



LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

Transactions of the Wisconsin State Agricultural Society, including proceedings of the state agricultural convention, held in February, 1884, together with other practical papers. Vol. XXII 1883/1884

Wisconsin State Agricultural Society
Madison, Wisconsin: Democrat Printing Company, State Printers,
1883/1884

<https://digital.library.wisc.edu/1711.dl/7QVFZW54MPAZM83>

Based on date of publication, this material is presumed to be in the public domain.

For information on re-use, see
<http://digital.library.wisc.edu/1711.dl/Copyright>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

RBW7

AG75

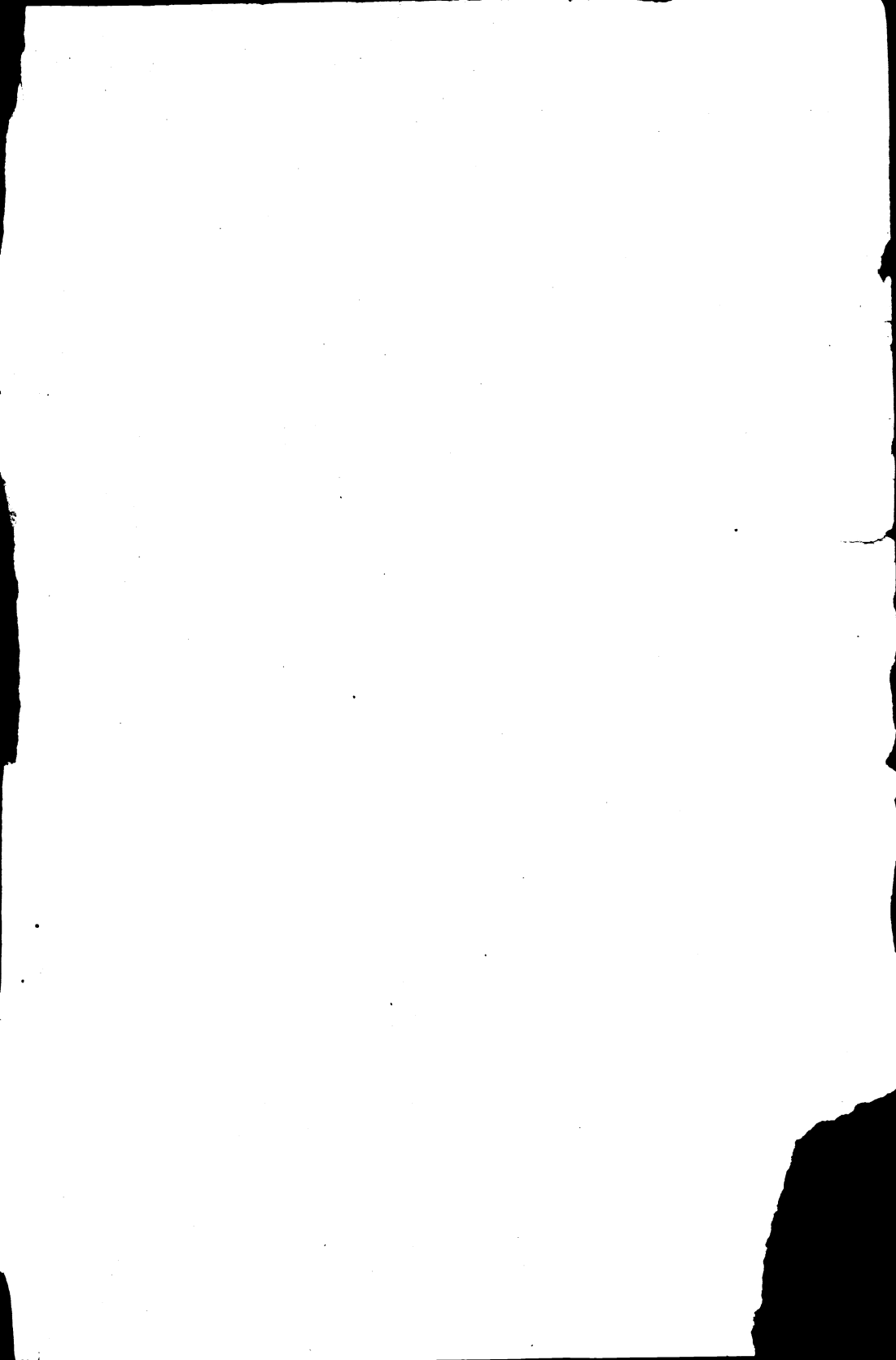
22

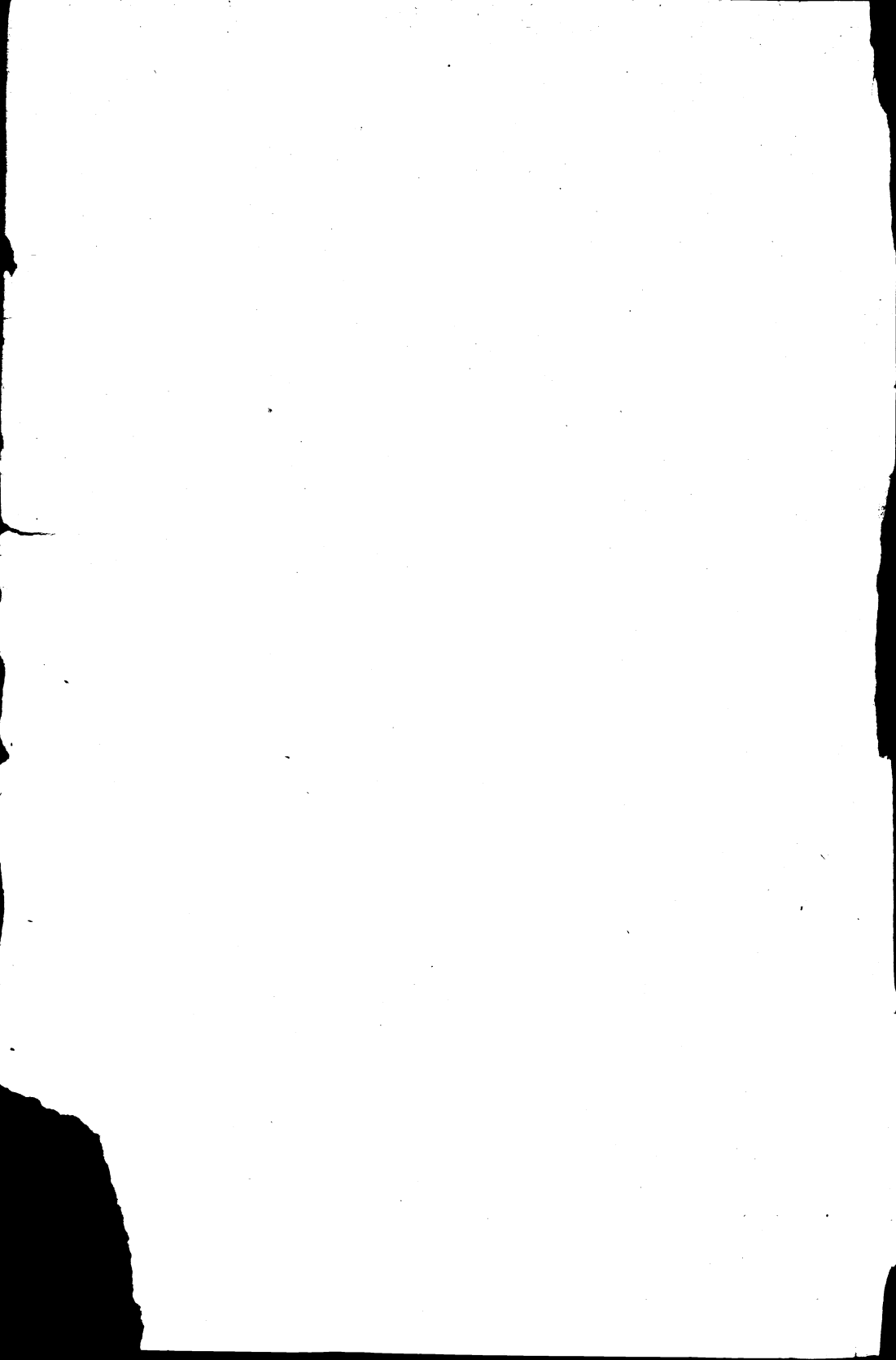
University of Wisconsin
LIBRARY

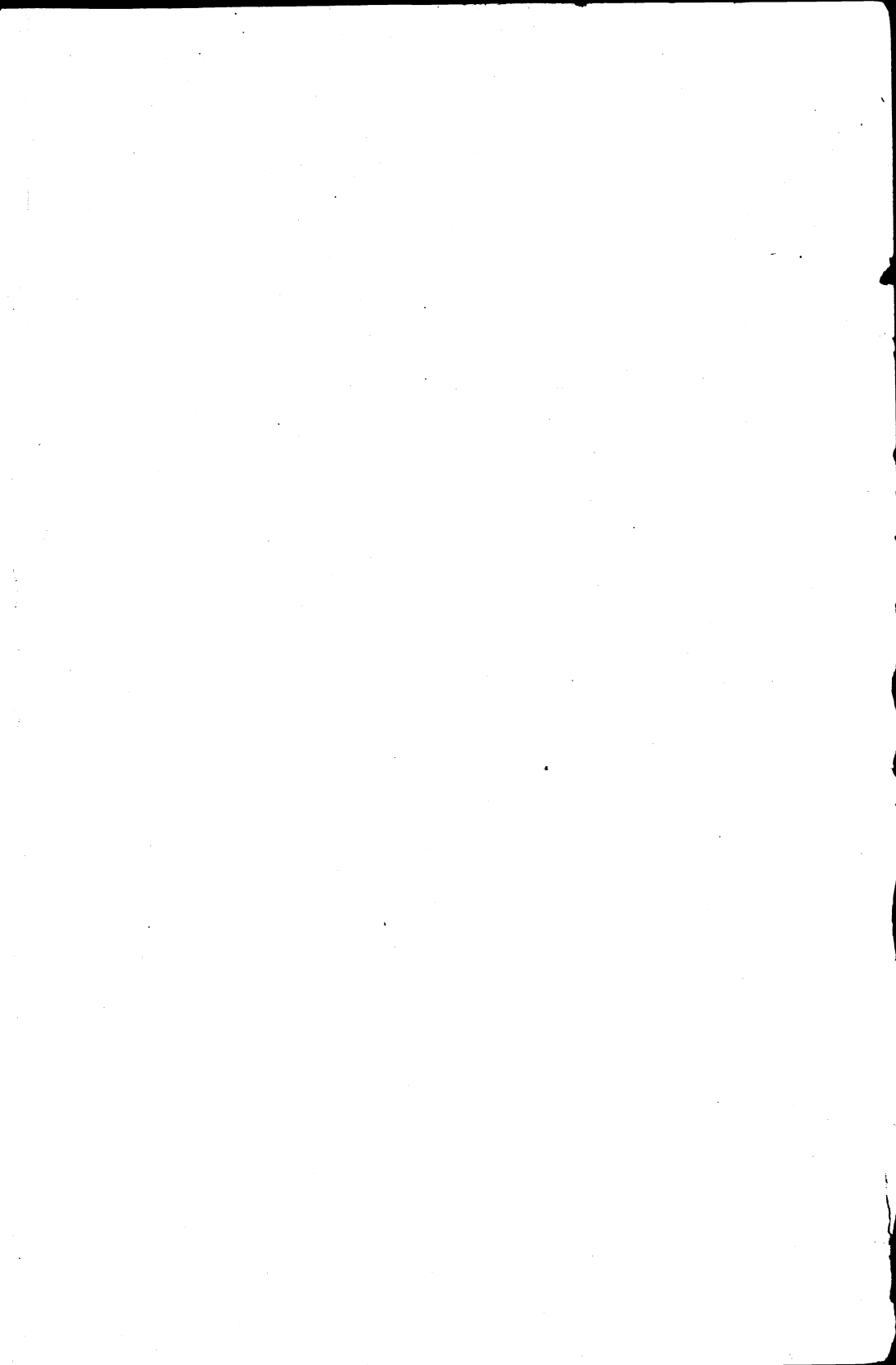
Class

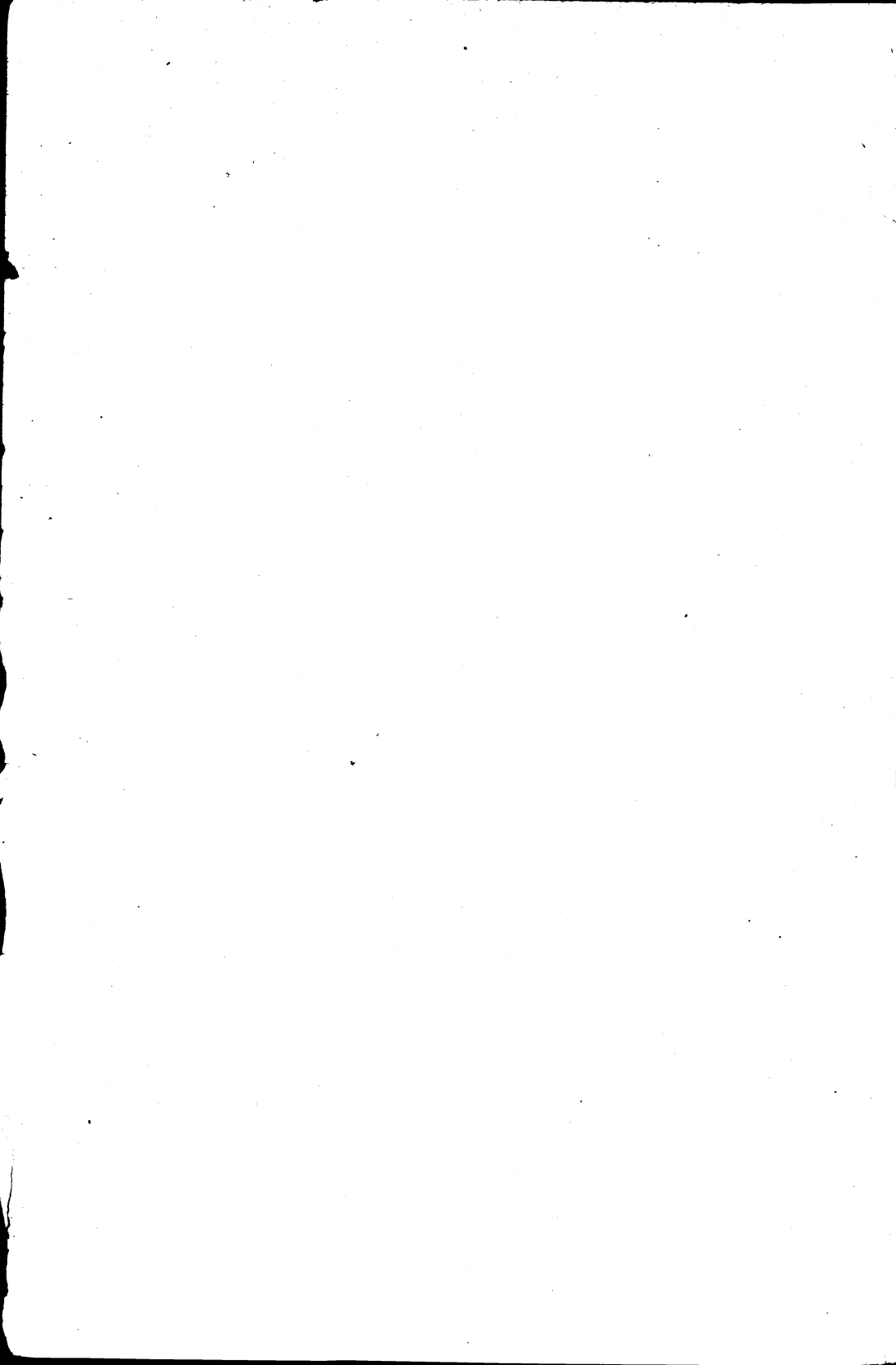
Book

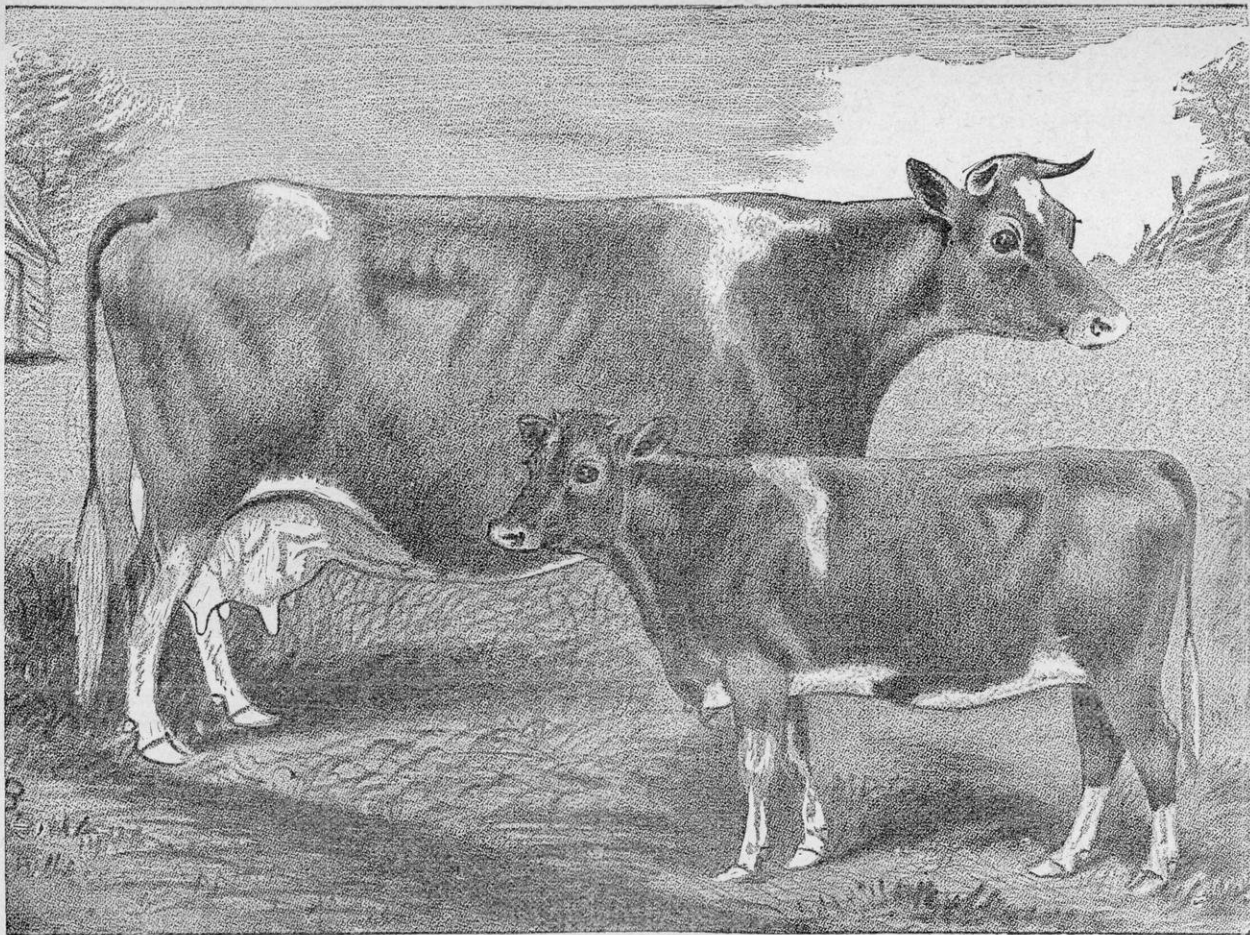
39258











IMP. "POLLY OF KENOSHA," No. 849 of A. G. C. C. HERD REGISTER. OWNED BY I. J. CLAPP, Kenosha, Wis.

TRANSACTIONS

OF THE

WISCONSIN

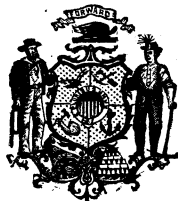
State Agricultural Society,

INCLUDING

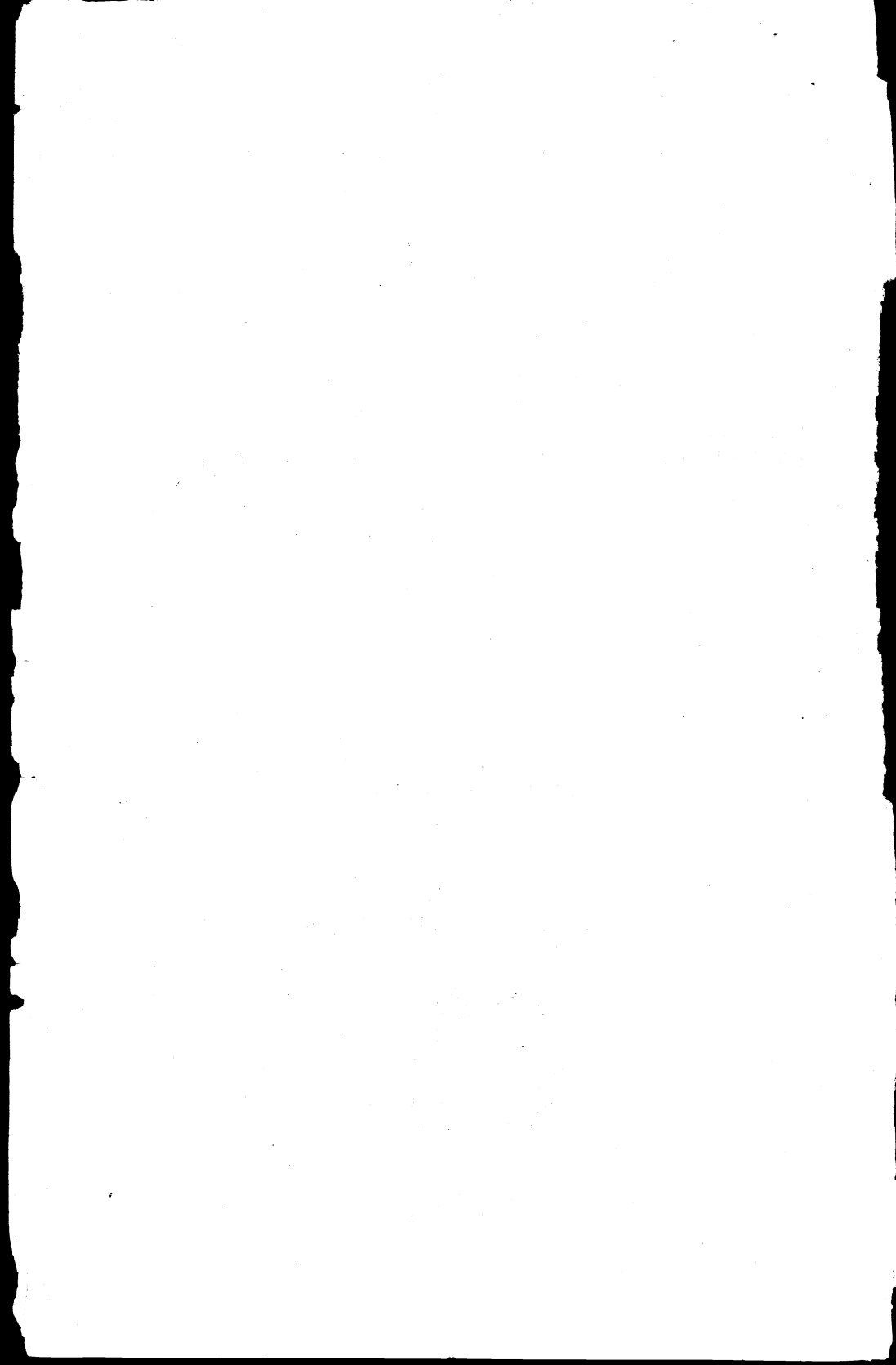
PROCEEDINGS OF THE STATE AGRICULTURAL CONVENTION,
HELD IN FEBRUARY, 1884, TOGETHER WITH
OTHER PRACTICAL PAPERS.

VOL. XXII.—1883-84.

PREPARED BY
CLINTON BABBITT, SECRETARY.



MADISON, WIS.:
DEMOCRAT PRINTING CO., STATE PRINTERS.
1884.



RBW7
AS75

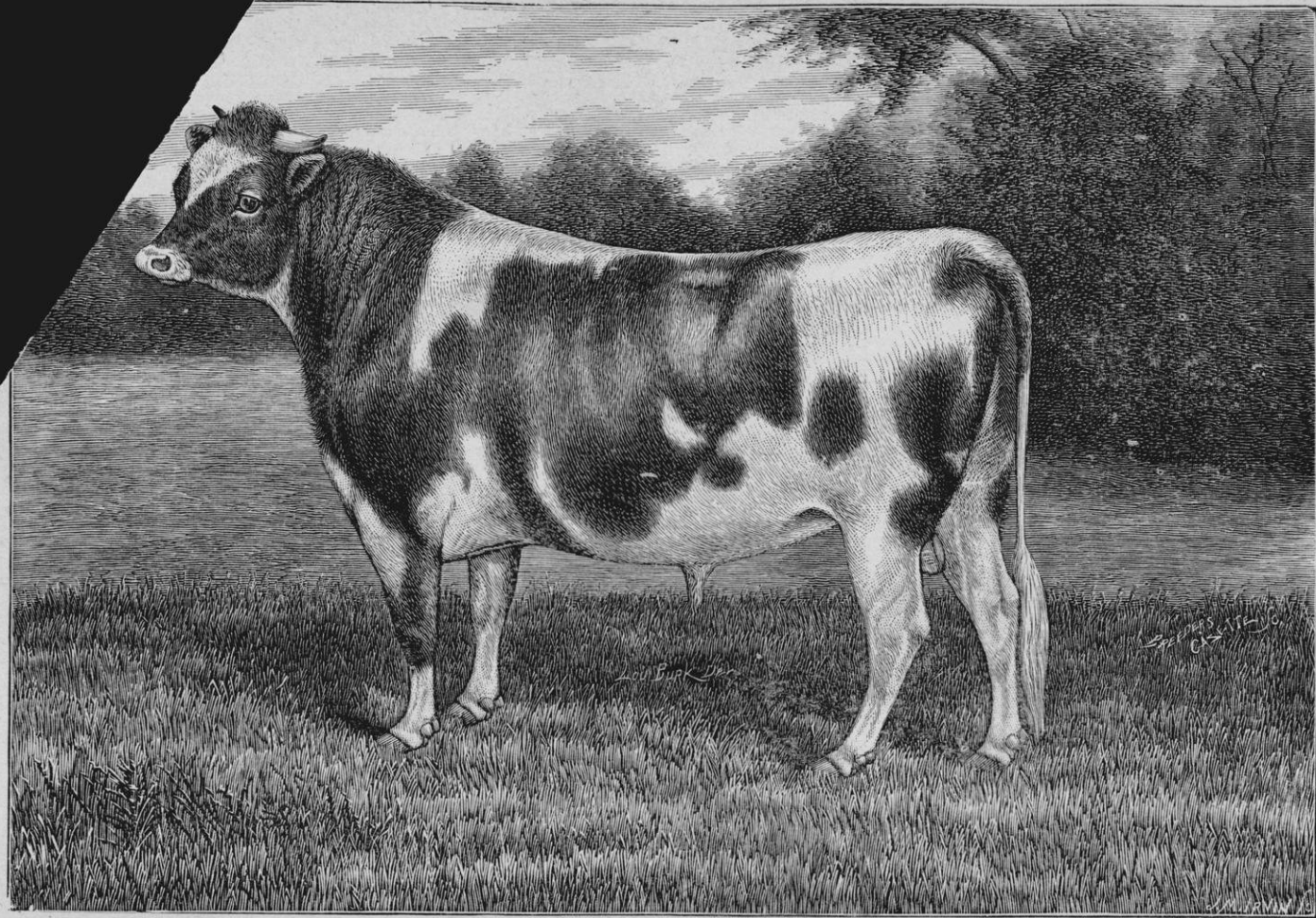
39258
4 S '96

TABLE OF CONTENTS.

	<i>Page.</i>
I. Constitution, by-laws, members and officers.....	6-20
II. Proceedings of Society and Executive Board	22-36
III. Society Meeting — Address of Hon. N. D. Fratt.....	34-36
IV. Executive Board meeting, and election of officers.....	36-37
V. Address of President N. D. Fratt to Executive Board.	38-41
VI. Report of Superintendents	41-44
VII. Presentation of Beer Question, by women of W. C. T. U., and open letters of Emma Bascom, Clinton Bab- bitt, "S," and A Member	44-53
VIII. Board Meeting, of Agricultural and Horticultural Soc.	55
IX. Exhibition of 1883 — Opening Address, by Hon. N. D. Fratt	57-75
X. Premium Awards	75-101
XI. Report of Superintendent Machinery, Department H, by T. L. Newton.....	102-127
XII. Farmers' Convention, under auspices of Wisconsin State Agricultural Society — Opening Address by Hon. N. D. Fratt.....	128-139
Discussion, by Hinton, Ford, Babbitt and Broughton	139-154
XIII. The Future of the Sorghum Sugar Industry, by Prof. Wiley, Washington	154-169
Discussion	169-172
XIV. The Agricultural College, by Dr. A. C. Barry, Lodi..	172-186
XV. Management of University Farm and Experiment Station, by Hon. I. C. Sloan, Madison.....	186-198
Discussion	198-219
XVI. Alfalfa, or Chili Clover, by Lewis Clark, Beloit.....	219-225
Discussion	225-226
XVII. First Principles, by John Bascom, Pres't State Univ'ty	226-236
Discussion	236-247
XVIII. Our Boy Crop, by J. C. Bartholf, Milton.....	247-256
XIX. The Draft Horse the Farmers' Friend, by Matt. Ander- son, Pine Bluff	256-273
Discussion	274-282
XX. The Horse, by Gen. Geo. E. Bryant, Madison, Wis....	282-288
XXI. Wind as a Farm Motor, by C. D. Fox, Roscoe, Ill.....	288-301
Discussion	301-303

TABLE OF CONTENTS.

	<i>Page.</i>
XXII. Some Underestimated Factors in Business Enterprises, by E. P. Wheeler, Rock county	303-312
Discussion	312-316
XXIII. Farm Drainage, by J. J. W. Billingsley	316-324
Discussion	324-333
XXIV. One Aspect of Soil Exhaustion, by Prof. H. P. Armsby, Ph. D., Madison.....	333-350
Discussion	350-366
XXV. Cranberries in their Wild and Cultivated Condition, by L. G. Kniffen.....	366-374
XXVI. Extemporaneous reply to resolutions passed by Wis- consin State Grange, by Prof. J. C. Freeman.....	374-386
Discussion	386-406
XXVII. Discussion on Paper of Geo. E. Morrow, Illinois, by Henry, Allen, Seymour, Clark	406-413
XXVIII. Extemporaneous remarks upon Milking Qualities of Short-Horn Cattle, by Clinton Babbitt, including letter of Hon. Horace Capron, Hon. Lewis F. Allen, remarks by Ford, Broughton, Gill, Babbitt, Henry, Ames and Hilton	413-430
XXIX. Miscellaneous — Remarks on the Physiology of Breed- ing, by S. L. Goodale. (Continuation from page 479, Vol. XXI).....	431-442
XXX. Leaves, Beautiful Leaves, by Mrs. H. M. Lewis, Secre- tary Wisconsin State Horticultural Society	442-446
XXXI. Insectivorous Plants, by Mrs. F. P. Willard	446-452
XXXII. Sugar from Sorghum Plant, by A. J. Decker, Fond du Lac, Wis.	452-454
XXXIII. Epizootic Abortion, by N. P. Valerius, New York.....	455-461
XXXIV. Bee-Keeping for Profit, by E. A. Morgan.....	461-469
XXXV. Nutritious Qualities of various Foods variously Cooked	469-470
XXXVI. Russian Fruit, by A. G. Tuttle.....	470-481
XXXVII. The Dangerous Classes, by Dr. Howard Crosby.....	481-



GUERNSEY BULL SIR CHAMPION XIII (320). THE PROPERTY OF N. K. FAIRBANK, CHICAGO, ILL., AND I. J. CLAPP, KENOSHA, WIS.

OFFICERS OF THE SOCIETY, 1884.

BOARD OF AGRICULTURE.

President,

N. D. FRATT, RACINE.

Vice-Presidents,

First Congressional District—DR. C. L. MARTIN, JANESVILLE.

Second Congressional District—H. D. HITT, OAKFIELD.

Third Congressional District—R. B. OGILVIE, MADISON.

Fourth Congressional District—D. T. PILGRIM, WEST GRANVILLE.

Fifth Congressional District—J. M. SMITH, GREEN BAY.

Sixth Congressional District—J. BYRON OLCOTT, OSHKOSH.

Seventh Congressional District—J. W. WOOD, BARABOO.

Eighth Congressional District—A. A. ARNOLD, GALESVILLE.

Ninth Congressional District—NOT REPRESENTED.

Secretary,

CLINTON BABBITT, BELOIT.

P. O. Address.

(Wisconsin State Agricultural Rooms,)

MADISON.

Treasurer,

CYRUS MINER, JANESVILLE.

Additional Members of the Executive Committee,

ORRIS PRATT, SPRING PRAIRIE.

I. C. SLOAN, MADISON.

T. L. NEWTON, BEAVER DAM.

J. H. HICKS, OSHKOSH.

FRANKLIN J. BLAIR, MILWAUKEE.

GEORGE B. SHAW, EAU CLAIRE.

W. A. JOHNSTON, GALESVILLE.

CONSTITUTION.

ARTICLE I.

OF THE NAME AND OBJECT OF THE SOCIETY.

This Society shall be known as the "Wisconsin State Agricultural Society." Its object shall be to promote the advancement of agriculture, horticulture, and the mechanical and household arts.

ARTICLE II.

OF THE MEMBERS.

The Society shall consist of life members, who shall pay, on subscribing, twenty dollars, and of honorary and corresponding members, who shall be elected by a two-thirds vote of all the members of the executive board, at any regular meeting. The presidents of county agricultural societies shall be members *ex-officio*, entitled to the same privileges as life members, and together, shall be known as the general committee of the Society.

ARTICLE III.

OF THE OFFICERS.

The officers of the Society shall consist of a president, one vice-president for each congressional district of the state, a secretary, a treasurer, and seven additional members, who shall hold their respective offices for a term of one year from the first day of January next succeeding the date of their election, and until their successors shall have been elected; and all of whom, together with the ex-president latest in office, and the president and general secretary of the Wisconsin Academy of Sciences, Arts and Letters, shall constitute the executive board.

ARTICLE IV.

OF THE POWERS AND DUTIES OF OFFICERS.

The presidents and vice-presidents shall perform such duties as are common to such officers in like associations, as may be required by the executive board.

The secretary shall keep the minutes of all meetings, and have immediate charge of the books, papers, library, and collections, and other property of the Society. He shall also attend to its correspondence, and prepare and superintend the publication of the annual report of the Society, required by law.

The treasurer shall keep the funds of the Society and disburse the same on the order of the president, or a vice-president, countersigned by the secretary, and shall make report of all receipts and expenditures at the regular meeting of the Society in December.

The executive board shall have power to make suitable by-laws to govern the action of the several members thereof. They shall have general charge of all the property and interests of the Society, and make such arrangements for the holding and management of general and special exhibitions as the welfare of the Society and the interests of industry shall seem to require.

The general committee shall be charged with the interests of the Society in the several counties where they respectively reside, and constitute a medium of communication between the executive board and the public at large.

ARTICLE V.

OF MEETINGS AND ELECTIONS.

The annual meeting of the Society for the transaction of general business, shall be held in its rooms in Madison, on the first Wednesday in December, at nine o'clock A. M., in each year, and ten days' notice thereof shall be given by the secretary, in one or more papers printed in the city of Madison.

The election of officers of the Society shall be held each year, during and at the general exhibition, and the exact time and place of the election shall be notified by the secretary in the official list of premiums, and in all the general programmes of the exhibition.

Special meetings of the Society will be called by order of the executive board, on giving twenty days' notice in at least three newspapers of general circulation in the state, of the time, place and object of such meetings.

At any and all meetings of the Society, ten members shall constitute a quorum for the transaction of business, though a less number may adjourn from time to time.

ARTICLE VI.

OF AMENDMENTS.

This constitution may be amended by a vote of two-thirds of the members attending any annual meeting, all amendments having been first submitted in writing at the previous annual meeting, recorded in the minutes of the proceedings, and read by the secretary in the next succeeding meeting after the election of officers. All amendments proposed shall be subject to amendment by a majority vote at the meeting when presented, but not thereafter.

BY-LAWS.

SECTION I.

OF OFFICERS.

The officers of the society shall, *ex officio*, fill the corresponding offices in the Executive committee.

SECTION II.

OF THE DUTIES AND POWERS OF OFFICERS.

The duties of the President, in addition to those defined by the constitution and the by-laws regulating the duties of the permanent committee, shall be as follows, to wit:

1. To inspect the fair grounds after they shall have been prepared for the annual exhibition by the special committee of arrangements, appointed for that purpose, and suggest such modifications or further preparations as he may deem necessary.

2. To formally open the annual fair of the Society at such time as the Executive committee may prescribe, with an appropriate address.

3. As the executive head of the Society, to have a general supervision and control of the entire exhibition, subject only to the authority of the Executive committee.

The duties of the Secretary, more especially defined than in the constitution, shall be as follows :

1. To make a faithful record of each meeting of the Executive committee and keep such record in a condition for the convenient reference of any member thereof, at any time ; also to make a record of every order drawn on the treasurer, and deliver to parties in whose favor they were so drawn—separately entering and numbering the orders drawn to pay premiums and those to pay general expenses, and so defining them — and of all moneys due the Society ; in all cases holding the parties so indebted responsible therefor until they shall have presented him a certificate from the treasurer, showing that the same has been paid.

2. To open and carry on such correspondence as may be advantageous to the Society or to the common cause of agricultural improvement, not only with individual agriculturists and eminent practical and scientific men of other industrial pursuits, but also with other societies or associations whose objects are kindred to ours, whether in this country or in foreign lands, and to preserve a journal of such correspondence in the archives of the Society.

3. To collect and arrange for convenient examination, standard agricultural works and periodical publications, together with such models, machines and implements as may be donated to, or otherwise acquired by the Society.

4. To investigate, as far as practicable, the nature of fertilizers, indigestions and cultivated plants, insects injurious to vegetation, etc., and to collect and preserve such specimens thereof as will illustrate the natural history and agricultural resources, conditions and progress of the state.

5. To institute, and collect reports therefrom, needed experiments relative to the preparation of the various soils of the state for economical culture, the cultivation of different grains, fruits and garden vegetables, the breeding and raising of stock, etc.

6. To visit, by the advice of the Executive committee, or as his own judgment may direct, the various portions of the state, and to give lectures on the science and practice of agriculture, wherever and whenever they may be deemed most necessary or desirable.

7. To co-operate with the superintendent of public instruction and the chief of the normal school board, for the introduction and use in the schools of Wisconsin, of standard works on agriculture and the other industrial arts and sciences.

8. To attend as many as possible of the industrial exhibitions of this country, particularly the county fairs of Wisconsin; to co-operate with the president and special committee of arrangements, for the judicious preparation and management of our state exhibition; and to have the sole supervision and control of the offices of entry thereat.

9. To carefully prepare and superintend the publication of the annual report of the Society to the governor of the state, embodying therein the proceedings of the State Agricultural Society, an abstract of the reports of the incorporated county agricultural societies of the state, and such reports, essays and addresses, or other matters of information, as may be calculated to enhance the value of said report.

Finally, it shall be his duty, not only by the means above named, but also through such other instrumentalities as he may devise, and the committee approve, to devote himself faithfully and unreservedly to the promotion of the industrial interests of the state.

It shall be the duty of the Treasurer —

1. To receive primarily and exclusively all moneys due the Society, from whatsoever source.

2. To keep a full and faithful record of all receipts of moneys coming into his hands, and of the sources whence derived, in a book specially furnished by and belonging to the Society, and to have the same open at all reasonable times, to the inspection of any person or persons authorized by the Executive committee to make such examination.

3. To likewise keep an exact record of every order by him paid; and such record must be verified by the proper vouchers, showing that the sums therein named have been by him so paid.

SECTION III.

OF MEETINGS.

The Executive Committee shall meet annually, on the day preceding the day on which the annual meeting of the Society is held, on Monday preceding the first Tuesday of February, and again on the first day of the annual fair.

They shall also meet at the call of the secretary, the president and a vice-president of the Society concurring — and may adjourn to any stated time.

SECTION IV.

OF A QUORUM.

At any meeting of the Executive committee, four members thereof shall constitute a quorum for the transaction of business.

SECTION V.

OF PERMANENT COMMITTEES.

There shall be two permanent committees of the Executive committee, which shall be respectively styled the *Standing Committee* and the *Finance Committee*.

The Standing Committee shall consist of the president, the secretary and treasurer, who shall have power in the recess of the Executive committee to draw orders on the treasury for all necessary current incidental expenses. But the Executive committee shall have authority, and are hereby required to revise the proceedings or transactions of said Standing committee, and indorse or disapprove of the same.

The Finance Committee shall consist of the president and treasurer, and it shall be their duty to suggest means for increasing the revenues of the Society.

They shall also have authority to invest any portion of the funds of the Society that may from time to time be set apart by the Executive committee for investment, disposing of such funds upon such terms and conditions as may be prescribed by the said Executive committee.

Each of the above-named sub-committees shall be responsible for the faithful discharge of their duties to the Executive committee, to whom an appeal may at any time be taken from their acts or decisions.

The auditing, adjusting, allowing or rejecting of all bills, claims or demands, of whatsoever nature, against the Society, and the issuing of orders upon the treasurer for payment of the same — except for the current incidental expenses of the Society, as by this section already provided for — shall devolve upon the Executive committee; and it shall be the duty of said committee to annually examine the books, papers and vouchers of the treasurer and secretary, and compare the same, and adjust the accounts between those officers and the Society, and report thereon at the annual meeting in December.

SECTION VI.

OF THE ORDER OF BUSINESS.

The following order of business shall be observed at all meetings of the Executive committee:

1. Reading the minutes of the preceding meeting.
2. Reading the minutes and reports of the Standing committee.
3. Reading the minutes and reports of the Finance committee.
4. Report of Auditing committee.
5. Reports from special committees.
6. Communications from the secretary.
7. Communications from members of the committees.
8. Unfinished business.
9. Miscellaneous business.

This order of business may be suspended, however, at any time, by a vote of the majority of the members present.

SECTION VII.

OF THE FISCAL YEAR.

The fiscal year of this Society shall commence on the first Wednesday of December in each year, and all annual reports of the year previous shall be made up to that time.

SECTION VIII.

OF THE EXPIRATION OF THE TERMS OF OFFICE.

The terms of office of all the officers of this Society shall expire on the 31st day of December in each year.

SECTION IX.

OF AMENDMENTS.

These by-laws may be amended at any regular meeting of the Executive committee by a vote of eight of the members thereof.

LIFE MEMBERS.

Names.	Residence.	Names.	Residence.
Adams, James.....	Janesville.	Braley, A. B.....	Madison.
Adams, L. L.....	Stoner's Prairie	Brazen, Benj.....	Wauwatosa.
Alexander, O.....	Milwaukee.	Brichener, G. H. . .	Sheboygan F's
Allen, J. W.....	Janesville.	Brabazon, J. R. . .	Delavan.
Allen, W. C.....	Delavan.	Brockway, E. P. . .	Milwaukee.
Allen, H. M.....	Evansville.	Brodhead, E. H. . .	Milwaukee.
Allis, Edward P....	Milwaukee.	Brown, Jas. J. . . .	Madison.
Anderson, Matt.....	Pine Bluff.	Brown, J. A.....	Milwaukee.
Angell, R. R.....	Janesville.	Brown, Frank G..	Madison.
Angell, W. H.....	Sun Prairie.	Bruce, A. T.....	Milwaukee.
Atkins, Albert R....	Milwaukee.	Bryan, John.....	Cross Plains.
Atwood, David.....	Madison.	Bryant, F. H.....	Madison.
Atwood, Wm. T....	Portland, Org.	Bryant, D. D.....	Madison.
Atwood, R. J.....	Madison.	Bryant, G. E.....	Madison.
Armour, P. D.....	Milwaukee.	Bryant, G. E., Jr.	Madison.
Armstrong, L. G....	Boscobel.	Bull, Stephen.....	Racine.
Arnold, J. M.....	Milwaukee.	Bullard, James....	Evansville.
Arnold, A. A.....	Galesville.	Bump, N. P.....	Janesville.
Aspinwall, D. M....	Farmington.	Bunker, Geo.....	Madison.
Babbitt, Clinton...	Beloit.	Burgess, J. M.....	Janesville.
Babbitt, D. H.....	Janesville.	Bush, Samuel.....	Milwaukee.
Bacon, I. P.....	Wauwaukee.	Button, Henry H..	Milwaukee.
Bacon, W. D.....	Waukesha.	Burnham, A., Jr..	Milwaukee.
Bailey, A. P.....	Oshkosh.	Burnham, J. L....	Milwaukee.
Bailey, M. T.....	Madison.	Burnham, Miles...	Bl'ng Pr. Minn
Barlass, Andrew...	Emerald Gr'Ve	Byrne, John A....	Madison.
Barlass, David.....	Emerald Gr'Ve	Brand, F. C. G....	Milwaukee.
Barrows, E. S.....	Chicago.	Carey, Ed. A.....	Fond du Lac.
Baxter, Geo.....	Windsor.	Camp, H. H.....	Milwaukee.
Bates, A. C.....	Janesville.	Cantwell, M. J....	Madison.
Bement, E. R.....	Oregon.	Capron, Geo.....	Boston, Mass.
Bemis, Jervis.....	Footville.	Carleton, W. D....	Sun Prairie.
Benedict, J. D.....	Bristol.	Carpenter, J. A....	Waukesha.
Benedict, S. G.....	Providence, R.I.	Carpenter, J. E....	Windsor.
Benedict, W. G....	Milwaukee.	Carpenter, J. H....	Madison.
Benson, S. W.....	Bloomfield.	Carpenter, S. D....	Carthage, Mo.
Biglow, F. G.....	Milwaukee.	Carr, N. B.....	Madison.
Bliss, C. M.....	Kansas.	Carr, Joseph S....	Eau Claire.
Bird, I. W.....	Jefferson.	Carter, A. M.....	Johnstown.
Bird, T. E.....	Madison.	Carver, P. S.....	Delavan.
Bishop, J. C.....	Fond du Lac.	Cary, J.....	Milwaukee.
Black, John.....	Milwaukee.	Case, J. I.....	Racine.
Blair, F. J.....	Milwaukee.	Clark, C. H.....	Madison.
Blanchar, Willard.	Madison.	Clark, D. J.....	Milwaukee.
Bostwick, J. M.....	Janesville.	Chandler, J. C....	Madison.
Bostwick, R. M....	Janesville.	Chandler, S.....	Milwaukee.
Bonnell, James....	Milwaukee.	Chapman, T. A....	Milwaukee.
Bonnell, L.....	New York City	Chase, Enoch.....	Milwaukee.
Boorse, Henry.....	Granville.	Chase, H.....	Milwaukee.
Boyce, A. A.....	Lodi.	Cheney, Rufus....	Evanston, Ill.
Boyd, R. B.....	Milwaukee.	Chipman, A.....	Sun Prairie.
Bowman, J. M.....	Madison.	Children, E.....	E. Dubuque, Ill
Bradley, C. T.....	Milwaukee.	Chipman, C. R....	Waunakee.
		Church, W. W....	Topeka, Kas.

Names.	Residence.	Names.	Residence.
Clark, C. E.....	Madison.	Dodge, H. S.....	Milwaukee.
Church, Wm. A....	Milwaukee.	Doolittle, W. J...	Janesville.
Clapp, G. W.....	Oregon.	Dore, J. S.....	Neillsville.
Clark, C. M.....	Whitewater.	Doris, John.....	Milwaukee.
Clark, Lewis.....	Beloit.	Dorn, M. M.....	Madison.
Cochraee, John....	Waupun.	Dousman, T. C....	Dousman.
Cogswell, A. W....	Brookfield.	Dow, O. P.....	Madison.
Colby, Charles....	Janesville.	Drakely, S.....	Madison.
Coleman, W. W....	Milwaukee.	Dunlap, S.....	Token Creek.
Cohman, Ed.....	Fond du Lac.	Durkee, H.....	Kenosha.
Colladay, Wm. M..	Stoughton.	Dutcher, J. A....	Milwaukee.
Colton, John B....	Madison.	Dwinnell, J. B....	Lodi.
Cooper, E. J.....	Des Moines, Ia.	Eaton, J. O.....	Lodi.
Cornell, James....	Oakfield.	Echlin, J. C.....	Janesville.
Cornwell, H. H....	Verona.	Edgerton, E. W....	Milwaukee.
Corrigan, John....	Cedarburg.	Elderkin, Ed.....	Elkhorn.
Cottrill, J. P. C....	Milwaukee.	Elliott, E.....	Lone Rock.
Cottrill, W. H....	Appleton.	Elliott, Joseph T..	Racine.
Cottrill, C. M.....	Milwaukee.	Ellis, J. A.....	Chicago.
Crampton, N. B....	Madison.	Ellsworth, O.....	Milwaukee.
Crawford, J. B....	De Smet, Dak.	Ellsworth, L.....	Milwaukee.
Crawl, John.....	Center.	Ellsworth, W. J..	Madison.
Crilly, John J....	Milwaukee.	Elmore, A. E....	Green Bay.
Crocker, Hans....	Milwaukee.	Elmore, R. P....	Milwaukee.
Crosby, J. B.....	Janesville.	Eldred, John....	Milwaukee.
Crossett, B. F....	Janesville.	Elson, Charles....	Milwaukee.
Calver, Caleb E..	Shopiere.	Emmons, N. J....	Milwaukee.
Cammings, Wm....	Fitchburg.	Enos, Elihu.....	Waukesha.
Curtis, F. C.....	Rocky Run.	Esterly, Geo. W..	Whitewater.
Curtis, D. W.....	Fort Atkinson.	Farnsworth, J. H..	Fond du Lac.
Curtis, Dexter....	Madison.	Farwell, L. J....	Chicago.
Cutting, J. W....	Harmony.	Fenn, G. W.....	Janesville.
Coon, H. C.....	Albion.	Ferguson, D.....	Milwaukee.
Dexter, W. W.....	Janesville.	Ferguson, Benj...	Fox Lake.
Dahlman, Anthony.	Milwaukee.	Fernly, Jno.....	La Grange.
Dahlman, John....	Milwaukee.	Field, Martin....	Mukwanago.
Dann, Obed.....	Chicago.	Field, W. W.....	Odebolt, Ia.
Danks, E. P.....	Stoughton.	Fifield, L.....	Chicago.
Daniel, W. W.....	Madison.	Fifield, D. E.....	Janesville.
Darling, K. A.....	Fond du Lac.	Fifield, E. G.....	Janesville.
Darwin, A. G.....	Brooklyn, N. Y.	Finch, Lorin....	Bradford.
Darburner, Geo. H.	Brookfield, C.	Firmin, F. H....	Madison.
Davidson, Adam...	Verona.	Fisher, C. C.....	Center.
Davis, N. P.....	Pierceville.	Fischer, Elijah...	Newark.
Davis, W.....	Center.	Fisher, Seth.....	Center.
Dean, E. B.....	Madison.	Fitch, D.....	Madison.
Dean, John S.....	Madison.	Fitch, W. F.....	Madison.
De Hart, J. L....	West Lima.	Fitch, W. G.....	Milwaukee.
De La Matyr, W. A.	Middleton.	Fitzgerald, R. P..	Milwaukee.
Delaplaine, G. P...	Madison.	Fetcher, John....	Springfield.
De Mor, A. B.....	Chicago.	Flint, J. G., Jr...	Milwaukee.
Dewey, Nelson....	Cassville.	Folds, Geo. H....	Sioux Falls.
De Wolf, E.....	Fitchb'rg, Mass	Foot, E. A.....	Footville.
Devoe, A. B.....	McFarland.	Foot, H. E.....	Milwaukee.
Diehman, J. A....	Verona.	Ford, J. C.....	Madison.
Dickson, J. P.....	Janesville.	Fowler, James S..	Milwaukee.
Dodge, J. E.....	Lancaster.	Fox, A. O.....	Oregon.

Names.	Residence.	Names.	Residence.
Fratt, N. D.	Racine.	Hawes, W. N.	East Middleton
Frank, A. S.	Madison.	Hayes, A. J.	Milwaukee.
Frank, Geo. R.	Boscobel.	Hazelton, Geo. C. .	Boscobel.
Frankfurth, Wm. . .	Milwaukee.	Hazen, Chester. . .	Ladoga.
Freeman, C. F.	Milwaukee.	Hempsted, H. N. . .	Milwaukee.
Friedman, Ignatius.	Milwaukee.	Hicks, J. H.	Oshkosh.
French, Jonathan. .	Madison.	Hibbard, W. D. . . .	Milwaukee.
Fuller, M. E.	Madison.	Hibbard, Wm. B. . .	Milwaukee.
Fuller, F. D.	Madison.	Higby, A. T.	Stoughton.
Fuller, E. M.	Madison.	Hill, H. J.	Madison.
Furlong, Thos. T. . .	Chicago.	Hill, J. W. P.	Belleville.
Furlong, John.	Milwaukee.	Hill, Robert.	Chicago.
		Hitt, H. D.	Oakfield.
Gammons, Warren . .	Middleton.	Helmer, A. M.	Waukesha.
Gaylord, Aug.	New York.	Hinckley, B. R. . . .	Summit.
Gernon, Geo.	Madison.	Hodson, C. N.	Janesville.
Gibbs, Chas. R.	Whitewater.	Hoyt, F. E.	Rochester.
Gilbert, Thomas. . .	Oregon.	Hoefinger, Carl. . .	Wausau.
Giles, H. H.	Madison.	Hogan, Gilbert. . . .	Janesville.
Gilman, H.	Burke.	Holister, R. M. . . .	Janesville.
Goodenow, H. D. . . .	Madison.	Holmes, A. M. . . .	Milwaukee.
Goodrich, Ezra.	Milton.	Holton, Edward D. .	Milwaukee.
Goodrich, G.	Whitesville.	Hoven, Matt.	Madison.
Grady, F. M.	Fitchburg.	Hopkins, B. B.	Milwaukee.
Graham, Alex.	Salt Lake.	Hopkins, E. E.	Milwaukee.
Grant, Albert.	Milwaukee.	Hoskins, J. W.	Milwaukee.
Graves, R. T.	Ripon.	Hoskins, Alfred. . .	Janesville.
Graves, S. W.	Rutland.	Hoyt, J. W.	Madison.
Green, Geo. G.	Milwaukee.	Hurlburt, E.	Oconomowoc.
Green, Richard.	Middleton.	Hume, Wm.	Oshkosh.
Green, N. S.	Milford.	Hutchins, C. A. . . .	Fond du Lac.
Greenleaf, E. B.	Milwaukee.	Hutson, J. S.	Stoughton.
Greenman, C. H.	Dov'r Cen., Min.	Hudson, John.	Madison.
Greenman, H. D. . . .	Milwaukee.	Huntley, D.	Appleton.
Gregory, J. C.	Madison.	Hyde, Edwin.	Milwaukee.
Grinnell, J. G.	Adams.		
Grubb, W. S.	Baraboo.	Ilsley, Chas. F.	Milwaukee.
Gurnee, J. D.	Madison.	Inbush, J. H.	Milwaukee.
		Ingram, A. C.	New York.
Haight, Nicholas. . .	Madison.	Jacob ^s , Wm.	Madison.
Haight, J. M.	Sacram'to Cal.	Jackman, Hiram. . .	Chicago.
Hall, Augustus.	Janesville.	Jeffery, Geo.	Milwaukee.
Hallock, Youngs. . .	Middleton.	Jenks, S. R.	Madison.
Hall, H. P.	Boston.	Johnston, W. A. . . .	Galesville.
Hall, S. H.	Madison.	Jenkins, J. C.	Janesville.
Hanchett, A. M.	Milwaukee.	Jerdee, L. P.	Madison.
Hancock, Brad.	Chicago.	Jerdee, M. P.	Madison.
Hanks, A. S.	Milwaukee.	Johnson, John, Jr.	Madison.
Hammond, L. M. . . .	Janesville.	Johnson, M. B.	Janesville.
Hammond, E. S. . . .	Fond du Lac.	Johnson, Joseph. . .	Hartland.
Harrington, N. M. . .	Delavan.	Johnson, John V. . .	Milwaukee.
Harris, Jas.	Janesville.	Johnson, John A. . .	Madison.
Harvey, J. N.	Kn'xville, Tenn.	Johnson, Hugh L. . .	Milwaukee.
Hasbrouck, W.	Eau Claire.	Johnson, John.	Milwaukee.
Hastings, S. D.	Madison.	Jones, E. D.	Bjorn, Dak.
Hausman, Jos.	Madison.	Jones, C. H.	Sun Prairie.
Hawes, J. T.	Wil'w Lake, Da	Jones, John N.	Madison.

Names.	Residence.	Names.	Residence.
Kellogg, Geo. J.	Janesville.	Martin, A. C.	Ashton.
Kelwert, Emil.	Milwaukee.	Martin, C. L.	Janesville.
Kent, A. C.	Janesville.	Martin, Nathaniel.	Monroe.
Ketchaw, C. J.	Milwaukee.	Mason, Geo. A.	Chicago.
Keyer, E. W.	Madison.	Mathews, A. E.	Milwaukee.
Kinsell, M. G.	Sheboygan.	Mason, G. T.	Waukegan.
Kingsley, Geo. P.	Springfield.	Way, A. C.	Milwaukee.
Kingston, J. T.	Neenah.	Wayhew, F. L.	Milwaukee.
Kiser, W. C.	Tetonka, D. T.	Wayhew, J. L.	Milwaukee.
Kiser, J. C.	Oregon.	McCarty, F. D.	San Francisco.
Klueber, Samuel	Madison.	McComber, S. D.	New Lisbon.
Knight, E.	Myrtle, Dakota.	McConnell, Wm. N.	Dartford.
Kneeland, James.	Milwaukee.	McConnell, T. J.	Madison.
Knowles, Geo. P.	Fond du Lac.	McCormick, J. G.	Madison.
Knowles, Geo.	Milwaukee.	McDermott, Wm.	Fond du Lac.
Knapp, G. A.	Fond du Lac.	McDonald, A.	Alloa.
Knapp, J. G.	Tampa, Florida.	McDonald, J. S.	Fond du Lac.
Knapp, Wm. A.	Fond du Lac.	McDougal, G. W.	Madison.
Koss, Rudolph.	Milwaukee.	McDowell, H. C.	Oconomowoc.
		McGeogh, P.	Milwaukee.
Ladd, M. L.	Mendota, Ill.	McKenna, Martin.	Madison.
Lamb, F. J.	Madison.	McLaren, Wm. P.	Milwaukee.
Landauer, Max.	Milwaukee.	McNeil, David.	Stoughton.
Lapham, Henry.	Summit.	McPherson, J. P.	Springdale.
Larkin, B. F.	Madison.	Merrill, Alf.	Madison.
Larkin, G. H.	Milwaukee.	Merrill, S. S.	Milwaukee.
Larkin, Daniel.	Madison.	Millett, Chas. O.	Beloit.
Larkin, Wm.	Madison.	Mills, Simeon.	Madison.
Lawrence, W. A.	Janesville.	Miner, Cyrus.	Janesville.
Lawton, J. G.	De Pere.	Miner, John B.	Milwaukee.
Leach, Ed.	Madison.	Mitchell, Alex.	Milwaukee.
Leander, J. M.	California.	Mitchell, J. L.	Milwaukee.
Leibertson, B.	Milwaukee.	Morse, B. F.	Fond du Lac.
Leitch, W. T.	Brooklyn, N. Y.	Morden, E.	Madison.
Leitch, W. T., Jr.	Vienna.	Morehouse, L. H.	Milwaukee.
Lester, Waterman.	Janesville.	Morrison, W. H.	Elkhorn.
Lewis, John L.	Madison.	Mosely, J. E.	Madison.
Lindsay, E. J.	Milwaukee.	Mullen, James.	Milwaukee.
Lloyd, Lewis.	Cambria.	Murray, Geo.	Racine.
Lochin, John.	Pueblo, Col.	Nason, S. L.	Nasonville.
Lockwood, John.	Milwaukee.	Nash, C. D.	Milwaukee.
Lodington, H.	Milwaukee.	Nazro, John.	Chicago.
Lodington, James.	Milwaukee.	Needham, E. G.	Elm Grove.
Lodwin, A.	Monroe.	Newcomb, S. B.	Cold Spring.
Long, G. K.	Columbus.	Newcomb, Eph'm	Oregon.
Loren, H.	Dakota.	Newton, J. S.	Verona.
Lynch, E. M.	Janesville.	Nicholas, L. T.	Janesville.
Lynch, W. F.	Milwaukee.	Norris, C. W.	Milwaukee.
Lyncht, Wm.	Monroe.	Nowell, W. A.	Milwaukee.
		Nelson, C. B.	Madison.
		Newton, T. L.	Beaver Dam.
Maas, J. E.	Sun Prairie.	Ober, R. P.	Milwaukee.
Maas, Alexander H.	Madison.	Ogilvie, Robert.	Madison.
Maas, J. L.	Madison.	Olcott, J. B.	Oshkosh.
Maas, Henry.	Sun Prairie.	Oliver, Joseph B.	Milwaukee.
Maas, Charles.	Oconomowoc.	Olney, C. W.	LaCygne, Kan.
Macomber, Wm.	Black Earth.	Orr, G. H.	Verona.
Macmillan, Samuel.	Milwaukee.	Ott, Geo. V.	Madison.
Maize, G. T.	Waukegan.		

Names.	Residence.	Names.	Residence.
Page, H. M.	Baraboo.	Robbins, J. V.	New York.
Palmer, H. L.	Milwaukee.	Rodgers, Lawr'nce	Westport.
Palmer, J. Y.	Oregon.	Roe, J. P.	Franklin.
Palmer, O. M.	Oregon.	Rogers, C. H.	Milwaukee.
Palmer, Henry	Oregon.	Rodgers, D. J.	Milwaukee.
Park, Wm. J.	Madison.	Rogers, J. S.	Burlington.
Parker, C. H.	Beloit.	Rogers, Anson	Janesville.
Parmley, Ira.	Center.	Rogers, H. G.	Milwaukee.
Parsons, P. B.	Denver, Col.	Ross, James.	Madison.
Paul, John H.	Genesee.	Rowe, Richard W.	Madison.
Partridge, J. S.	Whitewater.	Rowe, W. E.	Arena.
Patten, L. F.	Janesville.	Ruggles, J. D.	San Francisco.
Patton, Jas. E.	Milwaukee.	Ryder, James K. ..	Waterloo.
Paul, Geo. H.	Milwaukee.		
Payne, Wm.	Janesville.	Sage, E. C.	Faulkton, D. T.
Payne, H. C.	Milwaukee.	Salisbury, R. W. ..	Fitchburg.
Peffer, G. P.	Pewaukee.	Salisbury, D. F. ...	Fitchburg.
Pember, R. T.	Janesville.	Sanderson, Edw. ...	Milwaukee.
Perkins, P. M.	Burlington.	Sanderson, R. B. ...	Madison.
Perrine, L. W.	Janesville.	Sarles, John H.	Boscobel.
Perry, B. F.	Madison.	Schute, Charles. ...	Milwaukee.
Pfister, Guido	Milwaukee.	Schutt, U.	Janesville.
Phelps, A. Warren. .	Milwaukee.	Seville, James.	Lodi.
Pier, C. K.	Merrill.	Sexton, W. F.	Milwaukee.
Pierce, C. L.	Milwaukee.	Simmons, C. J.	Monroe.
Pilgrim, D. T.	West Granville	Sinclair, Jeff.	Milwaukee.
Pinney, S. U.	Madison.	Sharp, J. W.	Iowa.
Plankinton, John. .	Milwaukee.	Shaw, J. B.	Milwaukee.
Plumb, J. C.	Milton.	Sheldon, A. H.	Janesville.
Plumb, T. D.	Madison.	Sheldon, D. G.	Madison.
Plummer, B. C.	Wausau.	Sheldon, S. L.	Madison.
Pond, Samuel A.	Janesville.	Shepard, C.	Milwaukee.
Porter, Wm. H.	Marshall.	Sherman, George. .	La Prairie.
Porter, G. E.	Eau Claire.	Sherman, J. M.	Burnett.
Power, D. G.	Milwaukee.	Sherwood, J. C. ...	Dartford.
Powers, W. J.	Black Earth.	Shipman, S. V.	Chicago.
Pratt, E. E.	Chicago.	Skelley, Charles. .	Janesville.
Pres. St. Peter's Val.		Skinner, Geo J.	Sioux F'ls, D.T.
Farmers' Club.	Springfield.	Skinner, E. W.	Sioux City, Ia.
Pritchard, P. M.	Fitchburg.	Sloan, I. C.	Madison.
Pratt, Orris.	Spring Prairie.	Slocum, G. A.	Chicago.
Power, D. J.	Chicago.	Smith, Winfield. .	Milwaukee.
Ray, Charles	Milwaukee.	Smith, Angus.	Milwaukee.
Raymond, S. O.	Geneva.	Smith, Adam.	Madison.
Riordan, Chas.	Oshkosh.	Smith, J. B.	Milwaukee.
Reed, Harrison	Jacksonv'l, Fla.	Smith, S. W.	Janesville.
Ressigue, A. C.	Janesville.	Smith, H. L.	Janesville.
Reynolds, Thos.	Madison.	Smith, M. C.	Janesville.
Reynolds, John.	Kenosha.	Smith, S. B.	Verona.
Rexford, J. D.	Janesville.	Smith, J. Maurice. .	Chicago.
Rice, E. M.	Whitewater.	Smith, J. M.	Green Bay.
Richards, Richard. .	Racine.	Snell, H.	Madison.
Richardson, D.	Middleton.	Spaulding, Wm. .	Janesville.
Richardson, Jas.	Buffalo, N. Y.	Stickney, J. S.	Wauwatosa.
Richardson, R. J.	Janesville.	Spencer, James C. .	Milwaukee.
Richardson, H.	Janesville.	Spencer, R. C.	Milwaukee.
Richmond, A.	Whitewater.	Squier, Thomas H. .	Waterloo.
Riebsam, C. R.	Madison.	Stannard, A. C. ...	Milton.

Names.	Residence.	Names.	Residence.
Stark, Chas. A.	Milwaukee.	Vilas, Wm. F.	Madison.
Stoel, Chester.	Milwaukee.	Ward, A. J.	Madison.
Stevenson, Isaac.	Marinette.	Waggstaff, S.	Oshkosh.
Stevens, Geo. C.	Milwaukee.	Wackerhagen, E.	Racine.
Steensland, H.	Madison.	Wait, J. B.	Waitsville.
Stewart, C. R.	Karson, Minn.	Warren, Albert.	Madison.
Stewart, G. H.	Col. Sp'gs, Col.	Warren, J. H.	Albany.
Stilson, Edgar.	Oshkosh.	Webster, James.	Danville.
Stilson, Adelbert.	Oshkosh.	Webb, James A.	Janesville.
St. John, J. W.	Janesville.	Welch, W.	Madison.
Stockman, John.	Milton Junct'n.	Wells, Daniel L.	Milwaukee.
Stone, Gustavus.	Beloit.	Werner, John.	Sauk.
Storm, Wm.	Madison.	West, Henry.	Madison.
Stowe, La Fayette.	Sun Prairie.	West, S. C.	Milwaukee.
Street, Richard.	Waukesha.	West, Henry M.	Milwaukee.
Sutherland, C.	Syene.	Whaling, J. W. M.	Waukesha.
Swain, Wm. W.	Madison.	Wheeler, Geo. F.	Milwaukee.
Fallman, W. H.	Janesville.	Wheeler, Guy.	La Prairie.
Taylor, E. T.	Mukwanago.	Wheeler, L. A.	Milwaukee.
Taylor, W. R.	Cottage Grove.	Wheelock, W. G.	Janesville.
Tenney, H. A.	Madison.	Wheelwright, J.	Middleton.
Tenney, D. K.	Madison.	Whitney, W. F.	Milwaukee.
Tenney, Samuel.	Hartland.	Wicks, Thomas.	Milwaukee.
Terwilliger, Jas.	Syene.	Wight, O. W.	Milwaukee.
Therson, John.	Milwaukee.	Wightman, H.	Black Earth.
Tibbitts, Geo. M.	Milwaukee.	Wilcox, C. T.	Janesville.
Tierney, K.	California.	Wilkins, A. W.	Milwaukee.
Thompson, W. H.	Chicago.	Wiley, O. S.	Ben'n Har. Mch
Thorp, J. G.	Eau Claire.	Williams, C. H.	Baraboo.
Todd, J. G.	Janesville.	Williams, D.	Darien.
Telford, J. W.	Neillsville.	Williams, Daniel.	Summit.
Torgerson, Lars.	Madison.	Williams, G. G.	Whitewater.
Torrey, E. D.	Oshkosh.	Williams, J. P.	Janesville.
Townley, John.	Moundville.	Williams, Randall.	Janesville.
Treat, R. B.	Chicago.	Williams, S. B.	Madison.
Treat, George E.	Milwaukee.	Wilson, Wm.	Westport.
Twining, M. S.	Broadhead.	Wilson, Zebina.	Palmyra.
Van Brunt, W. A.	Horicon.	Wood, J. W.	Baraboo.
Van Cott, Albert B.	Madison.	Wootton, Robert.	Madison.
Van Bta, Jacob.	Madison.	Worthington, B. M.	Madison.
Van Kirk, N.	Milwaukee.	Wright, D. H.	Madison.
Van Schaick, J. W.	Milwaukee.	Wright, Geo.	Mt. Horeb.
Van Slyke, N. B.	Madison.	Wright, J. S.	Emerald Grove
Vaughan, O. A.	Lodi.	Wright, Josiah T.	Janesville.
Viall, Andrus.	Madison.	Wylie, Geo. W.	Elkhorn.
Vilas, Chas. H.	Cleveland, O.	Zweitusch, Otto. ..	Milwaukee.
Vilas, L. M.	Eau Claire.		

MORTUARY.

Isaac Adams.
 Chauncey Abbott.
 Chas. D. Atwood.
 J. W. Ayers.
 Wm. W. Brown.
 Timothy Brown.
 James Barry.
 Fred. Bemis.
 Wm. G. Beecroft.
 George Barnes.
 A. A. Bennett.
 H. M. Billings.
 Perry Bostwick.
 W. A. Briard.
 B. F. Brown.
 H. D. Barron.
 J. B. Bowen.
 Guy Carter.
 Wm. Casar.
 C. M. Campbell.
 C. B. Chapman.
 John Child.
 D. R. Coit.
 B. F. Catlin.
 A. J. Craig.
 L. F. Kellogg.
 L. H. Kellogg.
 A. C. Kent.
 Thos. H. Little.
 J. A. Lapham.
 James R. Larkin.
 J. B. Mosier.
 J. H. B. Matts.
 Clinton Matterson.
 E. D. Masters.
 Samuel Morse.
 And. McColough.
 Alex. McGregor.
 E. F. Mabie.
 John B. Macy.
 Alex. McBride.
 A. S. McDill.
 David McKinna.
 Wm. A. Mears.
 Ira Miltmore.
 G. F. Moseley.
 D. S. Morse.
 B. F. Nott.
 George Paddock.
 George Paine.
 W. F. Porter.
 David Post.
 John W. Park.
 Herbert Lewis.
 J. B. Cross.
 Satterlee Clark.

L. S. Curtis.
 Seymour Curtis.
 N. W. Dean.
 G. L. Davis.
 John Davis.
 S. B. Davis.
 S. S. Dagget.
 M. L. Daggett.
 E. P. Doty.
 J. B. Dousman.
 Chas. Durkee.
 Andrew Dunn.
 Wm. Dunn.
 E. W. Drury.
 Abel Dunning.
 S. S. Fisher.
 Sidney Foote.
 Jacob Fowle.
 E. Fairbanks.
 S. B. Grant.
 Samuel Green.
 Anthony Green.
 Eleazer Grover.
 Joseph Goodrich.
 G. Goodrich.
 Andrew Proudfit.
 B. Pinckney.
 John Reynolds.
 M. Reynolds.
 Herbert Reed.
 J. O. Rezer.
 John Rodermund.
 N. C. Rowley.
 Simon Ruble.
 Jas. H. Rogers.
 R. Roddis.
 Harvey G. Russell.
 Wm. B. Slaughter.
 Jas. Sullivan.
 Geo. B. Smith.
 Frank Scollan.
 L. Sexton.
 M. Spaulding.
 A. C. Shipman.
 Kellogg Sexton.
 J. M. Sherman.
 Joseph Spaulding.
 Geo. C. Stevens.
 Amaziah Sherman.
 S. B. Scott.
 W. E. Smith.
 H. P. Strong.
 Dr. W. Thompson.
 Geo. H. Slaughter.
 Orrin Guernsey.

R. E. Gillett.
 H. D. Greenman.
 Peter Houstain.
 J. A. Helfenstein.
 P. B. Hill.
 L. J. Hobart.
 David Holt.
 W. H. Hiner.
 L. P. Harvey.
 B. F. Hopkins.
 J. C. Hopkins.
 Wheldon Hughes.
 John W. Hunt.
 E. Hulbert.
 Sol. Hutson.
 N. W. Harrington.
 Robert Hodge.
 A. G. Hanford.
 E. H. Janssen.
 Paul Juneau.
 H. C. Jacobs.
 J. C. Johnson.
 John Kimball.
 Wm. J. Kershaw.
 Moses Kneeland.
 S. P. Kingsley.
 M. J. Thomas.
 Ole Thompson.
 B. Throop.
 Wm. H. True.
 A. H. Terry.
 James Utter.
 L. B. Vilas.
 Henry Vilas.
 A. H. Van Norstrand.
 E. B. Wolcott.
 J. F. Willard.
 Dennis Worthington.
 Charles Weed.
 C. L. Williams.
 Wm. A. White.
 A. White.
 T. L. Whittlesey.
 H. O. Wilson.
 N. A. Wright.
 Wm. R. Warren.
 Jas. Webster.
 S. G. Williams.
 Geo. Worthington.
 J. F. Woolley.
 Martin Webster.
 Wm. A. Wheeler.
 J. E. Young.
 J. Cory.
 A. H. West.
 W. H. Fox.

LAW AUTHORIZING PUBLICATION OF TRANSACTIONS.

Sections 7, 8, 9 and 10 of chapter 320 of the Laws of Wisconsin, gives the following rules for the publication and distribution of the reports of the State Agricultural, Horticultural and Dairymen's associations, and of the Department of Agriculture of State University:

SECTION 7. There shall be printed annually by the state printer, and on the order of the commissioners of public printing, the following documents:

1. Twelve thousand (12,000) copies of the transactions of the Wisconsin State Agricultural Society, together with abstracts of the reports of the county agricultural societies, and such other matters pertaining to the industry of the state as shall be deemed important; provided, the number of pages shall not exceed five hundred (500).

2. Twelve thousand (12,000) copies of the transactions of the Wisconsin State Horticultural Society, together with such abstracts of reports of county and other horticultural societies, and such other matters pertaining to fruit growing and other horticultural interests of the state as shall be deemed important; provided, the number of pages shall not exceed two hundred (200).

3. Twelve thousand (12,000) copies of the transactions of the State Dairymen's Association and such other matters pertaining to the dairy interests of the state as shall be deemed most important; provided, the number of pages shall not exceed one hundred and fifty (150).

4. Twelve thousand (12,000) copies of the report of the Department of Agriculture of the State University, provided the number of pages shall not exceed one hundred (100).

SECTION 8. Eleven thousand five hundred (11,500) volumes of said report shall be bound in cloth, uniform in style with volumes previously published, each volume to contain one copy of each of the reports designated in the preceding section, and shall be distributed as follows: Thirty (30) copies to each member of the legislature; one hundred (100) copies to the State Historical Society; twenty-five (25) copies to each county agricultural society, and district industrial association which embraces two or more counties, and furnishes the State Agricultural Society a report of its proceedings; one hundred (100) copies to the State Horticultural Society; twenty-five (25) copies to each county horticultural society that shall report its organization, with officers elect, and give an abstract of its proceedings for publication in said volume, to the secretary of the State Horticultural Society;

one hundred (100) copies to the State Dairymen's Association; fifty (50) copies to the State University; five (5) copies to the Wisconsin Humane Society; two (2) copies to each public library in the state; and the remaining copies to the State Agricultural Society for distribution by its secretary.

SECTION 9. Five hundred (500) copies of the transactions of the State Agricultural Society and five hundred (500) copies of the transactions of the State Horticultural Society shall be bound singly, in cloth; five hundred (500) copies of the transactions of the State Dairymen's Association and five hundred (500) copies of the report of the department of agriculture of the State University shall be bound in paper, for the use of these several societies and departments, for distribution or exchange.

SECTION 10. There shall also be printed annually by the state printer, and bound in cloth, two thousand and five hundred (2,500) copies of the transactions of the Northern Wisconsin Agricultural and Mechanical Association, provided the number of printed pages shall not exceed four hundred.

TWENTY-SECOND ANNUAL REPORT
OF THE
SECRETARY
OF THE
Wisconsin State Agricultural Society

To His Excellency, JEREMIAH M. RUSK,
Governor of the State of Wisconsin:

I hereby respectfully submit, in behalf of the sovereign farmers of our commonwealth, the annual report of the Wisconsin State Agricultural Society for the years 1883 and 1884.

CLINTON BABBITT,

Secretary.

MINUTES

OF THE

STATE AGRICULTURAL SOCIETY.

DECEMBER MEETING.

STATE AGRICULTURAL ROOMS,
MADISON, December 4, 1883.

In pursuance of the by-laws and published notice, the executive board of the Wisconsin State Agricultural Society met in the rooms of the Society, December 4, 1883. Quorum present. President Fratt in the chair.

After stating the object of the meeting, Cyrus Miner, Treasurer of the Society, presented his report, showing the financial exhibit of the Society, for the fiscal year ending December 4, 1883.

Said report was compared with the books of the secretary by President Fratt and financial committee and affirmed.

On motion adjourned.

STATE AGRICULTURAL ROOMS,
MADISON, December 5, 1883.

As required by the constitution, the Wisconsin State Agricultural Society met in the rooms in the capitol, at 9 A. M. President Fratt in the chair. Quorum present.

Matt. Anderson moved that a committee of three be appointed to examine the reports of the treasurer, and compare the same with the books of the secretary and vouchers thereof.

The following named gentlemen were duly appointed.
A. S. Frank, J. C. Chandler and Albert Warren.

The committee appointed to examine the vouchers of the treasurer, and compare them with the books of the secretary, beg leave to report that we have discharged that duty, having compared the vouchers with the report and with the orders drawn, and find them correct.

All of which is respectfully submitted.

A. S. FRANK,
J. C. CHANDLER,
ALBERT WARREN,

Committee.

On motion of Geo. E. Bryant, the report was unanimously adopted.

On motion adjourned.

TREASURER'S REPORT.

To the Wisconsin State Agricultural Society:

GENTLEMEN — I hand you herewith report of the financial transactions of your Society for the year ending December 5th, 1883.

Respectfully submitted,
CYRUS MINER,
Treasurer.

AGRICULTURAL ROOMS, MADISON, December 5th, 1883.

RECEIPTS.

Balance from 1882.....	\$176 00	.....
Amount received from loan.....	3,000 00	.....
Amount received from state.....	6,480 00	.....
Amount received from secretary, entry fees.....	1,700 00	.....
Amount received from sale of tickets.....	10,638 50	.....
Amount received from rent of ground.....	1,895 11	.....
Amount received from subscriptions.....	922 50	.....
Amount received from advertising.....	100 00	.....
Amount received from membership.....	140 00	.....
Amount received from Keenan & Hancock.....	25 00	.....
Amount received from sale of forage.....	87 68	.....
Amount received from sundries.....	5 20	.....
	\$25,169 99	.....

CONDENSED STATEMENT OF DISBURSEMENTS.

Paid premium	\$8,579 29	.....
Paid on past indebtedness.....	5,089 36	.....
Paid for material and labor.....	3,050 43	.....
Paid superintendents and assistants.....	554 00	.....
Paid marshals, police and gate attendants.....	456 50	.....
Paid executive board and committee expenses.....	275 09	.....
Paid secretary, clerks and office expenses.....	347 50	.....
Paid assistant treasurer and ticket clerks.....	114 00	.....
Paid printing, advertising, express, etc.....	913 30	.....
Paid dinner tickets	145 66	.....
Paid secretary's salary.....	1,800 00	.....
Paid hay, straw and grain.....	576 00	.....
Paid miscellaneous.....	256 76	.....
Total amount disbursed.....	\$22,157 98	.....
Cash balance on hand.....	3,012 01	.....
	\$25,169 99	.....

DETAILED STATEMENTS OF EXPENDITURES, AS COMPARED WITH WARRANT ACCOUNT OF SECRETARY.

No.	To whom and for what paid.	Amount.
1	Humbird, A. and B., premium.....	\$28 00
2	Wilson, E., premium.....	32 50
3	Dodd, H. B., express.....	5 70
4	Booth, W. A., express.....	1 25
5	Mather Bros., premium.....	7 00
6	Dean, E. B., clerk.....	8 00
7	Pilgrim, D. T., board meeting.....	12 00
8	Welch, Wm., labor.....	30 00
9	Slaughter, B. C., clerk.....	4 00
10	Dodd, H. B., express.....	25
11	Dean, E. B., clerk.....	16 00
12	Bryant, Geo. E., expenses.....	19 00
13	Bryant, Geo. E., secretary, salary.....	1,800 00
14	Boyce, A. A., board meeting.....	5 00
15	Dodd, H. B., express.....	65
16	Babbitt, C., superintendent, horse.....	5 00
17	Weeks, Geo., sheriff, fees.....	45
18	Frank & Ramsay, nails.....	1 20
19	Bryant, Geo. E., medals.....	38 75
20	Babbitt, C., secretary, salary.....	300 00
21	Miner, Cyrus, loan and interest.....	613 37
22	Kutchin, H. M., advertising.....	5 00
23	Davidson, A. D., reporter.....	35 00
24	Dodd, H. B., express.....	30
25	Park, Wm. J. & Co., diploma rollers.....	78
26	Cook, Geo. B., maker medals.....	9 95
27	Western Union Telegraph Co.....	65
28	Hodrock, Miss Kittie, premium.....	7 14
29	Danning, C. D., premium.....	40 60
30	Strong, H. P., premium.....	268 20
31	Babbitt, C., secretary, salary.....	150 00
32	Dore, J. S., marshal.....	25 00
33	Dore, J. S., board meeting.....	13 98
34	Nason, S. L., board meeting.....	15 00
35	Wood, J. W., board meeting.....	7 80
36	Arnold, A. A., executive expenses.....	18 96
37	American Express.....	1 40
38	Eaton, J. O., executive board meeting.....	6 00
39	Dorn, A., livery.....	1 00
40	Babbitt, C., secretary, salary.....	150 00
41	American Express.....	9 90
42	Western Union Telegraph.....	1 03
43	Void through mistake.....	
44	Martin, C. L., expense, board meeting, 82-83.....	20 00
45	Expense Eau Claire committee.....	18 00
46	Fenn & Ruger, attorney's fees.....	50 00
47	Miner, Cyrus, expenses and sundries.....	40 65
48	Skavlin, Miss Bessie, clerk.....	35 00
49	Mun, C. D., herd book.....	15 00
50	Roder, L. R., advertising.....	10 00
51	Babbitt, C., secretary, salary.....	150 00
52	Chapman, C. P., abstract.....	16 50
53	American Express.....	1 20
54	United States Express.....	2 85
55	Hubrer, Bros. & Son, premium.....	5 00
56	Calkins & Watrous, advertising.....	24 00

No.	To whom and for what paid.	Amount.
57	Newton, S. L., board expenses.....	\$20 25
58	Bross, Chas. E., telegram.....	1 25
59	Dodd, H. B., express.....	7 50
60	Fuller, F. L., clerk.....	17 50
61	Saxe, J. G., agent, commission on loan.....	15 00
62	Skavlin, Bessie, clerk.....	35 00
63	Denton, F. H., advertising.....	10 00
64	United States Express.....	2 65
65	American Express.....	3 15
66	Darwin, E. D., freight.....	8 75
67	Babbitt, C., secretary, salary.....	150 00
68	Bross, Chas. E., telegram.....	2 15
69	Bryant, Geo. E., interest.....	128 94
70	Darwin, Ed. D., freight.....	1 98
71	Democrat Printing Company, advertising.....	5 00
72	Hoard, W. D., advertising.....	10 00
73	Blanchard, W., labor on track.....	33 37
74	Pierce, A. J., expenses.....	20 00
75	Childes & Co., stamps.....	35 00
76	Smith, Frank, clerk.....	17 50
77	Skavlin, Bessie, clerk.....	17 50
78	Parkhurst, Kittie, clerk.....	9 75
79	Plumb & Son, advertising.....	25 00
80	Watch, Wm., work on track.....	25 00
81	Babbitt, C., secretary, salary.....	150 00
82	Davidson, A. D., reporter.....	100 00
83	Memhard, F., carting.....	5 50
84	Zyner, Lou., clerk.....	3 00
85	Parie, A. J., labor.....	1 50
86	Babbitt, C., expenses.....	58 58
87	U. S. Express.....	1 35
88	McCarthy, C., labor.....	1 50
89	Dodd, H. B., express.....	8 90
90	Waples, Wm., labor.....	6 00
91	Parkhurst, Hattie, clerk.....	3 00
92	Reynolds, R., labor.....	25 00
93	Sherry, H., material and labor.....	125 00
94	Smith, Frank, clerk.....	18 00
95	Skavlin, Bessie, clerk.....	18 00
96	Hunting, J., work haying.....	6 37
97	Calkins & Watrous, advertising.....	25 00
98	Hayle, D., labor haying.....	50 74
99	Sentinel Company, advertising.....	25 00
100	Sherry, H., material and labor.....	60 00
101	Sheasby, F. C., signs.....	3 00
102	Monona Assembly, advertising.....	10 00
103	Croney, Wm., labor haying.....	1 50
104	Fuller, Frank, clerk.....	40 00
105	Shiney, H., material and labor.....	300 00
106	Wood, J. W., board meeting.....	4 00
107	Johnson, P., advertising expenses.....	5 00
108	Babbitt, C., secretary, salary.....	150 00
109	Parkinson, Miss Mary, clerk.....	6 75
110	Dundon, Frank H., advertising.....	5 00
111	Ainsworth, H. C., labor.....	13 00
112	Brown, I. J., labor.....	17 00
113	Haley, Wm., labor.....	4 50
114	Myer, C. H., labor.....	4 50
115	Barnes, Wm., labor.....	4 82
116	Sherry, H., material and labor.....	75 00
117	Eastman, J., labor.....	7 50

DETAILED STATEMENT OF DISBURSEMENTS.

27

No.	To whom and for what paid.	Amount.
118	Dodd, H. B., express.....	\$11 90
119	Sherry, H., material and labor.....	100 00
120	Sheasby, F. C., sign painting.....	30 00
121	Western Union Telegraph Company.....	9 90
122	Hankins, Ed., labor.....	1 05
123	Sheldon, S. L., sundries.....	25 00
124	Sorenson, Frederickson & Co., lumber.....	25 00
125	Dexter Curtis, labor.....	122 50
126	Hiestand, Wm., reporter.....	8 00
127	Zamlim, L. M., labor.....	14 00
128	Sherry, H., labor and materials.....	150 00
129	Raynon, Wm., labor.....	17 50
130	Carney, Wm., labor.....	2 00
131	Hay, Jas., labor.....	15 37
132	Craig, N., labor.....	14 62
133	Missner, F., labor.....	10 88
134	Mather, C. A., premium.....	309 20
135	Carnathan, R., premium.....	30 00
136	Brown, F., premium.....	85 00
137	Brown, F., premium.....	91 00
138	Severety, J. O., premium.....	75 00
139	Farquahason, premium.....	75 00
140	Hicks, J. H., superintendent swine.....	28 00
141	McKinney, H. D., premium.....	45 00
142	Patner, L. M., police.....	11 00
143	McFarland, H. M., watch.....	11 00
144	Baker, J. W., assistant superintendent agricultural department.....	21 00
145	Williams, D., president's clerk.....	17 50
146	Lucas, W., labor.....	5 25
147	Philips, A. J., assistant superintendent poultry.....	21 00
148	Rhody, D., premium.....	195 00
149	Pilgrim, D. T., labor.....	7 50
150	Pilgrim, D. T., superintendent horticulture.....	36 00
151	Seaver, J. E., assistant superintendent machinery.....	35 00
152	Stickney, J. S., superintendent poultry department.....	8 00
153	Doble, Budd, premium.....	250 00
154	Johnson, Potter N., premium.....	150 00
155	Fuller, Geo. A., premium.....	300 00
156	Webber, Geo., premium.....	200 00
157	Pilgrim, D., assistant superintendent horticulture.....	21 00
158	Campbell, M., premium.....	100 00
159	Nelson, C. C., use of team.....	1 00
160	Burrows, F., labor.....	10 00
161	Doble, Budd, premium.....	50 00
162	Palmer, J. N., premium.....	45 00
163	Palmer, J. N., premium.....	30 00
164	Ornston & Jardin, premium.....	115 00
165	Jeffries, Geo., watch.....	10 00
166	Arnold, A. A., superintendent cattle.....	24 00
167	Arnold, A. H., messenger.....	5 00
168	Pilgrim, D. T., extra board expense.....	10 50
169	Johnson, D., premium.....	195 00
170	Regan, M. J., premium.....	6 00
171	Necley, W. J., premium.....	267 60
172	Wells, W. D., premium.....	150 00
173	Johnson, Daniel, premium.....	35 00
174	Hall, A. B., police.....	5 00
175	Fratt, N. D., president, expenses and sundries.....	36 00
176	Fratt, N. D., president, expenses and sundries.....	142 00
177	Wm. Dwyer, premium.....	15 00

No.	To whom and for what paid.	Amount.
178	Peffer, G. P., watchman.....	\$4 00
179	Patman, L. M., watchman.....	2 00
180	Hall, T., watchman and police.....	12 00
181	Joiner, S. H. & A. E., premium.....	71 00
182	Martin, C. L., service at fair.....	24 00
183	Clark, R. B., premium.....	59 00
184	McKey Bros., premium.....	10 00
185	Palmer, J. H., advertising.....	2 65
186	Austin, E. J., premium.....	22 00
187	Medlar, J. B., premium.....	23 00
188	Olcott, J. B., assistant superintendent of horses.....	32 00
189	Langley, N. B., police.....	3 00
190	Calkins, J. G., police.....	6 00
191	Calkins, J. G., police.....	5 00
192	Avery, C. H., premium.....	5 00
193	Whetlock, E. C., premium.....	7 00
194	Bull, J., police.....	8 00
195	Atwood, M. R., premium.....	2 00
196	Green, M. B., premium.....	26 00
197	Pilgrim, D. T., premium.....	84 00
198	Jeffrey, Geo., premium.....	82 00
199	Mills, Mrs., premium.....	36 00
200	Burrows, F., premium.....	76 00
201	Ringrose, Geo., premium.....	67 00
202	Robinson, C. M., carpenter.....	3 00
203	Ames, Wm., carpenter.....	3 00
204	Wyant, L. B., museum.....	100 00
205	Taylor, E. S., premium.....	6 00
206	Jenkins, E. B., police.....	8 00
207	Gillett & Moore, premium.....	70 00
208	Jenkins, F., police.....	6 00
209	Holt, G. W., premium.....	3 00
210	Clark, Chas., premium.....	75 00
211	Miller, H., premium.....	6 00
212	Taylor, J. F., police.....	10 00
213	McCloud, assistant marshal.....	14 00
214	Bancroft, H., police.....	13 00
215	Simmons, H.....	12 00
216	Stowe, Esther, premium.....	5 00
217	Fitch, E., assistant superintendent swine.....	21 00
218	Hitt, H. D., superintendent manufactures.....	44 00
219	McCoy, H., premium.....	10 00
220	Wood, J. W., superintendent fine arts.....	36 00
221	Gregory, T., assistant superintendent fine arts.....	10 00
222	Wood, J. W., premium.....	34 00
223	Langley, N. B., police.....	8 00
224	Jones, A. B., assistant superintendent fine arts.....	28 00
225	Peffer, Nellie, premium.....	16 00
226	Peffer, G. P., premium.....	71 00
227	Snyder, Frank, assistant in cattle.....	8 00
228	Philips, A. J., premium.....	9 60
229	Potter, Ida, assistant in art hall.....	10 00
230	Hill, H. J., premium.....	8 00
231	Waterhouse, H., premium.....	12 00
232	Craven, Miss, premium.....	14 40
233	Huston, J. and C., premium.....	235 00
234	Carey, T., police.....	10 00
235	Heimstreet, E. B., treasurer clerk.....	17 50
236	Atwood, Chas., treasurer clerk.....	10 50
237	Main, A. H., assistant treasurer.....	30 00
238	Hess & Schmitz, livery.....	12 00

DETAILED STATEMENT OF DISBURSEMENTS.

29

No.	To whom and for what paid.	Amount.
289	Robertson, A. J., gate attendant.....	\$17 50
290	Jeffreys, W. J., gate attendant.....	17 50
291	Clapp, Geo. W., gate attendant.....	17 50
292	Clark, D. J., superintendent gates.....	24 00
293	Rates, J. W., treasurer clerk.....	17 50
294	Main, H. W., treasurer clerk.....	14 00
295	Brownell, F. C., treasurer's clerk.....	17 50
296	Miner, Cyrus, sundries.....	8 75
297	Main, Geo. C., treasurer's clerk.....	7 00
298	Clark, D. J., advertising.....	5 00
299	Dunnell, Geo., police.....	13 00
300	Shene, Wm., police.....	11 00
301	Leonard, N. M., police.....	8 00
302	Paine, J. E., police.....	14 00
303	Palmer, L. M., police.....	1 00
304	Comfort J., police.....	8 00
305	Weside & Bro., premium.....	20 00
306	Brace, A., assistant superintendent of cattle.....	28 00
307	Zumbin, L., police.....	4 00
308	Undan, L., police.....	8 00
309	Pierce, A. N., labor.....	2 50
310	Sherry, H., labor and materials.....	6 19
311	Sherry, labor and materials.....	2 37
312	Warren, A., gate attendant.....	17 50
313	Taylor, Miss Lizzie, premium.....	13 00
314	Sullivan, C., labor.....	8 00
315	Sherry, H., labor and material.....	50 00
316	Hoy, James, watch and police.....	13 00
317	Smith, P.....	11 20
318	Linderman, E. G., police.....	10 00
319	Thomas, Mrs. E. C., premium.....	4 00
320	Francis, Matt, police.....	2 00
321	Stone, J. B., premium.....	18 50
322	McCaity, J. M., police.....	12 00
323	Chandler, J. C., gate attendant.....	17 50
324	Breitenbach, M., drayage.....	1 00
325	Gill, A., use of engine.....	35 00
326	Madison Manufacturing Company, pulleys and engineer.....	13 50
327	Willia, G. M., premium.....	5 00
328	Randall, R., premium.....	68 25
329	Garlick, R. D., premium.....	18 00
330	Ogilvie, R. B., premium for Clark.....	255 00
331	Stannard, Harry, secretary's clerk.....	73 50
332	Henrich Bros., labor.....	83 90
333	Sherry, H., labor and materials.....	471 63
334	Sylvester, M. H., premium.....	19 00
335	Northwestern Business College, premium.....	20 00
336	Morrison, J., premium.....	12 00
337	Shiney, H., express on shafting.....	33 00
338	Hook, S. I., police.....	8 00
339	Hook Bros., premium.....	10 00
340	Brady, J., premium.....	2 00
341	Farr, Chas H., stabling.....	2 80
342	Curtis, F. H., work on track.....	12 00
343	Bunyan, J., advertising.....	1 00
344	Ainsworth, H. C., sash and glazing.....	2 70
345	Conover, A. D., surveying.....	18 50
346	Pifer, P. T., premium.....	2 00
347	Schenck, Miss Ella, premium.....	4 00
348	Miller, C. B., premium.....	20 00
349	Gallanger, C. L., police and drayage.....	9 00

No.	To whom and for what paid.	Amount.
300	Ball Bros., premium	\$5 00
301	Hacker & Co., premium	60 00
302	Storm, Wm., premium	86 52
303	Storm, Wm., signs	14 00
304	Lazier, Mrs. E., premium	6 00
305	Wirston, M., clerk	10 00
306	Henrika, F., premium	3 00
307	Scovell, J. M., premium	5 00
308	Stang, I. G., premium	17 00
309	Palmer, E., premium	31 00
310	Topleman, C., premium	8 00
311	Missner, F., watch	8 00
312	Bross, Chas. E., telegraph	34 00
313	Craig, F., labor	5 00
314	Bailey, N. R., premium	6 00
315	Dann, R. W., premium	18 00
316	Bird, R. W., police	8 00
317	Babbitt, C., secretary salary	150 00
318	Lueders, J., band	160 00
319	Nelson, A., premium	5 00
320	Memhard, F., drayage	2 00
321	Isaacs, A., premium	10 00
322	Bishop, A., sprinkling	40 00
323	Bird, F. A., assistant marshal	14 00
324	Bird, F. A., premium	7 00
325	Heath, T. L., premium	32 00
326	Welch, W. B., labor	14 00
327	Fuller, Frank, clerk	34 00
328	Pritchard, Miss Minnie, clerk	50 00
329	Parkhurst, Harvey R., mail carrier	5 00
330	Taylor, Lizzie B., premium	3 60
331	Field, P. B., gate keeper	15 00
332	Mallary, J., premium	24 00
333	McLaughlin, Mrs. M., labor	10 00
334	Smith, Mark, premium	3 00
335	Hall, S. H., premium	9 00
336	Porter, W. W., premium	6 25
337	Grady, F. M., oats	16 50
338	Newton, M. E., premium	23 00
339	Newton, M. E., premium	6 00
340	Bixley, J., premium	3 00
341	Tipple, O. F., premium	10 00
342	Palmer, H., premium	3 00
343	Cleveland, B., premium	5 00
344	Stuart, J. R., premium	78 00
345	Swan, W. W., police	4 50
346	Bancroft, labor	11 25
347	Kiser, J. C., premium	165 00
348	Bates, Mrs. A. C., premium	2 00
349	Sullivan, police	8 00
350	Whittheford, Stella, clerk	6 00
351	Memhard, Mrs. Geo., premium	20 00
352	Donahan, D. D., premium	10 00
353	Parnell, L. H., premium	10 00
354	Walker, J. L., premium	10 00
355	Eaton, J. O., marshal	24 00
356	Carr, F. A., premium	10 00
357	Forrest, Wm., premium	16 00
358	Culver, Page & Hoyne, printing	219 01
359	Wordon, E., sundries	28 00
360	Western Union Telegraph Company	17 15

DETAILED STATEMENT OF DISBURSEMENTS.

31

No.	To whom and for what paid.	Amount.
361	Vial, A., watch.....	\$16 00
362	Vial, E., premium.....	13 00
363	Atwood, David, advertising.....	38 50
364	Phillipps, H. A., premium.....	25 00
365	Caldwell, R., premium.....	30 25
366	Phillipps, H. A., premium.....	10 00
367	Democrat Printing Company, advertising.....	13 20
368	Parke, W. J. & Co., books, etc.....	5 35
369	Beement, E. R., premium.....	37 00
370	Wilkes, Wm., premium.....	5 20
371	Lake City Co., dep. scraper.....	1 50
372	Larkin, Geo., labor.....	21 00
373	Brown, Mrs. G., premium.....	11 60
374	Mead, Mrs. C. M., premium.....	22 00
375	Mead, Mrs. C. W., premium.....	2 00
376	Sutherland, Miss Anna, premium.....	2 00
377	Cooper, Miss Anna, premium.....	14 00
378	Dorn & Co., livery.....	39 00
379	Hiestand, J. R., premium.....	13 00
380	Grady, F. M., straw.....	68 76
381	Grady, F. M., oats.....	18 95
382	Grady, F. M., premium.....	3 00
383	Grady, F. M., work on track.....	2 00
384	Tipple, B. E., premium.....	2 00
385	Tipple, Mrs. R. E., premium.....	7 00
386	Culver, Ed., labor and team work.....	74 50
387	Fuller & Johnson Mfg. Co., labor.....	13 00
388	Haak, W., use of water pipe.....	10 00
389	Lucas, J. M., teaming.....	15 00
390	Sheasby, F. C., painting on grounds.....	65 69
391	Beernia, M., reaper scraper.....	1 50
392	Fuller, Mrs. Ada, premium.....	2 00
393	Riley & Co., livery.....	33 00
394	Ayer, Geo., police.....	11 00
395	Barnes, F., labor.....	8 00
396	Schloefoy, L., police.....	8 00
397	Behm, C., police.....	9 00
398	Austin, F., police.....	8 00
399	Jacobson, O., forage.....	74 75
400	Dodd, H. B., American Express.....	7 50
401	Jacket, W., premium.....	13 00
402	Huntley, D., premium.....	59 00
403	Horn, A., premium.....	2 00
404	Fox, A. O., premium.....	119 00
405	Fitch, D., straw.....	37 50
406	Peffer, Miss Kate, secretary's clerk.....	30 00
407	Ross, S. C., premium.....	75 00
408	Ross, J. J. & Son, premium.....	75 00
409	Goodnow, Mrs. H. D., premium.....	1 20
410	Goodnow, H. D., premium.....	6 40
411	Carr, Mrs. N. B., premium.....	1 20
412	Spreicher, J., hay.....	224 28
413	Spreicher, J., premium.....	25 00
414	Farkinson, M., gate attendant.....	17 50
415	Welch, Wm., labor.....	40 00
416	Welch, Wm., labor.....	10 00
417	Young, P. & M.....	16 25
418	Tosney, H. A.....	10 00
419	Bredenbach, M., premium.....	5 00
420	Bird, L. A., assistant marshal.....	9 80
421	Corscot, J., coke.....	2 00

<i>No.</i>	<i>To whom and for what paid.</i>	<i>Amount.</i>
422	Fredricks, L., lumber	\$548 21
423	Kingston, A., livery	7 00
424	McDougal, Geo. W., assistant to president	42 00
425	McDougal, Geo. W., premium	11 00
426	Owens, J. E., premium	64 00
427	Kent, Ed., paint signs	3 50
428	Canfield, H. R., advertising	2 00
429	Beattie & Co., premium	7 00
430	Denkler, F., straw	67 38
431	Hamilton, Wm., stabling	7 00
432	Madison Manufacturing Co., machinery department	22 94
433	Armstrong, Mrs. H. D., premium	10 00
434	Baldwin, Chas., premium	5 50
435	Roberts, E. P., premium	67 00
436	Palmer, N. N., premium	120 00
437	Clark, C. M., premium	41 00
438	Hazen, C., premium	76 25
439	Hobbs, A., premium	6 25
440	Harding, Geo., premium	96 00
441	Newton, E., premium	6 00
442	Kingman, R., premium	120 00
443	Daubner, Geo. H., premium	21 00
444	Ogilvie Bros., premium	36 00
445	Carpenter, J. H., premium	20 00
446	Converse, A. D., premium	90 00
447	Clark, John, sundries	8 15
448	Benedick, C. D., premium	5 00
449	Thomas, J. M., premium	10 00
450	Freeborn & Hatch, premium	28 00
451	Angel, C. C., premium	40 00
452	Angel, C. C., premium	3 00
453	Bars, Wm. D., premium	12 00
454	Vernon, R. C., carting	4 00
455	Silbernagel & Dean, skylights	7 54
456	Rockford Silver Plate Co.	514 05
457	Cheever, R. N., advertising	2 50
458	Dodgeville Chronicle, advertising	9 75
459	Wilson, A. O., advertising	3 50
460	Sherman & Gowdy, advertising	1 50
461	Toole, Wm., premium	1 50
462	Ried, Wm., premium	32 00
463	Baker, Geo., premium	110 00
464	Woodward, J. L., premium	20 00
465	Wilson, E., premium	33 50
466	Maxon, F. W., premium	15 00
467	Bigelow, L. F., premium	2 00
468	Hopson, W. W., premium	13 00
469	Dow, O. P., premium	14 00
470	Richmond, E. Y., premium	16 00
471	Herschinger, C., premium	34 50
472	Leonard, L. N., premium	30 00
473	Bizler, Geo., labor	1 78
474	Morris, G. D. & Co., flags	20 00
475	Welch, Wm., mortar	60
476	Colby, W. A., advertising	2 00
477	Beloit Paper Pail Co., pails	4 00
478	Weeks, N. G., advertising	2 50
479	Richards, P., advertising	3 00
480	Wells, C. W., advertising	3 00
481	Laster, Mrs. L. P., advertising	5 00

DETAILED STATEMENT OF DISBURSEMENTS.

33

No.	To whom and for what paid.	Amount.
483	Knicht, J. G., advertising.....	\$5 00
483	Colby, A. P., advertising.....	2 00
484	Hobbitt, C., secretary's salary.....	150 00
485	Dunton, F. R., advertising.....	15 00
486	Gilbraith Bros., premium.....	86 00
487	Bacon, N., premium.....	3 00
488	Bdoth, Chas. A., advertising.....	2 00
489	Leonard, M. M., premium.....	6 25
490	Minch & Co.....	5 00
491	Fowler, B. F., premium.....	43 00
492	Stain, C. R., lumber.....	27 95
493	Park Hotel.....	48 25
494	Nelson, E., premium.....	2 00
495	Childs, S. D. & Co., tickets.....	192 00
496	Parkhurst, Samuel, labor.....	12 00
497	Barantee, C., police.....	8 00
498	Bowles & Haddon, premium.....	37 00
499	Patterson, Mary A., premium.....	12 40
500	Spaulding, A., premium.....	2 00
501	Fritchard, Miss Minnie, clerk.....	27 00
502	Culver, Edwin, teaming.....	12 00
503	Wilnot, Missea, premium.....	6 00
504	McKinney, H. D., expenses.....	4 70
505	Hobbitt, C., secretary, salary.....	300 00
506	McKinney, H. D., premium.....	15 00
507	Ward, C., & Sons, premium.....	10 00
508	Evanson, E., premium.....	10 00
509	Boice, R., premium.....	37 00
510	Carney, Wm., drayage.....	1 00
511	Davidson, A. L., reports.....	5 00
512	Carras, J. N., advertising.....	2 00
513	Morse, J. W. & Son, premium.....	242 00
514	Shoets, O., police.....	8 00
515	Gill, L. F., premium.....	2 00
516	Howe, J., premium.....	4 00
517	Freeman, L., premium.....	4 00
518	Bullard, H., premium.....	10 00
519	Cook, O., premium.....	7 00
520	Plumb & Son, printing.....	10 00
521	McCumber, S. D., premium.....	50 00
522	De Haven, Geo. W., premium.....	14 00
523	Millet, Chas. O., balance of work at fair.....	15 00
524	Eastman, J., labor.....	50 00
525	Domestic Sewing Machine Company, lumber.....	2 25
526	Culver, E., labor.....	24 00
527	Balance loan of 1876.....	1,177 24
528	Troan & Wiggen, grain.....	27 00
529	Hobbitt, C., secretary's expenses.....	3 00
530	Miner, Cyrus, expenses and sundries.....	47 21
531	Miner, Cyrus, services at fair.....	28 00
532	Recorder Publishing Company, printing and advertising.....	12 50
533	Gazette Publishing Company, printing and advertising.....	10 00
534	Cornish, Nathen, premium.....	41 40
535	Doubleday, Geo., premium.....	51 00
536	Sexton, J. P., premium.....	39 00
537	Elmty, Wm., premium.....	9 00
538	Cornes, John, premium.....	15 00
539	Paul, J. H., premium.....	48 00
540	Swanson, Thom., labor at fair of 1883.....	5 00

No.	<i>To whom and for what paid.</i>	<i>Amount.</i>
541	Babbitt, C., services and sundries	\$48 00
542	Millett, Charles, services at fair	20 00
	Total amount of orders issued by secretary	\$22, 011 86
	Orders 109, 152, 354, 461, 517, 521, 537, 538, 539, 540 not presented at date of this report.	\$156 75
		\$21, 855 11
	Paid orders of 1882.	157 21
	Paid dinner tickets.	145 56
	Cash balance on hand.	3, 012 01
		<u>\$25, 169 99</u>

SOCIETY MEETING.

In accordance with the requirements of the constitution, and after due notice by the secretary, the life members of the Wisconsin State Agricultural Society convened at the Senate Chamber in the city of Madison, September 13, 1883.

The following address was delivered by Hon. N. D. Fratt on taking the chair.

Gentlemen of the State Agricultural Society: This annual meeting, by the provisions of our constitution, is a marked period each year in the history of our great enterprise. It is at this time that we, your stewards, bring to you an account of the interests intrusted to us, and surrender into your hands those offices which are yours to bestow upon whomsoever you will. It is now six years since with generous partiality you bestowed upon me the honors of the presidency of this important association. It was a trust to be accepted with hesitation, involving as it does, high and responsible duties. It was an honor to be received with gratitude, as it constitutes its recipient the official head of the great brotherhood of farmers.

Gentlemen, it has been my greatest care, my highest ambition, to so discharge the duties of this honorable position, as to advance the best interests of this society. Gentlemen, will you permit me, in doing so, to announce to you my final decision, that I cannot again become a candidate for re-election.

In making this decision, I beg leave to assure you that I am influenced by no diminished zeal in our common cause —

no lack of personal interest in the future of this society, and no want of grateful remembrance of all your past kindness to me; but, on the contrary, I feel that this step is entirely compatible with all these. My official connection with our society will close with the present year.

During the successive years in which I have been honored by your choice, I have brought to the discharge of my duties as your president, the best abilities that I possess; but that I may have committed error, and made mistakes — none know better than I do.

My aim has ever been to so administer the affairs of this association as to shape for it a bright and prosperous future — a future of increased and ever increasing usefulness in the wide and important field which constitutes its rightful domain. In this connection it is eminently just that I express my grateful acknowledgments of the ever prompt and valuable assistance that I have received from the hands of my associates in office.

Wisely and well have they counseled me; efficiently and skillfully have they co-operated with me in the discharge of our respective duties. Without that able counsel, that ready assistance, failure oftentimes might have followed my best efforts. Gentlemen of the executive board, for the intelligent and painstaking manner in which you have wrought for the interests of this society, I feel that you richly deserve our united thanks, and personally to each member of the board I desire to express my most sincere and heartfelt thanks for that generous confidence which you have at all times reposed in me, and for the unvarying courtesy which you have shown me in a thousand ways. Gentlemen, may all the good things for which you are striving crown for each of you a long and happy life.

To the members of this society, one and all — allow me to say, that among the pleasant associations of a somewhat long and active life, spent amongst active men, and in the midst of manly affairs, the pleasantest recollections will ever cluster around these years of thought, and care, and labor for our beloved society, and let me assure you that the termination of my official life with you, will not abate one jot or

title of my deep and lasting interest in your welfare. Surrendering at the proper time, the trusts committed to my keeping, my personal and best endeavors will still be with you, and any service that I can render will be at your command. One and all, I again thank you.

EXECUTIVE BOARD MEETING.

STATE AGRICULTURAL ROOMS,

MADISON, September 14, 1883.

The executive board met in accordance with the by-laws of the Wisconsin State Agricultural Society, September 14, 1883. Meeting called to order by President N. D. Fratt.

Mr. Arnold, superintendent of cattle department, called the attention of the board to the award of sweepstakes of *one hundred dollars*. Which by vote was divided as follows: In cattle department, 1st premium \$45; 2d premium \$35; and 3d \$20.

Board also voted to ratify the sweepstakes premium offered on Clyde horses.

Mr. J. V. Palmer was awarded by vote third money in the 2:45 race.

ELECTION OF OFFICERS.

On motion of Gen. Geo. E. Bryant, of Dane county, the Society proceeded to ballot for president, treasurer, and secretary in the order named.

Whole number of votes cast for president 87; necessary to a choice 44; of which number Mr. Fratt received 53.

On motion of Mr. Larkin, Hon. N. D. Fratt was declared unanimously elected president for the year 1884.

Cyrus Miner having received all votes cast, was declared unanimously elected treasurer for the year 1884.

Ballot for secretary: Whole number of votes cast 89; necessary to a choice 45; of which number Clinton Babbitt received 72.

On motion of E. W. Keyes, Clinton Babbitt was declared unanimously elected secretary for the year 1884.

On motion of Gen. Geo. E. Bryant a committee of 10, one from the state at large, to be appointed by the president, and one from each congressional district of the state to be appointed by the members from each district represented, be raised for the purpose of nominating the balance of the officers for the year 1884. Committee consisted of the following:

- From State at Large—Gen. Geo. E. Bryant.
- 1st Congressional District—A. H. Sheldon.
- 2d Congressional District—Chester Hazen.
- 3d Congressional District—N. B. Van Slyke.
- 4th Congressional District—D. T. Pilgrim.
- 5th Congressional District—J. M. Smith.
- 6th Congressional District—J. H. Hicks.
- 7th Congressional District—W. S. Grubb.
- 8th Congressional District—W. A. Johnson.
- 9th Congressional District—S. L. Nason.

The committee retired and returning reported as follows:

For the office of vice-presidents for the year 1884,

- 1st Congressional District—C. L. Martin, Janesville.
- 2d Congressional District—H. D. Hitt, Oakfield.
- 3d Congressional District—R. B. Ogilvie, Madison.
- 4th Congressional District—D. T. Pilgrim, West Granville.
- 5th Congressional District—J. M. Smith, Green Bay.
- 6th Congressional District—Byron Olcott, Oshkosh.
- 7th Congressional District—J. W. Wood, Baraboo.
- 8th Congressional District—A. A. Arnold, Galesville.
- 9th Congressional District—*Not represented.*

And the following additional members of the executive board:

- Orris Pratt, Elkhorn.
- I. C. Sloan, Madison.
- T. L. Newton, Beaver Dam.
- J. H. Hicks, Oshkosh.
- W. A. Johnson, Galesville.
- George Shaw, Eau Claire.
- F. J. Blair, Milwaukee.

Who were unanimously severally elected. Adjourned.

CLINTON BABBITT,

Secretary.

STATE AGRICULTURAL ROOMS,

MADISON, February 4th, 1884.

The executive board of the Wisconsin State Agricultural Society met in their rooms in the Capitol at 7 o'clock, P. M., as required by the by-laws. Present President N. D. Fratt, Vice-Presidents Dr. C. L. Martin, J. W. Wood, A. A. Arnold and R. B. Ogilvie, and additional members Cyrus Miner, W. A. Johnson, T. L. Newton and Secretary Clinton Babbitt. President N. D. Fratt in the chair.

President Fratt read his address to the board, which, on motion of Dr. C. L. Martin, was ordered printed in the transactions of the Society.

ADDRESS OF PRESIDENT FRATT.

Gentlemen of the Executive Board—As provided by our constitution, we are assembled here this evening in regular annual session. But, before we proceed to business, I wish to say a word or two respecting the annual exhibitions of this society, not in the way of commendation, for that they do not need, but rather in the way of candid criticism and friendly suggestions. There have been tolerated, perhaps invited, many things in connection with our fairs, partly in the way of increasing the receipts, and partly for the purpose of furnishing additional attractions, which are becoming more and more offensive to a large portion of our citizens, and are far from being contemplated as among the legitimate objects of these annual gatherings. I refer, as you readily understand, to the gaudy shows, gambling devices, organ-grinding, conjuring, mountebankism and every species of graceless vagabondism, which we have admitted to our grounds, augmenting the inconvenience, confusion and discomfort that in some sort is necessarily attendant upon our expositions.

“We care not,” says the editor of the *American Agriculturalist*, referring to the bringing together in the fairs of the New York society of this incongruous mass of utility and nonsense, things befitting the occasion, and things illegitimate and harmful. “We care not how large the concourse may be of sincere admirers of agricultural objects, nor what

may be the inconveniences following it. All this we are willing to accept as the necessary part of the occasion; but we heartily deprecate factitious influence brought into requisition by the publicans; the porters and the purveyors of every sort, to stifle and suffocate the legitimate visitors on these occasions, by these spurious broods of auxiliaries, led thither for the purposes of notoriety and excitement by one party, and the hope of extortion and plunder by the other." In the main I would be willing, I think, to adopt this language as my own, at least so far as it will apply to the fairs of this society, or to the admission of things foreign to their purposes. And I submit that we have no need to resort to tricks and devices in the way of making these exhibitions attractive and successful. To elevate their character, by dispensing with offensive and hurtful features, will be to render them more popular, and to make them more than ever a means for advancing our agricultural and mechanical interests. [The practice has become general for professional breeders to take their stock to all the fairs they can reach during the season. As a consequence, they take all the premiums of the stock of the kind they breed. The presence of these show herds on the fair grounds discourages small breeders, as well as farmers who raise stock while they are also engaged in general agricultural pursuits. If competition in the stock exhibits were classified, so that amateurs could compete with amateurs, and professionals with professionals, there would at once spring up a generous rivalry among the local farmers and stock breeders. They would have a reasonable idea of what they would have to contend against, and would run the risk of an exhibition of their stock.] Professional breeders can take their stock to most fairs with less expense and trouble than those who are non-professionals. They have but to load them on the cars and unload them in the vicinity of the fair grounds. If the animals themselves are "professionals," or members of a "show herd," they are accustomed to traveling on railroads, and will step on or off a car with as little hesitancy as a commercial traveler, and will make for the best stall on the fair grounds as expeditiously as a "drummer" will secure the

best room in a hotel, though the proprietor has announced to the public that they are all full.

The appointment of judges to make awards that shall be in the highest degree satisfactory to our exhibitors, should be thoroughly considered. Perhaps it would be well to employ experts, who should receive some compensation for their trouble. This is the course pursued by the principal fairs in Great Britain, and the awards made there generally give satisfaction. The judges on live stock devote a large amount of time to the examination of stock, and they make a diligent comparison of the scale of points in each animal. Exhibitors and all others interested, learn by the decision of the judges, not only which animals are, in their opinion, superior to the others on exhibition, but in what particular and to what extent they are superior. A decision of this kind is of great advantage to breeders, as they may learn by it what animals to couple in order to produce young that shall combine the numerous points of excellence to the highest degree.

The present plan of "picking up" committees on the ground is full of objection. The former plan of printing their names in our premium list, upon their appointment at our board meeting many months before the fair, has proven ineffective, because not one in ten, perhaps, will attend the fair. Whether to appoint them, as was done at the Centennial exhibition, and pay a stated salary, or to pay expenses merely, or to choose them on the ground, is a problem not easily solved. But much, very much, depends upon the manner in which awarding committees do their work.

That our premium list is very defective is obvious to you all, and a careful and thorough revision at this time should be made. That there are many awards offered for useless articles that have remained in the list for years, simply for the reason that sufficient time and attention has not been given to the matter. Therefore, in view of the shortness of our session, I hope that each superintendent will, when his department is reached, have all recommendations, which in his opinion are needed, ready, that they may be acted upon at once, and understandingly, and thus expedite business.

Our state fair has grown to mammoth proportions, so that there are grave objections to changing the location from year to year. The expense of fitting up accommodations is very large, and it seems a waste of money to erect buildings that are to remain at longest but two or three years. It is true, that the money necessary to erect the buildings, and make all other improvements, is mostly raised by the inhabitants of the city where the fair is to be held. Many are reluctant to visit or otherwise patronize a fair held in a place they never have visited, for fear there will not be suitable accommodations for themselves and their stock. Still there are advantages in changing the location of our fair. By doing so a new class of exhibitors and visitors are obtained, thus doing considerable valuable missionary work. Experience teaches us that our fairs are chiefly patronized by those living within a radius of about sixty miles, so you can readily see that it would take about a decade to cover the whole state. Our neighboring states of Illinois, Iowa and Minnesota, are agitating the question of permanently locating their state fairs. I think several of our western states have already done so. These are all important questions, affecting the life and prosperity of our society, and may, if desired, be discussed as they are reached in their regular order.

Mr. W. L. Wells referred his claim on running race to the board, which, by motion of Dr. Martin, was laid over until subsequent meeting; and at the proper time it was taken up and a warrant of \$30 was ordered to be drawn in his favor.

On motion of J. W. Wood, Mr. Geo. Weis, of Evansville, was awarded a premium of \$5.00 for second best display, at State Fair of 1883, for collection of photographs.

On motion of Mr. Ogilvie, it was resolved to join the National Association.

The following was submitted by Mr. Ogilvie:

I have no report, but a few recommendations to make. First, I discovered that in many classes not to exceed one-half the horses entered were exhibited. And to obviate an recurrence of them in the future, I would suggest that we

impose a tax of \$2 on each box stall and \$1.50 on each open stall. We now have 264 box stalls and 36 open stalls, which at the above charges would amount to \$578. The money thus raised I would return to the exhibition in additional premiums.

Recommendations concurred in.

REPORT OF A. A. ARNOLD.

As superintendent of Department B for the year 1883, I would most respectfully report and recommend as follows, viz.:

1st. In my department at the last state fair there were 279 entries of neat cattle, embracing all of the popular breeds, Polled Angus, Galloways and Herefords excepted. The exhibit was large and show satisfactory. I also have the pleasure of saying that there was no manifestation of dissatisfaction on the part of the exhibitors either in the management of the department or in the award of the committees.

2d. I would recommend that at our next fair we charge \$1.50 for stalls, thereby increasing our receipts, curtailing our expenses, and allowing us to increase our amount of premiums offered.

3d. That we increase the number of premiums by offering premiums on stock raised in the state and bred by the exhibitor.

4th. That the committee be required to state in writing in each case, the reasons why they make their awards as they do, and the point wherein they excel their competitors.

All of which is respectfully submitted.

ALEX. A. ARNOLD.

P. S. 5th. That we strike out the grand sweepstake premium on the best display of cattle of any or all breeds. Adopted.

On motion of Secretary Clinton Babbitt, the recommendations of Mr. Arnold, superintendent of the cattle department, was rescinded so far as a charge for cattle stalls was concerned, leaving them free to the use of the exhibitors as formerly. Carried.

TUESDAY, February 5, 1884.

9 A. M. The executive board met at their rooms at the capitol. Quorum present. President Fratt in the chair.

The following communication was received and read to the board:

PRESIDENT FRATT: Last evening a committee was appointed to take into consideration the future of our Society and to recommend some definite course of action. This committee would be pleased to meet with your Board for a few minutes conference, if it should be desired by the members of your Board. Yours truly,

J. M. SMITH,

President State Horticultural Society.

Mr. Perkins, chairman of a committee appointed by American Merino Sheep Breeders' Register, presented to the board the claims of the American Merino Sheep Register.

Mr. Perkins, Mr. Frazier and Mr. Craig composed the committee.

Mr. Wilkinson asked that the Ohio and Michigan registry be added to the classification, which was adopted.

Mr. Ogilvie moved that in class 1, 2, and 4, a premium of \$50 each for best stallion and four mares of any age, be given. Also a grand sweepstakes premium of \$100 for best display of horses of any breed owned by any individual or firm. Which was lost by a vote as follows, viz:

Ayes—President N. D. Fratt, J. H. Hicks, R. B. Ogilvie and Orris Pratt.

Opposed—Cyrus Miner, W. A. Johnson, Dr. C. L. Martin, J. W. Wood, T. L. Newton, D. T. Pilgrim, J. H. Hicks, A. A. Arnold and Clinton Babbitt.

Mr. Arnold moved that a committee be appointed by the chair to arrange the speed list, restricting the amount to the sum offered last year. Committee appointed: R. B. Ogilvie, Dr. C. L. Martin and T. L. Newton.

Mr. Arnold moved to add a premium of \$25 each, to the best display of six head in the following classes: Nos. 8, 9, 10, 11, 12, 13 and 14, which was adopted after Mr. Hicks' motion to include all classes, and that they be made the same as class 10. Carried.

On motion of Mr. T. L. Newton, a class was made for

Guernsey cattle, on the same footing with other classes.
Carried.

Meeting adjourned till 2 o'clock P. M.

The adjourned meeting of the agricultural board met at 2 o'clock P. M., Tuesday. President Fratt in the chair. Quorum present.

Mrs. Sarah P. Bradish presented a petition in behalf of a large delegation of ladies of Madison, members of the W. C. T. U. of Wisconsin, in which she took strong grounds in relation to temperance at state and county fairs, which was listened to with profound respect. Mrs. Emma C. Bascom also addressed a few forcible and eloquent remarks to the board on the subject of excluding beer from our annual exhibition.

Dr. C. L. Martin, A. A. Arnold, I. C. Sloan and Clinton Babbitt, also spoke on the question.

The following communications more fully express the varied views upon the subject:

BEER DRINKING AT THE FAIR GROUNDS.

[An Open Letter.]

Mr. President, and Gentlemen of the Executive Board of the State Agricultural Society—The members of the Woman's Christian Temperance Union of Madison, respectfully, in this public way, for lack of any other, solicit your attention for a few moments.

We desire, in behalf of all just, wise and beneficent sentiment, to briefly expose some of the fallacies which at your late meeting in February, were so impressively presented for the instruction and guidance of your Society, in protecting and promoting the great industrial interests of our state. The views referred to were so obviously false and vicious, that the majority of your board, we must believe, rejected them at once and with decision. But the high position of the leading speaker, and his fine rhetorical power, were well calculated to mislead any among you who are willing to be misled by fallacies; for such, we are told, turn away their ears from the truth and turn aside unto fables.

The speaker insiduously implied that temperance people are not temperance people, but only rank hypocrites, sporting themselves with their own deceivings. We stoop not to refute the charge, but pity the men so poor in soul as to believe it true. It was declared that the Agricultural Society was not a reform society and ought not to be. Madison, it was said, was a

beer-drinking city; farmers generally were beer-drinkers, and therefore the society should not prohibit the sale of beer from its grounds, but rather should afford every facility for indulgence, in this deluding and debasing drink. This principle is so full of mischief that, if acted upon in any department of human affairs, it would quickly undermine and destroy every valuable interest of that department.

No society has any right to exist that is not in some sense corrective and reformatory. But this Society—a society to promote agriculture and the household arts, a society to maintain and cherish those vast and vital interests upon which the prosperity of every other calling is built—this Society ought to be pre-eminently a reform society. It can be useful only in proportion as it is reformatory and educational in every one of its aims. It is to reform bad methods of tillage, and to teach better methods; it is to reform horticulture, and introduce more varied and more excellent fruits and vegetables; it is to reform the material condition of the farmer by stimulating his ambitions, increasing his gains, refining his habits, improving his home-life, and helping him to do all honor to the domestic and social virtues. Above all other vocations the prosperity of agriculture is conditioned on the industry, frugality and sobriety of those who pursue it; and the guardians of farming interests are, first of all, to instill and foster these virtues. Nothing less than this reform work should be the object of your Society. Furthermore, the legislature has no right to appropriate the money of the state in support of an organization that, in any of its meetings, in its publications, in its influence on the fair grounds or elsewhere encourages or countenances any custom or any habit that depresses agricultural industries, brutalizes the farmer, weakens his judgment, wastes his substance and transforms what should be a happy, comfortable home, where children are reared in strength and intelligence, into a miserable hovel, where degenerate offspring are bred in ignorance and vice, to fill later our jails and penitentiaries to the lasting burden and disgrace of the commonwealth.

We refer you to the wife of the beer-drinker for any adequate portrayal of the dishonor and degradation, the want and woe, the misery and crime that follow in the wake of beer-drinking and its associate evils.

Yet your speaker informed the Society that it must not use its influence against these evils; but instead, should once a year afford under its auspices a grand opportunity to the young and old assembled on its fair grounds, for their full indulgence; that is, the society for elevating and educating the farmer should defraud him in large measure of the benefits for which the fair was instituted. This Society should be willing to fill these holidays of the farmer—these days which, more than any others, mark for him the rolling year, when he, with wife, and sons and daughters, meets neighbor, acquaintance and stranger, far and near, for enjoyment, for education, and for awakening interest and new incentives in his calling—this Society, to whose care these weighty affairs are intrusted, should be willing to fill these days with temptations the most dangerous he and his sons can en-

counter, and should invoke for these temptations, when all hearts are open to hilarity, and restraint is cast off, the countenance and sanction of the entire community. What worse work could your Society do, and how could you plan it more deliberately and fatally to fulfill its accursed purpose?

In the name of the material interests of agriculture, this great wrong is advocated and persisted in! In this century of Christian civilization, a society so short-sighted may well be remarked to Paganism to learn wisdom. Pagan philosophers believed and taught that the forces of this world make for righteousness, and that wrong-doing never pays. Hence these maxims were current among them:

“Do right, and leave the rest with the gods.”

“He hurts the good who spares the wrong.”

“Unless the right is with you, all your toil is vain.”

Everyone familiar with the history of the growth of morals in society knows that in all its stages material prosperity has advanced. Since the beginning, when Cain slew his brother, it has never been shown that wrong-doing was helpful to the interest of any good thing.

Gentlemen, will you risk it now, and foster an evil that is to-day sapping the virtue and strength of our state, and undermining, like no other evil, the very interests you have been chosen to protect and promote?

You have a law prohibiting the sale of distilled liquors from the fair grounds, but it is made of no effect while the sale of beer is permitted, for under cover of beer all liquors are introduced without the possibility of prevention. Are you willing to appear before the public as an organization too weak to enforce its own regulations? Are you willing, in these days of reform and of growing temperance power, to take no step in advance and thus allow our state to fall behind her sister states in all true industrial prosperity?

Gentleman, in asking you to prohibit the sale of beer, we are only asking you to enforce in full your own prohibition. We are only asking you to rise to the wisdom of Paganism—only asking you to do right and leave the rest with the gods. Unless the right is with you, all your toil is vain. Under the inflexible laws of nature, wrong-doing always has, and always will, defeat its own object. Only moral forces will ever win and triumph in the end.

Believing you will dare to do right, we are hopefully and respectfully yours.

EMMA C. BASCOM,

Corresponding Secretary of W. C. T. U., of Madison.

MADISON, February 22.

AN ANSWER TO MRS. BASCOM.

[An Open Letter.]

Emma C. Bascom, Corresponding Secretary of the W. C. T. U., Madison.
Your open letter to the officers of the Wisconsin State Agricultural Society has just come to hand, and as it challenges a reply, and unfairly quotes some of my remarks at our board meeting, at which you presented your views, I will courteously define my position, and concede to you the "last word." As you ask us "only to rise to the wisdom of Paganism," the task of answering will not be hard.

I suppose all good civilized men and women honestly desire the best and fullest enforcement of law, if for no other benefit than that arising from the consciousness of being good citizens, and of securing better protection to life and property. We stand, then, on the same platform, desiring the same great end—which is not strange, as we live in a civilized country, under a government of law, where the welfare of woman is equally desirable with that of man.

In discussing the policy of allowing beer to be sold on the fair grounds of the State Agricultural Society, we must concede the common-sense conclusion, that whatever is permitted by law is entitled to the protection of law. Our national and state legislatures permit the manufacture of beer, and if we include the invalids that drink it, with the social element, it may be called a national drink. It is permitted by law to be sold in every state of the Union, and particularly by every city where the Wisconsin state fair of 1884 will be likely to locate. It is sold under municipal law to the very gates of the Society's grounds.

Is it wise or does it show good judgment to prohibit it on our own little sixty acres and oblige all visitors to pass and elbow their way through a crowd of drunken revelers, over whom we have no control, and who, maddened by what they deem an infringement on their own rights, are inclined by the very nature of the case to annoy as much as possible? Do you think under the circumstances that any less beer would be drunk? Possibly less beer might be, but would there be any less liquor drunk? You regard drinking as an evil; would the evil resulting from drinking be less if drunk on the inside of the fence than on the outside?

After all, does not this annual clamor from the women of the W. C. T. U. for a prohibition of beer on our grounds seem any other to you, viewed in the light of facts, than a useless sentiment, conceding to you, and all women the right to labor for sobriety and good government, desirable to one and all alike? Experience, our only guide, convinces me that no good can come to our Society by placing ourselves in opposition to the established law of the city where our fair is held. We are not law-makers; it is for us to conform to law already in force. If we should locate where prohibition by the city is enforced, we should obey. If the city licenses,

we certainly have a right to accept the expressed sentiment of the people, who by vote have settled the question and "Among Romans, do as Romans do." But it should be borne in mind that our Society does not license, nor ever did. It conforms to law as it stands—permits or rejects according to law.

You ask: "Are you willing to appear before the public as an organization too weak to enforce its own regulations?" I would respectfully say that the resolutions of a previous board are not binding upon the present board; neither are our resolutions binding upon our successors. We occupy for a time this position of trust, intending to do our duty, and that we shall be fearless in so doing you may be assured.

The president and other members of the board to whom I have sent your open letter will undoubtedly answer your communication. As for myself, as secretary of the Society, from now to January 1, 1885—when my term of office expires—I will, without prejudice, or fear, or hope of reward, endeavor to run the Wisconsin State Agricultural Society free, uninfluenced and unbiased by creed or political pressure, in the legitimate line for which it was originally organized.

CLINTON BABBITT,

Secretary of Wisconsin State Agricultural Society.

ANOTHER VIEW.

[Another Open Letter.]

Mr. President and Gentlemen of the State Agricultural Society: The "open letter" addressed to you by the W. C. T. U., of Madison, is based upon a misunderstanding and consequent perversion of the remarks referred to, so gross as to render the communication of no value as an argument.

The speaker referred to did not say anything from which it could be fairly implied that temperance people generally were hypocrites. Madison was not said to be "a beer-drinking city." It was not said that "farmers generally were beer-drinkers." And it was not argued that therefore the Society should not prohibit the sale of beer, "but rather should afford every facility for indulgence in this deluding and debasing drink."

The speaker did not inform "the Society" that it must not use its influence against these (beer-drinking) evils, but instead should once a year afford under its auspices a grand opportunity to the young and old assembled upon the fair ground for their full indulgence." What was said, was in substance that men must be taken as they are, and not as they ought to be, and that it was to be regretted by all that Madison and other places in the state contained so many persons, including farmers, who drank beer, and that fact must be taken into consideration in conducting the state fair; that the Society could not afford to cripple its resources and destroy itself by

adopting the proposed resolution, and whether such result would follow was a matter for careful consideration before it was adopted.

It will be seen, by comparing what is alleged to have been said in the "open letter," with what was in fact said, how gross the misrepresentations in the "open letter" are.

It is surprising that intelligent ladies should be so careless in their recollection and statements, when a fair synopsis and statement of the purport of the speaker's remarks appeared in both the daily papers, immediately after the meeting.

The emotional method of reaching conclusions, by jumping at them, is said to be especially feminine, and the "open letter" seems to bear out the assertion, at least in this instance.

S.

MRS. BASCOM'S REPLY TO MR. BABBITT AND "S."

[An Open Letter.]

Mr. Babbitt, Secretary of the State Agricultural Society:

DEAR SIR — I have read with care your reply to the open letter of the W. C. T. U., of Madison, to your Society. I am glad of the reply, as a possible means of advancing temperance sentiment, by leading your Society and the public to take a more just view of the subject discussed. The Woman's Christian Temperance Union, in accordance with the general object for which it exists, has striven to induce the State Agricultural Society to take a moral and reformatory position. You characterize this effort as an "annual clamor" and "useless sentiment." It has certainly been found almost valueless.

In this letter I wish to waive the effort, and to consider the subject of discussion between us, as you look upon it—from the point of custom and law. You appeal to Cæsar, and to Cæsar let us go:

"All good civilized men and women honestly desire the best and fullest enforcement of law. * * * Whatever is permitted by law is entitled to the protection of law."

Here, "we stand on the same platform." First, let us suppose that the sale of beer and allied drinks is not allowed on the fair ground; then the case, between those who approve and those who disapprove of the traffic, stands thus: the former—those who approve—suffer no unusual restriction. All authorized saloons are open in the usual places. The temperance sentiment has put no new burden upon those who drink beer. The temperance sentiment has changed no legal or customary relation. There has been no aggression or appearance of it. The law has sway. The rights of thoughtful, sober-minded citizens are not infringed in behalf of beer-drinkers, and the State Agricultural Society is freed from the fearful responsibility of "drunken revelers."

Let us now suppose the reverse. A free sale of beer is allowed on the fair grounds. The legal and customary condition is at once altered in favor of intemperance. When the State Agricultural Society gives permission to any person to sell beer or distilled liquor on the fair grounds in Madison, unless the person has already received a license to sell these drinks on that same ground from the city authorities, the action is an illegal usurpation. A license to sell in the city confers a right explicitly confined to certain premises. The moment the holder of a license opens a saloon elsewhere, or opens an additional saloon on the fair grounds, he violates the municipal law of our city as completely and as absolutely as if he had no license whatever. Is this "the best and fullest enforcement of law" which forms the platform on which you stand?

The State Agricultural Society in granting permits for the sale of liquor and beer, betrays every interest. It betrays the liquor dealer, for it charges him for a protection it cannot afford. It cannot stand between him and the law. It betrays the law, because it usurps its functions. It betrays the public, because, under the appearance of a fair play it readjusts moral conditions in favor of the anti-temperance sentiment. It is not sufficient for the State Agricultural Society to say to a liquor dealer, or to one who prepares to spread a gambling table, "You can do it for a hundred dollars. We will not interfere if no one complains." This is using whatever dignity and authority attend a body of such responsible trusts as that of the State Agricultural Society, for a cloak to cover a disgraceful violation of the law. "Is it wise, or does it show good judgment thus to do?"

Let us look at the subject, also, from a little different point of view. The law of the state closes saloons on election days, as days of excitement and temptation. Your Society illegally creates and multiplies saloons for the accommodation of a large crowd when the restraints of good order are weak, the police force small, and the dangers of accident great. Bad men excited with drink—"drunken revelers"—are obviously occasions of disturbance and alarm on a ground crowded with men, women and children, on foot and in teams. Law puts restraint on the traffic, at a point of danger. Your Society removes all restraint at a point of still greater danger. Any accident resulting from this policy would be directly chargeable on the Society. Your policy is not that of the law—be the law good, or bad—but the exact reverse.

"Is it wise or does it show good judgment thus to do," in violation of law? Is this doing "Among Romans as the Romans do," or is it not rather outdoing the Romans.

You say that you propose "to run the Wisconsin State Agricultural Society so long as its interests are intrusted to you, without prejudice, or fear or hope of reward." As the declaration lies in your mind, I have no doubt that it is a sincere one, and, therefore, I cheerfully applaud it. But if it means that you propose to run the fair as it was run last year, I must still think that you mislead yourself by brave and pleasant words. The

method of last year I must denounce as dishonest, illegal and indecent: dishonest, because your Society took money for what you could not sell — a license; illegal, because it took money for a permission to violate the law; indecent, because it set aside the legal protections of sobriety and safety in defiance of the expostulations of good citizens. The Woman's Christian Temperance Union has petitioned the State Agricultural Society not to grant these suppositious licenses to liquor dealers. Our humble petition has begotten the arrogance of power. I now satisfy myself by reminding our Society that no good citizen can knowingly be an accomplice to the violation of law — especially of law enacted in the interests of good order and morality.

The accusation of "S." against the W. C. T. U., of "perversion and gross misrepresentation" is not well sustained, it seems to me, judging from memory and the meagre newspaper report. If true, none would deplore it more than the writer of the letter to which the accusation refers. It was not attempted to report, *verbatim et literatim*, the pro-beer speeches of your last meeting. It was only intended to render, faithfully and truthfully, their spirit, their legitimate inferences and implications. It is not easy to exaggerate the evils involved directly and indirectly by the advocacy of the sale of beer and liquor on the fair grounds. It was the endeavor to state these evils strongly.

In behalf of our commonwealth, yours truly,

EMMA C. BASCOM.

February 28, 1884.

THE W. S. A. S. AND THE W. C. T. U.

To the Editors.

I have read the controversy between the worthy corresponding secretary of the Woman's Christian Temperance Union and the officers of the State Agricultural Society. Mrs. Bascom, it seems, has been accorded the privilege of opening and closing the debate. She does so with much controversial ability and ingenuity, and no one can question her sincerity.

But she is plainly in error in her assumption that the Agricultural Society licenses the sale of beer on the fair grounds. They do nothing of the kind. The beer sellers are compelled to get their licenses from the municipal authorities. No permit of the Society can legalize the sale of any intoxicant on its grounds; the seller must get his license from the authorities that control territorially the sale of liquors in the town, city or village where the fair grounds are located. The officers of the society can refuse if they deem proper, to lease grounds for such purposes, within their enclosure. They are not the source of the license and if the local authorities do not permit such sale the Society cannot. The society which Mrs. Bascom represents should therefore direct their efforts to the city authori-

ties, as they are the body to whom the discretionary function of legalizing or outlawing the sale of liquors is primarily intrusted.

The difficulty with this association of temperance ladies is that they attach undue importance to their reform, and insist that other organizations framed for other objects shall jeopardize the interests and the progress which they represent and seek to promote, merely to promote, the peculiar views of the good people who advocate temperance. The agricultural societies are formed for one object—the promotion of agricultural interests. They need, in order to accomplish the purpose of their existence the support of large portions of the community irrespective of their views or practices on the subject of beer-drinking. To raise sufficient sums to defray their expenses and pay their premiums they must have the support of the whole community, as well those who sometimes drink as those who abhor a glass of beer. If the ideas of Mrs. Bascom are adopted it will operate to deprive the Society of a large element of support. It would suffer the fate of the temperance hotel, and perish for want of patronage, for all experience shows that the advocates of abstinence, whatever their other virtues may be, are not free-handed supporters of fairs, teetotaler hotels and the like. It is therefore the part of practical wisdom for the officers of the Agricultural Society to take society as they find it, endeavor to promote the aims for which they have formed the Society, and not attempt to conduct it on the high-moral but altogether impracticable views of Mrs. Bascom.

It is the mistake, very honestly made, of some temperance agitators, that their reform must be loaded upon every wagon. The world does not make progress in that way. One reform at a time is the rule. It is more likely to be accomplished when not complicated with other reformatory efforts which aim for human progress in other directions. A few years ago the friends of the Union were putting forth every effort to save the Union. People of every creed and political faith, of every kind and class of opinion on every social, moral or religious question, stood together on the simple platform of maintenance of the Union. Suppose the advocates of temperance then had stood out and said, "Our views must be carried out. There must be no drinking men or officers in the army, and no liquors allowed to be used in the field." It would have been better for the army, no doubt, but every one can see that such a stand at that time would have done the cause of temperance no good, but would have created an element of discord which would have wrought dire calamity to the cause of the Union.

So it would be, I think, to the agricultural people, if they attempted to make their Society an auxiliary branch of the Woman's Christian Temperance Union. It would not diminish the consumption of beer, but it would lessen the receipts of the Society mightily. The general shrinkage of their revenues would not be made up by the patronage or liberality of the W. C. T. U.

Suppose the Society adopt Mrs. Bascom's views. Then a society is formed that with equal sincerity believes that tobacco is a bane and its use a vice, and they undertake to banish it from the catalogue of needless and harmful objects of consumption. They array facts and figures to prove that it is weakening the virile powers of the race, spoiling nervous systems, transmitting physical infirmity to the offspring and deteriorating the race. All of which is capable of demonstration. This society demands that no tobacco or cigars shall be sold on the fair grounds. The same logic now invoked by the W. C. T. U. compels agricultural societies to forbid the sale or use of tobacco in any form on their grounds.

But the reformers do not stop here. The dress reformers come in with their statistics and their facts and figures to prove that the vices of dress, the heavy skirts, the high-heeled shoes, too thin for health and too tight for comfort, are injuring the women of the land. They are impairing the constitutions of the mothers of the men of the next generations. These reformers say to the Society, "Your aims, gentlemen, are not only to improve breeds of animals and fowls but also breeds of men. You should therefore, use your grounds to enforce *our* views of human and social reforms, and not permit these health-destroying fashions to be indulged in within your inclosure."

There is no escape from the logic of these reformers, and so our Society issues its manifesto that no tight, high-heeled shoes, nor too airy bonnets, nor too tightly-laced dresses are to be permitted on the fair ground. It drives away much of the grace and beauty which adds to the attractiveness of the fair, but the managers console themselves with the maxims that "they are doing right and leaving the rest with the gods," etc., and struggle along. But next they are beset by the cooking reformers. They assail the Society with their views. "These church societies" say they "are cooking food on your grounds in violation of every gastronomic law. They are breaking down the digestion of these vast assemblages by a system of cooking which brings dyspepsia and with it mental, moral and spiritual degeneracy." "Pray what will you have us do?" exclaim the bewildered state fair people. "Let no cooking be done except according to *our* recipes," coolly demand these reformers.

It needs but little sense to foretell the fate of a society that departs from the objects of its creation to carry out the ideas or enforce the customs of people, however meritorious and sincere they may be, which are not a part of the aims of its organization.

The temperance people should labor to prevent people from *wanting* beer rather than seek to accomplish the task of making it just a trifle more inconvenient for them to get it. And I, as one member of the Society, approve the action of the officers in not attempting to advance temperance by such unavailing methods of petty restriction.

A MEMBER.

On motion of Mr. Sloan, the further discussion of the temperance question was unanimously postponed. Carried.

Moved by A. A. Arnold, that another class for sheep be added to the list for the American Merino, and all others not enumerated in class 17. Adopted.

Department D — Swine.— Premiums were authorized to be increased \$100, at the discretion of Secretary Babbitt of the Agricultural Society and Secretary Plumb of Swine Breeders' Association.

Department H — Machinery. — Superintendent T. L. Newton says: "No stalls to rent, no pedigrees to look after, no judges to find fault with, all we want is plenty of room and steam.

Resolved, That Superintendents of the Departments be elected by ballot.

Carried.

On motion, meeting adjourned.

Executive Board met at 10 o'clock A. M., Wednesday. President Fratt in chair. Quorum present.

Superintendents of the several departments were elected by ballot as follows:

Department A — Horses — R. B. Ogilvie.

Department B — Cattle — A. A. Arnold.

Department C — Sheep — Orris Pratt.

Department D — Swine — J. H. Hicks.

Department E — Poultry — ———.

Department F — Agriculture — W. A. Johnson.

Department G — Fruits and Flowers — J. M. Smith.

Department H — Machinery — T. L. Newton.

Department I — Manufactures — H. D. Hitt.

Department J — Fine Arts — J. W. Wood.

Marshal — Dr. C. L. Martin.

Superintendent of Forage — D. T. Pilgrim.

Superintendent of Gates — Geo. B. Shaw.

Moved by T. L. Newton, that a committee be appointed to locate state fair of 1884, committee to consist of the president, secretary, and three additional members.

The following constituted the committee: President, N. D. Fratt; secretary, Clinton Babbitt; treasurer, Cyrus Miner, R. B. Ogilvie and T. L. Newton. Committee to report March first.

Moved that the state fair be held on the week commencing September 15th. Carried.

Moved that the industrial societies of this state be invited to our convention at the capitol each winter, and that the programme of such convention be made by conference of the executive heads of the several societies. 2d. That if separate sessions of each society at said conventions should be found necessary such sessions should be arranged by concert of action. Further, be it resolved, that the secretary of the Wisconsin State Agricultural Society be requested to prepare the programme for the annual convention of the Wisconsin State Agricultural Society as usual.

WEDNESDAY, February 6, 1884.

12 o'clock P. M.

Board met in Agricultural Rooms at Capitol, President Fratt in the chair. Quorum present.

Agricultural Board met Executive Board of Horticultural Society for consultation as to the future of the two Societies.

After an exchange of mutual congratulations, the Executive Board adjourned.

STATE AGRICULTURAL ROOMS,

MADISON, February 29, 1884, 7 P. M.

The locating committee appointed by the State Agricultural Society to locate state fair for 1884, met at the rooms of Society at above time and place. Said committee, consisting of N. D. Fratt, Cyrus Miner, T. L. Newton, R. B. Ogilvie and Clinton Babbitt, were present, and listened to propositions from Milwaukee presented by E. P. Mathews and W. A. Collins. E. W. Keyes and W. F. Vilas presented

the propositions in behalf of **Madison**. After mature deliberations it was unanimously voted to accept the proposition of the **Madison** committee who offered to add to the treasury of the Society the sum of two thousand dollars, provided the state fair of 1884 was located at **Madison**. The meeting then adjourned.

CLINTON BABBITT,
Secretary.

EXHIBITION OF 1883.

OPENING ADDRESS.

By Hon. N. D. FRATT, President.

Fellow Members of the State Agricultural Society, Ladies and Gentlemen: I have once again the honor and the pleasure of addressing you on this our annual gathering. You are not an audience of strangers, but of friends. I see around me the familiar faces of those who look into my face with the genial, kindly recognition which tells of sympathetic feeling, born of kindred labors, pursuits and aspirations; and some of us — of whom I am one — have attained an age, when these meetings, so marked by kindly, cheerful enjoyment and unity of purpose, are prized the more, because in the inevitable course of events, there can be but few yet in store for us. It seems to me that one of the chief advantages to us of these fairs is the recognition and promotion of this feeling of common purposes and interests. They awaken a desirable *esprit du corps*, not of mere selfish clannishness; not for the object of pecuniary profit only; not even for the advancement of our class as competing with the other great interests around us.

This "spirit of the body" should influence us as being an integral element in the great working world around us, whose interests are intimately associated with our own. These fairs do promote a class unity in this, that they show us our mutual dependence. They show us the best results hitherto attainable in all

AGRICULTURAL ENTERPRISES,

in stock raising, in tillage, in implements, in orcharding, grain-growing, dairying, etc.; and more than all this, they show us the value of that knowledge which is the basis of these improvements; and they incite one and all to a gener-

ous emulation to produce similar or even better results for their own and the general good. The course of the present year has been in many parts of our country singularly disastrous. Floods have been destructive to a degree before unequalled; the growth of all vegetation, except the grasses, kept back by long continued rains. These rains have in many places sadly interfered with securing the hay crop. The difficulty of getting the seed corn in the ground has been equalled by the difficulty of cultivating the growing plants. But I mistook; some kinds of vegetation besides the grasses,

HAVE THRIVEN AMAZINGLY.

The weeds we have always with us, and this year the eye is offended by corn fields without number, in which the plants have been dwarfed by cold and rain, and choked by vigorous weeds, unmolested by the cultivator.

Many parts of the country have been visited by destructive wind storms, which seem to have been connected with electrical disturbances; every few days the news has been brought us of the terrible havoc wrought in succession by these destructive cyclones, unfavorable conditions for agriculture, and floods and cyclones at home; and political troubles, earthquakes, and pestilence abroad, have caused this year to be strangely notable as the year of disaster. Not alone in the

“ORDER OF NATURE”

are these troubles brought home to us; in the intellectual and moral life of the world, also, alarming change seems the rule rather than the exception. Systems of thought, political, philosophical and religious, which have been relied on and cherished as essential and fundamental to the progress, and even the life of humanity, are abandoned with a facility which is amazing, as though they were merely the fancies of dreamers, or the baseless beliefs of ignorant and deluded fanatics. Men are brought face to face with doubt, and general confusion reigns. Even science seems to have enlisted in the service of anarchy, and threaten to make insecure the foundations of authority. Man, who fancied himself the lord of nature, subjecting it to his will, develop-

ing its forces in harmony with the laws and workings of a wise and good Being—its Creator and his—seems to find himself—wise or unwise, a mere atom among myriads of atoms, driven blindly and aimlessly through the universe, by a relentless fate, as blind and purposeless as himself. There seems to be growing as never before, a pessimistic way of thinking and feeling, that the general tendency of affairs is to evil. Now for the first time in the world's history, the philosophy of the "malign" is elevated to position as a science. It has its votaries; prophets of evil, and apostles of pessimism.

LET US HOPE

that this tendency is not so general and far reaching as it seems. Schopenhauer may philosophize ingeniously and profoundly, and prove to all who have the same obliquity of vision as himself that all progression is downward; even so moderate and wise a man as Professor Goldwin Smith may see clearly the coming "moral interregnum," but let us trust that the grand march of human life is onward and upward; that there is a "Divinity that shapes our ends;" that the barriers which vice and ignorance (and the pessimism generally born of both) would raise to impede, will sink out of sight from their own lack of support. As occasional periods of disaster occur to us as farmers, which are beyond our control, and beyond our comprehension, yet our experience causes us to trust in the generally beneficent order of the seasons, and in that

GREAT POWER

which gives us seed-time and harvest, "filling our barns with increase, and our stores with plenteousness." The individual perishes, but the race continues; the individual lives his short life; he enjoys, he grieves, he labors, he aspires and he dies. He strives to beautify the earth; he works with his Maker, develops wealth from the soil, builds homes and temples in forms of everlasting beauty, develops in himself powers of mind and heart, and aspirations which fit him for immortality, and passes from these scenes where he has been a blessing, and they know him no more.

But the scenes last. His works live after him. The great interests of humanity which were his life still live. The great world indeed moves on; but it carries with it the influence of his thought and the impress of all that was worthy in his life. Individual interests seem to be of small account but they are really identified with the great objects of the human race, and these will last while the race itself endures. These great purposes are necessities growing out of the nature of man. They are subject to change, but change is essential to progress. In this ever shifting, ever advancing, constantly widening life of the world, who can doubt that change has been progress, and no greater changes have taken place and no greater progress has been made than in the science and practice of agriculture. In previous addresses, which it has been my duty to make to you, I have considered at different times, various subjects which seemed at those times to be of greater importance to us than others in our success as farmers. I propose on this occasion, to take a comprehensive view of the changes and progress in agriculture among us since the formation of our state society, and from this view to deduce some considerations bearing on our

FUTURE PROGRESS

and elevation as a class, forming so large a part of a great and enterprising nation. What in time past has been the condition of the tiller of the soil, and what has been the nature of his labors? Farmer he could not be called, and science he had none. The cultivation of the soil in some way or other, far ante-dates the period of history. Some of the grains, and among them wheat, have been found in the Hjocken-moedings of Denmark, and the lake dwellings of Switzerland. These Hjocken-moedings—meaning kitchen refuse—are great heaps of waste matter of every kind, shells, bones, tools, wood, horn and everything which would accumulate around a settlement of savages; they were formed by the inhabitants of Northern Europe generally long before we have any historical records, before iron was used. They afford scientists a very complete knowledge of the habits of those ancient people, of the tillage of the

Assyrians, and more particularly of the Egyptians. We have almost perfect knowledge from the sculptured illustrations upon the palaces of the former, and the temples, tombs, and monuments of the latter. The Egyptians have favored us with detailed representations of the whole process of their labor from plowing the soil, to securing the ripened grain, and even to its grinding and preparation as food. We are shown all their implements,

RUDE AND IMPERFECT

to a degree hardly to be conceived at the present day. This was among a people the most refined, generally cultured, learned and most powerful of their time. In some of the sciences, and in their application, they seem to have transcended the wisdom of the present age; and yet, should models of their various agricultural implements be constructed and placed side by side with the perfect and beautiful tools and machines on exhibition here to-day, the lesson would indeed be an instructive one; and there would be no room here for a pessimistic view or feeling. From all we know of agriculture through the succeeding ages (commonly called the "dark ages"), down to the revival of learning and the arts, which followed the introduction of printing, the improvement of agriculture and the condition of the agriculturist made no progress. The soldier, the petty tradesman and the mechanic outranked the farmer in the social scale; the peasant, the countryman, the workers of the soil being equivalent to, and rendered in the literature of those times, as hind, clown, clod-hopper and boor, and were often used as synonyms for rudeness, clumsiness and stupidity, and there must have been some justice in this, for we should expect a relation between the implements and the users. Even in comparatively modern times in England, and at the present time in France and most of the other countries of Europe, the farm tools have been and are so weighty and rude in construction as to excite the amazement of our own people who see them for the first time. Their plows, hoes, carts, harness, seemingly made for future generations, and to destroy the life and spirit of the present. Let us now turn

to our own country, and our own blessed time. Favored as we have been, my friends, still let us call to mind a few of the unfavorable conditions under which we labored in our younger days, and which we have been

STEADILY CHANGING

for the better up to the present time. Let us hastily recall first, the tools we used, and thank God, and the spirit of the age, that they are things of the past. We will mention them only; there is no time for comment. The heavy cast iron plow for all uses; the small corn plow; many of us can remember the first use of the many toothed cultivator; the slowly moving scythe; the heavy swinging cradle — not rocking — we cannot dispense with that as yet. The monotonous thud of the wearisome flail; the slow and imperfect threshing with the help of horses and cattle tramping the grain from the straw. The manual work with hand tools in spreading, tossing and raking hay. Consider the general ignorance then prevailing concerning the laws of life and growth in plant and stock. Our fathers thought the soil would never wear out. It was only too rich. The grain would fall and lodge from excess of fertility in the soil. So the thrifty farmers of the Mohawk valley threw their manure which would accumulate on the farm, down the hill and into the river, that it might most easily be disposed of.

THE FARMERS

of the newer counties of western New York, Ohio, Illinois, Michigan and Wisconsin, had not always such a resource and were obliged to fodder their stock in the roads, that the manure might be washed away by the rains, and the stalks and hay rot and be useless. The heaps of straw from the threshed grain were generally burned on the spot where threshed. The corn was usually fed to the hogs by throwing it into the mud and filth of the hog-yard or barn-yard. Do not all these strictures, my friends, apply to the practice of some of us even at the present day. What is the consequence of all this waste? We all know; the fertile lands become sterile, and the destroyer passes westward to new fields spread ready for destruction. Next we notice the universal

practice of grain growing to the exclusion of other industries. The more enlightened of old-time farmers saw no farther than the adoption of a system (so-called) of a three or four crop rotation, while the majority of their neighbors had no system at all, but would sow spring wheat or oats, or plant corn on the same fields year after year, as caprice or the success of the last crop might indicate, until the result was a general decrease of production of grain, decrease of fertility in the soil; constant increase in the production of weeds, increase of all manner of plant disease, blight and rust, and at last—sale of the farm. This dependence on grain-growing only, was however, chiefly hurtful in this, that all, or nearly all, that was grown on the farm was sold from it, taken away, and

NOTHING RETURNED

in its place. Here is the true cause of the blight, of sterility which has destroyed the agriculture of most of the older countries of the world. The fields become impoverished; they can no longer supply the constant demand made upon them, and the people must look abroad for the necessities of life. This is the history; the process is still going on. In England at the present day, from the ever-increasing poverty of the soil, the subject of food supply is made a question of consideration for Parliament. China and Japan alone, as nations, teach us the true philosophy of agricultural practice. By the most varied agriculture possible, and the perfect balance of vegetable and animal life on every farm, by which the least amount of fertilizing elements shall be taken away, and the greatest amount shall be returned to the soil, will this question of the very existence of profitable agriculture be determined. Next, the irrational method of tillage which was common forty or fifty years ago, will be noticed. The plowing was an annual skimming of the surface of the soil to the depth of from three to five inches, and tile draining was then unknown.

THE ADVENT

of a subsoil plow in a neighborhood was an event for the wonder or the mirth of the farmers around, and even now

its advantageous use is little realized. The better way of underdraining was unknown. We are just beginning to learn, not merely the immense value, but the absolute need of the tile drain. Yet I will venture to say that there is hardly an acre of prairie or timber land in our whole state, which would not be greatly benefited by it; all lands with retentive clay subsoil would have crops nearly doubled by its use. For grass, grain, or hoed crops, it is alike valuable; and the increased returns for two or three years' use would fully pay all its cost. A season, such as this present, will have this use to us as farmers: if nothing more, it will teach us the great need of underdraining. Next let me call attention to isolation of the farmer, and the dependence of himself and his household on his individual resources for the necessities and enjoyment of life. Then the absence of machinery, the lack of facilities for transit and transportation not only caused this isolation and self-dependence, but caused also an amount of hard labor for both sexes, which only those who have experienced such a life would be able to appreciate.

NEARLY ALL

the clothing used in the household was manufactured on the farm, from the planting of the seed and the growth of the wool to the made garment, and a far greater portion of the clothing made then was of linen and wool than at the present time. The cotton gin was not then invented; it was dormant in the brain of Whitney, who had not then enthroned "Cotton as King." The flax seed was sown, and the straw pulled by hand. The straw was constantly watched and was turned by hand during the slow process of rotting the woody fiber, to keep the flax itself from mildewing. Then came the laborious process of breaking, which was all done by hand. After this the hatcheling, or straightening of the flax. The boys and girls were pressed into the service of pulling the straw (hard enough in the blistering sun); the breaking and hatcheling were men's work. Then began the woman's labor, she took the finer flax from the hands of the hatcheler and spun it directly; than she took

the coarser flax, which was called tow, carded it and spun it for the coarser cloth. The fine flax she then wove into cloth, which she made up into all the finer articles of domestic use and wear—table-cloths, sheets, towels, shirting, etc.; and in those days, my friends, no parlor could be considered furnished which had not its bed, with its display of white linen pillow cases, sheets and counterpanes, all spun, woven, bleached and made up by the fair hands of mother and daughter. No house-yard was complete without its bleaching plat; as indispensable then as is the croquet ground now. The coarser tow was by the

SAME FAIR HANDS

made up into the every-day wear of both men and women. In the preparation of the wool for use, also a large portion of the labor fell upon the woman. It was a great advance and saving for her when the wool could be sent to the mill to be carded into rolls ready for the spinning. Of the same pure white flannel which was made up into under-clothing for all the family, a portion was sent to the fuller to be fulled, colored and pressed for the Sunday's best of the men and boys. Then also from the same force of circumstances, a great amount of dairy work was performed in the making of butter and cheese, which is now largely done away by the cheese factory, and by the sale of the milk in the towns and cities, made possible by the railroads.

In almost every kind of farm labor were disabilities hardly to be understood by us of the present day. I will mention here the difficulties in the way of the education of the boys and girls necessitated by this isolation, the lack of high schools accessible to them, the scarcity of agricultural journals, and more than all the heavy, grinding pressure of hard labor from day to day forced upon them, took from them, both men and women, all desire for improvements, all aspiration for a higher life.

Now think for a moment of the difficulties of marketing the secured products from lack of transportation, and then we will gladly leave the past, and take a little comfort in the consideration of the present.

THESE DIFFICULTIES

we have all of us known from sad experience; we would not live them over again even in memory. All these conditions, so sad in the retrospection, have been greatly changed for the better. Knowledge of the fundamental laws of the science of agriculture is accessible now to all, and these laws are more and more understood, and relied on by the mass of our more enterprising farmers. Now the general disposition is to save, not to waste the elements of fertility. Now the tendency is towards a more mixed husbandry, regarding the grasses as the true basis for a successful agriculture. The growth of all kinds of stock, and all dairy products depends largely on the grass; and in the feeding of the grasses on the farm, we solve the difficulty of keeping up its fertility. Now tillage is more thorough than it has ever been before; the plowing is better and deeper, and underdraining is coming so rapidly into use, that the land may no longer as the Scotchman said of his clay soil — “giens a simmer and greets a winter,” but the farmer may get upon his land in proper season to plow it in the spring, and cultivate it either wet or dry in the summer. Now, our tools and machines are of the best construction and material, and are models of excellence. We have implements for plowing and working the soil, which seem perfect. We have now machines for digging ditches, turning furrows, pulverizing the soil, sowing seed broadcast, and planting it in hills and drills, working the soil between the rows, cutting, binding and threshing grain, pulling flax, digging potatoes, topping turnips, spreading manure, and other fertilizers, cutting, spreading, raking and stacking hay, digging up trees, trimming hedges, and shelling corn. Almost all the work connected with butter and cheese making, is now done by means of machinery. Much of the labor is now taken from over-worked men, and “transferred to the backs of horses, and the driving wheels of steam engines.” As an illustration of the immense saving of muscular labor, take the matter of threshing alone. Twenty-three to thirty bushels of grain are given as the daily work of three horses, one man and a boy in threshing on a barn floor unaided by machinery. Now the steam threshers of

CALIFORNIA

have reached in an authenticated instance, twenty-seven hundred bushels of clean grain, sacked and ready for market, in a single day. Now, the farmer is no longer shut off from the world, and dependent on home resources only. The railroads bring the production of the world to his doors, take his products to the ends of the earth, and make him, by facility and cheapness of travel, a citizen of the world, equally with the merchant and the professional gentleman. Now the railroads provide the means of education by making cheap postal service possible, cheapening literature, bringing agricultural and scientific journals at the slightest cost, bringing his machinery and his improved stock, as was never before possible, making a world-wide demand for his products, and by his wonderfully cheap transportation, enabling him to supply that demand at a profit, taking his grain from a Milwaukee or Chicago elevator, "and placing a year's supply within reach of a New England laborer for the cost of a day's work."

While incidentally mentioning the railroads, let me digress a little to pay a deserved tribute to them from the community of farmers, and from this Society particularly. Though these corporations are frequently spoken against as monopolies, I think we may conclude that in the main they are managed not only justly, but with an enlightened generosity in regard to the interest of the community generally. Their benefits to all our living interests are beyond computation, and what as a people and as farmers would we be without them? Take as an instance of their generosity the fact that the Chicago and Northwestern and the Chicago, Milwaukee and St. Paul

RAILROADS

and their tributaries, all carry everything the farmers choose to this great fair; all stock and produce, all machinery and implements; in fact, everything here displayed, both forward and back to the owners, entirely free of charge.

Now, to return, and close this, I fear, diffuse address, let me briefly refer to the changes in the amounts produced

upon our farms then and now. The agricultural interest of this country is a young and mighty giant, whose power is felt and is increasing throughout the world. It furnishes the basis of all other material prosperity. All well directed labor is wealth; pre-eminently is this the case with agriculture and mining, for they alone produce. Most other great lines of human enterprise seem peculiarly tributary to agriculture. This is abreast of or outranking all other industries. It is the agricultural interest which is really the life of the railways and factories. Even in Europe more wealth is produced by farms than by factories, and in this country farming is the Alpha and Omega of our prosperity. One partial failure of the crops of this country reduced the value of our railroads hundreds of millions of dollars, while the great harvests of last year gave an impetus to business such as had not been felt for years before. Although, as in the present year, we may have occasional checks in some interests, yet the progress on the whole is wonderfully great and uniform. Mr. Mulhall showed last year, that while the population of the United States has only trebled since 1840, the increase of agricultural wealth has been five fold.

This country produced in 1840, 615,000,000 bushels of grain; in 1880, 2,643,000,000 bushels of grain. In 1840 the value of all crops was \$410,000,000; in 1880 the value of all crops was \$1,995,000,000. The value of all cattle in 1840 was \$317,000,000; in 1880, \$1,820,000,000. From the last report of the Department of Agriculture at Washington, we learn the number of domestic animals in the United States during the current year and their value.

Number of horses.....	10,838,111
Number of milch cows.....	13,125,685
Number of other cattle.....	28,046,077
Number of hogs.....	43,270,086
Number of sheep.....	49,237,291

And the valuation of the whole is given as \$2,169,465,578.

The capitalized value of the farms would not be less than \$20,000,000,000; adding to these aggregates the total value of the live stock, we have the immense sum of \$24,776,435,578 as the grand total of farm wealth for the year 1883. The crop of cotton is not included in these estimates.

Dairying has, for various causes, been somewhat impeded of late, but its importance may be shown from a consideration of figures, representing the annual production which I shall now present. From the last census reports we learn that 772,204,000 pounds of butter have been made on farms, and 29,420,000 pounds at factories, making a total of 801,625,000 pounds. Also, that 27,260,000 pounds of cheese were made on farms, and 215,885,300 pounds were made at factories — making a total of cheese of 223,145,300 pounds. The butter being valued at \$240,487,500, and the cheese \$31,608,850. There were made besides over 17,000,000 pounds of oleomargarine. The total production of butter in the United States in 1850, was 313,345,306 pounds; of cheese 105,535,893 pounds. In our own state the prosperity of this branch of agriculture has been very remarkable. From the address of President C. R. Beach of the Wisconsin Dairymen's Association, I learn that "ten years ago the products of this state amounted to about 24,000,000 pounds of butter, mostly consumed at home, and not far from 16,000,000 pounds of cheese. The products of the current year will not fall much below 70,000,000 pounds of butter, and 30,000,000 pounds of cheese, and the quality has been improved in a ratio almost if not equal to the increase in production."

THE MAKING OF SUGAR

from the amber cane is now an assured success; and it is anticipated that ere long we shall produce at will, what is needed for home consumption. I will here give you a few facts on this subject, gleaned from the proceedings of the third annual meeting of the Wisconsin Cane Growers' Association, held in February last. It was stated by the director of experiments at the experimental farm, at Madison: "The year had not been a favorable one, yet a large quantity of syrup had been made. Two hundred and eighty manufacturers report to him 491,200 gallons for the season's make. From this datum, it is safe to put the total yield in the state at 600,000 gallons. Wisconsin is the only state in the Union that has made appropriations for the express purpose of making sugar from the amber cane." Also

“that 997 pounds of sugar to the acre have been made at Madison, thus securing the largest yield to the acre which has been made in any state in the Union.” Ensilage is also now no matter of experiment. There appears to be no doubt that it is at once to take an important place in our agricultural economy. The construction of silos and feeding of ensilage to stock is in so many ways advantageous, that it seems the one thing needed with us to insure economical and profitable farming. I say with us, because the shelter we are able to give our stock, and the comparative mildness of our winters, enable us to keep a greater number of animals relatively to the small size of our farms, than will be possible on the unsheltered plains of the west and northwest. But this increase of stock will require that economy in the saving of fodder which these silos now render possible. As before shown success only lies for us in the way of

MIXED HUSBANDRY.

This means increase of dairying and stock for meats, and this is only possible with largely increased facilities for the production and curing of fodder. By old methods this fodder could not be properly saved. The increase of stock means increase of fertilizing material, and so the needed balance is kept upon the farm, between what is taken off and what is restored.

The increasing attention which is now given to silk production requires that this industry, also, should receive some notice. Although its growth has been very slow, yet within a few years past this condition has greatly changed for the better. We are now rapidly approaching such an amount of production as may enable us to compare favorably with Germany or France.

The annual production of silk goods in Great Britain now amounts to.....	\$25,000,000
Of the United States	35,000,000
Of Germany.....	45,000,000
Of France	65,000,000
Of China and Japan.....	80,000,000

We find from this very imperfect review of the progress of agriculture that we at least have nothing of which to

complain. There seems little chance for a pessimistic view of the progress we make in the onward march of humanity, largely through the spread of the railroad system during the last twenty years, and especially through the last ten years.

A WONDERFUL PROSPERITY

and development of all parts of the country have been the rule; during the same time we have been favored with exceptionally productive years, and the nations of Europe have had unfavorable seasons. This last has caused a constantly increasing demand for our products, and that to an extent that is really amazing. During the last ten years we have sold to Great Britain, France and Germany, our chief customers, American products to the amount of \$4,902,587,206, and have been rich enough to buy from them goods amounting to \$2,617,609,132, leaving surplus in our favor of \$2,284,978,074 — certainly not a bad showing for us. This ability to compete with and undersell the farmers of Europe in their own market, has in some places, and particularly in Great Britain, produced wide-spread agricultural distress, so that in 1879 a royal commission was appointed to consider the causes of the trouble. This commission has worked on from year to year, and sent sub-commissions to this country whose reports have at intervals been made public. In this country all things seem to favor agricultural prosperity, increased immigration, the constant opening of new territory, favorable seasons, lands with fertility almost unimpaired, and by no means last in the category, intelligent, independent, wide-awake farmers, who adopt readily all real improvements, and who call no class of men their superiors. Notwithstanding all this prosperity, the number of farmers relative to those following other pursuits than theirs, is steadily decreasing; this means more home demand for farm products and better prices. A fact of immense importance in this connection is one not generally known, that now, although

OUR EXPORTS ARE SO LARGE,

the home consumption of cereals has been ninety per cent. of the entire production of the country. We are our own

customers, and if it be desirable to seek foreign demand for our products, we should rather seek it for those concentrated forms such as meats and dairy products, which may be so much more economically transported. Although the advance in the last ten years has been so great, an equal or greater progress in the next decade may be reasonably anticipated. The causes of this prosperity which have been in operation may be expected to continue in increased ratio, and are the grounds for our trust in the future. It is clear that the road is wide open for improvement, and eager aspirants are pressing into it. The spirit of the people is restless activity. The desire for emigration to this country from Great Britain and central Europe still continues; and the rapid opening of the west and northwest is stimulating that desire. God has given us all the elements in soil, climate, variety of production, and means of improvement, which could be given to any people. Nothing but intellectual and moral degradation can prevent our progress. If we allow the spirit of trade, of greed, of accumulation of wealth for its own sake, to prevail over the higher aspirations of the mind and heart, we shall certainly decline in all the forms of well being. But, if we are true to ourselves, to our own moral and intellectual discernments, we shall as surely advance in all that tends to making a great, a peaceful, and a happy people.

NATIONS WILL FEED,

from our stores, follow our example, and bless us as benefactors. But we must be true. We must strive to secure free education for all our people; and we must know that intelligence and virtue are the true sources — in God's order — whence all other blessings flow.

In closing this quite lengthy review, I will call your attention, somewhat in detail, to the various departments of this most noble exhibition, taking them in their order as we find them in our premium list.

This wonderful exhibition of live stock has not been confined to our own state; the whole northwest has contributed the most perfect specimens of both horses and cattle for competitive display, and the amplest accommodations have

been made to receive them. Never before in the history of our Society have I seen a display of draft horses at all comparable with the one you see here to-day. Of the most noble Clydesdale we have fully one hundred most magnificent specimens, and two car loads of them coming direct from their native land in Scotland, and these may be compared, side by side, with the most perfect examples of Normans, that breed which alone rivals them. Added to these we have the Cleveland Bay, and other English draft horses, contributed by most of the greatest breeders and importers on the continent, while the home display of thoroughbreds, and horses for general work, gentlemen's driving horses, is fully equal to any which has preceded it.

OF CATTLE,

the show is fully equal to the display of horses. All the great breeds are represented with a prodigality never before equalled in this place. The Short Horns, Jerseys, Ayrshires, Devons, Holsteins, and Polled Angus — are nearly all shown in numbers and perfection, surpassingly great. Lovers of the different breeds of fine cattle may here be gratified to the fullest extent, whilst the display of hogs, sheep and poultry, in their several departments, always fine, contribute largely to swell the exhibition of live stock. You may here see in the agricultural department in generous rivalry, the finest exhibition of field, garden, and dairy products, ever before shown in the northwest. The manufacturers' department is fully up with its usual great collections, and shows no lack of interest in that wonderfully fine exhibit.

MACHINERY DEPARTMENT,

which is in extent and character unparaled; we have it strewn over the ground by the acre, and the entries were limited only by the difficulty of finding space for the exhibit. This display is in itself a wonderful illustration of the genius and enterprise of our American manufacturers. Time will not permit the mention of a tithe of the matters of interest and instruction which have here been brought before you, and although that which is considered as essentially practical is displayed in such variety and profusion,

the refinements and elegances of life (really quite as practical), have not been neglected. Here you may find in the department devoted to art, all its various forms and embodiments, which might not be surpassed by any exhibit in our larger cities, which you would make a journey to see. You would go to New York or Chicago to see the display that is here brought to you. Art in all its forms, portraits, landscapes, statuary, and all forms of decorative art. Musical instruments are also represented as never before. In short, my friends, the exhibition is amazing and bewildering, in variety and extent, of all that illustrates the useful and the beautiful in this wonderful life of ours, and nowhere else can you find such embodied evidence of our great and varied prosperity and such manifestations of the activity, enterprise and intellect of our people as on these grounds. My friends, I will occupy your time no longer, hoping you may realize your highest expectations. Thanking you for your patient attention, I now declare this, the thirtieth annual exhibition of the Wisconsin State Agricultural Society, open to the public.

PREMIUMS AWARDED.

DEPARTMENT A — HORSES.

CLASS 1 — *Roadsters.*

Best stallion 4 years old and over, 19 exhibits, Henry A. Phillips, Sun Prairie.....	\$25 00
Second best, Wm. Dyer, Lancaster.....	15 00
Best stallion 3 years old and under 4, 7 exhibits, D. Johnson, Jefferson.....	25 00
Second best, D. Johnson, Jefferson.....	10 00
Best stallion 2 years old and under 3, 12 exhibits, H. D. McKinney, Janesville.....	15 00
Second best, S. D. Macomber, New Lisbon.....	10 00
Best stallion 1 year old and under 2, 2 exhibits, S. D. Macomber, New Lisbon.....	10 00
Best sucking stallion foal, 3 exhibits, Henry A. Phillips, Sun Prairie.....	10 00
Second best, Barber Randall, Hustisford.....	5 00
Best brood mare 4 years old and over, with foal by her side, 3 exhibits, S. D. Macomber, New Lisbon.....	15 00
Second best, H. Waterhouse, Madison.....	10 00
Best filly 2 years old and under 3, 6 exhibits, S. D. Macomber, New Lisbon.....	15 00
Second best, O. F. Tipple, Stoughton.....	10 00
Best sucking filly foal, 5 exhibits, A. R. McCoy, Windsor.....	10 00
Second best, S. D. Macomber, New Lisbon.....	5 00
Best stallion and 5 of his colts at 4 years of age or under, in harness or not, at option of owner, Barber Randall, Hustisford, Silver Plate.....	25 00

CLASS 2 — *Horses for all Work.*

Best stallion 4 years old and over, 10 exhibits, John Curry, Lodi....	\$15 00
Second best, Lyall and Beattie, Verona.....	7 00
Best stallion 3 years old and under 4, 2 exhibits, Bowles & Hadden, Janesville.....	12 00
Second best, Galbraith Bros., Janesville.....	6 00
Best stallion 2 years old and under 3, 5 exhibits, R. W. Davis, Sun Prairie.....	8 00
Second best, Lewis Freeman, Belleville.....	4 00
Best stallion 1 year old and under 2, 3 exhibits, B. Cleveland, West Middleton.....	5 00
Best sucking stallion foal, 6 exhibits, Robert Caldwell, Arlington..	4 00
Second best, Robert Caldwell, Arlington.....	2 00
Best brood mare 4 years old and over, with foal by her side, or evidence that she has had a foal within 2 years, 15 exhibits, Reuben Boyce, Brooklyn.....	15 00
Second best, Robert Caldwell, Arlington.....	7 00
Best Clyde mare 4 years old and over, with foal by her side, 5 exhibits, J. & C. Huston, Blandinsville, Ill.....	15 00
Second best, Uriah Stroup, Fond du Lac.....	7 00

Best filly 3 years old and under 4, nine exhibits, Ogilvie Bros., Sun Prairie.....	\$12 00
Second best, Robert Caldwell, Arlington	6 00
Best filly 2 years old and under 3, 9 exhibits, R. W. Davis, Sun Prairie.....	8 00
Second best, Reuben Boyce, Brooklyn.....	4 00
Best filly 1 year old and under 2, 4 exhibits, Wm. Plinty, Poynette	5 00
Second best, R. W. Davis, Sun Prairie.....	2 00
Best sucking filly foal, 7 exhibits, Wm. Plinty, Poynette.....	4 00
Second best, Lewis Gill, Syene.....	2 00

CLASS 3—*American Highly Bred Trotting Stock with Pedigree.*

Best stallion any age, 4 exhibits, Wm. Dyer, Lancaster,	Grand Silver Medal.
Best stallion 4 years and over, 2 exhibits, Atwood & Roundtree, Platteville	Dip.
Best stallion 2 years old and under 3, 1 exhibit, H. M. Bock, Richland City	Dip.
Best stallion 1 year old and under 2, 1 exhibit, S. D. Macomber, New Lisbon.....	Dip.
Best sucking stallion foal, 2 exhibits, H. M. Bock, Richland City.	Dip.
Best brood mare, 1 exhibit, S. D. Macomber, New Lisbon.....	Dip.
Best span of mares driven together and owned by one party, 2 exhibits, F. A. Bird, Madison.....	Dip.
Best stallion and five of his colts, in harness or not, at option of owner, S. D. Macomber, New Lisbon.....	Grand Silver Medal

CLASS 4—*Draft Horses, Pure Bred.*

Best Clydesdale stallion 4 years old and over, 10 exhibits, Galbraith Bros., Janesville.....	\$25 00
Second best, J. & C. Huston, Blandinsville, Ill.	15 00
Best Norman stallion 4 years old and over, 12 exhibits, A. O. Fox, Oregon.....	25 00
Second best, H. J. Case, Baraboo.....	15 00
Best Clydesdale stallion 3 years and under 4, 12 exhibits, J & C. Huston, Blandinsville, Ill.	25 00
Second best, Galbraith Bros., Janesville.....	10 00
Best Norman stallion 3 years old and under 4, 4 exhibits, Bowles & Hadden, Janesville	25 00
Second best, A. O. Fox, Oregon.....	10 00
Best stallion 2 years old and under 3, 13 exhibits, J. & C. Huston, Blandinsville, Ill.	20 00
Best stallion 1 year old and under 2, 7 exhibits, J. & C. Huston, Blandinsville, Ill.	10 00
Second best, J. & C. Huston, Blandinsville, Ill.	5 00
Best sucking stallion foal, 5 exhibits, Uriah Stroup, Fond du Lac.	10 00
Second best, J. & C. Huston, Blandinsville, Ill.	5 00
Best Clyde mare, 4 years old and over, 9 exhibits, J. & C. Huston, Blandinsville, Ill.	15 00
Second best, Raeside Bros., Waukegan, Ill.	10 00

Best filly 3 years old and under 4, 4 exhibits, Galbraith Bros., Janesville	\$15 00
Second best, Galbraith Bros., Janesville.....	10 00
Best filly 2 years old and under 3, 16 exhibits, J. & C. Huston, Blandinsville, Ill.....	15 00
Second best, Galbraith Bros., Janesville.....	10 00
Best filly 1 year old and under 2, 4 exhibits, Raeside Bros., Waukegan, Ill.....	10 00
Second best, Galbraith Bros., Janesville.....	5 00
Best sucking filly f al, 3 exhibits, J. & C. Huston, Blandinsville, Ill	10 00
Second best, Galbraith Bros., Janesville.....	5 00
Best stallion and five of his get, 3 exhibits, Lyall & Beatti, Verona.....	40 00
Second best, H. J. Case, Baraboo.....	20 00

CLASS 5—*Matched Horses and Mares.*

Best pair of carriage horses or mares, not less than 15½ hands high, 11 exhibits, Henry Campbell, Evansville.....	S. P. \$20 00
Second best, N. B. Van Slyke, Madison.....	S. P. 10 00
Best pair of roadsters, 14 exhibits, Henry Pettit, Kingston.....	S. P. 20 00
Second best, H. B. Robinson, Leeds Center.....	S. P. 10 00
Best pair farm horses, 9 exhibits, Mathew Muir, Springdale.....	S. P. 20 00
Second best, Nels. W. Stephans, Baraboo.....	S. P. 10 00

CLASS 6—*Geldings or Mares for Single Harness, and Thoroughbreds.*

Best gentleman's roadsters, for single harness, 4 years old and over, 26 exhibits, H. D. McKinney, Janesville.....	S. P. \$20 00
Second best, M. J. Regan, Eagle.....	S. P. 10 00
Best thoroughbred stallion of any age, to be shown by bridle, 3 exhibits, W. H. Cook, West Point.....	S. P. 20 00
Second best, S. D. Macomber, New Lisbon.....	S. P. 10 00
Best thoroughbred mare, any age, to be shown by bridle, S. D. Macomber, New Lisbon.....	15 00

Sweepstakes.

Best Clydes stallion and 4 mares, J. and C. Huston, Blandinsville, Ill.....	\$100 00
---	----------

Special Premium from Scanlin Plow Co.

Best sucking foal, J. & C. Huston, Blandinsville, Ill.....	
--	--

DEPARTMENT B—CATTLE.

CLASS 8—*Short-Horns.*

Best bull 4 years and over, 6 exhibits, J. J. Ross & Sons, Mineral Point.....	\$25 00
Second best, J. C. Kiser, Oregon.....	15 00
Best bull 3 years and under 4, 4 exhibits, J. C. Kiser, Oregon.....	25 00
Second best, J. E. Owens, Brooklyn.....	15 00
Best bull 2 years and under 3, 3 exhibits, George Harding, Waukesha.....	25 00
Best bull 1 year old and under 2, 7 exhibits, N. P. Clark, St. Cloud, Minnesota.....	15 00
Second best, J. J. Ross & Sons, Mineral Point.....	10 00
Best bull calf over 6 and under 12 months old, 10 exhibits, N. P. Clark, St. Cloud Minn.....	10 00
Second best, N. P. Clark, St. Cloud, Minn.....	5 00
Best bull calf under 6 months old, 12 exhibits, John Sprecher, Madison.....	10 00
Second best, Geo. Harding, Waukesha.....	5 00
Best cow 4 years old and over, 15 exhibits, N. P. Clark, St. Cloud, Minn.....	25 00
Second best, N. P. Clark, St. Cloud, Minn.....	15 00
Best cow three years and under 4, 8 exhibits, N. P. Clark, St. Cloud, Minn.....	25 00
Second best, John Sprecher, Madison.....	15 00
Best heifer 2 years and under 3, 9 exhibits, N. P. Clark, St. Cloud, Minn.....	20 00
Second best, J. C. Kiser, Oregon.....	10 00
Best heifer 1 year and under 2, 11 exhibits, N. P. Clark, St. Cloud, Minn.....	15 00
Second best, J. C. Kiser, Oregon.....	10 00
Best heifer calf over 6 and under 12 months old, 9 exhibits, Geo. Harding, Waukesha.....	10 00
Second best, N. P. Clark, St. Cloud, Minn.....	5 00
Best heifer calf under 6 months old, 10 exhibits, Geo. Harding, Waukesha.....	10 00
Second best, J. C. Scovell, Lowville.....	5 00

CLASS 9—*Jerseys.*

Best bull 3 years old and over, 4 exhibits, N. N. Palmer, Brodhead.....	\$20 00
Second best, J. T. Wright, Janesville.....	10 00
Best bull 2 years old and under 3, 3 exhibits, J. L. Woodward, Oconomowoc.....	20 00
Second best, T. L. Hacker & Co., Madison.....	10 00
Best bull 1 year old and under 2, 2 exhibits, T. L. Hacker & Co., Madison.....	15 00
Second best, J. B. Stone, Oregon.....	10 00
Best bull calf over 6 and under 12 months old, 3 exhibits, T. L. Hacker & Co., Madison.....	10 00
Second best, N. N. Palmer, Brodhead.....	5 00
Best bull calf under 6 months old, 6 exhibits, C. B. Miller, Madison.....	10 00
Second best, N. N. Palmer, Brodhead.....	5 00

Best cow 4 years old and over, 13 exhibits, R. S. Kingman, Sparta.	\$25 00
Second best, T. L. Hacker & Co., Madison.....	15 00
Best cow 3 years old and under 4, 4 exhibits, R. S. Kingman, Sparta.....	25 00
Second best, N. N. Palmer, Brodhead.....	15 00
Best heifer 2 years old and under 3, 3 exhibits, N. N. Palmer, Brodhead.....	20 00
Second best, C. B. Miller, Madison.....	10 00
Best heifer 1 year old and under 2, 5 exhibits, N. N. Palmer, Brodhead.....	15 00
Second best, R. S. Kingman, Sparta.....	10 00
Best heifer calf over 6 and under 12 months, 3 exhibits, N. N. Palmer, Brodhead.....	10 00
Second best, T. L. Hacker & Co., Madison.....	5 00
Best heifer calf under 6 months old, 5 exhibits, R. S. Kingman, Sparta.....	10 00
Second best, T. L. Hacker, Madison.....	5 00

CLASS 10—*Ayrshires.*

Best bull 3 years old and over, 5 exhibits, A. D. Converse, Whitewater.....	\$20 00
Second best, D. Huntley, Appleton.....	10 00
Best bull 2 years old and under 3, 2 exhibits, Ormiston & Jardine, Cuba, N. Y.....	20 00
Second best, D. Huntley, Appleton.....	10 00
Best bull 1 year old and under 2, 4 exhibits, C. Hazen, Ladoga.....	15 00
Second best, A. D. Converse, Whitewater.....	10 00
Best bull calf over 6 and under 12 months old, 3 exhibits, A. D. Converse, Whitewater.....	10 00
Second best, D. Huntley, Appleton.....	5 00
Best bull calf under 6 months old, 4 exhibits, C. Hazen, Ladoga.....	10 00
Second best, Ormiston & Jardine, Cuba, N. Y.....	5 00
Best cow 3 years old and over, 15 exhibits, Ormiston & Jardine, Cuba, N. Y.....	15 00
Second best, C. Hazen, Ladoga.....	10 00
Best heifer 2 years old and under 3, 5 exhibits, A. D. Converse, Whitewater.....	15 00
Second best, C. Hazen, Ladoga.....	10 00
Best heifer 1 year old and under 2, 12 exhibits, Ormiston & Jardine, Cuba, N. Y.....	15 00
Second best, D. Huntley, Appleton.....	10 00
Best heifer calf over 6 and under 12 months, 3 exhibits, D. Huntley, Appleton.....	10 00
Second best, A. D. Converse, Whitewater.....	5 00
Best heifer calf under 6 months old, 6 exhibits, Ormiston & Jardine, Cuba, N. Y.....	10 00
Second best, D. Huntley, Appleton.....	5 00

CLASS 11—*Devons.*

Best bull 3 years old and over, 4 exhibits, George Baker, Hustisford, Dodge county.....	\$20 00
Second best, J. S. Newton, Verona.....	10 00

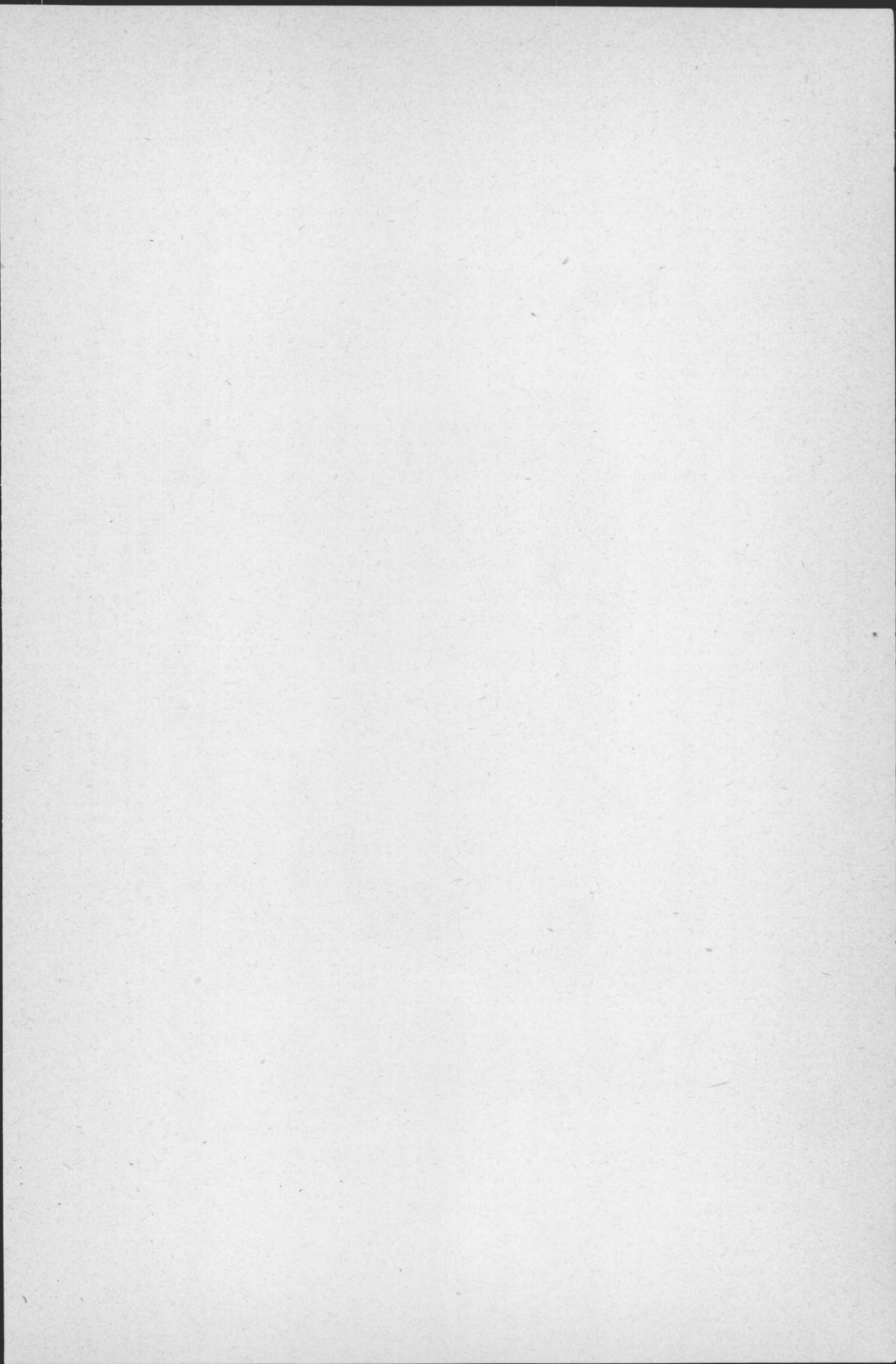
Best bull 2 years old and under 3, 2 exhibits, J. W. Morse & Son, Minneapolis, Minn.....	\$20 00
Second best, George Baker, Hustisford.....	10 00
Best bull 1 year old and under 2, 7 exhibits, George Baker, Hustis- ford.....	15 00
Second best, Geo. Baker, Hustisford.....	10 00
Best bull calf over 6 and under 12 months old, 3 exhibits, J. W. Morse & Sons, Minneapolis, Minn.....	10 00
Second best, Geo. Baker, Hustisford.....	5 00
Best bull calf under 6 months old, 5 exhibits, J. S. Newton, Verona	10 00
Second best, J. W. Morse & Sons, Minneapolis, Minn.....	5 00
Best cow 3 years old and over, 14 exhibits, J. W. Morse & Sons, Minneapolis, Minn.....	15 00
Second best, Geo. Baker, Hustisford.....	10 00
Best heifer 2 years old and under 3, 8 exhibits, J. W. Morse, Min- neapolis, Minn.....	15 00
Second best, J. W. Morse, Minneapolis, Minn.....	10 00
Best heifer 1 year old and under 2, 13 exhibits, J. W. Morse & Son, Minneapolis, Minn.....	15 00
Second best, J. W. Morse & Son, Minneapolis, Minn.....	10 00
Best heifer calf over 6 and under 12 months old, 4 exhibits, George Baker, Hustisford.....	10 00
Second best, J. W. Morse & Son, Minneapolis, Minn.....	5 00
Best heifer calf under 6 months old, 8 exhibits, J. W. Morse & Son, Minneapolis, Minn.....	10 00
Second best, J. W. Morse & Son, Minneapolis, Minn.....	5 00

CLASS 12—*Galloways and Polled Angus.*

Best bull 2 years old and under 3, J. H. Carpenter, Sun Prairie...	\$20 00
--	---------

CLASS 14—*Holsteins.*

Best bull 3 years old and over, 4 exhibits, Thos. Heath, Madison..	\$20 00
Second best, C. Hazen, Ladoga.....	10 00
Best bull 2 years old and under 3, Gillett & Moore, Fond du Lac...	20 00
Best bull 1 year old and under 2, 3 exhibits, L. B. Leonard, Lake Mills.....	15 00
Second best, J. W. Thomas, Lone Rock.....	10 00
Best bull calf under 12 months old, 8 exhibits, Gillett & Moore, Fond du Lac.....	10 00
Second best, Gillett & Moore, Fond du Lac.....	5 00
Best cow 3 years old and over, 8 exhibits, Gillett & Moore, Fond du Lac.....	15 00
Second best, Gillett & Moore, Fond du Lac.....	10 00
Best heifer 2 years old and under 3, 5 exhibits, C. Hazen, Ladoga.	15 00
Second best, F. W. Maxim, Walworth.....	10 00
Best heifer 1 year old and under 2, 2 exhibits, L. B. Leonard, Lake Mills.....	15 00
Second best, Gillett & Moore, Fond du Lac.....	10 00
Best heifer calf under 12 months old, 5 exhibits, Thomas Heath, Madison.....	10 00
Second best, F. W. Maxim, Walworth.....	5 00





CRAWFORD'S 113. PROPERTY OF J. N. CRAWFORD, MUKWONAGO, WIS.

CLASS 16 — *Herds.*

Best bull and 4 cows, or heifers, over 2 years old (Short-horns) 6 exhibits, J. C. Kiser, Oregon.....	\$60 00
Second best, J. J. Ross & Sons, Mineral Point.....	40 00
Best bull and 4 cows or heifers, over 2 years old (Jerseys), R. S. Kingman, Sparta.....	50 00
Second best, N. N. Palmer, Brodhead.....	30 00
Best bull and 4 cows, or heifers, over 2 years old (Ayrshire), 5 exhibits, Ormiston & Jardine, Cuba, N. Y.....	50 00
Second best, A. D. Converse, Whitewater.....	30 00
Best bull and 4 cows, or heifers, over 2 years old (Devons) 4 exhibits, J. W. Morse & Son, Minneapolis, Minn.....	50 00
Second best, George Baker, Hustisford.....	30 00

Sweepstakes.

Best bull with 4 females, age not considered, 17 exhibits, N. P. Clark, St. Cloud, Minn.....	\$60 00
Second best, J. W. Morse & Son, Minneapolis, Minn.....	40 00
Best bull calf and 4 heifer calves, to be bred and owned by exhibitor, 9 exhibits, George Harding, Waukesha.....	30 00
Second best, Geo. Baker, Hustisford.....	20 00
Best bull and 3 of his get, 11 exhibits, J. C. Kiser, Oregon.....	25 00
Best cow and 3 of her calves, 6 exhibits, J. C. Kiser, Oregon.....	25 00

Consolidated Sweepstakes.

Best display of cattle, by any individual or firm, 8 exhibits, J. C. Kiser, Oregon.....	\$45 00
Second best, N. P. Clark, St. Cloud, Minn.....	30 00
Third best, J. W. Morse & Son, Minneapolis.....	25 00

DEPARTMENT C — SHEEP.

CLASS 17 — *American Merinos.*

Best buck 2 years old and over, 5 exhibits, John H. Paul, Genesee..	\$12 00
Second best, C. M. Clark, Whitewater.....	7 00
Best buck 1 year old and under 2, 5 exhibits, John H. Paul, Genesee.	12 00
Second best, O. Cook, Whitewater.....	7 00
Best pen 3 buck lambs, 4 exhibits, C. M. Clark, Whitewater.....	7 00
Second best, John H. Paul, Genesee.....	3 00
Best pen of 3 ewes 2 years and over, 5 exhibits, C. M. Clark, Whitewater.....	12 00
Second best, John A. Paul, Genesee.....	7 00
Best pen of 3 ewes 1 year and under 2, 5 exhibits, C. M. Clark, Whitewater.....	12 00
Second best, John H. Paul, Genesee.....	7 00
Best pen 3 ewe lambs, 4 exhibits, John H. Paul, Genesee.....	7 00
Second best, C. M. Clark, Whitewater.....	3 00
Best buck and 5 ewes (winners of above excluded), 3 exhibits, C. M. Clark, Whitewater.....	15 00
Second best, John H. Paul, Genesee.....	10 00

CLASS 18—*Long Wool.*

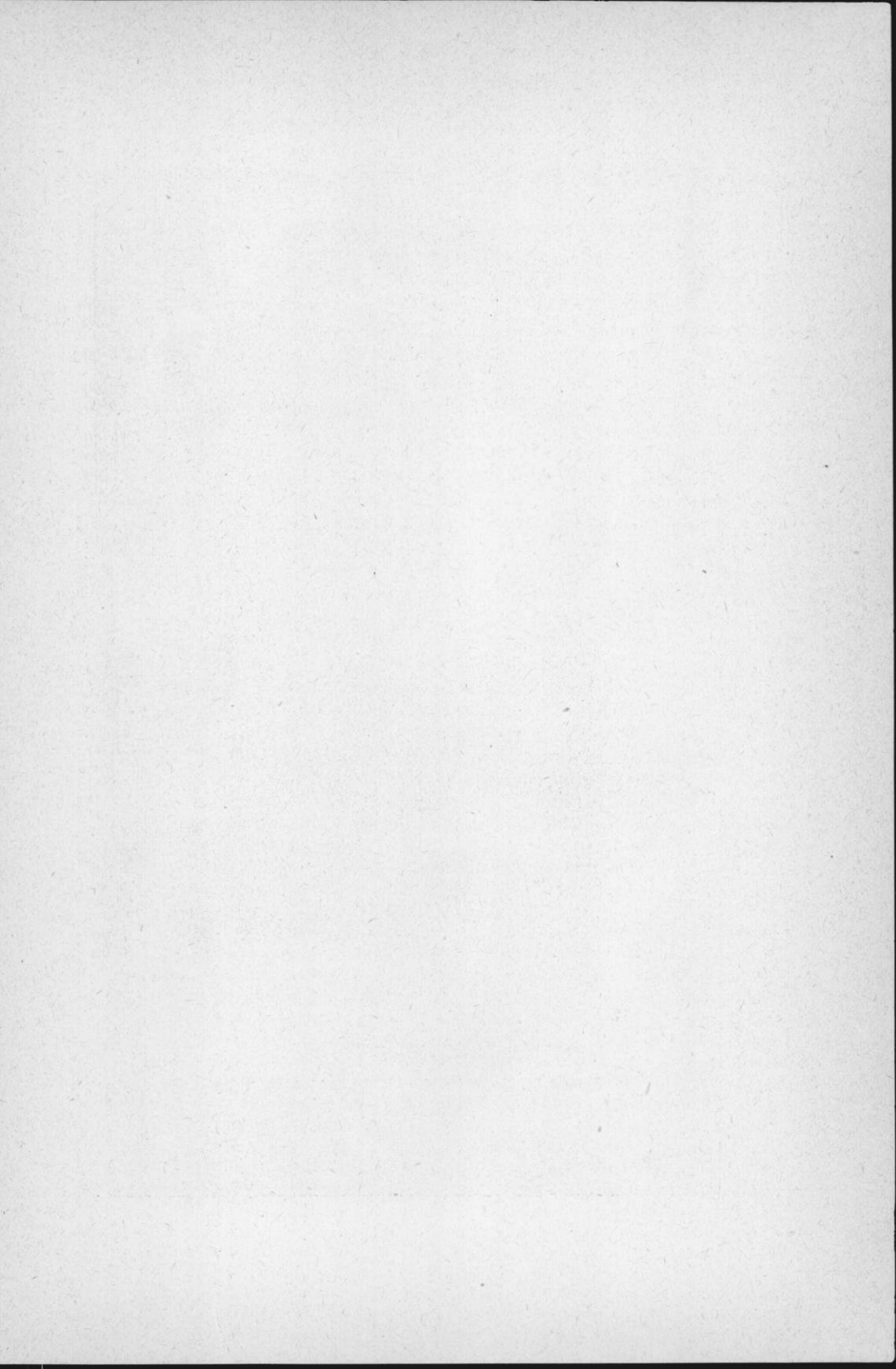
Best buck 2 years and over, 11 exhibits, George Harding, Waukesha	\$12 00
Second best, Jos. O'Malley, Waunakee.....	7 00
Best buck 1 year and under 2, 15 exhibits, Ogilvie Bros., Sun Prairie	12 00
Second best, Joseph O'Malley, Waunakee.....	7 00
Best pen 3 buck lambs, 7 exhibits, Joseph O'Malley, Waunakee ...	7 00
Second best, Geo. Harding, Waukesha.....	3 00
Best pen 3 ewes 2 years and over, 7 exhibits, George Harding Waukesha	12 00
Second best, G. W. De Haven, Shney's Mills.....	7 00
Best pen 3 ewes 1 year and under 2, 7 exhibits, George Harding, Waukesha	12 00
Second best, G. W. De Haven, Shney's Mills.....	7 00
Best pen 3 ewe lambs, 7 exhibits, Geo. Harding, Waukesha.....	7 00
Second best, Jos. O'Malley, Waunakee.....	3 00
Best buck and 5 ewes (winners of above excluded), 3 exhibits, Geo. Harding, Waukesha.....	15 00
Second best, Joseph O'Malley, Waunakee.....	10 00

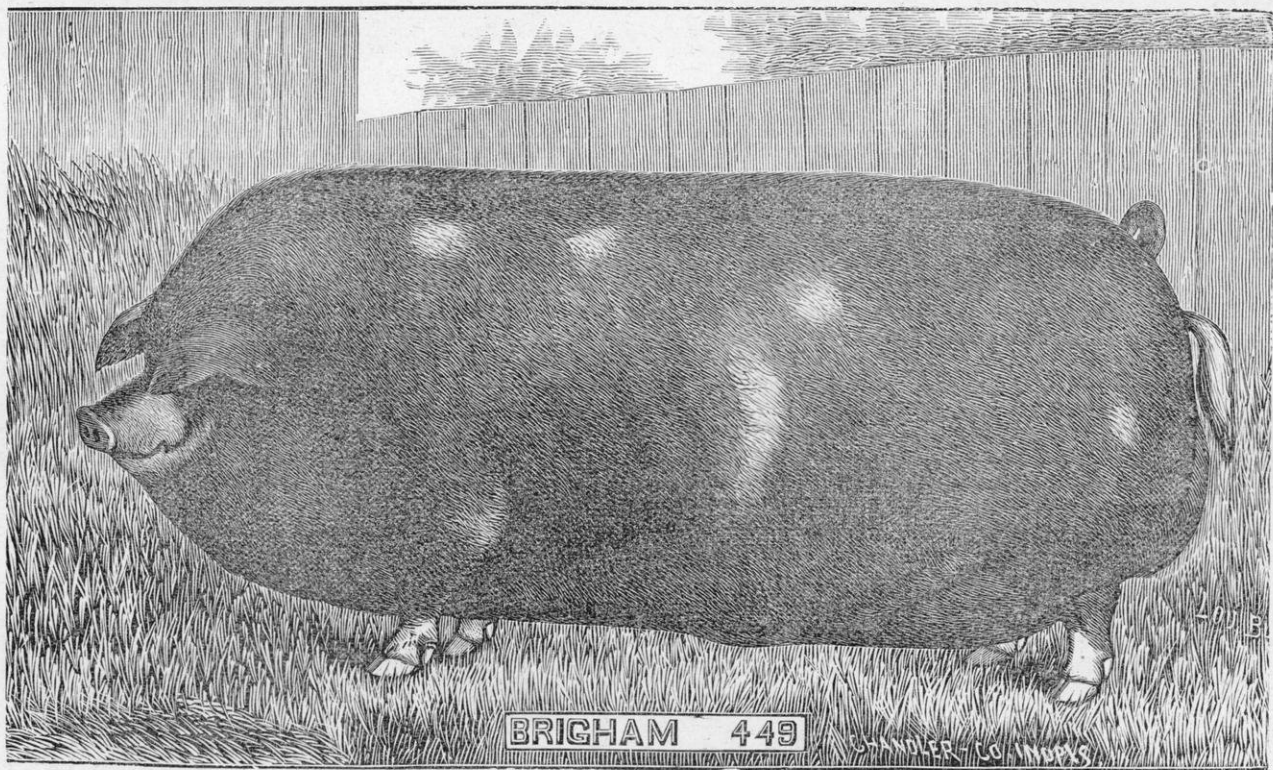
CLASS 19—*Downs.*

Best buck 2 years and over, 5 exhibits, A. O. Fox, Oregon.....	\$12 00
Second best, Geo. Daubner, Brookfield.....	7 00
Best buck 1 year and under 2, 5 exhibits, Ogilvie Bros., Sun Prairie	12 00
Second best, A. O. Fox, Oregon.....	7 00
Best pen 3 buck lambs, 5 exhibits, Geo. Daubner, Brookfield.....	7 00
Second best, A. O. Fox, Oregon.....	3 00
Best pen 3 ewes 2 years and over, 4 exhibits, A. O. Fox, Oregon..	12 00
Second best, Geo. Daubner, Brookfield.....	7 00
Best pen 3 ewes 1 year and under 2, 3 exhibits, A. O. Fox, Oregon	12 00
Second best, A. O. Fox, Oregon.....	7 00
Best pen 3 ewe lambs, 4 exhibits, A. O. Fox, Oregon	7 00
Second best, A. O. Fox, Oregon	3 00
Best buck and 5 ewes (winners of above excluded), A. O. Fox, Oregon	15 00
Second best, A. O. Fox, Oregon.....	10 00

Sweepstakes.

Best 3 fat wethers, 2 years old and over, 2 exhibits, A. O. Fox, Oregon	\$10 00
---	---------





PROPERTY OF GEORGE WYLIE, Leeds, Wis.

DEPARTMENT D — SWINE.

CLASS 20 — *Large Breeds — Poland China.*

Best boar 2 years old and over, 2 exhibits, E. J. Austin, Beloit.	\$12 00
Second best, E. Wait & Sons, La Grange	7 00
Best boar 1 year old and under 2, 3 exhibits, Hook Bros., Brooklyn	7 00
Second best, E. J. Austin, Beloit	3 00
Best breeding sow 2 years old and over, 5 exhibits, B. T. Fowler, Hart Prairie.	12 00
Second best, B. T. Fowler, Hart Prairie.	7 00
Best breeding sow 1 year old and under 2, E. J. Austin, Beloit.	7 00
Second best, J. S. Newton, Verona.	3 00
Best breeding sow with litter of sucking pigs, not less than 4, 3 ex- hibits, Reuben Boyce Brooklyn.	12 00
Second best, F. A. Bird, Madison.	7 00
Best boar pig over 6 months old and under 1 year, 6 exhibits, B. T. Fowler, Hart Prairie.	6 00
Second best, E. Wait & Sons, La Grange	3 00
Best sow pig over 6 months old and under 1 year, 3 exhibits, B. T. Fowler, Hart Prairie.	6 00
Second best, Reuben Boyce, Brooklyn.	3 00
Best boar pig under 6 months old, 30 exhibits, B. T. Fowler, Hart Prairie.	6 00
Second best, Hook Bros., Syene.	3 00
Best sow pig under 6 months old, 16 exhibits, B. T. Fowler, Hart Prairie.	6 00
Second best, Reuben Boyce, Brooklyn.	3 00

CLASS 21 — *Chester White and Others — Large Breeds.*

Best boar one year old and under 2, 5 exhibits, E. R. Bement, Ore- gon	\$7 00
Second best, M. B. Greene, Oshkosh.	3 00
Best breeding sow 2 years old and over, 3 exhibits, E. R. Bement, Oregon	12 00
Second best, Robt. B. Clark, Beloit.	7 00
Best breeding sow 1 year old and under 2, 7 exhibits, M. B. Greene, Oshkosh	7 00
Second best, E. R. Bement, Oregon.	3 00
Best breeding sow, with litter of sucking pigs, not less than 4, 4 exhibits, Robert B. Clark, Beloit.	12 00
Second best, M. B. Greene, Oshkosh.	7 00
Best boar pig over 6 months and under 1 year, 5 exhibits, Robert B. Clark, Beloit.	6 00
Second best, Jerome Bixby, Stoughton.	3 00
Best sow pig over 6 months and under 1 year, 6 exhibits, E. R. Bement, Oregon	6 00
Second best, M. B. Greene, Oshkosh.	3 00
Best boar pig under 6 months, 10 exhibits, E. R. Bement, Oregon	6 00
Second best, J. W. Morse, Verona.	3 00
Best sow pig under 6 months, 9 exhibits, M. B. Greene, Oshkosh	6 00
Second best, J. W. Morse, Verona.	3 00

CLASS 22—*Middle Breeds, including Berkshires.*

Best boar, 2 years old and over, 3 exhibits, Wm. Forrest, Poynette	\$12 00
Second best, J. E. Owens, Brooklyn	7 00
Best boar, 1 year old and under 2, J. E. Owens, Brooklyn	7 00
Second best, J. E. Owens, Brooklyn	3 00
Best breeding sow 2 years old and over, 5 exhibits, Barber Randall, Hustisford	12 00
Second best, J. E. Owens, Brooklyn	7 00
Best breeding sow, with litter of sucking pigs, not less than 4, 3 exhibits, Barber Randall, Hustisford	12 00
Second best, Barber Randall, Hustisford	7 00
Best breeding sow 1 year old and under 2, 7 exhibits, J. E. Owens, Brooklyn	7 00
Second best, E. R. Bement, Oregon	3 00
Best boar pig, 6 months old and under 1 year, 4 exhibits, J. E. Owens, Brooklyn	6 00
Best sow pig, over 6 months old and under 1 year, 5 exhibits, Barber Randall, Hustisford	6 00
Second best, J. E. Owens, Brooklyn	3 00
Best boar pig under 6 months old, 9 exhibits, Barber Randall, Hustisford	6 00
Second best, J. E. Owens, Brooklyn	3 00
Best sow pig under 6 months old, 5 exhibits, J. E. Owens, Brooklyn	5 00
Second best, Barber Randall, Hustisford	3 00

CLASS 23—*Small Breeds, including Essex, Suffolk and others.*

Best boar 2 years old and over, 2 exhibits, G. P. Pepper, Pewaukee	\$12 00
Second best, S. H. and A. E. Joiner, Janesville	7 00
Best boar 1 year old and under 2, 3 exhibits, O. P. Dow, Palmyra, Wis.	7 00
Second best, S. H. & A. E. Joiner, Janesville	3 00
Best breeding sow 2 years old and over, 3 exhibits, S. H. & A. E. Joiner, Janesville	12 00
Second best, S. H. & A. E. Joiner, Janesville	7 00
Best breeding sow 1 year old and under 2, 4 exhibits, O. P. Dow, Palmyra	7 00
Second best, S. H. & A. E. Joiner, Janesville	3 00
Best breeding sow with litter of sucking pigs, not less than 4, S. H. & A. E. Joiner, Janesville	12 00
Best boar pig over 6 months old and under 1 year, 3 exhibits, S. H. & A. E. Joiner, Janesville	6 00
Second best, S. H. & A. E. Joiner, Janesville	3 00
Best sow pig over 6 months old and under 1 year, S. H. and A. E. Joiner, Janesville	6 00
Second best, G. P. Pepper, Pewaukee	3 00
Best boar pig under 6 months old, 4 exhibits, S. H. & A. E. Joiner, Janesville	6 00
Second best, S. Quackenbush, La Crosse	3 00
Best sow pig under six months old, 5 exhibits, S. H. & A. E. Joiner, Janesville	6 00
Second best, S. Quackenbush, La Crosse	3 00

DEPARTMENT E—POULTRY.

CLASS 24—*Asiatic.*

Best trio of Light Brahma (fowls), 3 exhibits, Charles H. Belding, Shopiere	\$2 50
Second best, Robert B. Clark, Beloit.....	1 50
Best trio Light Brahma (chicks), 7 exhibits, E. G. Roberts, Fort Atkinson.....	2 00
Second best, J. W. Morse, Verona.....	1 00
Best trio Dark Brahma (fowls), 2 exhibits, E. G. Roberts, Fort Atkinson.....	2 50
Best trio Dark Brahma (chicks), 2 exhibits, E. G. Roberts, Fort Atkinson.....	1 00
Best trio Buff Cochín (fowls), 2 exhibits, Ephraim Wilson, Lake Mills.....	2 50
Second best, E. G. Roberts, Fort Atkinson.....	1 50
Best trio Buff Cochín (chicks), 3 exhibits, E. G. Roberts, Ft. Atkinson.....	2 00
Second best, Ephraim Wilson, Lake Mills.....	1 00
Best trio Partridge Cochín (fowls) Ephraim Wilson, Lake Mills....	2 50
Best trio White Cochín (fowls), E. G. Roberts, Fort Atkinson.....	2 50
Second best, Ephraim Wilson, Lake Mills.....	1 50
Best trio White Cochín (chicks), E. G. Roberts, Fort Atkinson.....	2 00
Best trio Plymouth Rock (fowls), 6 exhibits, Robt. B. Clark, Beloit.....	2 50
Second best, Robert B. Clark, Beloit.....	1 50
Best trio Plymouth Rock (chicks), 11 exhibits, E. G. Roberts, Ft. Atkinson.....	2 00
Second best, Rob. B. Clark, Beloit.....	1 00
Second best trio Dorking (fowls), E. G. Roberts, Ft. Atkinson.....	1 50
Best trio Langshan (fowls), Rob. B. Clark, Beloit.....	2 50
Best trio Langshan (chicks), Rob. B. Clark, Beloit.....	2 00
Second best, Rob. B. Clark, Beloit.....	1 00

CLASS 24—*Spanish.*

Best trio Black Spanish (white face) (fowls), E. G. Roberts, Ft. Atkinson.....	\$2 50
Best trio Black Spanish (white face) (chicks), E. G. Roberts, Ft. Atkinson.....	2 00
Second best, E. G. Roberts, Ft. Atkinson.....	1 00
Best trio White Leghorn (fowls), E. G. Roberts, Ft. Atkinson....	2 50
Second best, Ephraim Wilson, Lake Mills.....	1 50
Best trio White Leghorn (chicks), E. G. Roberts, Ft. Atkinson...	2 00
Second best, Rob. B. Clark, Beloit.....	1 00
Best trio Brown Leghorn (fowls), E. G. Roberts, Ft. Atkinson...	2 50
Second best, Robert Wootton, Madison.....	1 50
Best trio Brown Leghorn (chicks), E. G. Roberts, Ft. Atkinson....	2 00
Second best, E. G. Roberts, Ft. Atkinson.....	1 00
Best trio Silver Spangled Hamburg (fowls), E. G. Roberts, Ft. Atkinson.....	2 50
Best trio Silver Spangled Hamburg (chicks), E. G. Roberts, Ft. Atkinson.....	2 00
Best trio Silver Spangled or Penciled Hamburg (fowls), Ephraim Wilson, Lake Mills.....	2 50
Best trio Silver Spangled or Penciled Hamburg (chicks), Ephraim Wilson, Lake Mills.....	2 00

CLASS 24—*French.*

Best trio Houdan (fowls), Ephraim Wilson, Lake Mills	\$2 50
Best trio Black Polish (white crest) (fowls), E. G. Roberts, Ft. Atkinson	2 50
Second best, Wm. Forrest, Poynette.....	1 50
Best trio Black Polish (chicks), Ephraim Wilson, Lake Mills	2 00
Second best, Wm. Forrest, Poynette.....	1 00
Best trio White Polish (fowls), Ephraim Wilson, Lake Mills.....	2 50
Best trio White Polish (chicks), Ephraim Wilson, Lake Mills.....	2 00
Best trio Silver Polish (fowls), E. G. Roberts, Ft. Atkinson	2 50
Second best, E. G. Roberts, Fort Atkinson.....	1 50
Best trio Silver Polish (chicks), E. G. Roberts, Ft. Atkinson.....	2 00
Best trio Golden Polish (fowls), Rob. B. Clark, Beloit	2 50
Second best, E. G. Roberts, Ft. Atkinson.....	1 50
Best trio Golden Polish (chicks), Rob. B. Clark, Beloit.....	2 00

Bantams.

Best trio Golden Seabright (fowls), E. G. Roberts, Ft. Atkinson..	\$2 50
Best trio Silver Duckwing (fowls), E. G. Roberts, Ft. Atkinson..	2 50
Best trio any other variety (fowls), Mrs. McDougal, Madison.....	2 50
Second best, E. G. Roberts, Ft. Atkinson.....	1 50
Best trio any other variety (chicks), Ed. R. Toepfman, Madison..	2 00
Second best, E. G. Roberts, Ft. Atkinson.....	1 00

Game.

Best pair Brown Red (fowls), Mrs. McDougal, Madison.....	\$2 50
Second best, Ephraim Wilson, Lake Mills	1 50
Best pair Brown Red (chicks), E. G. Roberts, Ft. Atkinson.....	2 00
Second best, Mrs. McDougal, Madison.....	1 00
Best pair Black Breasted Red Game (fowls), Rob. B. Clark, Beloit.	2 50
Second best, Ephraim Wilson, Lake Mills	1 50
Best pair Black Breasted Red Game (chicks), Rob. B. Clark, Beloit.	2 00
Second best, Rob. B. Clark, Beloit.....	1 00
Best pair Pyle (fowl), Ephraim Wilson, Lake Mills.....	2 50
Best pair Pyle (chicks), Ephraim Wilson, Lake Mills.....	2 00
Second best, Ephraim Wilson, Lake Mills	1 00
Best pair Game, any other variety (fowls), E. G. Roberts, Ft. Atkinson	2 50

Turkeys.

Best pair Brown Turkeys (fowls), Ephraim Wilson, Lake Mills....	\$2 50
Second best, Wm. Forrest, Poynette.....	1 50
Best pair Common Turkey (fowls), Ephraim Wilson, Lake Mills...	2 00
Second best, J. B. Stone, Oregon.....	1 00
Best pair Common Turkey (chicks), J. B. Stone, Oregon.....	1 50

Water Fowls.

Best pair Aylesbury ducks, E. Palmer, Madison.....	\$2 00
Best pair Rouen ducks, Chas. H. Belding, Shopiere.....	2 00
Second best, E. Palmer, Madison.....	1 00
Best pair Muscovy ducks, B. T. Piper, Madison.....	2 00
Second best, Charles H. Belding, Shopiere.....	1 00
Best pair Cayuga ducks, Mark Smith, Jr., Madison.....	2 00
Second best, Mark Smith, Jr., Madison.....	1 00
Best and greatest variety poultry shown by one person, E. G. Roberts, Fort Atkinson.....	5 00
Best exhibition of fancy pigeons, M. Breitenbach, Madison.....	5 00
Second best, E. G. Roberts, Fort Atkinson.....	3 00

Miscellaneous.

Best display 12 Pekin ducks, Arthur W. Spaulding, Brooklyn....	\$2 00
Second best, Robert B. Clark, Beloit.....	1 00

DEPARTMENT F — AGRICULTURE.

CLASS 25 — *Field Products.*

Best sample spring wheat (Rio Grande or China Tea), 5 exhibits, D. T. Pilgrim, West Granville.....	\$5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best sample spring wheat (Fife), 4 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best variety of any other spring wheat, 10 exhibits, Andrew Nelson, Blooming Grove.....	5 00
Second best, E. Palmer, Madison.....	3 00
Best sample blue stem spring wheat, 1 exhibit, C. E. Angell, Oshkosh.....	5 00
Best white winter wheat, 9 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, D. T. Pilgrim, West Granville.....	3 00
Best red winter wheat, 5 exhibits, H. J. Hill, Madison.....	5 00
Second best, M. W. Hopson, Ft. Atkinson.....	3 00
Best rye, 7 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, M. W. Hopson, Ft. Atkinson.....	3 00
Best oats, 17 exhibits, E. Palmer, Madison.....	5 00
Second best, Orin Jacket, Riley.....	3 00
Best white Schonen oats, 5 exhibits, E. Palmer, Madison.....	5 00
Second best, A. J. Philips, West Salem.....	3 00
Best barley, 6 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, D. T. Pilgrim, West Granville.....	3 00
Best buckwheat, 8 exhibits, D. T. Pilgrim, West Granville.....	4 00
Second best, N. R. Bailey, Sun Prairie.....	2 00
Best flax seed, 3 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, C. E. Angell, Oshkosh.....	3 00

Best timothy seed, 7 exhibits, D. T. Pilgrim, West Granville	\$5 00
Second best, C. E. Angell, Oshkosh.....	3 00
Best clover seed, 4 exhibits, D. T. Pilgrim, West Granville	5 00
Second best, D. T. Pilgrim, West Granville	3 00
Best variety of red top, 2 exhibits, C. E. Angell, Oshkosh.....	3 00
Best Hungarian millet, 3 exhibits, D. T. Pilgrim, West Granville ..	3 00
Best of any other variety, 2 exhibits, D. T. Pilgrim, West Granville ..	3 00
Best field peas, 1 exhibit, C. E. Angell, Oshkosh.....	5 00
Best peas of any other variety, 5 exhibits, E. W. Palmer, Madison	3 00
Second best, S. G. Stang, Madison	2 00
Best navy beans, 5 exhibits, D. T. Pilgrim, West Granville.....	5 00
Second best, M. W. Hopson, Ft. Atkinson.....	3 00
Best of any other variety of beans, 4 exhibits, C. E. Angell, Oshkosh ..	5 00
Second best, F. N. Grady, Madison	3 00
Best dent corn (white), 5 exhibits, Andrus Viall, Madison.....	5 00
Second best, H. J. Hill, Madison	3 00
Best dent corn (yellow), 8 exhibits, E. Palmer, Madison	5 00
Second best, Andrus Viall, Madison.....	3 00
Best flint corn (white), 2 exhibits, Geo. W. McDougal, Madison ...	5 00
Best flint corn (yellow), 9 exhibits, Orin Jacket, Riley	5 00
Second best, Robert B. Clark, Beloit	3 00
Best exhibition of field products grown in the state, including not less than five varieties of cereal grain, not less than twelve varieties in all, each sample to be free to compete for the foregoing individual prizes, both quality and number to be considered, and being not less in quantity than as above specified, 4 exhibits, D. T. Pilgrim, West Granville.....	20 00
Second best, C. E. Angell, Oshkosh.....	10 00

CLASS 26 — *Garden and Vegetable Products.*

Best Early Rose potatoes, 5 exhibits, E. Palmer, Madison	\$3 00
Second best, James Morrison, Morrisonville.....	2 00
Best Beauty of Hebron, 13 exhibits, Mrs. C. W. Mead, Sun Prairie ..	3 00
Second best, Orin Jacket, Riley.....	2 00
Any other variety of early potatoes, 8 exhibits, Henry Miller, Madison.....	3 00
Second best, E. Palmer, Madison.....	2 00
Best Snowflake potatoes, 12 exhibits, Orin Jacket, Riley	3 00
Second best, R. E. Tipple, Madison	2 00
Best Peachblows, 3 exhibits, Henry Palmer, Oregon	3 00
Best of any other variety of late potatoes, 11 exhibits, E. W. Palmer, Madison.....	3 00
Second best, H. A. Tenney, Madison	2 00
Best four quarts of Lima Beans (shelled), 1 exhibit, J. B. Stone, Oregon	3 00
Best Turnip beets, 8 exhibits, J. W. Wood, Baraboo.....	3 00
Second best, E. O. Wheelock, Brooklyn.....	2 00
Best Long Blood beets, 5 exhibits, J. W. Wood, Baraboo	3 00
Best Mangel Wurzel, 2 exhibits, J. W. Wood, Baraboo	3 00
Best Red Wethersfield onions, 7 exhibits, F. Henika, Madison	3 00
Second best, M. W. Hopson, Fort Atkinson.....	2 00
Best Yellow Danvers onions, 8 exhibits, H. A. Tenney, Madison..	3 00
Second best, M. W. Hopson, Ft. Atkinson.....	2 00
Best white variety of onions, 5 exhibits, H. A. Tenney, Madison ..	3 00
Second best, J. W. Wood, Baraboo	2 00
Best Drumhead cabbage, 3 exhibits, J. W. Wood, Baraboo.....	3 00
Second best, S. H. Hall, Madison.....	2 00

Best 3 cabbages of any other variety, 5 exhibits, S. G. Stang, Madison	\$3 00
Second best, S. H. Hall, Madison	2 00
Best long orange carrots, 6 exhibits, Geo. Ringrose, Wauwatosa....	3 00
Second best, J. W. Wood, Baraboo	2 00
Best horn carrots, 3 exhibits, J. W. Wood, Baraboo	3 00
Second best, E. O. Wheelock, Brooklyn	2 00
Best head of cauliflower, 4 exhibits, S. G. Stang, Madison	3 00
Second best, Geo. Ringrose, Wauwatosa	2 00
Best ten heads of celery, 2 exhibits, S. G. Stang, Madison	3 00
Second best, Geo. Ringrose, Wauwatosa	2 00
Best 12 ears of early sweet corn, 6 exhibits, Robt. B. Clark, Beloit	3 00
Second best, Andrus Viall, Madison	2 00
Best 12 ears of late sweet corn, 9 exhibits, J. B. Stone, Oregon....	3 00
Second best, H. Waterhouse, Madison	2 00
Best sample of egg plant, 1 exhibit, S. G. Stang, Madison	2 00
Best 6 Nutmeg melons, 1 exhibit, Geo. Ringrose, Wauwatosa.....	3 00
Best parsnips, 5 exhibits, J. W. Wood, Baraboo.....	3 00
Second best, J. L. Heath, Madison	2 00
Best 12 large red peppers, 4 exhibits, H. A. Tenney, Madison	2 00
Second best, S. G. Stang, Madison	1 00
Best peck of vegetable oysters, 3 exhibits, J. W. Wood, Baraboo..	2 00
Second best, Geo. Ringrose, Wauwatosa	1 00
Best 6 Hubbard squash, 1 exhibit, Henry Miller, Madison	3 00
Best 12 tomatoes, 10 exhibits, S. G. Stang, Madison	3 00
Second best, S. H. Hall, Madison	2 00
Best flax turnips, 5 exhibits, E. O. Wheelock, Brooklyn	3 00
Second best, J. W. Wood, Baraboo	2 00
Best rutabagas, 3 exhibits, S. H. Hall, Madison	3 00
Second best, J. W. Wood, Baraboo	2 00
Best exhibition by professionals, including not less than 5 speci- mens of vegetables, not less than 12 varieties in all, both quali- ty and number of varieties to be considered, J. W. Wood, Baraboo.....	S. P. 10 00
Second best, S. G. Stang, Madison	S. P. 5 00
Best exhibition by non-professionals, including not less than 5 specimens of vegetables, nor less than 12 varieties in all, both quality and number of varieties to be considered, 1 ex- hibit, E. O. Wheelock, Brooklyn.....	S. P. 10 00

CLASS 27—*Products of the Flouring Mill, Dairy and Apiary.*

Best barrel of Spring Wheat, 2 exhibits, H. N. Pomeroy,
Madison

S. P. \$15 00

Factory cheese—For each exhibit of 3 cheese, or not less than 150 pounds, made at any time, and awarded 40 points and over in a scale of 50 points or perfection, shall be designated "Grade No. 1," and draw a pro rata share of \$100, provided, etc. 5 exhibits, pro rated among following:

W. H. Porter, Marshall.
C. Hazen, Ladoga.
Alvin Hobbs, Brandon.
M. M. Seward, Harvey, Jefferson County.
Alvin Hobbs, Brandon.

Farm, Dairy Cheese, Schweizer and Limburger.

Best exhibit, not less than 100 pounds, made at any time, R. Caldwell, Arlington.....	\$10 00
Sweepstakes premium awarded to exhibit of 150 pounds of cheese that marks the highest on the above scale of points, provided, etc., R. Caldwell, Arlington..... S. P.	25 00
Best dairy butter, roll, print or package, not less than 20 pounds, James Morrison, Morrisonville.....	10 00
Second best, G. N. Willis, Janesville.....	5 00
Best 10 pounds of honey in the best marketable shape, Smith & Morgan, Columbus..... S. P.	5 00
Second best, L. F. Biglow, Brooklyn..... S. P.	3 00
Best practical beehive, 2 exhibits, D. D. Danihar, Madison... S. P.	5 00
Best honey extractor, 2 exhibits, Mrs. D. Wright, Madison... S. P.	2 00
Second best, D. D. Danihar, Madison..... S. P.	1 00
Best extracted honey, 4 exhibits, Mrs. D. Wright, Madison... S. P.	3 00
Second best, Mrs. C. W. Mead, Sun Prairie..... S. P.	1 00
Best method of handling bees, to be demonstrated on the grounds, D. D. Danihar, Madison..... S. P.	10 00
Best Italian bees, 2 exhibits, D. D. Danihar, Madison..... S. P.	5 00
Best display of apiarian supplies and fixtures, D. D. Danihar, Madison..... S. P.	5 00
Best gallon of maple syrup, Mrs. D. Bare, Hubbleton..... S. P.	5 00
Best gallon amber cane syrup, 4 exhibits, A. J. Decker, Fond du Lac..... S. P.	5 00
Second best, A. J. Decker, Fond du Lac..... S. P.	3 00
Best 5 lbs. sugar made from amber cane, 4 exhibits, A. J. Decker, Fond du Lac..... S. P.	5 00
Second best, A. J. Decker, Fond du Lac..... S. P.	3 00

CLASS 28—*Household Products.*

Best loaf graham bread, 4 exhibits, Mrs. C. W. Mead, Sun Prairie	\$3 00
Best loaf white bread (hop yeast), 5 exhibits, Mrs. E. Lazier, Madison.....	3 00
Best loaf white bread (milk raised), 3 exhibits, Mrs. H. Sylvester, Madison.....	3 00
Best loaf of Indian bread, 4 exhibits, Mrs. R. E. Tipple, Madison..	3 00
Best sponge cake, 2 exhibits, Mrs. J. R. Hiestand, Blooming Grove	2 00
Best pound cake, 1 exhibit, Mrs. J. R. Hiestand, Blooming Grove..	2 00
Best jelly cake, 2 exhibits, Miss Anna Sutherland, Syene.....	2 00
Best chocolate cake, 5 exhibits, Mrs. E. Lazier, Madison.....	2 00
Best cocoanut cake, 2 exhibits, J. R. Hiestand, Blooming Grove...	2 00
Best fruit cake, L. F. Biglow, Brooklyn.....	2 00
Best and largest exhibition of bread and cake, Mrs. J. R. Hiestand, Blooming Grove.....	Sil. Med.
Best canned peaches, 4 exhibits, Miss Annie Cooper, Madison.....	2 00
Best canned plums, 4 exhibits, Mrs. C. W. Mead, Sun Prairie.....	2 00
Best canned currants, 4 exhibits, Mrs. H. Sylvester, Madison.....	2 00
Best canned tomatoes, 4 exhibits, Mrs. H. Sylvester, Madison.....	2 00
Best canned gooseberries, 3 exhibits, Mrs. H. Sylvester, Madison...	2 00
Best canned raspberries, 5 exhibits, Mrs. H. Sylvester, Madison...	2 00
Best canned strawberries, 4 exhibits, Miss Annie Cooper, Madison..	2 00
Best canned grapes, 4 exhibits, Mrs. H. Sylvester, Madison.....	2 00
Best canned blackberries, 4 exhibits, Mrs. C. W. Mead, Sun Prairie..	2 00
Best canned pears, 4 exhibits, Mrs. H. Sylvester, Madison.....	2 00

Best canned Hyslop or Transcendent crabs, 2 exhibits, Mrs. D. Bare, Hubbleton	\$2 00
Best plum jelly, 5 exhibits, Mrs. H. Sylvester, Madison	2 00
Best currant jelly, 6 exhibits, Mrs. C. W. Mead, Sun Prairie	2 00
Best red raspberry jelly, 4 exhibits, Miss Annie Cooper, Madison ..	2 00
Best crab apple jelly, 4 exhibits, Mrs. C. W. Mead, Sun Prairie	2 00
Best marmalade, 6 exhibits, Mrs. H. Sylvester, Madison	2 00
Best raspberry jam, 4 exhibits, Mrs. C. W. Mead, Sun Prairie	2 00
Best blackberry jam, 5 exhibits, Miss Annie Cooper, Madison	2 00
Best cucumbers, pickled, 4 exhibits, Mrs. C. W. Mead, Sun Prairie ..	2 00
Best mangoes, 1 exhibit, Mrs. D. Bare, Hubbleton	2 00
Best red cabbage, pickled, 4 exhibits, Mrs. R. J. Atwood, Madison ..	2 00
Best cauliflower, pickled, 3 exhibits, Mrs. C. W. Mead, Sun Prairie ..	2 00
Best onions, pickled, 3 exhibits, Mrs. D. Bare, Hubbleton	2 00
Best mixed pickles, 5 exhibits, Mrs. C. W. Mead, Sun Prairie	2 00
Best pickled peaches, 3 exhibits, Miss Annie Cooper, Madison	2 00
Best pickled apples, 3 exhibits, Mrs. C. W. Mead, Sun Prairie	2 00
Best tomato catsup, 3 exhibits, Miss Annie Cooper, Madison	2 00
Best and largest exhibition of canned fruits, jellies, jams and pickles, in glass jars, 3 exhibits, Mrs. C. W. Mead, Sun Prairie	S. P. 5 00

Miscellaneous—Not on List.

- Largest variety of potatoes, G. W. Willis, Janesville,
 Premium recommended.
- Revolving churn, Cornish & Curtis, Fort Atkinson.....Diploma.
 Butter workers, Cornish & Curtis, Fort Atkinson.....Diploma.
 Beeswax, D. D. Danihar, first premium
- Comb foundation, D. D. Danihar, Madison, second premium.....
 Champion Creamery, Farm Machine Co., Bellows Falls, VtDiploma.
 Comb foundation, Mrs. D. Wright, Madison, first premium.....
 Butter color, Bean & Perry, Manufacturing Co., Rockford, Ill....Diploma.

DEPARTMENT G—FRUITS AND FLOWERS.

CLASS 29 *Fruit by Professional Cultivators.*

Best apples, greatest display of varieties, not to exceed 20, 3 or more specimens each, Freeborn & Hatch, Ithaca.....	\$10 00
Second, Chas. Hirschinger, Baraboo.....	7 50
Third, John Howie, Waunakee.....S. P.	5 00
Best apples, 10 varieties, adapted to Northwest, 3 specimens each, Freeborn & Hatch, Ithaca.....	7 00
Second, Chas. Hirschinger, Baraboo.....	5 00
Third, John Howie, Waunakee.....S. P.	3 00
Best apples, 5 varieties, adapted to Northwest, 3 specimens each, Chas. Hirschinger, Baraboo.....	3 00
Second, John Howie, Waunakee.....	2 00
Third, A. J. Philips, West Salem.....S. P.	1 00

Best apples, largest variety winter, not to exceed 10, 3 specimens each, Chas. Hirschinger, Baraboo.....	\$5 00
Second best, Freeborn & Hatch, Ithaca.....	3 00
Third best, Wm. Reed, North Prairie..... S. P.	2 00
Best apples, 5 varieties winter, 3 specimens each, 7 exhibits, Freeborn & Hatch, Ithaca.....	3 00
Second best, Chas. Hirschinger, Baraboo.....	2 00
Third best, G. P. Pepper, Pewaukee..... S. P.	1 00
Best apples, show of 10 varieties, large and showy, 3 or more specimens each, 5 exhibits, Freeborn & Hatch, Ithaca.....	5 00
Second, Chas. Hirschinger, Baraboo.....	3 00
Third, G. P. Pepper, Pewaukee..... S. P.	2 00
Largest apple, 4 exhibits, G. P. Pepper, Pewaukee.....	1 00
Heaviest apple, 4 exhibits, G. P. Pepper, Pewaukee.....	1 00
Apples, best plate of Plumb Cider, 4 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Haas, 5 exhibits, John Howie, Waunakee....	1 00
Apples, best plate of Fameuse, 7 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Walbridge, 3 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Utter, 4 exhibits, A. J. Philips, West Salem..	1 00
Apples, best plate of Westfield Seek-no-Further, 3 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Tallman Sweet, 4 exhibits, A. J. Philips, West Salem.....	1 00
Apples, best plate of St. Lawrence, 5 exhibits, John Howie, Waunakee.....	1 00
Apples, best plate of Duchess of Oldenburg, 5 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Willow Twig, 4 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Apples, best plate of Wealthy, 5 exhibits, G. P. Pepper, Pewaukee.....	1 00
Apples, best plate of Pewaukee, 4 exhibits, Charles Hirschinger, Baraboo.....	1 00
Pears, best display of varieties, 2 exhibits, G. P. Pepper, Pewaukee.....	5 00
Pears, best 3 varieties, 1 exhibit, G. P. Pepper, Pewaukee.....	2 00
Pears, best Flemish Beauty, 1 exhibit, G. P. Pepper, Pewaukee....	2 00
Pears, best plate of Beurre d'Anjon, 1 exhibit, G. P. Pepper, Pewaukee.....	1 00
Best plate of Clapp's Favorite, 1 exhibit, G. P. Pepper, Pewaukee..	1 00
Plums, greatest variety, 1 exhibit, G. P. Pepper, Pewaukee.....	3 00
Plums, best 3 varieties, 1 exhibit, G. P. Pepper, Pewaukee.....	2 00
Plums, best collection of native, 2 exhibits, G. P. Pepper, Pewaukee	2 00
Best plate of native plums, G. P. Pepper, Pewaukee.....	1 00

CLASS 30—*Grapes and Crabs by Professional Cultivators.*

Greatest display of varieties, 5 specimens, 2 exhibits, Wm. Reed, North Prairie.....	\$10 00
Second best, G. P. Pepper, Pewaukee.....	7 00
Best 10 varieties, 3 specimens, 2 exhibits, Wm. Reed, North Prairie.	5 00
Second best, G. P. Pepper, Pewaukee.....	3 00
Best 5 varieties, 3 specimens, 2 exhibits, Wm. Reed, North Prairie.	3 00
Second best, G. P. Pepper, Pewaukee.....	2 00
Best single variety, 3 specimens, 2 exhibits, G. P. Pepper, Pewaukee	2 00
Second best, Wm. Reed, North Prairie.....	1 00
Best 3 bunches of Concord on 1 cane, 2 exhibits, Wm. Reed, North Prairie.....	2 00

Best 3 bunches of Delaware on 1 cane, 2 exhibits, Wm. Reed, North Prairie.....	\$2 00
Second best, G. P. Pepper, Pewaukee.....	1 00
Best 3 bunches of Worden on 1 cane, 2 exhibits, Wm. Reed, North Prairie.....	2 00
Best grapes, single variety, quality to rule, 4 exhibits, G. P. Pepper, Pewaukee.....	3 00
Second best, Wm. Reed, North Prairie.....	2 00
Crabs, greatest variety named, 6 exhibits, A. J. Philips, West Salem	3 00
Second best, G. P. Pepper, Pewaukee.....	2 00
Third best, Freeborn & Hatch, Ithaca..... S. P.	1 00
Crabs, best plate of Hyslop, 5 exhibits, Chas. Hirschinger, Baraboo	1 00
Best plate of Transcendent crabs, 5 exhibits, Chas. Hirschinger, Baraboo.....	1 00
Crabs, best Whitney No. 20, 6 exhibits, A. J. Philips, West Salem.	1 00
Best seedling crab, 6 exhibits, G. P. Pepper, Pewaukee.....	2 00

Sweepstakes.

Best collection of fruit, all kinds, 4 exhibits, G. P. Pepper, Pewaukee.....	\$7 00
Second best, Wm. Reek, North Prairie.....	5 00
Third best, Chas. Hirschinger, Baraboo..... S. P.	3 00
Best bushel of Cranberries, 1 exhibit, G. P. Pepper, Pewaukee.....	5 00

CLASS 31 — Fruits by Non-Professional Cultivators.

Apples, best display of varieties, not to exceed 20; 3 or more specimens, 2 exhibits, Geo. Jeffrey, Milwaukee, 630 Chestnut st....	\$10 00
Second best, F. Burow, Menomonee.....	7 50
Apples, best 10 varieties adapted to the northwest, 3 specimens each, 3 exhibits, Geo. Jeffrey, Milwaukee, 630 Chestnut st....	7 00
Second best, D. Huntley, Appleton.....	5 00
Third best, F. Burow, Menomonee..... S. P.	3 00
Apples, best show of 10 varieties, large and showy, 3 or more specimens each, Geo. Jeffrey, Milwaukee, 630 Chestnut St.	5 00
Second best, F. Burow, Menomonee.....	3 00
Apples, best 5 varieties adapted to N. W., 3 specimens each, 3 exhibits, D. Huntley, Appleton.....	3 00
Second best, Geo. Jeffrey, Milwaukee.....	2 00
Third, F. Burow, Menomonee..... S. P.	1 00
Apples, best variety of winter, not to exceed 10, 3 specimens each, 2 exhibits, Geo. Jeffrey, Milwaukee.....	5 00
Second best, F. Burow, Menomonee.....	3 00
Apples, best variety winter, 3 specimens each, 2 exhibits, Geo. Jeffrey, Milwaukee.....	3 00
Second best, F. Burow, Menomonee.....	2 00
Largest apple, 3 exhibits, Andrus Viall, Madison.....	1 00
Heaviest apple, 3 exhibits, Geo. Jeffrey, Milwaukee, 630 Chestnut St.	1 00
Apples, best plate of Haas, 2 exhibits, Geo. Jeffrey, Milwaukee....	1 00
Apples, best plate of Walbridge, 2 exhibits, Geo. Jeffrey, Milwaukee	1 00
Apples, best plate of Utter, 1 exhibit, F. Burow, Menomonee.....	1 00
Apples, best plate of Westfield Seek-no-further, 3 exhibits, Andrus Viall, Madison.....	1 00

Apples, best plate of Tallman Sweet, 4 exhibits, Andrus Viall, Madison	\$1 00
Apples, best plate of St. Lawrence, 2 exhibits, F. Burow, Menomonee	1 00
Apples, best plate of Duchess of Oldenburg, 7 exhibits, Nelson Bacon, Madison	1 00
Apples, best plate of Willow Twig, 2 exhibits, Geo. Jeffrey, Milwaukee	1 00
Apples, best plate Wealthy, 2 exhibits, Geo. Jeffrey, Milwaukee	1 00
Apples, best plate Pewaukee, 2 exhibits, Geo. Jeffrey, Milwaukee	1 00
Apples, best plate Fameuse, 5 exhibits, Geo. Jeffrey, Milwaukee	1 00
Pears, greatest display of varieties, 2 exhibits, Geo. Jeffrey, Milwaukee	5 00
Second best, F. Burow, Menomonee	3 00
Pears, best 3 varieties, 2 exhibits, Geo. Jeffrey, Milwaukee	2 00
Second best, F. Burow, Menomonee	1 00
Pears, best Flemish Beauty, 2 exhibits, F. Burow, Menomonee	2 00
Second best, Geo. Jeffrey, Milwaukee	1 00
Pears, Beurre d' Anjon, 1 exhibit, Geo. Jeffrey, Milwaukee	1 00
Pears, Plate of Clapp's Favorite, 2 exhibits, Geo. Jeffrey, Milwaukee	1 00
Greatest variety of plums, 2 exhibits, George Jeffrey, Milwaukee ..	3 00
Second best, F. Burow, Menomonee	2 00
Best 3 varieties of plums, 1 exhibit, F. Burow, Menomonee	2 00
Best collection of native plums, 2 exhibits, G. Jeffrey, Milwaukee ..	2 00
Best plate of native plums, 2 exhibits, George Jeffrey, Milwaukee ..	1 00

CLASS 32 — *Grapes and Crabs by Non-Professional Cultivators.*

Grapes, greatest display of varieties, 5 specimens, Geo. Jeffrey, Milwaukee	\$10 00
Grapes, single variety, 3 specimens, 1 exhibit, G. W. Holt, Madison ..	2 00
Grapes, 3 bunches of Concord on 1 cane, 2 exhibits, Geo. Jeffrey, Milwaukee	2 00
Second best, Geo. W. Holt, Madison	1 00
Crabs, greatest variety, named, 3 exhibits, Geo. Jeffrey, Milwaukee ..	3 00
Second best, F. Burow, Menomonee	2 00
Third best, Mrs. G. F. Brown, Madison	1 00
Best plate of Hyslop crabs, 3 exhibits, Mrs. G. F. Brown, Madison ..	1 00
Best plate of Transcendent crabs, 3 exhibits, G. Jeffrey, Milwaukee ..	1 00
Best plate of Whitney No. 20, 3 exhibits, F. Burow, Menomonee ..	2 00
Best seedling crab, 1 exhibit, F. Burow, Menomonee	1 00

Sweepstakes.

Best collection of fruits of all kinds, 2 exhibits, Geo. Jeffrey, Milwaukee	\$7 00
Second best, F. Burow, Menomonee	5 00

CLASS 34 — *Nursery Trees.*

Collection of fruit trees, Sam Hunt, Evansville	Dip.
Collection of apple trees, Freeborn & Hatch, Ithaca	Dip.

CLASS 35—*Flowers by Professional Cultivators.*

Most artistically arranged floral design, 2 exhibits, Geo. Ringrose, Wauwatosa	\$5 00
Second best, F. Burow, Menomonee.....	3 00
Most tastefully arranged basket of flowers, 2 exhibits, Geo. Ringrose, Wauwatosa.....	3 00.
Second best, F. Burow, Menomonee.....	2 00
Most tastefully arranged collection of cut flowers, 2 exhibits, Geo. Ringrose, Wauwatosa	4 00.
Second best, F. Burow, Menomonee.....	3 00
Best pyramidal bouquet, 2 exhibits, Geo. Ringrose, Wauwatosa....	3 00
Second best, F. Burow, Menomonee.....	2 00
Best pair of flat table bouquets, 2 exhibits, Geo. Ringrose, Wauwatosa.....	2 00.
Second best, F. Burow, Menomonee.....	1 00
Best bouquet of everlasting flowers, 3 exhibits, Geo. Ringrose, Wauwatosa	3 00
Second best, F. Burow, Menomonee.....	2 00
Best 10 named dahlias, 2 exhibits, J. C. Plumb & Son, Milton.....	2 00
Best display of roses, 2 exhibits, Geo. Ringrose, Wauwatosa.....	3 00
Second best, F. Burow, Menomonee.....	2 00
Best 5 named varieties of roses, 2 exhibits, Geo. Ringrose, Wauwatosa.....	3 00.
Second best, F. Burow, Menomonee.....	2 00
Best show of pansies, 3 exhibits, Wm. Toole, North Prairie.....	1 00.
Second best, Geo. Ringrose, Wauwatosa.....	50
Best show of double petunias, 2 exhibits, Geo. Ringrose, Wauwatosa	1 00.
Second best, F. Burow, Menomonee.....	50.
Best show gladiolas, 2 exhibits, Geo. Ringrose, Wauwatosa.....	2 00.
Second best, F. Burow, Menomonee.....	1 00.
Best show of lilies, 2 exhibits, Geo. Ringrose, Wauwatosa.....	1 00.
Second best, F. Burow, Menomonee	50
Best show of tube roses, 2 exhibits, Geo. Ringrose, Wauwatosa....	1 00
Second best, F. Burow, Menomonee	50.
Best show of green house plants, not less than 50 nor more than 100 varieties, 2 exhibits, Geo. Ringrose, Wauwatosa.....	7 50.
Second best, F. Burow, Menomonee.....	5 00
Best 20 varieties of green-house plants in bloom, 2 exhibits, Geo. Ringrose, Wauwatosa	3 00
Second best, F. Burow, Menomonee.....	2 00.
Best 10 geraniums, 2 exhibits, Geo. Ringrose, Wauwatosa.....	3 00.
Second best, F. Burow, Menomonee.....	2 00
Best six fuchsias, 2 exhibits, F. Burow, Menomonee.....	2 00
Second best, Geo. Ringrose, Wauwatosa.....	1 00.
Best display of flowers of all kinds grown by exhibitor, 2 exhibits, Geo. Ringrose, Wauwatosa.....	5 00
Second best, F. Burow, Menomonee.....	3 00
Best display of ornamental foliage, plants, not more than 15 varieties, 2 exhibits, Geo. Ringrose, Wauwatosa.....	3 00
Second best, F. Burow, Menomonee.....	2 00.

CLASS 36—*Flowers by Non-Professional Cultivators.*

Most artistically arranged floral design, 2 exhibits, Mrs. G. W. Wells, Milwaukee	\$5 00
Second best, Mrs. G. F. Brown, Madison	3 00

Most tasteful collection of cut flowers, 5 exhibits, Mrs. Geo. Memhard, Madison	\$4 00
Second best, Miss Nellie Pepper, Pewaukee.....	3 00
Third best, Mrs. E. Lazier, Madison..... S. P.	2 00
Most tastefully arranged basket of flowers, 4 exhibits, Mrs. G. W. Wells, Milwaukee	3 00
Second best, Mrs. J. R. Hiestand, Madison.....	2 00
Best pyramidal bouquet, 4 exhibits, Miss Nellie Pepper, Pewaukee.	3 00
Second best, Mrs. G. W. Wells, Milwaukee.....	2 00
Best pair of round bouquets, 4 exhibits, Mrs. G. W. Wells, Milwaukee	2 00
Second best, Mrs. J. R. Hiestand, Madison.....	1 00
Best pair of flat table bouquets, 4 exhibits, Mrs. G. W. Wells, Milwaukee.....	2 00
Second best, Mrs. J. R. Hiestand, Madison	1 00
Best display of dahlias, not more than 20 varieties, 3 exhibits, Miss Nellie Pepper, Pewaukee.....	2 00
Best 10 named dahlias, 4 exhibits, Miss Nellie Pepper, Pewaukee... ..	2 00
Second best, D. Huntley, Appleton	1 00
Best display of roses, 4 exhibits, Mrs. Geo. Memhard, Madison.....	3 00
Second best, Mrs. G. F. Brown, Madison	2 00
Best display of verbenas, 3 exhibits, Mrs. G. F. Brown, Madison ..	2 00
Second best, Miss Nellie Pepper, Pewaukee.....	1 00
Best show of perennial phlox, 3 exhibits, Mrs. Geo. Memhard, Madison	1 00
Second best, Miss Nellie Pepper, Pewaukee.....	50
Best show of pansies, 3 exhibits, Mrs. G. F. Brown, Madison.....	1 00
Second best, Miss Nellie Pepper, Pewaukee.....	50
Best show of dianthus (pink), 2 exhibits, Mrs. G. F. Brown, Madison	1 00
Best show of gladiolas, 3 exhibits, Mrs. Geo. Memhard, Madison..	2 00
Second best, Miss Nellie Pepper, Pewaukee.....	1 00
Best show of phlox drummondii, 2 exhibits, Mrs. E. Lazier, Madison.....	1 00
Best show of tube roses, 1 exhibit, Mrs. G. W. Wells, Milwaukee ..	1 00
Best show of green-house plants, not less than 25 nor more than 50 varieties, 2 exhibits, Mrs. G. W. Wells, Milwaukee.....	5 00
Second best, Mrs. Geo. Memhard, Madison	3 00
Best 10 varieties of green-house plants in bloom, 1 exhibit, Mrs. G. W. Wells, Milwaukee.....	3 00
Best 10 geraniums, 2 exhibits, Mrs. Geo. Memhard, Madison.....	3 00
Second best, Mrs. G. W. Wells, Milwaukee.....	2 00
Best 6 fuchsias, 2 exhibits, Mrs. Geo. Memhard, Madison.....	2 00
Second best, Mrs. G. W. Wells, Milwaukee.....	1 00
Best 6 carnations, 1 exhibit, Mrs. G. W. Wells, Milwaukee.....	2 00
Best display of flowers raised by exhibitor, 3 exhibits, Mrs. G. W. Wells, Milwaukee.....	5 00
Second best, Miss Nellie Pepper, Pewaukee.....	3 00
Best show of ornamental foliage plants, not more than 10 varieties, 2 exhibits, Mrs. G. W. Wells, Milwaukee.....	3 00
Second best, Mrs. Geo. Memhard, Madison.....	2 00

DEPARTMENT I.—MANUFACTURES.

CLASS 40—*Stoves, Furnaces, Hollow Ware and Articles of Hardware.*

Best display of stoves, Ball Bros., Madison.....	Grand Silver Medal.
Best show of hollow ware, Frank & Ramsay, Madison.....	Diploma.
Best ornamental parlor stove, 1 exhibit, Ball Bros., Madison.....	\$5 00
Best horse shoes in variety, 2 exhibits, T. Brady, Madison.....	2 00

CLASS 41—*Silver, Britannia, and Crockery Ware.*

Best display of gold and silver electro plating, E. P. Copp, Madison,	Grand Silver Medal.
Best collection of glass, China and earthen ware, W. J. & F. Ellsworth, Madison.....	Grand Silver Medal.

CLASS 42—*Surgical, Dental, Mathematical and Philosophical Instruments.*

Best display of surgical instruments and apparatus by manufacturer or agent, A. H. Hollister, Madison.....	Diploma.
--	----------

CLASS 43—*Chemical Manufactures.*

Best show of fancy soaps and perfumery for the toilet by manufacturer, C. H. Avery, Madison.....	Silver Medal.
--	---------------

CLASS 44—*Carriages, Wagon Work, etc.*

Best single top buggy, 16 exhibits, S. L. Sheldon, Madison...S. P.	\$10 00
Best single open buggy, 5 exhibits, Hiram G. Dodge & Sons, Madison.....S. P.	10 00
Best phaeton, 2 exhibits, H. G. Dodge & Sons, Madison.....S. P.	10 00
Best double sleigh, 2 exhibits, T. G. Mandt, Stoughton.....S. P.	10 00
Best single sleigh, 3 exhibits, Wisconsin Mfg. Co., Madison..S. P.	5 00
Best common farm wagon, 12 exhibits, S. L. Sheldon, Madison.....S. P.	5 00
Best 3 spring and 3 seated wagon, 2 exhibits, Wisconsin Manufg Co., Madison.....S. P.	5 00

CLASS 45—*Cabinet-Ware, Cooperage, Willow-Ware, etc.*

Best extension table, Mathew Bros. Mfg. Co., Milwaukee.....	S. P.	\$5 00
Best centre table, B. Olson, Madison.....	S. P.	5 00
Best spring bed bottom, W. G. Bresee, Columbus.....	S. P.	5 00
Best 6 dining chairs, Mathew Bros. Mfg. Co., Milwaukee....	S. P.	5 00
Best parlor set, Mathew Bros. Mfg. Co., Milwaukee.....	Silv. Med.	
Best chamber set, Mathew Bros. Mfg. Co., Milwaukee.....	Silv. Med.	
Best exhibition of shoes, 1 pair each, Kirch & Bollenbeck, Madison.	Dip.	
Rest 6 cases men's boots, manufactured in state, Kirch & Bollenbeck, Madison.....	Gr. Silv. Med.	
Best exhibition of shoes manufactured in state, 1 pair each, V. Malec & Bros., Madison.....	Gr. Silv. Med.	

CLASS 48—*Textile Fabrics, Clothing, etc.*

Best fleece wool, American Merino, O. Cook, Whitewater....	S. P.	\$5 00
--	-------	--------

DEPARTMENT K—FINE ARTS.

CLASS 49—*Music and Musical Instruments and Sewing Machines.*

World's Star Knitting Machine, P. H. Mansfield, Bay View.....	Diploma.
Canadian Ribber Family Knitting Machine, T. H. Mansfield, Bay View.....	Diploma.

CLASS 50—*Works of Art.*

Best portrait in oil, 11 exhibits, James R. Stuart, Madison.....	\$10 00
Second best, James R. Stuart, Madison.....	5 00
Best original landscape in oil, work of exhibitor, 6 exhibits, Mrs. E. T. Richmond, Appleton.....	10 00
Second best, Miss H. E. Dodge, Madison.....	5 00
Best landscape in oil, work of exhibitor, 6 exhibits, Miss Esther Stone, Madison.....	5 00
Second best, Mrs. E. T. Richmond, Appleton.....	3 00
Best painting of horse, from life, 2 exhibits, Jas. R. Stuart, Madison.	10 00
Best painting of cow, from life, 5 exhibits, Jas. R. Stuart, Madison.	10 00
Best painting of sheep, from life, 1 exhibit, Jas. R. Stuart, Madison.	8 00
Best historical landscape, in oil, 4 exhibits, Jas. R. Stuart, Madison.	10 00
Second best, Miss H. E. Dodge, Madison.....	5 00
Best crayon from photograph, 1 exhibit, J. B. Medlar, Rockford, Ill.....	5 00
Best marine painting in oil, 4 exhibits, Fannie L. Walker, Okeo, Wis.....	10 00

Best portrait in water colors, 2 exhibits, J. B. Medlar, Rockford, Ill.	\$5 00
Best India ink portrait, 10 exhibits, R. L. Garlick, Madison.	10 00
Second best, C. L. Burdick, Albion, Wis.	5 00
Best plaque painting in oil, 2 exhibits, Mrs. E. T. Richmond, Appleton.	3 00
Best collection of china painting, 1 exhibit, R. L. Garlick, Madison.	5 00
Best single piece of china painting, 1 exhibit, R. L. Garlick, Madison.	3 00
Best panel painting in oil, 1 exhibit, Miss H. E. Dodge, Madison. .	3 00
Best panel painting in water colors, 1 exhibit, J. B. Medlar, Rockford, Ill.	3 00
Best crayon drawing, by exhibitor, 6 exhibits, L. Birdsay, Columbus.	2 00
Best collection of oil paintings, not less than 15 pictures, J. R. Stuart, Madison.	25 00
Second best, Miss Hattie E. Dodge.	10 00
Best India ink photograph, 2 exhibits, J. B. Medlar, Rockford, Ill.	5 00
Best water color (stipple) photograph, 1 exhibit, J. B. Medlar, Rockford, Ill.	5 00
Best specimen of steel engraving, 1 exhibit, Miss Lizzie Taylor, Madison.	3 00
Best collection of photographs and other sun pictures made by exhibitor, 2 exhibits, A. C. Isaacs, Madison.	10 00

CLASS 51 — *Needle, Shell and Wax Work.*

Best sample of plain sewing, embracing the different stitches used in household sewing and repairing, 3 exhibits, Mrs. H. D. Goodnow, Madison.	\$2 00
Best fancy knitting work, 5 exhibits, M. A. Patterson, McFarland.	S. P. 2 00
Best cotton tidy, 9 exhibits, M. A. Patterson, McFarland.	S. P. 1 00
Best worsted tidy, 5 exhibits, E. M. Newton, Verona.	S. P. 1 00
Best specimen of worsted embroidery, 3 exhibits, Miss Lizzie Taylor, Madison.	S. P. 2 00
Best raised worsted embroidery, 2 exhibits, Hester and Florence Craven, Madison.	S. P. 2 00
Best needle work or floss embroidery, 4 exhibits, Mrs. Kessler, Madison.	S. P. 2 00
Best silk embroidery, 3 exhibits, Hester and Florence Craven, Madison.	S. P. 2 00
Best embroidered chair cover (upholstered) 2 exhibits, Mrs. H. D. Armstrong, Madison.	S. P. 2 00
Best Ottoman cover, upholstered, 2 exhibits, Mrs. H. D. Armstrong, Madison.	S. P. 2 00
Best sofa cushion, upholstered, 8 exhibits, Mrs. S. J. Askew, Madison.	S. P. 2 00
Best specimen of machine braid work, 3 exhibits, Hester and Florence Craven, Madison.	S. P. 1 00
Best silk embroidered child's dress, 1 exhibit, Hester and Florence Craven, Madison.	S. P. 2 00
Best specimen of hand-braid work, 2 exhibits, Mrs. E. E. Thomas, Madison.	S. P. 1 00
Best gent's dressing gown, 3 exhibits, Hester and Florence Craven, Madison.	S. P. 3 00
Best sample of shell work, 1 exhibit, M. A. Patterson, McFarland.	S. P. 1 00

Best sample of leather work, 2 exhibits, N. R. Bailey, Sun Prairie.....S. P.	\$1 00
Best specimen of bead work, 2 exhibits, Mrs. Sophia Thorson, Madison.....S. P.	2 00
Best sample of fancy netting, 2 exhibits, Miss Lizzie Taylor, Madison.....S. P.	2 00
Best toilet set, 3 exhibits, Miss Lizzie Taylor, Madison.....S. P.	2 00
Best Afghan, 3 exhibits, Mrs. F. W. Madera, Madison.....S. P.	2 00
Best exhibition of any kind of lace, 2 exhibits, Miss Libbie Morse, Verona.....S. P.	3 00
Best exhibition of applique embroidery, 4 exhibits, Mrs. L. R. Burgess, Madison.....S. P.	2 00
Best exhibition of cretonne embroidery, 2 exhibits, Mrs. L. R. Burgess, Madison.....S. P.	2 00
Best set of embroidered underclothes, 1 exhibit, Hester and Florence Craven, Madison.....S. P.	2 00
Best picture embroidery, 4 exhibits, Mrs. S. J. Askew, Madison, S. P.	2 00
Best infants' robe and skirt, 3 exhibits, Boley, Hinrichs & Thompson, Madison.....S. P.	2 00
Best specimen of Kensington embroidery, 4 exhibits, Mrs. S. J. Askew, Madison.....S. P.	2 00
Best specimen of etching, on silk, satin or linen, 3 exhibits, Mrs. H. D. Armstrong, Madison.....S. P.	2 00
Best specimen of macrame lace, 3 exhibits, Mrs. H. D. Armstrong, Madison.....S. P.	2 00
Best specimen of lambrequin, 7 exhibits, Mrs. H. D. Armstrong, Madison.....S. P.	2 00
Best table scarf, 3 exhibits, Hester and Florence Craven, Madison.....S. P.	2 00
Best pillow shams, 6 exhibits, Boley, Hinrichs & Thompson, Madison.....S. P.	2 00
Best darne lace, 2 exhibits, Mrs. Thomas Wicks, Madison.. S. P.	2 00
Best air castle, 2 exhibits, Mrs. N. B. Carr, Madison.....S. P.	2 00
Best work on perforated board, 1 exhibit, Miss Libbie Morse, Verona.....S. P.	1 00

CLASS 52—*Domestic Manufactures.*

Best kersey blanket, 2 exhibits, Ed. Everson, Lodi.....	\$4 00
Second best, Ed. Everson, Lodi.....	2 00
Best 10 yards of home made flannel, 1 exhibit, Ed. Everson, Lodi.	4 00
Best 10 yards of home made flannel (colored), 1 exhibit, Ed. R. Toepelmann, Madison.....	4 00
Best rug of any material, 13 exhibits, Mrs. E. Newton, Oregon....	4 00
Second best, E. T. Taylor, Mukwanago.....	2 00
Best 15 yards of rag carpet, 3 exhibits, Mrs. R. E. Tipple, Madison.	4 00
Second best, Ed. R. Toepelmann, Madison.....	2 00
Best woolen stockings, 5 exhibits, M. A. Patterson, McFarland....	2 00
Best woolen socks, 6 exhibits, E. M. Newton, Verona.....	2 00
Best 2 pounds of woolen yarn, 1 exhibit, M. A. Patterson, McFarland.....	2 00
Best woolen mittens, 8 exhibits, Geo. Jeffrey, Milwaukee.....	2 00
Best fringed woolen mittens, 1 exhibit, M. A. Patterson, McFarland	2 00
Best white quilt, machine made, 1 exhibit, M. A. Patterson, McFarland.....	4 00
Best white quilt, hand made, 3 exhibits, Mrs. E. E. Thomas, Madison.....	4 00
Second best, N. R. Bailey Sun Prairie.....	2 00

Best silk quilt, six exhibits, Mrs. Thomas Wicks, Madison	\$4 00
Second best, Miss Lizzie Taylor, Madison.....	2 00
Best log cabin quilt, not silk, 7 exhibits, Miss Lizzie Taylor, Madison	4 00
Second best, Ada Fuller, Madison.....	2 00
Best silk log cabin quilt, 1 exhibit, Mrs. D. Bare, Hubbleton.....	4 00
Best patch-work quilt, 4 exhibits, Miss Ella Schenck, Madison.....	4 00
Second best, Mrs. E. Newton, Oregon.....	2 00
Best knit counterpane, 2 exhibits, Mrs. H. D. Armstrong, Madison	4 00
Second best, Mrs. D. Bare, Hubbleton.....	2 00
Best wrought counterpane, 6 exhibits, E. T. Taylor, Mukwanago..	4 00
Second best, Nelson Bacon, Madison.....	2 00
Best worsted scarf, 4 exhibits, Mrs. C. E. Angell, Oshkosh.....	3 00
Best wrought shawl, 2 exhibits, Miss Lizzie Taylor, Madison	4 00
Best gent's shirt, 4 exhibits, A. Flom, Madison.....	2 00
Best specimen of darning, 4 exhibits, N. R. Bailey, Sun Prairie....	2 00
Best specimen of patched mending, 1 exhibit, Mrs. J. C. Bates, Janesville.....	2 00
Greatest variety of articles of millinery, 2 exhibits, Misses Wilmot, Madison	10 00
Best ladies' sack, domestic manufacture, 2 exhibits, Mrs. L. R. Burgess, Madison.....	4 00
Best ladies' cloak, domestic manufacture, 1 exhibit, Hester and Florence Craven, Madison	3 00
Best display in this entire class by one exhibitor, Hester and Florence Craven, Madison.....	10 00

CLASS 53 — *Natural History.*

Best collection illustrating botany in Wisconsin, 1 exhibit, Louis H. Pammell, Madison.....	\$10 00
Best collection of woods of Wisconsin, Geo. B. Burrows, Madison.....	Diploma.
Best collection of the insects of Wisconsin, F. A. Carr, Madison.....	\$10 00
Best display of minerals, Geo. B. Burrows, Madison	Grand Silver Medal.
Best display of coins, etc. (Stone age), C. H. Avery, Madison	5 09
Best set of books and penmanship, the products of the pupils, Northwestern Business College, Madison.....	20 00

Miscellaneous Articles — Not on List.

H. D. Armstrong, Madison.....	Diploma.
-------------------------------	----------

REPORTS OF SUPERINTENDENTS.

DEPARTMENT H.—MACHINERY.

The superintendent of this department respectfully submits the following report of its operations for the year 1883:

Accepting, with some misgivings, the arduous duties of this responsible post, he has earnestly striven to conduct them in such manner as to promote and enlarge the general welfare of this Society and its patrons. The results of these efforts *are all in*, and he leaves it to others to say with what measures of success they have been crowned.

Convinced at the outset of the urgent need for a larger outlay to ensure a successful exhibit, he is glad to state that your officers, with enlightened liberality, fully appreciated and met these requirements.

A careful survey and platting of the show-ground, the providing of ample driveways and convenient access by walks and alleys, and of the needed facilities for seating the weary spectators, have contributed much to that order and system as well as comfort and accessibility, without which these great industrial expositions sometimes become mere Babels of sight and sound — “signifying nothing.”

The large additions to motive power — including several hundred feet of extra shafting, with necessary engines and machinery, proved none too liberal, as all was availed of.

These and other betterments and added facilities, enabled this department to hold its true rank in the fore-front of the unparalleled exhibition of 1883. Indeed prominent exhibitors were heard to say that our managements were unquestionably superior to those of the other western state expositions.

No accident or casualty clouded the occasion, and if any just cause for complaint went unremedied, it was due to its not being made known to the superintendent.

For the aid and courtesy shown him throughout in a new and trying position, he is glad to make acknowledgment to the exhibitors — to his assistants and to the other officers of this Society.

A distinguished predecessor in my office (Major Cheney in the report for 1870) remarks — “that it is a difficult thing to preside in this department on account of the great and diversified array of machinery and implements, and no less difficult to make a report that shall prove readable to the farmer, serviceable to the Society, and agreeable to the exhibitor.”

That these difficulties have not decreased by lapse of time, and the enormous increase both in number and variety of articles displayed, will be readily conceded. Nor does the practice of the Society which constituted this superintendent both judge and jury in his sphere of service tend to relieve these embarrassments. And this fact, with the added consideration that the exhibitor obtains no other award than his recognition in this report, will, I trust, form a sufficient apology for its length and voluminousness.

This grand agricultural exposition contributed to by the manufacturers of eleven great states of the Union and requiring for its use nearly twenty acres of ground, was by far the greatest and most complete display in the machinery, as well as in other departments, which our Society has ever been enabled to make. Surveying from the adjacent heights this vast and multiform and animated stage with its splendid enginery and implements of that occupation which Washington pronounced, “the most healthful, the most useful, and the most noble pursued by man,” the thoughtful observer could almost realize that in this later “age of iron,” the stupendous vision with which the Hebrew prophet opens his record, had been unrolled again. The “Great Chariot” in “the whirlwind of fire” with its celestial occupants inspiring and guiding the flight of those wonderful wheels, was, indeed, not there; but this magnificent modern revelation where all mechanical science and art were busied with the thousand-fold tasks of agriculture might well call forth the exclama-

tion of Ezekiel of old "verily the spirit of the living creature is in the wheels!"

We cannot refrain from complimenting these enterprising manufacturers upon their success in the constant struggle for excellence, both in the quality and finish of their wares. It is apparent, year by year, that nothing which money can command either in excellence of material or human skill is wanting in their fabrication. Our great standard harvesting and tilling machines are not only things of use but of beauty as well. And this is not only good in taste, but is also wise in policy. "The best is cheapest," in the eye of the true agriculturist, and the esthetic has due weight in the decision he makes. And assuredly that great department of mechanical industry which represents the largest accumulation of capital and labor in this vast workshop in America, must needs, almost as a matter of necessity, *stand in front* in this regard.

But large and satisfactory as was our display and its results, we cannot concede that it was all it should have been. A few prominent makers, of our state even, were, we regret to say, conspicuous by their absence. Aside from considerations of private interest, which are supposed to be all controlling, it has grown to be almost a recognized civil obligation that her artisans in agricultural mechanism avail themselves of the generous provision made by our commonwealth, through this organization, for their own and the general pleasure and good, and come up to her beautiful Capital City at these annually recurring festivals, with the best products of their workmanship. Nor, do the most active and intelligent, both producer and consumer of these commodities, fail to appreciate and appropriate such advantages.

We have not the time, even were this the proper place, to discourse upon the dignity and worth of the public fair. Its record has become a part of the history of civilization itself. Aye, before her dawn, one can detect in the "*Barbaric East*," traces of the "fair spirit" fore-running and preparing her advance. And in all ages and in every clime the "free fair" has been the ally of peace, the abettor of commerce, and the friend of society. Says an able English authority: "Like

the church on the religious side, so the 'free fair' on the commercial side has looked and cherished the international spirit."

Instead, therefore, of decrying this inherent tendency of social and commercial man, as some narrow obstructionists are doing, let us rather "give it free course and let it run and be glorified."

The entries upon the books of the machinery department for the state fair of 1883 numbered 349. A large number of articles were on the ground which did not bear the Society's entry tickets. The superintendent calls attention to this fact for two reasons: first, because it is not allowable to recognize such; and again, to urge upon future exhibitors the imperative necessity for promptness of entry. Great inconvenience and trouble results both to exhibitor and to the Society from failure in this respect; and many deserving exhibits must pass unnoticed in consequence.

We now proceed to list and notice the entries as they appear upon the books of this department.

John Lucas, Hastings, Minn.—

- No. 1. Wheat separator.
2. Wheat separator.

These were respectively for elevator and farm use. Of novel design, and working admirably, they attracted much attention and favor. Mr. Lucas has high testimonials from Minneapolis millers, and elevator men and farmers generally in his state.

Ransom Manufacturing Co., Hornellsville, N. Y.—

- No. 3. Reaper.
4. Mower.

Mr. E. H. Gage, of Milwaukee, western manager for this company, presented these thoroughly made and finished goods. He appreciates the patronage of the Badger State, having more than fifty agencies already at work here, and is giving his friends *full value* we have no doubt.

The Lake City Tool Co., Madison, Wis.—

- No. 5. Wind Mill (Conradson's).

An entirely new invention which claims amongst other points of superiority to insure a steady motion by duplex gearings; also entire freedom from side draft, and the necessity of lubricating obviated by friction rollers. Strength and lightness are assured by its tubular wrought iron frames. They desire close investigation by consumers.

Peck & Hopkins Man'f'g Co., Chicago—

No. 6. Hay Rake and tedder.

7. Hay Rake and tedder.

These machines and their workings were watched with great and increasing interest which they appeared to merit. A peculiarly valuable feature was the self-adjusting device by which a large or small amount of hay was equally well handled. We are assured that this invention has grown out of the experience and needs of the farmer who patents it.

James Fyfe, Portage, Wis.—

No. 8. Iron fence post adapted to barbed wire.

A new device claiming both cheapness and durability over wood.

West Depere Ag'l Works, West Depere, Wis.—

No. 9. Workman Seeder.

10. Reversible Harrow.

(340. One Harrow.)

Three good and serviceable implements of Wisconsin make.

The Plano Man'f'g Co., Ills.—

No. 11. Harvester and Binder.

12. New Warrior Mower.

The Agent was disappointed by the railroads and was unable to show up. We cordially invite them to try it again in '84.

John P. Manny & Co., Rockford, Ills.—

These standard machines were exhibited by Messrs. Dodge & Sons, agents at Madison. They need no description or recommend from us. They were pioneers in the pathway of western progress.

Hoover & Gamble, Miamasburg, Ohio —

No. 15. Excelsior Harvester and Binder.

This superior implement of husbandry (also exhibited by Messrs. Dodge & Sons), makes at will either large or small bundles. A very obvious advantage at times.

The Johnson Harvester Co., Batavia, N. Y.—

No. 16. Wrought Iron Harvester.

17. Continental Reaper.

18. Combined Reaper and Mower No. 1.

19. Combined Reaper and Mower No. 2.

20. Single Mower No. 3.

21. Changeable Speed Mower No. 5.

22. Changeable Speed Mower No. 6.

23. Harvester Twine Binder.

Mr. B. G. McMechen, general manager at Chicago of the western business of this extensive concern, made the above full and very creditable display of its harvesting machinery, etc. We expect and shall be glad to learn that he reaps the reward of his enterprise. We have no hesitation whatever in commending such machinery as this to the favors of our farmers.

D. M. Osborn Manufacturing Co., Auburn, N. Y.—

No. 24. Twine Self Binder.

(25 and 26. Not entered.)

27. Light Reaper No. 8.

28. Mower No. 7.

29. Mower No. 2.

The wares of this leading Empire State Manufacturing Company are also in extensive use and high rank in our own state. It is claimed that their binder of '83 is practically new, but embraces all the best results of their long experience and is the simplest in mechanical details of any of the standards. Their light reaper is a good representative of a recent style much in demand upon the smaller grain farms.

Joseph Smith, Agent, Madison, Wis.—

No. 30. Stover Wind Mill.

This old and familiar looking friend was in its accustomed

place and on its best behavior. We are always glad to meet it. [Freeport, Ill.]

J. P. Phillips, Agent, Milwaukee, Wis.—

- No. 31. Victor Clover Huller.
32. Portable Engine.
33. Hollingsworth Rake.
34. Reindeer Rake.
35. Crescent Rake.
36. Surprise Rake.
37. Taylor Rake No. 1.
38. Taylor Rake No. 4.
39. Red Bird Rake.
40. Farmers Friend Planter.
41. Farmers Friend Planter, single.
42. Double Harpoon Fork.
43. Randall Fork.
44. Walker Fork.
45. Randall Track Carrier.
46. Randall Rod Track Carrier.

We congratulate the various manufacturers represented by this gentleman upon their selection of so able, active, and trustworthy an agent. His exhibit was a prominent feature of the fair. The well known Victor Huller under our own eye and operated by a single man, cleaned up seed at the rate of six bushels an hour, on imperfectly cured clover at that. Several machines were made on the grounds.

His traction engine handles admirably, and his fine showing of horse rakes, mainly of staple makes, and other farming utensils, was well patronized throughout.

J. S. Green, Albion Wis.—

- No. 47. Eureka Harrow.

A new principle in the construction of this implement which promises much in adjustability and handling, so important in drag service.

Peerless Reaper Co., Canton, O.—

- No. 48. Peerless Reaper, single.
- 49. Peerless Reaper, combined.
- 50. Peerless Mower, rear cut.
- 51. Peerless Mower, front cut.

The above display of these finely finished and working machines apparently made them many friends. We are pleased to learn of their extensive introduction among us, more than one hundred agencies already being opened. We shall expect to hear satisfactory reports.

S. K. Ellsworth, Agent, Madison, Wis.—

- No. 52. Champion Self Binder (6 feet).
- 53. Champion Light Binder (5 feet).
- 54. Champion Light Reaper.
- 55. Champion Light Mower.
- 56. Champion New Mower.

Our old friend Cap't E. was promptly on hand with his line of this standard make. No introduction of them by us is needed with Wisconsin farmers, where they have been so long and so favorably known. The light binder is new this season and claims to be the lightest made, weighing only 1350 lbs. and made specially for our state trade. A single team handles it. We note a few minor modifications and improvements, perfecting their service and finish.

Barnes Man'f'g Co., Freeport, Ills.—

- No. 57. Peerless Hay Rake.
- 58. Tiger Corn Sheller.
- 59. Riding Cultivator.
- (316.) Walking Cultivator.
- (318.) Sweepstakes Sheller.

The above samples constitute a part only, of the large list made by this enterprising Freeport Company, and commend themselves by their uniform excellence and utility.

C. Aultman & Co., Canton, O.—

- No. 60. Buckeye Elevator Binder.
- 61. Low-down Binder.
- 62. Canton Reaper.

C. Aultman & Co., Canton, O.—

- No. 63. Buckeye Mower.
- 64. Traction Engine.
- 65. Engine Tank.
- 66. Vibrator Thresher.

This important display of the great "Buckeye" Company was made by its agent, Mr. S. L. Sheldon, to whom we shall make special allusion hereafter. The Badger State has for a quarter of a century been familiarized with the substantial worth of their goods, having been its "sinews of peace." We need only make special mention of the new low-down binder (of 1000 lbs. weight only, as claimed) and capable of being handled by a single (even light) team. And the mower as now built, is a marvel of strength and durability. The traction engine, too, elicited great attention, and is handled with remarkable ease and facility.

C. L. Hartshorn, Clinton, Wis.—

- No. 67. Osgood's Improved Farm Scale.

Mr. H. as state agent of this very economical and meritorious article, did the subject full justice, and met an ample appreciation of his efforts. We can conscientiously advise a trial of this scale.

Milan Man'fg Co., Milan, Mo.—

- No. 68. Hay Rake.
- 69. Stacker and Loader.

The Sucker State contributed these creditable samples of her mechanical art. We hope for a complete display of their wares at our succeeding fair.

P. Schlechtman, Arlington, Wis.—

- No. 70. Corn-shock Loader.

It seemed to us that the onerous work of shock gathering can be greatly lightened by this simple device. A capacity of ten acres per day for single man with team is claimed for it.

Ward Brothers, Soldiers Grove, Wis.—

- No. 71. Extensible Harrow.

A new and very neat flexible and reversible adaptation of the drag, suited both to sod and plow ground.

Ball Brothers & Co., Madison, Wis.—

No. 72. Woodbury Sorghum Mill.

The old pioneer cane mill reappears in an improved and enlarged edition, due, as we suppose, to the great revival in the native syrup industry following the development of the Minnesota amber plant.

C. Ostrander, Dane Station, Wis.—

No. 73. Farm Gate.

A very inexpensive and practical iron device, applicable to a section of common board fence. We are cognizant of the fact of its long use and approval by leading farmers of central Wisconsin.

No. 74. Self-locking Hay Fork.

S. Freeman & Sons, Racine, Wis.—

No. 75. Fanning Mill.

No description or indorsement of this well known Racine-mill is needed. It is known and approved in all parts of the world.

Dickie & Pease, Racine, Wis.—

No. 76. Cast-iron Field Roller.

77. Farm Fanning Mill.

78. Warehouse Fanning Mill.

The foregoing remarks are applicable to the above makes of grain-cleaners. Indeed the Bell City has long enjoyed a most enviable reputation in this line. No farmer can afford to be without a good durable implement like this roller.

Stover Manufacturing Co., Freeport, Ill.—

No. 79. Sweep and Power Feed Mill.

(343. Two Corn and Cob Mills.)

We have great faith in the seed grinder and have seen none doing more rapid and thorough work than these. We purpose to give them a trial. Shown by A. S. Brown, agent, Madison.

J. P. Parker, Peoria, Ill.—

No. 80. Sweep and Power Mill.

81. Drill.

82. Seeder.

Mr. Parker exhibits for Messrs. Hart & Hitchcock, some good serviceable and substantial wares that no consumer can go astray in buying. Those spring seats on their seeding machines look highly comfortable and satisfactory.

Walter A. Wood, Hoosick Falls, N. Y.—

No. 83. Twine Binder Harvester.

84. Junior Reaper.

85. Light Reaper.

86. Wood's Mower.

This great manufacturer's interests were well represented by Mr. A. S. Brown, their Madison agent, who succeeds Messrs. Fuller & Johnson, now themselves manufacturers. The world-wide use and reputation of these goods renders comment superfluous. A new bundle-carrying attachment seems the only marked improvement, although minor improvements are added year by year.

Wm. Deering, Chicago, Ill.—

No. 87. Twine Binder Harvester.

88. Deering Reaper.

89. Deering Mower.

Mr. Brown, of Madison, had also in charge the Deering machinery which appears to be growing rapidly into favor in our state. We know them principally by reputation, but they bear evidence of superior quality and workmanship.

Furst & Bradley Manufacturing Co., Chicago, Ill.—

No 90. Steel Beam Plow.

91. Steel Beam Plow.

92. Steel Beam Plow.

93. Wood Beam Plow.

94. Wood Beam Plow.

95. Wood Beam Plow.

96. Wood Beam Plow, chilled.

97. Wood Beam Plow, chilled.

Furst & Bradley Manufacturing Co., Chicago, Ill.—

- No. 98. Wood Beam Plow, chilled.
- 99. Sulky Plow.
- 100. Sulky Plow.
- 101. Walking Cultivator.
- 102. Combined Cultivator Sulky.
- 103. Self Dump Hay Rake.
- 104. Push and Pull Lever Hay Rake.
- 105. Adjustable Harrow.
- 106. Scotch Harrow.
- (231). Field Roller.

The extensive and splendid display of this leading agricultural concern of the western metropolis, well sustained their reputation. We can but repeat what we have frequently stated before in the case of others, that we see no need for lengthy comment and eulogy upon implements that are in almost universal use and which speak so well for themselves. We are pleased to hear that they propose erecting a permanent show warehouse, on the fair ground the coming season — an example which more of our own manufacturers would do wisely in following.

[Nos. 107-125 inclusive, transferred to Department I.]

- 126. Superior Seeder.
- 127. Superior Seeder.
- 128. Big Giant Feed Mill.
- 129. American Feed Mill.
- 130. American Reaper.
- 131. American Cider Mill.
- 132. Leader Reaper.
- 133. Bonanza Hay Rake.
- 137. Farm Roller.
- 138. Wood's Bundle Carrier.
- 141. Barlow Corn Planter.

[We apologize, and with much regret, for the loss and misplacing of our notes upon the above list constituting a part of the large and fine exhibit of Mr. A. S. Brown.]

Nos. 134-6, inclusive, and

139 and 140, were transferred to Department I.

Eau Claire Chilled Plow Co., Eau Claire, Wis. —

- No. 142. Sod Plow.
- 143. Cross Plow.
- 144. General Purpose Plow.
- 145. Display of Plows.

A very unique and elegant display by this young and enterprising company — quite worthy of another centennial. But we would be glad to see the regular working samples at our next exposition. We can indorse them on general reputation, and their crook neck beams and little jointer plows are features of great merit, peculiar to this make.

Mast, Foot & Co., Springfield, Ohio —

- No. 146. Iron Turbine Wind Engine.
- 147. Buckeye Force Pump.
- 148. Iron Fencing, samples.
- 149. Lawn Mowers, samples.

A diversified and very creditable showing of implements and wares from another large manufactory in the Buckeye State. Their wind engine is constructed on radically new principles, being entirely of iron and looks very simple and strong.

Their pumps enjoy a high reputation, and the fence and gate patterns are both elegant and economical. A nice assortment of lawn mowers closes their list.

J. M. Boyd, Waupun, Wis.—

- No. 150. Fountain City Seeder.
- 151. Fountain City Seeder.
- 152. Fountain City Cultivator.
- 153. Fountain City Hay Fork.
- 154. Fountain City Hay Carrier.
- (282.) Harrow.

This gentleman as agent for the "Wheel and Seeder Co.," Fond du Lac, Wis., an old and favorably known concern, presented the foregoing catalogue. We cannot comment upon their special features, but can safely assure purchasers that they will get their money's worth. We were especially pleased with this new hay handling apparatus.

Isaac Miles, Janesville, Wis.—

No. 155. Strickler's Hay Carrier.

Another improved invention of its kind which has been extensively introduced and very favorably received in leading hay producing states.

Emerson, Talcott & Co., Rockford, Ills.—

No. 156. Standard Reaper No. 1.

157. Standard Reaper combined.

158. Corn Planter.

159. Riding Cultivator.

160. Riding Cultivator.

161. Riding Cultivator.

162. Standard Mower.

A fine exhibit of the productions of one of our leading western factories, all well known and approved by our own wide-awake and inventive farmers.

Hoosier Drill Co., Richmond, Indiana —

No. 163. Twelve Hoe Seeder.

164. Coil-tooth Hay Rake.

Two very superior implements of Indiana make which we hope to see here again.

Madison Manufacturing Co., Madison, Wis.—

No. 165. Two Steam Engines.

166. Cane Mill.

167. Tripple Geared Horse Power.

168. [Omission.]

Of the two engines, we understand the portable one was not for exhibition. The other one seemed a wonderful machine and we have been informed that competent engineers have pronounced favorably upon the new principles involved in its construction — the practical issue of which is to effect a saving of nearly one-half in the consumption of fuel.

With respect to cane mills and their various adjuncts, our Capital City, as before indicated, is fast becoming an emporium in their production, and we advise all concerned not to overlook it in their inspections.

J. I. Case & Co., Racine, Wis.—

- No. 169. Sulky Plow.
- 170. Canton Draft Plow No. 64.
- 171. Canton Draft Plow No. 84 M.
- 172. G. M. Draft Plow No. 83.
- 173. Plow No. 12.
- 174. Plow No. 24.
- 175. Plow No. 24½.
- 176. Plow No. 03, chilled.
- 177. Plow No. 3, chilled.
- 178. Plow No. 1, chilled.
- 179. Plow No. 24½, chilled.
- 180. Riding Cultivator, 4 shovel.
- 181. Riding Cultivator, 4 shovel.
- 182. Adjustable Cultivator, 60 tooth.
- 183. Eureka Harrow.

The exhibit of this great Badger State institution, in its extent and variety, constituted another prominent feature of our fair. Without entering into details, we confine ourselves to the statement that such concerns as this, whether considered in the vastness of its operations, or in the thoroughness of its work and the elegance of its finish, is one of which any state may well be proud; indeed, the name of "Jay Eye See" is national.

The Fuller & Johnson Manufacturing Co., Madison, Wis.—

- No. 184. Riding Cultivator — 4 shovel.
- 185. Iron Cultivator — 3 shovel.
- 186. Iron Cultivator — 5 tooth.
- 187. Wood beam Cultivator — double shovel.
- 188. Iron beam Cultivator — double shovel.
- 189. Bonanza Corn Planter.
- 190. Bonanza Sulky Rake.
- 191. Patent Harrow — 72 tooth.
- 192. Patent Harrow.
- 193. Prairie Breaking Plow — 14 inch.
- 194. Wood beam Breaking Plow — 14 inch.
- 195. Steel beam Breaking Plow — 14 inch.
- 196. Steel beam Breaking Plow — 16 inch.
- 197. Sod and Stubble Plow — 14 inch.

The Fuller & Johnson Manufacturing Co., Madison, Wis.—

- No. 198. Brush Breaking Plow — 14 inch.
- 199. Grub Breaking Plow — 14 inch.
- 200. Red White and Blue Mower.
- 201. Red White and Blue Mower.
- 202. Folding Corn Knives.

We confess to great astonishment and pleasure at this display of another of our rapidly rising manufacturing establishments, located at the Capital City, representing a consolidation of three large plants, viz.: the Firmin-Billings Plow Company (second to none in reputation); the Garnhart Reaper Works, and the long established agricultural warehouse which designates the consolidated concern. It has now one of the largest and most thoroughly equipped workshops in the northwestern world.

Consumers and dealers will consult their own best interests in examining their extensive and diversified array of the implements of husbandry, and considering the advantages in transportation this company can offer.

Janesville Machine Co., Janesville, Wis.—

- No. 203. Crown Reaper.
- 204. Crown Mower.
- 205. Prairie City Seeder.
- 206. Leader Reaper.

These samples of the Prairie City factory products justify us in indorsing their own statement of their goods, viz.: "Well made, finely finished, strong and durable." We can conscientiously add to this, as we have done before in other cases, that they have their own peculiar features of superiority.

H. J. Hill, Madison, Wis.—

- No. 207. Lifting Jack.

A very simple but powerful lever action, working on a tripod, by which a single man readily lifted a boulder weighing more than a ton and a half. Two men can raise with it a dead lift of seven tons.

Oregon Manufacturing Co., Illinois—

No. 208. Corn Plow. A good sample of its kind.

Van Brunt, Davis & Co., Horicon, Wis.—

No. 209. Force Feed Seeder and Cultivator.

210. Force feed Drill.

These productions of another leading state concern attracted the attention and approval which they well deserved. Handled by so genial and popular a gentleman as Secretary French, they could have hardly missed. By devoting themselves exclusively to broadcast and drill work and especially to developing its cultivating capacity, a matter of the highest importance, this firm has placed itself in the front rank of its profession, and have attained the reputation and success which is accorded only to solid merit.

Eagle Fork Co., Appleton, Wis.—

No. 211. Self Reversing Hay Carrier.

212. Display of Horse Forks.

213-216. Display of Horse Forks.

This concern devotes itself entirely to the manufacture of haying tools, and possesses extensive facilities and valuable patents.

Kappe & Daale, Belleville, Ill.—

No. 217. Portable Hay Press.

This compact and powerful press attracted much attention. We were not able to examine it thoroughly, but can say that it produces ample guarantees and references, and we would recommend those in need to inquire into its merits.

Moline Plow Co., Illinois—

No. 218-226. Display of Plows.

This old friend of our agriculturists sustained its old-time reputation by a fine show of its first class implements.

Russell & Co., Massillon, O.—

No. 227. Traction Engine.

228. Water Tank.

229. "New" Massillon Separator.

230. Straw-Stacker.

We were glad to welcome these representatives of this prominent Ohio manufacturing firm to the hospitalities of our state fair, and can safely say that no part thereof attracted more attention than the exhibition superintended by their Milwaukee branch. The traction engine handled "like a thing of life." Their well-known thresher, with all the modern improvements and finish, has developed a straw-stacking arrangement, which pretty much does away with manual labor on the dreaded straw pile. A most valuable invention.

H. S. Pomeroy, Edgerton, Wis.—

No. 232. Two tobacco hoes.

It seems to us that the use of Mr. P.'s tobacco working tools ought to greatly lighten the onerous and never-ending labor of the culture of "The Great Plant."

S. Gesley & Bro., Beloit Wis.—

No. 233. Sulky Plow.

234. Two Plows.

(281.) Corn Cultivator.

The products of the labor and skill of a new and rising young firm, carry their own recommendation. Further than this, we may add that we have used them ourselves and proved them good.

W. W. Heath, Cazenovia, N. Y.—

No. 235. Upright Hay Knife.

This little device, in spade form, and with teeth of sickle sections, we have tried, and found the most useful tool we have yet employed for its purpose. We can cordially recommend it.

E. O. Darling, Rockton, Ill.—

No. 236. "Business" Grain Separator.

We can testify to the thorough work done by Mr. D.'s fanning mill at the fair, and think it entitled to a fair trial.

Foeler Bros., Dubuque, Iowa—

No. 237. Clipper Press Drill.

This implement's special feature is a presser-wheel follower

which packs the earth on the seed. Of the advantage of this in certain soils and seasons, no farmer can entertain a doubt.

S. D. Henderson, Beloit, Wis.—

No. 238. Sickle Grinder.

We did not see this invention, but are advised that it is a success.

McCulloch Bros. Mfg. Co., Chicago—

No. 239. Improved Box Rack.

[Transferred to Department I.]

Upton Mfg. Co., Battle Creek, Mich.—

No. 240. Traction Engine and Separator.

These standard machines, from one of the oldest and best manufacturing concerns in the west, secured a full share of intelligent appreciation. We learn that this company propose to *push things* in Wisconsin, where their wares have never had the patronage justly due them.

S. L. Sheldon's Agency, Madison, Wis.—

No. 242. Cooper Traction Engine.

243. Ames Portable Engine.

244. Wm. Anson Wood's Mower.

245. Esterly Self Binder.

246. Corbin Disk Harrow.

247. Acme Pulverizer.

248. Church's Hay Carrier.

249. Betts' Hay Carrier.

250. Betts' Hay Fork.

251. Kelly Barbed Wire.

252. Meadow King Mower.

253. Gregg Reaper.

254. Gregg Hay Rake.

255. Meadow King Rake.

256. Coates' Sulky Rake.

257. Sheldon Saw Frame.

258. Common Sense Potato Digger.

Of Mr. Sheldon's extensive display, embracing the whole range of agricultural manufactures and rising almost to the

rank of an *exposition* itself, we cannot refrain from making honorable mention. Covering about two acres of the whole territory and requiring about half the steam power and line shafting in use, we are still owing him an apology for the insufficiency of the accommodations furnished. And the thanks of the Society are due him for many important favors and courtesies which were most cheerfully proffered by him. We speak of Mr. S. the more freely as his was the most conspicuous example of the enterprise of the many leading agents to whom so much of the success of this exhibition was due. We shall be most happy to welcome all again.

As respects the above list of entries by Mr. S. we may observe that some have already been noticed and others will be hereafter. In general terms it may be said that all who know Mr. S. and his business methods regard his indorsement of any implement as almost *prima facie* evidence of its merit. His large experience has thoroughly educated him in his profession, and his personal interests would not be enhanced by his approval of mechanical failures. The Meadow King goods which he has handled so long are recognized standards in their line. Those invaluable aids to the soil tiller, the Disk Harrow and the Acme Pulverizer we are glad to believe are coming into more general use. Indeed no one need go away unprovided with an entire outfit of the most approved modern agricultural weapons from the vast armory of S. L. Sheldon.

G. H. Pomeroy, Ft. Atkinson, Wis.—

No. 259. Two Pounder Harrrows.

Another meritorious badger invention.

D. C. & H. C. Reed, Kalamazoo, Mich.—

No. 260. Spring Tooth Seeder.

261. Spring Tooth Harrow.

In these implements, the new "spring tooth" principle seems to be very successfully applied.

J. W. Stoddard & Co., Dayton, O.—

- No. 262. Tiger Sulky Rake.
- 263. Hollingsworth Sulky Rake.
- 264. Favorite Sulky Rake.
- 265. Triumph Seeder.

These Buckeye State wares, handled by Mr. Sheldon, have their own peculiar merits and bring with them a first class home reputation.

A. W. Coates, Alliance, O.—

- No. 266. Self-dumping Horse Rake.

Also shown by Mr. Sheldon and justify Mr. Coates' own recommendations of his specialty as "simply made, easy of operation, of excellent material and durable."

D. S. Morgan, Chicago, Ill.—

- No. 267. Triumph Reaper, No. 2.
- 268. Triumph Reaper, No. 3.
- 269. Clipper Mower.

Another fine lot of Chicago samples. We are glad to learn that Mr. Morgan proposes to acquaint our grangers better with their virtues. He is on the right track to do it.

Geo. Esterly & Son, Whitewater, Wis.—

- No. 270. The Esterly Binder.
- 271. The Esterly Binder.

These machines operated by the makers as also by Mr. Sheldon, proved themselves amongst the most attractive features of fair week. We note little change in the make up of this favorite harvester the past season, save a simplification of some of its working parts. Such institutions as these Whitewater works are the pride and strength of our commonwealth.

The Knowlton Manufacturing Co., Rockford, Ill.—

- No. 272. Two Riding Cultivators.
- 273. One Walking Cultivator.
- 274. Two Sulky Rakes.
- 275. Mower.

This more recent candidate for popular attention from the Reaper City, seems well entitled to its share, judging from

the specimens offered above. We shall look for them again in 1884.

Northwestern Manufacturing and Car Works, Stillwater, Minn.—

No. 276. Traction Engine.

277. Minnesota Chief Separator.

This exhibition by the Great Minnesota Company received that attention which its merits and importance deserved. We are becoming well acquainted in Wisconsin with this staple thresher, and its companion, the agricultural engine, bids fair to overtake it in the race for public favor.

J. H. Thomas, Springfield, Ill.—

No. 278. Thomas Hay Rake.

279. Champion Hay Rake.

280. Morgan Hay Tedder.

We were pleased to see this display of haying tools held in such high repute in their native state.

We have only time and space to earnestly invite our farmers' attention to the tedder, and especially the Morgan variety as an indispensable factor in their calling.

Nos. 281 and 282 elsewhere noticed.

Skandia Plow Co., Rockford, Ill.—

No. 283. Corn Planter.

284. Sulky Plow.

285. Walking Cultivator.

286. Walking Cultivator.

287. Walking Cultivator.

288. Walking Cultivator.

289. (No entry.)

Another display of strong and serviceable working machinery from the well known Plow Factory at Rockford. We should be glad to see a full line of their makes next fall.

South Bend Iron Works, South Bend, Indiana—

No. 290. Casaday Sulky Plow.

Mr. Sheldon presented this singular production of a "Hoosier" Factory—a plow without a landside and with

furrow wheel working at nearly a right angle with its mate. But there is strong and satisfactory proof of great merit in this invention, and we recommend it to our progressive farmers for trial.

Pitts Agricultural Works, Buffalo, N. Y.—

- No. 291. Traction Engine.
- 292. Vibrator and Separator.
- 293. Water Tank.

It is needless to say, perhaps, that these old standbys still maintain their place in the front rank in the great army of the world's industry.

Briggs & Enoch, Rockford, Ill.—

- No. 294. Rockford Corn Planter.
- 295. Check Rower.
- 296. Stalk Cutter.
- 297. Sulky Plow.
- 298. Walking Cultivator.

A very attractive display by another of the Reaper City's wide-awake institutions. We would especially desire to ask our friends' attention to this new thing for helping solve the vexatious problem of the disposal of the corn stalk.

Eclipse Wind Engine Co., Beloit, Wis.—

- No. 299. Wind Engine (pumping).
- 300. Wind Engine (geared).
- 301. Feed Grinder.
- 302. Feed Grinder.
- 303. Water Tank—frost proof.
- 304. Assorted Pumps.
- 305. Corn Sheller.

As a matter of course, the extensive and well-handled exhibition of the Great Eclipse Company, another offspring of our own commonwealth, was a focus of popular interest. These wind engines, now courting the gales in almost every quarter of the globe, were there for "use" as well as "ornament," surrounded by its retinue of conveniences and labor saving accessories—the pump and tank—the grinder and sheller, etc. This machine now seems to be conceded to be

“The Standard,” and the query now is not so much as to what it *can* do, as what it *cannot* do in the line of labor. We are assured that they are in successful use as a threshing power—a fact which sufficiently attests the volume, reliability and steadiness of this splendid Badger production.

Mechanicsburg Manufacturing Co., Ohio.—

No. 306. Baker Grain Drill.

307. Baker Grain Drill.

We confess to being especially pleased and interested in these products of Buckeye skill. The light and strong gas-pipe frame and spiral spring pressure on the hoes are entirely new features to us, and we have great faith in their value. We bespeak for them a thorough trial by our practical, common-sense farmers.

H. C. Haven & Co., Chicago, Ill.—

No. 308. Buckeye Feed Mill.

309. Buckeye Feed Mill, with carrier.

These grinders seemed to *hold their own* in a department where very active competition prevailed.

Norwegian Plow Co., Dubuque, Iowa —

No. 310. Sulky Cultivator.

311. Walking Cultivator.

312. Four Plows.

313. Sulky Plow.

This concern, originating in our own state, has grown from a mere blacksmith shop into an immense agricultural manufactory. They have accomplished this by knowing their business, and making good, honest goods. Mr. Sheldon also displayed their line as agent.

Deere & Mausur Co., Moline, Ill.—

No. 314. Corn Planter.

315. Invincible Corn Planter.

Two excellent implements from makers of first-class reputation. We look for a large line of their wares at the succeeding state fair.

Nos. 316-319 inclusive — See entries 57-59.

Keystone Manufacturing Co., Sterling, Ill.—

- No. 320. Two Planters.
- 321. Four Corn-shellers.
- 322. Faust Hay-loader.

These corn tools are well spoken of and will bear inspection. The loader, we regret to say, we were unable to see at work.

N. C. Thompson, Rockford, Ill.—

- No. 323. Corn Cultivator.
- 324. Two Corn Cultivators.
- 325. Hay Tedder.
- 326. Assorted Plows.

These are old and tried friends of our granger community, and comprise but a portion of Mr. T.'s large list. He pronounces ours as his banner state — having more than 100 agencies at work. Send us a full line next fall.

P. P. Mast & Co., Springfield, Ohio —

- No. 327. Spring-tooth Seeder.
- 328. Force-feed Seeder.
- 329. Force-feed Drill.
- 330. Fertilizer Drill.
- 331. Senior Cider Mill.
- 332. Junior Cider Mill.
- 333. Buckeye Cultivator.

Another part of the exhibit of this great Buckeye State concern, represented by their agent, Mr. Sheldon, we believe. All such thoroughly made and finished work *tells its own tale.*

R. Ellwood Manufacturing Co., Sycamore, Ill. —

- No. 334. Ellwood Power.
- 335. Ellwood Cultivator.
- 336. Veteran Hay Rake.
- 337. Ellwood Mill Cart.

Another very creditable sample line from one of our well-known Illinois neighbors. The cultivators are a staple article in our Wisconsin agencies.

Wart Manufacturing Co., Grand Haven, Mich.—

- No. 338. Challenge Corn Planter.

Appleton Manufacturing Company, Appleton, Wis.—

No. 339. Badger Seeder.

West Depere Agricultural Works —

No. 340. See Nos. 9 and 10.

Wyckoff & Tuttle, Perry, Ohio —

No. 341. Royce Reaper.

342. Royce Mower.

Belle City Manufacturing Company, Racine Wis.—

No. 344. Feed-cutter.

[Our notes upon these, as upon some formerly mentioned, have got mislaid. But we cordially invite all these exhibitors to the exposition of 1884, when we shall hope to renew our acquaintance and make amends for apparent inattention.]

Birdsell Manufacturing Company, South Bend, Ind.—

No. 355. Clover Huller.

This old and approved standby appeared with some minor modifications and improvements, just to keep it fully up with the times.

[Nos. 346-7-8 noticed before under 76-77-78.]

J. S. Rowell & Sons, Beaver Dam, Wis.—

Exhibited by Mr. Sheldon's agency. We had fully expected to have seen a complete exhibit by this firm, which is one of the oldest and most favorably known in the northwest, and is a pioneer in the introduction of some of the most important improvements in harvesting machinery. We shall confidently look for this next season, if for no other reason than to represent the large and growing interests of their beautiful city, which is fast becoming a center of all manufacturing industries.

Respectfully submitted,

T. L. NEWTON,

Sup't and Chairman of Special Examining Committee.

A. A. AVERY,

Secretary and Member of Committee.

FARMERS' CONVENTION,

UNDER THE AUSPICES OF

Wisconsin State Agricultural Society,

Held February 4-8, 1884.

OPENING ADDRESS.

By Hon. N. D. FRATT, Racine.

Gentlemen of the State Agricultural Convention: We are met again under pleasant and encouraging circumstances, and are somewhat wiser and better equipped for the labors of our calling, and for all noble services, because of the experiences through which we have passed in the year just ended. Gratefully is it to be acknowledged that during the interval since last we were gathered here, the sovereign ruler of nations has liberally dispensed his benefactions to the people of this state, in the full enjoyment of the rights of conscience, with public tranquility, and the increase and diffusion of knowledge. They continue to be blessed with civil institutions admirably calculated to secure, in the highest degree, their social happiness and the benefits of a free government. We have, for the most part, been mercifully exempted from those calamities which are frequently permitted to afflict nations and communities; we have enjoyed an unusual degree of public health, and been favored with a fruitful season and a

PLENTEOUS HARVEST.

If in the midst of this liberal ministration to our necessities and comforts by our beneficent Creator, our hearts are not fully satisfied, then indeed have our inordinate desires

turned us from the path of duty and happiness; and the chidings of His providence by reproving our too eager passion for gain, repressing our extravagances, and teaching us salutary lessons of humility, moderation and wisdom, are, if rightly considered, but the merciful manifestations of His paternal goodness. In view, therefore, of the numerous favors and blessings with which the past year has been crowned, our thoughts should naturally be directed to our Munificent Benefactor, and our hearts be moved to expressions of gratitude and thankfulness. I do not forget — we none of us can forget — that the records of the vanished year, while they tell of numberless good things for which we ought to be grateful, they also chronicle sad and awful catastrophes, the wide sweep of destruction, desolating and bereaving strokes such as hardly ever before, in any year, have caused homes and cities, and whole lands to mourn.

Almost without warning, what multitudes of people have been swept away, as with a flood! How many have perished amid the smoke and flame of the conflagration, and the fury and desolation of the tornado or cyclone. How many sunny lines have been blotted out by a single stroke, when swift-flying trains have collided and been dashed in pieces; earthquakes, too, have opened their horrid jaws, and swallowed whole cities together with their inhabitants. Every day, almost, the hand of destruction, here and there, has suddenly fallen, and human homes and hearts have been desolated by some awful visitation, and yet, it is not for us to say that there is no

KIND AND WATCHFUL PROVIDENCE,

but that fate, or accident, or chance rules the world, and controls the destinies of men. It is better to think that the voice which sometimes speaks from out the cloud, or in the whirlwind, oftenest speaks in the sunshine, in mercies new every morning, and in every kind and gentle way. When in the annual procession of the seasons, the autumn had come round again, and the ripe fruits, grown during the summer from the spring's planting, were gathered in, I thought, as I looked upon the specimen productions of our farms, and mingled with those who were competitors in

the show of grains and fruits, of flocks and herds, of the creations of shop and factory, and saw in them and their families an aristocracy of intelligence and good breeding, that when man was set apart to till the soil, and to fill it with the monuments of his art and genius, it was

A BLESSING AND NOT A CURSE

that was pronounced upon him. The real and great value of what are called fairs or expositions also becomes the subject of thought. In other avocations men compete with each other, day by day, sharply and briskly; every one is trying to be the best man in his business. In the line of the mechanical arts, one manufacturer strives to outdo another. It is different in farming; the tendency there is to settle down quietly, and not try to excel one's neighbors, even by friendly rivalry. Now fairs are competitive, and those who bring the products of their farms to these exhibitions, will as a consequence become better producers. Under their stimulation

FARMERS WILL GROW IN INTELLIGENCE AND SKILL

and elevate their calling more and more to the dignity of the learned professions. Sowing for such a fruitage, they shall reap it in some ripe time to come. They will also raise themselves, among their associates, and make the farm to stand for the dignity of the laborer as well as of labor, where shall abound the fruits of their ripe experience and cultured skill. It is told to the praise of a certain Greek, that, in the battle of Marathon, he fought with a plowshare for a weapon, having no other, and wielded it stoutly and victoriously. But a greater victory than his is being won with the plowshare in these later times, and its heroes are numbered by thousands, though their praises are seldom sung. Military glory has a sort of glare and attraction about it, while it is yet little more than an illusion, a false light. But the glory that is won by him who peacefully subdues the earth, "making the dull clod to bring forth life, and the desert to become a watered garden," is a glory of a far higher order, and fadeless as the stars. In a very just sense, every man who tills the soil or puts the best that is in him into his work, that it shall be good work and true work, is

A FELLOW LABORER WITH THE DIVINE WORKER,

not only on his earthly acres, but also in the spiritual field where character is cultivated and mature life becomes like a shock of ripened corn. I think our fifty millions of people are trying to do a greater number of difficult things at once than were ever yet attempted by a nation — working to subdue a half cultivated continent, and, amid the embarrassments of a mixed population, representing every phase of civilization, endeavoring to construct a republic, which means nothing less than the reconstruction of all the institutions of society.

WE ARE CALLED A MATERIAL PEOPLE,

and such, no doubt, we are, by force of circumstances. We could not help ourselves. To subdue a wilderness, either by hard blows of the arm, or the invention and use of machinery, necessarily produces such a concentration of the national mind on physical success as will bring every great class to the adoption of a strongly material test.

We are what we are, because we had no time to become anything better, and it may be said that our materialism decides the quality of nearly all we call American. The literature of the country, it has been affirmed, is chiefly a journalism kept alive by its connection with the commercial interests of the country; our society an aristocracy of wealth, either of land or money; of this we may be sure, that wealth is more easily and sooner obtained here than anywhere else. The number of rich men in America is

SOMETHING WONDERFUL.

And we know that money confers more of social importance and political power here than anywhere else. Mainly for this reason thousands propose to themselves riches as an end; they live for money, and with an eye single to its material uses. We need not hesitate to pronounce this wrong and degrading. Wealth may be so sought — there are those who so seek it — as that by the very toil in its acquisition a nobler manhood is built up and adorned. It may be so used, also — there are men who so use it, use it so unselfishly, that they are helped up to higher ground, and

the good they do is wrought as an element of goodness into their lives. I may say of our farmers, or of the mass of them, and greatly to their praise, that the acquisition of wealth is rarely made an end, and that it is seldom used to subserve mereseifish and unworthy purposes. There is that, I think, in the very nature of their calling, although they have to do with material things, and there is something of drudgery in their daily employment, that prevents sordidness of aim, and fixes the eye upon objects

MORE VALUABLE THAN WORLDLY TREASURE.

In any event, not many of them get rich, as now-a-days we count riches, but are content to attain to that comfortable condition expressed by the words "well to do," while they pour untold treasure into the lap of the state. Their labor furnishes the resources on which its prosperity and independence are based. In pursuing his art, working may be better than he knows.

THE FARMER

subdues, transforms, and employs material nature; seizes the invisible powers of water and air, and compels them to serve his purposes, thus advancing the cause of civilization, and increasing the comforts and conveniences of life.

In pleading the cause of agriculture, I would not have it thought that I strike at any other interest, whether commercial or mechanical. Of commerce it is to be said, that while it has wrought many evils, it has vindicated its essential nobleness, and mended where it marred. Physical resources have been developed by it, new channels of trade and better rewards of industry created, new ideas sown to grow and ripen into a rich harvest, and it has shown itself the builder of institutions, the school-master of character, the mother of nations.

It is a true saying that the necessities and rivalries of business have made constantly fresh demands on energy, invention, taste and skill, and thus have kindled aspirations, fostered the mechanic arts and helped to produce a sharpness of intellect, a persistence of purpose, a power of insight and foresight, and habits of application and self-reliance, which,

though their best results have seldom fully appeared, have yet played no mean part in the world's ripening life. I mention here, as a gratifying result of the progress of our times, the

GROWING HARMONY

between commercial, mechanical and agricultural interests, or at least indications of a disposition to join hands in a kindlier fellowship. Between an important and widely extended branch of mechanical industry and that of agriculture, a most intimate relation has been established. I refer, of course, to that branch of mechanical industry to which we are indebted for the time-saving and labor-saving machinery employed on the farm. Formerly the manufacturing greatly overbalanced the agricultural interest. Associated with them was wealth, ease, privilege, education and political power; the consequence of which was, the wide separation of the town from the country, the shop from the farm, in sentiment, habit, sympathy, and intellectual tendencies. This wideness of separation, through the increasing social and political power, privilege and intelligence of the American farmer, has, in our day, been contracted to a very narrow space, or to a hand-shaking distance. No doubt the wonderful improvements in

THE ART OF FARMING

have had something to do with this — improvements so numerous that we may not attempt to name them. We can, however, cover them all in three words: Liberty, Science, Invention. Of our new and improved agricultural machinery, it may be said that it has a moral and educational significance, in that it helps to relieve alike the men and women of the country of overburdening toil, and enables our farmers to educate their sons and daughters at our best institutions of learning. One day the great toiling masses will be raised from their drudgery, and given time to learn and think. To this end the mechanical arts will mightily contribute, and the inventor shall be counted among the greatest benefactors of the race. Let me here call attention to

A BIT OF HISTORY,

which, if it serves no other purpose, will help us to see as we look back to the beginning it marks, with what marvels of change the last few decades have been packed, and what especially has been achieved in the field of agriculture. Thirty-three years ago this Society was organized. We were then a state only three years old. The interval between then and now is not very considerable, as we count off the years one by one; and yet there has been room for wonderful growths, for long forward marches, for broad sweeps of enterprise, for the coming to pass of memorable things more than we can number. If we go back only a few years beyond the birth of this Society, we reach a time when there was

NO MILWAUKEE NOR CHICAGO,

when the site of this Capital City was a solitude, and none dreamed of the extension of empire across the continent. The Erie canal had only just been completed, and a railroad was then unknown. Travel was by private conveyance, or by post coaches; on the farm only the rudest and clumsiest implements were employed, and they were few in number. Even the vehicles were coarse, lumbering affairs. Oxen were used more than horses. When some of us were taken a-field to try our 'prentice hand at farm work, hay was made and grain harvested after the most laborious fashion. The scythe, the sickle, the cradle, the hand rake, and the pitchfork were the only tools used. In those days there was no daily newspaper, no electric telegraph, no sewing machine, and none of the discoveries and inventions which have brought us so much of new light and help in these later years. By the growth of this Society in breadth of plan, largeness of work, reach and weight of influence, with which many of you are familiar, we may measure the growth of our state in all things, especially in agricultural wealth and greatness. It would seem almost as though there had been

PROVIDENTIAL INTERVENTION

in the helping of our great farming interest. I call your attention to the fact that the *germ thought* of a reaping

machine, was embalmed in the classic lines of the Elder Pliny, written eighteen hundred years ago, and finally found lodgment and growth in the brain of an Englishman towards the close of the last century; and that out of his crude invention grew, by slow degrees, the perfect reaper of McCormick, and Manny, and Esterly; and that these, along with the threshing machine and other time and labor saving inventions, were nigh at hand when this vast wheat and corn field was opened to occupancy and tillage. With the demand for farm machinery came the supply, only waiting to be called; and this supply was of a nature that it made of every man ten men, put the work and achievement of a century into a space of a little more than a generation.

I have thought to say something upon a subject to which attention has not often been called in these latter days, but one that by and by will present itself anew for serious consideration to the minds of the laboring classes, especially of our farmers, and of the whole American people, and out of its discussion, I have no doubt, will come the true remedy for the evils which a partially false or mistaken diagnosis attributes to other than the true cause, and to cure which there is a resort to "strikes," dynamite and riotous demonstrations. I refer to the subject of

THE RIGHTEOUS DISTRIBUTION AND ENTAIL OF OUR LANDS,

or of such a system of land laws as shall remove many of the most serious of our political and social evils, and promote among the people the great blessings of liberty, equality and fraternity. I hold that the poorest of our citizens should have a direct interest in the soil of his country; that there should be a homestead or hearthstone for every family among us, of which no misfortune, no usury, no rich man could finally deprive them or their children. I would have every citizen a land owner, and not an acre of the soil be held for speculative purposes. In this way I would

STAY THE STEADY GROWTH OF PAUPERISM

in our country, and finally make an end of it altogether. Please do not denounce this idea as utopian in advance of a careful and thorough examination. And surely you will

not haste to pronounce the subject one in which you agricultural men and mechanics have no special and immediate interest, for the question it involves, if it possesses the eminent merit and importance claimed for it, is not only one which, in its practical bearings, touches vital matters in your calling, but must receive from you, more than from all others, a final determination. A statement of Dr. Wines is to the effect that some years ago Great Britain, with a population of twenty-six or seven millions, numbered less than ninety thousand land owners. It has a million and a half of

PUBLIC PAUPERS,

or about one in eleven. Besides, there are fourteen millions of human beings whose utmost possible earnings are only three-quarters of what it costs to maintain the inmates of their poor houses. More recently we find the statement that the number of land-holders is constantly diminishing. In 1770 there were 250,000; now less than 30,000, of whom nearly 9,000 are in Ireland. Five of the aristocracy own one-fourth of the land in Scotland; twelve men possess one-half, and half of England belongs to about 150 persons. Out of the seventy-seven millions of acres in the United Kingdom, thirty-four millions seven hundred thousand acres were uncultivated, and although the population from 1851 to 1861 had increased nearly 2,000,000, the agriculturists had diminished by 400,000. The 30,000 land-holders receive a clear annual income of \$750,000,000. With a thousand years of experience and progress in civilization, this is a picture of her condition to-day — the great mass of her people landless, with little to defend save poverty and bondage. Our legislation, so far as it has gone, has been of a more just and merciful kind. The accepted theory of this country is that the people own the land; and in a partial, bungling way, we have shaped it into law. That is, we have made feeble, half-hearted efforts to secure a homestead to the poor.

If the people own the land, it would seem that provision should have been made for an equitable division of the land among the people, and a law enacted preventing the final alienation of the family property. In other words, upon our

accepted theory, there should have been secured to every American citizen by constitutional law, or otherwise, an inalienable title to

A PORTION OF HIS NATIVE SOIL.

This is what the Hebrew constitution did for every native Hebrew citizen. We may call this intensely agrarian, but whatever called, it was eminently just and safe. And it has been well said that the history of other nations, and especially the internal convulsions arising from conflicts between the rich and poor, the patricians and plebeians, which shook the republics of Greece and Italy to their foundations — conflicts like those which now so frequently and alarmingly disturb the public tranquility and peace in our own country, show with what wise foresight the Hebrew law-giver anticipated and provided against the evils of a rich and powerful landed oligarchy on one hand, and extreme poverty and its attendant dangers on the other. “The improvident or unfortunate Hebrew might reduce himself and family to penury and even servitude for a time, but he could not perpetuate a race of paupers and slaves, he could not extend the evil beyond the year of jubilee. Once in fifty years the divine sovereign and owner of the country resumes his right and title to the soil, and gives it back again to the family descendants of the original owner.”

THE RIGHTEOUSNESS OF THIS LAW,

that which recommends it as eminently worthy of re-enactment among all peoples, especially of adoption as a law of this land, is seen in that it secured the means of independence to every family, and stood as a barrier against the evils growing out of the accumulation of immense fortunes in the hands of the few, leaving destitution and dependence the lot of the many.

We know how largely the best of our public lands have been absorbed, through grants and sales, by corporations and speculators, within the last few years, until now, according to authentic statements, all that remains of real value might be comprised in a single large county like Chippewa. In instances, we may concede, these lands have been worthily

appropriated; but we cannot avoid the conclusion forced by an examination of official reports, that a

RECKLESS SQUANDERING

has been going on, and that if continued much longer, even our homestead law will be no protection to the landless poor, because inoperative and void, on account of the entire absorption of the public domain, for the most part, by other than actual settlers. What Governor Oglesby feared, only seven years ago, has already largely been realized, that under what he called our "liberal system," men with strong arms and long purses would reach out and get possession of this land by millions of acres; and so a long step be taken toward that condition which is the curse of England to-day, a great landed aristocracy. I cannot discuss this subject further, but must content myself with saying, that in my opinion, our great need is

A LAND SYSTEM,

having reference to such a distribution and entail of our lands as shall secure social equality, pleasant homes, fertile fields, general prosperity, peace and happiness to the whole people, and security to the government, whether from internal strife or external violence.

The man who stands upon his own soil, who feels that by the laws of the land in which he lives, by the law of civilized nations, he is the exclusive and just owner of that land which he tills, is by the constitution of our nature under a wholesome influence, not easily obtained from any other source. He feels, other things being equal, more strongly than another, the character of man as lord of the inanimate world, of this great and wonderful sphere, which

FASHIONED BY THE HAND OF GOD,

and upheld by His power, is rolling through the heavens, a portion is his, from the center to the sky. It is the space on which the generations before him moved in its round of duties; and he feels himself connected by a visible link with those who preceded him, and he is also to those who will follow him, and to whom he is to transmit a home. Perhaps his farm has come down to him from his fathers. They

have gone to their rest; but he can trace their footsteps over the scenes of his daily labors. The roof which shelters him was reared by those to whom he owes his being; some interesting domestic tradition is connected with every inclosure. The favorite fruit tree was planted by his father's hand. He sported in his boyhood beside the brook which still winds through the meadow. Through the field lies the path to the village school of early days. He still hears from his window the Sabbath bell which called his fathers and forefathers to the house of God, and near at hand is the spot where his parents laid down to rest, and where he, when his time has come, will be laid by his kindred. These are the feelings of the owner of the soil. Words cannot paint them, gold cannot buy them; they flow out of the heart; they are the life-spring of a fresh, healthy and generous character.

DISCUSSION.

Mr. John Hinton, of Milwaukee — Mr. President, I am quite sure that every lady and gentleman present will most heartily and sincerely join with the distinguished chairman in thanks to the giver of all good for the manifold blessings, the freedom and the unequalled opportunities that are the birthright of every American and of which every foreigner becomes a partaker. The gentleman has alluded to some republics dead and buried centuries ago, and I think has drawn a very unfavorable contrast between our grand republic and those. History furnishes no example of any government based upon the moral, the pure and the Christian intelligence of a people before this. The great enunciated principle that all men are created free and equal, that they are endowed with certain inalienable rights, life, liberty and the pursuit of happiness, was first announced when those grand men, not much more than a century ago, laid the foundations of this government. I know of no country where the homestead law, with all its sacred character, exists as it does in this grand country, which some of us came thousands and thousands of miles to partake of and to thank God that we have it. So far as the waste of public land is concerned,

every man, regardless of any political feeling, must and ought to be strenuously opposed to it. So far as these land grants have been the means of opening up and peopling new parts of our great country which must but for this have remained comparatively a wilderness, I understand them to have been nationally beneficial to the country. But there is a part of this land matter which the gentleman has not touched upon—undoubtedly an oversight on his part—which merits the severest condemnation and the most resolute reprobation, and that is that these men, a few of whom hold so much of that grand old land I came from, come over here and buy immense tracts, countless almost in their millions of acres, with no law to prevent them from giving ninety-nine year leases, as the common law of England prevails wherever there is no statute to intervene, and that is the case in this state and over a large part of this country. Therein lies one of our greatest dangers. So far as the Hebrew system is concerned, a bigger or more miserable failure never cursed the earth. You might as well look for the grace of God in the hills of Scotland as to look for a Jew farmer. Where did you ever hear of one? I do not think your venerable president ever saw one. Did you?

President Fratt — I do not know that I did.

Mr. Hinton — Now there is a confounding idea in these allusions to the old republics. How long would the people of Wisconsin go to an amphitheater to see slaves thrown into a ring to be torn to pieces by wild beasts, the principal amusement in many of those old republics. If some of those old systems were right, why in the name of Heaven are the wolves and hyenas to-day the only inhabitants of those old massive buildings, compared with which the capitol at Washington would be little more than a shanty? I believe that the allusions frequently made to those old republics have no application to this at all. I believe there were giants in those days when this government was formed. I do not mean giants physically, but giants intellectually and morally, and in love of mankind. The ink was hardly dry upon that grand instrument, the beginning of our present government, when those who signed it said "be it remembered that

the workings of the American government are solely for humanity," and, however material these people may be, God's sun never shone on a people who offered the whole soil of their country to every poor outcast that would come here and settle upon it. The words which even John Bright said to that mass meeting in Birmingham, a quarter of a century ago, are as true to-day as they were then, for her free latch string never was drawn in against the poorest child in Adam's kingdom. I am glad the gentleman made a slight, a very slight indeed, allusion to the flocks. He scarcely alluded to the flock master. Now I assure you I am not here to introduce anything of a political character. It would be entirely out of place, and I am not the man to do it. But some of these questions are so great and touch the interests of so many people in this country at the present time, and are being so agitated from one end of the land to the other, that I certainly was astonished that he did not make some slight allusion to it. I am very well aware that it is a very delicate subject, and it requires on the part of some people a great deal of skill to touch it without making it quiver. I remember once seeing a man found torpid. A very skillful surgeon came and putting two parts of the body together pronounced the man living because, said he, there is a concurrent sensation. Now I would like to have heard something to-night upon this great question. You cannot ignore it. It is coming up I understand. It is like Banquo's ghost, it will not down. It is bound to come up and it will break out, like the measles, all over. There will not be one of you who will be like the clown in the circus, whose father and mother and brothers and sisters had all had the measles, but who said he supposed he did not have it himself because there was not enough to go around. There will be plenty to go around to every one of you, and I tell you, gentlemen, you have got to pull the wool off your own eyes or some one else will pull it off for you. There are nearly six hundred thousand flock masters in the United States, and I tell you they are a power not to be derided. This is a more important question to you by far than where this Agricultural Society will hold its next fair. You must think

it over. I want to tell you, my friends, to-day, that there is no class of men in the country in the same danger that the farmers are to-day. Australia has about twenty-five million bushels of wheat for sale this year, more than she wants. Victoria has seven millions to sell. India has nearly forty millions to sell, and there are other countries, including the Argentine Republic, which have large amounts to sell. If you look it over you will not wonder any longer why wheat does not come up. You will be like the poet when they showed him a fly imbedded in a piece of amber. He looked at it and said —

Not that the thing itself is rich or rare,
The wonder is how the devil it got there.

I tell you, you must look beyond your fences, no matter how big your farm is. I have no doubt some of you think those countries a long distance off. What did you hear the other day? That they brought wheat from Calcutta to London at two pence a quarter. A quarter is eight bushels. I hold myself second to no man living in my earnest love and admiration for this country. In one respect I think I am the superior of our worthy president — he is an American by accident and I am one by my own making. I say a self-made American who came here of his own choice and who had such a profession as I had, that of a sailor, which took him anywhere the wind might blow — when I came here of my own choice and solemnly registered that oath to forever break away from the allegiance to the land of my birth and attach it to this, it is a grand thing to think of. There is no comparison between this republic and the old republics which perished from the earth and could not live. They perished from within. Like Jonah's gourd, the worm was within them and killed them. This country has grown stronger every day, and it has been the school-master that has done it. It is from these little log school-houses that dot the prairies and stud the hillsides that has gone out this intelligence that there is in such immense measure, to the girls and boys alike, that has inculcated a higher order of intelligence than was ever known before. That is

wherein lies our strength. It is not to be compared with any form of government of nations dead and buried centuries ago. We cut loose from all previous forms of government. The world had never dreamed of it. Its failure was predicted far and near, but it has grown with its growth, strengthened with its strength till, as Lord Coleridge, chief justice of England, said in New York, "I see in this country as I go around what I never expect to see in my dear old England. I am told that nearly all your private gentlemen own their own homes and the land on which they stand; that your farmers own the farms they occupy, and your artisans own the cottages they inhabit. Oh, what a grand thing to think of in time of peace and what a marvelous protection in time of war!" That was the lord chief justice of England. I do not say that he is any better man because he is lord chief justice. I remember of a very big justice in England, and I thought when I was a boy, and I still think, that he was one of the most unmitigated scoundrels that ever went unhung. I never spoil a story for nationality's sake.

There is danger of a terrible absentee system which shall draw the strength and the produce out of our country and spend it in another land. We have a land system here never equaled, and it is because this government was founded upon the very truest and broadest principles that underlie the Christian religion, because, when the independence of this country was achieved, those men, who were conquerors in the complete sense of the word, those men who had conquered at least that part of the continent which constituted the original thirteen states, and were absolutely the owners of it, considered themselves simply the apostles of Him whose footstool is the earth, and they invited the poor, the outcast and the needy to come here, and hundreds and hundreds of thousands have come. They said to them: "Come unto us all ye that are weary and heavy laden. Here ye shall have rest." Millions have come here and found that rest, and that is why God has blessed this land as none other has been blessed. I do not like these allusions to these old dead and buried republics. If those old republics were so grand,

where are they? A search warrant would not find them. When they were pointing out some of those old temples to the Yankee traveler, and he was told how grand they were, "Yes," said he, "but they are terribly out of repair." They have perished. They were doomed to perish. God sustains only that that is right. That is all there is of it. I was addressing three or four hundred boys here a while ago, and they asked me a question which I will not repeat, but which I answered in this way: If you will look into one of Sir Archibald Allison's essays, speaking of the greatness of that country over there, he said: "Supposing the President of the United States and the Autocrat of all the Russias should combine and say to Great Britain, 'You shall not have any of our wheat,' what would you do? You would starve to death." I remember an extract in an English paper, the purport of it was, "All our eyes are now turned to India." It was about the same time that a loan of one million, two hundred and fifty thousand pounds was made for the purpose of opening up the great wheat fields. There is no limit to them. They can raise it there for thirty cents a bushel, and do well on it.

There was another little paragraph. An English traveler, writing from Australia, said: "Here are immense herds of oxen and immense flocks of sheep in this part of the empire, and in another part there are hundreds of thousands of hungry mouths and empty stomachs yearning for food and cannot get it, and the great wisdom, so-called, of all the statesmen has not yet been able to contrive a plan by which the beef of these fat cattle and the mutton of these immense flocks of sheep can be brought to these hungry mouths." But that question is being solved. Not very long ago a company went out to New Zealand, having one million five hundred thousand dollars of capital, and they have already commenced to send from sixty to seventy thousand carcasses of mutton every month to London. Already two more are formed to slaughter the cattle in Australia, in Queensland, and send them here in refrigerator ships. We have in this country to-day probably fifty-three to fifty-three and a half million people. We have got to feed them or they will

starve; we have got to clothe them or they will freeze. Of all we raise in this country to-day we do not send nine per cent. out of it. We imported last year three million dollars worth of eggs. We do not begin to raise eggs enough to feed the children their breakfast. For the staples I tell you the old heads in the old country — and I tell you those old heads are old and wise; they do not let the fools come to the top there; they put the biggest men in the biggest places as sure as you live — they are devising means by which they can get along without being dependent upon this country for the food supply.

Mr. Ford — If the gentleman will allow me I would like to ask him what means they have in the old country for preventing the fools from coming to the surface.

Mr. Hinton — I will tell you why. In the first place the elective system there is totally different from what it is here. While I am as heartily in favor of this general suffrage as any man can be, yet there the votes are cast by those who have a stake in the soil, who own a good deal of property, and fewer votes are cast, but, being cast by those who have a deep interest, they are cast with a good deal of caution. While general suffrage is a grand blessing it may have its evils. While there is far less liberty there, so far as the elective franchise is concerned than there is here, yet, fewer votes being cast, the biggest offices being held by appointment by those who have such tremendous stakes in the country, they put a different class of men in the high places than we often do here. That is all there is of it. I am not in sympathy with it. I am only telling how they do it.

Mr. Ford — I am enlightened by the gentleman partially. I wish to say to the gentleman in behalf of the president, who is a modest man, that the reason he did not allude to that question was because he is a modest man and he knew that there was a gentleman here who certainly would and could discuss that question for him.

Mr. Hinton — Thank you. I respect the president more than ever.

Mr. Ford — I was forcibly reminded during the gentleman's remarks, in which he said that the president did not

make himself, but the speaker did, of a translation of one of the odes of Horace which was given by a classmate of my father's. I will not say that this was Horace's meaning, but this was the translation: "Who made Mycaenas? Nobody. What bad luck he had then."

Mr. Hinton—It was just to show the good luck I have had, and the good luck that has followed me every instant since I have been here, that has made me feel proud of making myself an American citizen.

Mr. Babbitt—I hope the gentlemen will feel at liberty to pitch into our friend Fratt. He has been our president for several years, and he has given us such good papers that we have not had an opportunity to get at him, and it is expected to-night that you will do so, if you can see anything to pull to pieces; I think the president invites it by writing such excellent articles. I see many here that could make it very lively for him, and I wish they would do it. Here is Brother Broughton, for instance.

Mr. Aaron Broughton—I could not find much fault with it, without it was in purely malicious mischief, and that would not be a very pleasant thing at this time. As there will be plenty of opportunity to expend our energies in another direction, perhaps we had better not undertake it; not that I wish to flatter the president at all, but I do not feel like it. There is one matter I would like to allude to, and that is the Mosaic law in regard to land tenure. It seems to be a fact that the editors of the Encyclopedia Britannica sought to get articles written upon that subject from different parties. There was an article written by a gentleman in Scotland embodying the very same principles that our president alludes to. That article was not accepted by the editors of the encyclopedia, but another article was accepted, the principle of which was regular landlordism. I think that is a matter of history. It seems that it was thought best that mankind should not be taught generally those doctrines that Moses taught, that land should be sold no more forever, etc. There is another point: kings can not live in palaces unless those who till the soil live in hovels. That is a matter of fact. It was as true in Assyria, and Rome and Greece, as it

is in this country. If the Vanderbilts have rich palaces along the Hudson, some must live in hovels to balance the account. In Egypt, the government expended the energies of the people in building the pyramids. What have we there? A desert covered with vast stone obelisks. It will be just so in this country if things are allowed to go as they are. The rich can build palaces and vast edifices and the industrial man will live in hovels. Look at our common schools, for instance. By the reports of the district clerks the value of the six thousand school-houses in this state, including the lots on which they stand, does not exceed five hundred dollars apiece, the accommodations amounting to twelve dollars and a half for each pupil educated therein. And look at the facilities afforded for education in the university, buildings and appurtenances that cost one thousand dollars for each student. See the vast difference. One is being educated comparatively in a log cabin, and the other in a palace. Have they greater caste than that in India? You say, what is the matter with our common schools? Sure enough, what is the matter? The same ones that build the one build the other. They build the one for themselves and the other for some one else. Hence, we see aristocracy grow apace in this land.

Mr. Ford — Mr. President, in regard to that portion of your address which refers to railroads and railroad land grants, I sympathize with it so far as the general purport of it goes, and the general drift of your address I like very much, that is, the desirability of every American having an interest in the soil. One portion of your address reminded me very much of the work of Henry George, a recent writer on political economy, which has been very much noticed of late. I am not sure that I understand fully the ground you take there in regard to the ownership of the soil, but in regard to the railroad land grants it is a very popular thing through the press and by party resolutions to condemn in wholesale terms these great railroad grants, and then for our members of congress to go there and support them and vote them. It seems to me there is a discrimination to be made. I can not, when I look over the past twenty-five years, entirely condemn all of these railroad grants. I think the state of

Wisconsin has been very much benefited by the Northern Pacific railroad grant. We have two or three great lines pushing through the state, and perhaps already through the state going from Chicago to Duluth, Chicago to St. Paul and Chicago to Bayfield, stimulated by the desire to meet the Northern Pacific and conduct its freight and its travel to Chicago. All of Dakota has within the last three years been settled by the railroads that have been anxious to settle their own lands and sell them. There is a great state which has been made by these land grants, which is now demanding admission to the Union. The Northern Pacific, the Union Pacific, and the Southern Pacific railroads probably would not have been built within twenty years of the time they were built, and perhaps never, but for these land grants. They were enormous land grants, where millions and millions of dollars went to individuals, and where they were entirely absorbed and immense fortunes made; but at the same time I have no doubt that in the aggregate they have been of great benefit to the country at large. So far as the United States government proper is concerned, the receipts of the sales of land amount to nothing, and the president does not recommend it, but recommends the homestead law, which, of course, I believe in; but these lands in Dakota would have been worth absolutely nothing without the railroad. The great cities that have been built upon those lines would not have been there but for these railroads. These land grants have stimulated them. I think we ought to make a discrimination. I think we have realized immense benefit from them, but there has been the danger of these great monopolies, but the people have it in their own hands; if the people will control them, they are the most necessary and useful thing that there is in this republic at the present time in a material way, in the way of developing our industries; so we will all go heart and hand with the president in the general drift of his address. I can not condemn indiscriminately these railroads, because I think every man here knows that some of them have been of great benefit to the country in the production of wealth and the development of the country.

Mr. Broughton — I would like to ask Mr. Ford one question. Were the railroads made for the farmers or the farmers for the railroads?

Mr. Ford — I would like to ask the gentleman in return whether he means ought they to be or are they?

Mr. Broughton — I mean, which are the most necessary for the public good, the farmers or the railroads?

Mr. Ford — I should say in the case of Dakota that the railroads were the most necessary for the farmers in the first instance, because the railroads carried the farmers and their material there and brought back their grain. Without them they would not have been there. In the majority of instances the railroads are built to subserve the interests of the farmers, and so it ought to be in the long run; but in the new countries, these immense prairies away off on the frontier, this seems to be the modern way of settling them.

Mr. Broughton — I would infer from that that the farmers were made for the railroads.

Mr. Babbitt — Our president said here two or three minutes ago that if his paper did not excite discussion he had got through; he would never give you another one, and I really was in hopes that you gentlemen would pitch into him roughshod. My friend, brother Hinton, does the fair thing once in a while. I think he has done it to a limited extent to-night. I did not expect I would have to come to the defense of the president. In fact, I did not expect to say anything; but Mr. Ford has made a remark to-night that does not exactly coincide with my views. I take the president's side in this little war of words. I remember a few years ago when I was at St. Paul and the bonds of the Northern Pacific railroad were advertised for sale, that in the handbill they made the statement that they owned more land than all the New England States and Maryland added. Now that may appear to be a very happy boast. It may appear to be perfectly safe in your estimation for one corporation to be able to say to the American people at large that they own more land than all the New England States and Maryland added, and it may appear a safe position for us to know, that these lands are free from taxation until sold to actual

settlers. I have visited many of the best portions on the Northern Pacific road. Many were the instances, and not exceptions by any means, where the men who went there to make that fair land their home, were unable to pay for their land and were obliged to sell out and go still further west, giving up their land to others. I believe that that is wrong, and I believe that Mr. Hinton never made so honest an assertion in his life as he did when he said that the greatest danger that we have to combat in this country is that those great lines which run from ocean to ocean are paid for by the capital of foreign countries or that foreign wealth has undue influence.

Mr. Hinton — You misrepresent me entirely. I did not say so. I said no such thing.

Mr. Babbitt — I was in hopes that brother Hinton could stand fire, did really mean what he said.

Mr. Hinton — No sir.

Mr. Babbitt — I agree with brother Hinton in some things.

Mr. Hinton — Allow me to say just in one word what I did say. I said this, that so far as these land grants were concerned in conducing to the building of railroads and opening up and causing the settlement of an immense area of land that would have been yet a wilderness but for them, that in such cases it was a benefaction. The great danger was in men coming from the country where I came from, the very men whom the president spoke of harshly, and justly, where so few own nearly the whole country, coming here and buying these vast tracts of land, leasing them for ninety years, taking all their products to foreign lands, and we living under the curse of an absentee system. That is what I said.

Mr. Babbitt — That is about the way I understood it. Foreign capital omnipotent and when controlled by a foreign country a dangerous citizenship. Brother Hinton is a more honest man than I took him for. He talks about pulling wool. He can do it first rate, but he can not pull the wool over my eyes to make me believe that he did not imply that the influence of foreign capital invested as he has described is a dangerous thing. He also

eulogizes these foreigners who are able to come over here and buy immense tracts of land, and still he pretends to advocate the interests of our small wool-growers in this country, and these very rascals that he tells about, these long-headed fellows who come over here and buy land in such quantities, that three men in this country to-day can own more sheep than all the farmers in the state of Wisconsin combined. The farmers of the state of Wisconsin own about one million four hundred thousand sheep. Now if those fellows across the water would let our institutions alone and would not come here with this immense amount of wealth and buy up immense tracts of land, and cover them over with sheep and run a tremendous opposition right here at home against the farmers of this state. I should think they were doing about the fair thing. It is hoped, however, that our government, which curtails the soldier to 160 acres, will be in time less liberal to foreign capital and more honest to our country's defenders. Brother Hinton also advises you farmers here to look out, you are in *terrible danger*; he even carries the idea so far as to try to make you believe that you can buy your flour cheap.

Mr. Hinton — I said nothing about flour.

Mr. Babbitt — You did say wheat, and from that we make flour.

Mr. Hinton — I never said anything about buying wheat cheap at all.

Mr. Babbitt — You said those fellows in Australia can raise wheat for thirty cents a bushel and lay it down here.

Mr. Hinton — In India.

Mr. Babbitt — You said Australia and India, *breakers ahead!* You farmers can get that wheat cheap, or in other words have cheap flour. Now Hinton thinks you are in terrible danger if you can do that, as we Wisconsin farmers have about given up raising wheat. My friend here has said, and he says it very candidly, that he is anywhere where the wind blows, and we admit that, and he does his fair share of the blowing. The wind blows certainly wherever he is. He makes more fun for us than any other man that comes here, and there is much music in him. I like to have him enjoy

his liberty. I do not blame him for standing up here in his good old patriotic way, as he has done repeatedly time after time, and earn his money and applaud the character, the reputation and the standing of those old Englishmen. John Bright is always spoken of by my friend here as one of nature's great and noble men. It is all right that he should speak well of him. John Bright says, and he says it honestly, that anything that is permitted by law is entitled to the protection of the law. Now if we permit these men to come into this country and to purchase and control three rods in width extending from ocean to ocean and from lakes to the Gulf, an independent country almost from the people, running through this country, if we permit this I say, and allow these purchases of lines of railroads, and to surrender virtually their control, we as an honest people are certainly obliged honorably to protect them in their outlay and their purchases. I prefer however that foreign powers should let our institutions alone.

Mr. Hinton.—I never saw a man in my life yet, and I am about sixty-six years of age, that would tie himself up in a not tighter than our friend Babbitt. He says he wants those countrymen of mine over there to let our institutions alone. That is what I have been fighting for forty-five years. I say make them let them alone, and John Bright, whom he admires so much, says we have no right to manufacture for ourselves; that we are all barbarians; that we should buy everything we want from England. Long ago I remember reading an article that was published in one of those old papers some forty-three or forty-four years ago, speaking of the purpose and intention and the desire of England. It was this:

Said a certain rich isle of the sea,
I would like the world's workshop to be,
Let me make your cloth,
T'will be better for both,
And decidedly better for me.

Mr. Babbitt — When will brother Hinton discard the primer of his youth and read the lessons Tom Payne read his fathers.

Mr. Hinton — So far as John Bright stood by this country, so

far as John Bright raised his voice when his grand land was in the agony and bloody sweat of the civil war, I say to him who rules us all, God bless him to the last instant of his life. If he was ten thousand free traders, if he was the whole Cobden club trying to tear down our industries in this country and ruin us, even then I could not forget his kind words then. Those are the feelings of respect I have, and that is as far as they go for John Bright. But when John Bright, by letters to Cyrus W. Field and many other Americans in this country, would tear down and destroy the laws which enable you and I as we go through this broad land to witness in almost every city thousands of artisans living in happiness and contentment, to look upon hundreds and hundreds of thousands of mechanics, and laborers' homes, to go into them and see the carpeted floor, to see the piano or organ in the parlor, to see them well dressed as they go to the church of their own choice on Sunday, to see them standing erect as Americans inheriting the great blessings of this country — when John Bright would tear down and destroy this, then I say I am against him; then I say "keep your hands off our institutions." I agree with my friend that they should let our institutions alone. We are capable of taking care of ourselves, and if the worst should come to the worst, let them bombard the cities on the coast, but we can stay, and the fact exists, as was said more than a century ago, we cannot be conquered; there are two things yet left, the woods and our liberty.

I confes I do not know what the gentleman was driving at. I say that he misrepresented me, and I mean to say that I consider myself the equal of any other man, generally speaking, and I have too much respect for this audience to stand up here simply for the purpose of making fun. I am not here for that purpose. I can use my voice and whatever little talent God has given me for far better and more worthy and more respectable purposes. That is not the purpose for which this Agricultural Society came together. If I had thought it was, I tell you candidly I would not bemean myself by coming here. I say the language of the gentleman is totally unfit for this occasion. It is insulting. I tell

you there are some very grave questions. Has he attempted to answer anything I said? Has he denied that the surplus of grain exists? I have given him facts which he ought to know. If he reads the papers, I care not what kind they are, he knows them to be true, and he cannot gainsay a word of it. That is what I spoke of. I uttered no word of disrespect for the president of this society. I have no feeling but respect for him. I consider him my friend. I certainly feel that I am his. Now I say that the gentleman's perversion of plain, square statements is uncalled for, and, with all due respect to him, it is ungentlemanly.

Mr. Ford—It seems to me we are now liable to drift into a very profitless discussion on a question which seems to me entirely outside of the purpose for which this great convention has met. The farmers of the state of Wisconsin meet here for important business. There are a great many intelligent and practical men here whom we shall desire to hear from, and who can give us valuable ideas immediately connected with our business, while the question of the tariff is a purely political question. It has been in here before year after year, and it has made nothing but a fruitless discussion and taken up time. We have only three or four days, a short enough time to get through with the important business before this convention. Therefore I protest against any further discussion of a question so entirely outside of our duties and our interests.

President Fratt—I think this discussion has taken quite a wide range this evening, but we seemed to have nothing else to talk about and had to allow it to go on.

The convention adjourned.

WEDNESDAY, February 6th, 1884.

Prof. Wiley, of Washington, was introduced to the convention, and spoke as follows:

THE FUTURE OF THE SORGHUM SUGAR INDUSTRY.

I am not in the habit of making my appearance as a prophet, but I do not know, considering the unfavorable

season that is at hand, but that the work of a prophet is more pleasant than that of an historian. But if I should attempt to recount the success which the sugar industry has met in the west during the past year, I fear it would be a very sorry account, while, on the other hand, if I portray its future, we will make it as bright as the facts in the case seem to warrant. In regard to the future of this industry I will say that as a syrup-producing plant sorghum cane has already become firmly established; that the product of syrup in the country is already approaching that which the country consumes. I have found that the amount of syrup imported into the country during the past year was less than fifty millions of gallons, while the amount that was made from sorghum syrup in the country during that period was nearly as much. It is difficult to collect statistics on this matter as so many hundreds and thousands of farmers make their own syrup in a small way, so that it is hard to collect into one body all the statistics that represent the actual product of syrup, but from the best information at hand the product is almost equivalent to one gallon per head for all the people of the country at the present time. An industry which has already developed to such an extent needs no prophecy in regard to its future; its future is already assured. I will say to the farmers of Wisconsin that as a syrup-producing plant, sorghum cane is of more importance to your state than as a source of sugar, and I will briefly explain what I mean by this. As a syrup-producing plant it is a certain crop. As you well know, there is no more hardy crop than sorghum cane. It will grow in a dry season or a wet season, in a hot season or a cold season. Of course in a cold season there is some difficulty about its maturity, but it is not necessary in order to make a fair article of syrup that the plant be ripe. In almost any season you can have a crop of sorghum. I have just been talking with the governor, and he says he does not know when the crops were so injured by the frost as in 1883, so that he does not expect a season like the past one for many years. The sugar product of the country is an important point which every one must consider. I sometimes say I measure the progress of a country

in civilization, in culture, in refinement, by the amount of sugar which that country consumes. I think that is a pretty fair criterion by which to judge of the progress of a country. In barbarous countries you will find they use no sugar at all. Take those countries which are little advanced in civilization, and the amount of sugar consumed is proportionately small, but take those countries which occupy the highest rank, and there you will find the largest consumption of sugar. On that ground America justly leads the world, because the amount of sugar used per head is the greatest of any country in the world. The sugar consumed in this country is more than forty pounds per head, and hence, it becomes an immense article of consumption. This country does not begin to produce the sugar it consumes. People sometimes think the sugar they get is nearly altogether made in this country, particularly in Louisiana; while the fact is that the sugar made in Louisiana is a very small proportion of the amount consumed. We imported into this country during the season of 1883, according to the estimates, nearly one million, two hundred thousand tons of sugar; while the amount of sugar we made in this country did not altogether exceed one hundred thousand tons. You see we produce only about one-twelfth of the sugar consumed. These figures may not be exactly correct, but they are approximately so. A gentleman said to me the other day: "This is a business which cannot be overdone. In fifty years or in a hundred years there is no danger of the over-production of sugar." At the same time he was referring to his own business, which was overdone. He had a large warehouse stored with his manufactured goods, which he was afraid to put on the market for fear it would produce a fall of half a cent a pound and thus produce a panic. He said to me: "If we could be in such a business as sugar production, we would have no such danger to look for for fifty years and perhaps for a hundred. Thus, not only for farmers but for business men there is an opportunity to use all the skill and all the capital at their command, and without any fear whatever of over-production. These are matters, then, which

commend themselves not only to the farmer but to the man of business.

Where does the sugar come from that we import? A great deal from the tropics, from Cuba, and a great deal from the Sandwich Islands, which comes in free from duty, and we are now importing large quantities of sugar from Germany and France. Think of it! France and Germany, a country exhausted by a thousand years of agriculture, no more suitable in any respect for the production of sugar than the United States. The most of the sugar we import is made from the tropical cane, the sugar cane. The sugar which they produce in Europe is made exclusively from the sugar beet. In the Sandwich Islands the sugar is made from the sugar cane. In this country the sources of sugar are four: the sugar cane as it grows in Louisiana, producing by far the largest amount of sugar; next in importance the sorghum cane, I think, although I do not know positively which produces the largest amount of sugar in this country, the sorghum cane or the sugar beet, but I am inclined to think the sorghum cane; next, the sugar beet, and fourth, the sugar maple. These are the four sources of sugar to which we must look in this country. You cannot expect the sugar maple to increase its production; on the other hand, the production of sugar from the sugar maple is likely to decrease. We must therefore look to the other three sources. I think the production of sugar in Louisiana could be greatly increased, though I judge from the last twenty years that such an event is not likely to occur. The product of sugar there is less now than it was before the war. They made more sugar in 1858, 1859 and 1860 than they do now. Thus it seems that the product of sugar is diminishing. I think that can be easily explained. They are conservative people. They cling to the old methods of agriculture and manufacture. It is hard for them to get used to the new condition of things caused by the war and the emancipation of the slaves, but you do find in different parts of the state people accommodating themselves to the new order of things, and wherever you do they have increased the amount of sugar produced per acre, so that when the new order of things

shall prevail over the whole state you may expect that the product of sugar will be at least doubled. I think it is reasonable to expect that in ten or twenty years the product of sugar in Louisiana will be double the present amount, that is, we may expect to see as much as two hundred thousand tons of sugar made in Louisiana and other parts of the south suitable to the growth of the southern cane.

What is the history of the sorghum cane and sugar? A few years ago the amount of sugar made from sorghum cane could be numbered by hundreds of pounds. During the past year I have taken particular pains to collect statistics from all parts of the country, and, although it has been a very unfavorable year everywhere for the production of sugar, the total amount produced is not far from one million pounds. The area in which sorghum cane can be grown is of much larger extent than it can possibly be for the southern cane, so that we have not a sharp geographical limit to the production of the sorghum cane, and we may expect that with increased skill and means of production its production will increase very rapidly. It is hard to tell what its limits may be.

While the subject announced for me was "The Future of the Sorghum Sugar Industry," I think it would have been better to have said "The Future of the Sugar Industry," because I think it unwise to confine our investigations to a single source of sugar. Somebody asked me yesterday what was the difference between the sugar produced from the southern cane, the sorghum cane and the sugar beet? I said "no difference whatever." You may rely on that as being true. I know that the impression is abroad that differences exist, but such impressions are entirely erroneous. The sugar produced from the tropical cane, the sorghum cane and the sugar beet are all identical in their nature, they have exactly the same properties, the same sweetening power, the forms of the crystals are entirely the same. The sugar produced from either of these plants will be exactly the same. The experiments made in this state have not been very successful financially, but that by no means indicates that the industry is always to be a failure. If people were discour-

aged by a single failure at the beginning of an industry, very few industries would ever have been established in this country. We must expect failure at the beginning of an industry. The sugar beet industry in Europe was a failure financially for fifty years, and yet men were hopeful enough and strong enough of heart, and long enough in purse to go on in the investigation and the establishment of the industry, until now it is one of the chief industries of the old world. There is no more important industry to-day in Germany and France than the production of sugar from the sugar beet. And yet it came up through difficulties ten times greater than those that surround the development of the industry in this country from the sorghum cane. We have now the experience of Europe to help us in this matter. Three or four years ago a gentleman was appointed to investigate the climatic conditions which are favorable to the production of the sugar beet in this country, and by examining the report of McMurphy you will find that the most of the state of Wisconsin has the same climate which has been found most favorable in Europe to the production of the sugar beet; so that if Wisconsin does not make large quantities of sugar from sorghum it may from the sugar beet. I think the sugar beet is more favorable to the production of sugar, and sorghum cane more favorable to the production of syrup. There are two sorts of sugar, the crystallizable sugar and the uncrystallizable sugar, both of them destined to be sources of great wealth in the state of Wisconsin.

Let us look at the factors which condition the success of the industry as relating to the sorghum cane itself. I have mentioned the climatic conditions. I may mention those that are more important than those I have mentioned relating to the culture of the sugar beet. It will not thrive in a country where the average temperature for June, July and August rises above seventy degrees F. On the other hand, I am quite convinced, from the experiments and observations that have been made for many years on the growth of sorghum sugar cane, that it will not be safe to produce it for sugar in a country where the average temperature is below seventy degrees F. Thus, you see, these two plants

supplement each other; one of them being suited to a climate where the average summer temperature is below seventy degrees, and the other peculiarly adapted to a climate where the average temperature is above that. Of course accurate determinations have not been made of the climatic conditions most favorable to the sorgham plant, but I have made some preliminary studies. I have taken, as a basis of comparison, the sorghum sugar factory at Rio Grande, New Jersey. That has passed through three years of successful life, producing large amounts of sugar, and the crop has not been injured by the frost. You may rest assured, from the experience of the last three years, which have been cold years, that all factories in similar localities would be safe. Taking that as a basis of comparison, I have taken the records of the signal service for the last ten or twelve years, and traced a series of isothermal lines, which will indicate those portions of the country whose climate is the same, as far as heat is concerned, as Rio Grande. I find that the lines for June, July and August are very peculiar in their direction. They start at Cape May, adjoining Rio Grande, and run north along the coast; then, as they bend in toward the Alleghany mountains, they turn and run southwest, on the eastern slope of those mountains, running down into Virginia until they can get around the spur of those mountains; then they run back in a northeasterly direction nearly to Pittsburg, and there they cross the river and strike out to the western states, going through northern Ohio and northern Indiana, and bending around Lake Michigan, coming up through Wisconsin, running along near the center of the state, crossing the Mississippi river near Minneapolis, passing out through northern Minnesota, and then are lost in the British possessions.

The conclusion from this is, that all this vast northwestern country is as favorable to the growth and maturity of the sorghum cane as the country on the shores of New Jersey. It is, in fact, peculiarly suitable to the growth of the sorghum cane. I think all of you will bear witness that the general result is that the early Amber cane ripens in this whole region. They have ninety days of good growing

weather, which is sufficient to mature the earlier varieties of the sorghum cane. But the period of growth is not the only one which we must consider. As a sugar making plant, there is another period which is nearly as important as the period of growth, and that is, the period of manufacture. For making sugar profitably from any source, it requires a large plant. This is the present condition of affairs. No method has yet been devised by means of which sugar can profitably be made in a small way by each individual farmer. If such a method is ever to be devised, it is yet to be invented. The history of the sugar industry of the whole world shows that profitable sugar making requires a large plant, extensive machinery, and expensive labor; and it is as true of sorghum as of any other source of sugar. The manufacturer who puts his money into a plant for the manufacture of sugar must have a reasonable expectation of being able to run the plant long enough in the year to make it profitable. The manufacturing season is necessarily cut short by an early frost. Sorghum cane which has been frozen is almost entirely ruined for sugar-making purposes. A frost that will freeze the liquid in the cells, and cause them to burst, will put an end to the manufacturing season from sorghum, as it does to the manufacture of sugar from the sugar cane in Louisiana.

Every few years the manufacturing season is cut short in Louisiana by an early frost. That was the case in January this year. Before all the cane was worked up in that state, the cold wave that swept over the country reached Louisiana, and some of the people there told me they had the coldest weather that had ever been known. The thermometer fell to 16 degrees above, and the result was that all the cane that was not worked up was ruined for sugar making purposes. I, therefore, made another thermal study of climatic conditions for the months of September, October and November, for the same reason, at Cape May. There we have the same lines passing through Cape May, then passing down along the eastern slope of the mountains, and bending back, going up towards Pittsburg, but nearly so far, then following the river down along the valley of the Ohio

river until they get near to Cincinnati; then they go into southern Indiana and southern Illinois, passing on through Missouri, central and southern Kansas, bending down into the Indian Territory, and down into Texas. In the summer months the isothermal lines run in a northwestern direction in general, while in the full months they run in a southwesterly direction. You see that when you come to need three months of solid manufacture without danger of frost, this country is entirely cut out by means of this preliminary study. I do not give this as a definite settlement of this business of sorghum making. It is merely a study of climatic conditions, and though it may be disappointing to those who have hoped to see in Wisconsin a large product of sugar made from Wisconsin, it looks to me that that hope is doomed to disappointment, although it may not be so.

Although the belt of successful growth extends all over the northwest, the belt of successful manufacture does not. You may ask why this country can produce beet sugar when it cannot produce sorghum sugar? My answer is that an early winter is indispensable to a beet sugar country. The beets are harvested and protected in pits from the frost. The beets could be put in silos and worked through the entire winter. Why not preserve cane in this way? I have made one experiment upon this subject, but it is very dangerous to base an opinion on a single experiment. I will give you the experiment for what it is worth; that is, the experiment of putting the sorghum stalks under ground and covering them up. The experiment has been entirely successful; the sorghum has been preserved without any loss of sugar contents up to the present time. When the last analysis was made, on the 14th of January, it was found that the stalks had preserved their sugar intact up to that time, and the reasonable expectation is that they will do so during the entire winter. Thus, it seems possible to preserve canes in this way; but you must be careful not to put them under ground too early, because if the weather continues warm, the canes will sprout at the joints and new shoots will come up, and you will have the same condition of affairs that you

would have with the sugar beets in a late fall. I do not assert that large crops of sugar cane can be preserved in this way, although in Louisiana they preserve their seed cane in a similar manner. I think that these experiments are hopeful. If this can be done, the manufacturing belt can be extended all through this region, because the cane can be preserved in pits at a very small expense. I consider the climatic conditions the most important in the investigations which relate to the future of this industry. It is of the first importance to locate definitely that part of the United States which is best suited to the production of the cane. When that is done, other problems present themselves. One of them is the problem of extracting from the cane the sugar which is present. It is well known that the amount of sugar produced in manufacturing is scarcely more than one-half of that which is contained in the cane. Nearly half of the sugar is wasted.

The future of the industry depends largely on the extraction of the whole of the sugar. This may be done in different ways. Improved crushers would look in this direction. Mills are now constructed in which the rollers are held together by hydraulic power, and they claim that with them as high as eighty per cent. of sugar is obtained; but this is hard to believe. If we do not use mills, we may resort to the process largely used in Europe for the extraction of sugar from the sugar beet; that is, by diffusion, cutting the cane in small pieces and extracting the sugar by means of water. I have made some experiments in a small way. In 187 experiments I extracted 90 per cent. of sugar. We could easily determine whether this is practical in a large way. We cannot assume that it would be successful on a large scale because it is successful in a small way. It is a question that affects the industry, whether the sugar is obtained from the sugar cane, the sorghum cane or the sugar beet. Another factor which I think is of the greatest importance to the future of the industry is the improvement of the cane. You know how stock can be improved by judicious breeding, and you know how the sugar beet has been improved in Europe in the same way. A hundred years ago, when

they began to make sugar, the average of the contents of the sugar was not more than 7 per cent in the beets. Now in some parts of Germany they get as high as 13 or 14 per cent. This has been done by careful selection of the seed and judicious cultivation with the one end in view of the improvement of the beet in the content of sugar. If that is true of one plant, it must be of others. The scientific farmer looks carefully to the selection of seed for every crop he grows.

I think the sorghum cane can be improved in this country be a wise selection of the seed; and this should be done by saving the seeds from those stalks that produce the largest amount of sugar, expecting that accidental variations in the individual may become hereditary in the offspring, just as we take advantage of accidental variations in the improvement of our stock. This, of course, can only be done slowly. We can not do in three or four years what has taken three quarters of a century to accomplish in Europe with the sugar beet, but I believe that, with judicious selection in the course of twenty-five or fifty years we can produce a sorghum cane in this country which will have a largely increased percentage of sugar more than the present cane. Another thing in the sorghum cane is the existence of a non-crystallizable sugar, and this exists sometimes in large proportions in sorghum cane. For syrup-making purposes the existence of this sugar is no disadvantage; it makes a most excellent syrup; but when you come to obtain crystallizable sugar, it is a serious disadvantage, for a double reason. In the first place, by its presence it diminishes the total contents of the crystallizable sugar which the cane contains, and in the second place, it prevents an equal amount of crystallizable sugar from crystallizing. If you have ten per cent. of crystallizable and four per cent. of non-crystallizable sugar, the total amount of sugar which will crystallize out will be six per cent. In the sugar beet there is only a trace of non-crystallizable sugar; hence there is great advantage in the manufacture of sugar from the sugar beet from this cause.

In the improvement of the cane the object will be to increase the percentage of crystallizable sugar and dimin-

ish the percentage of non-crystallizable sugar. I do not see why we can not in this way produce a cane which will equal the southern cane; that is, that will have an average of fourteen per cent. of crystallizable and not more than one and one-half non-crystallizable. We often find individual sorghum canes of this composition, and sometimes even better. The demand for syrup in this country is a limited one in comparison with the demand for sugar, and it is easily possible for the sorghum industry to over-supply the demand for syrup, while it is a long time yet before, under the most favorable circumstances, it can equal the demand for sugar.

Then, the future of the industry depends largely on the use we make of by-products. Nothing should be wasted in a great industry. Mr. Armour, of Chicago, lately told me that his firm now save \$300,000 a year, which, a few years ago, they dumped into the river, from the blood and bristles, etc., in their slaughter houses. The principal by-product of the sugar industry will be syrup. If this industry spreads over the country, the product of the syrup will be enormous. It will be in far greater demand because the syrup that comes from the sugar is not nearly as good as that that is made directly. The molasses that comes from the centrifugals in the sugar mills will be utterly unable to compete for table use with the syrups made directly from the cane. The centrifugal molasses of the Louisiana sugar cane is only worth half as much now as the open kettle molasses.

The history of all sugar countries shows what will probably come from that. They have large amounts of syrup from their centrifugals which they cannot sell because it cannot be used upon the table. They sometimes sell it as a lubricator, but it is rather sticky. They sometimes sell it as a feed for cattle, but it is not wholesome for cattle. There is another thing to be done with it, and that is, to convert it into alcohol, and that seems to be the only thing to be done with the vast quantity of syrup which the country is about to produce. I am not making a temperance speech now, nor considering this question from a temperance standpoint, but purely as a matter of political economy. The question is,

what can you do with it to make the most money out of it? It seems to me that the alcohol of this country will be produced from the refuse of the sugar factories, while our grain will be devoted to more useful purposes.

Another product, which is of great importance in this industry, is the seed of the plant. That is something which has largely been neglected. Sorghum seed is composed chiefly of starch. It has a nutritive value equal to that of common corn. You may say that pound for pound the seed is equal to corn.

How much would it produce? That has been pretty definitely determined. You will find that the amount of seed from every ton of ripe cane will be over one hundred pounds of clean seed. That is a low estimate, as has been determined by careful experiments. Suppose the cane produces eight tons to the acre. You may regard that as quite an average crop. It is occasionally much over this, and occasionally very much less; but you will get at a low estimate eight hundred pounds of seed to the acre. A thousand pounds would not be an extravagant statement. There is an immense product of a cereal which is as valuable as corn for any purpose that corn is used for. It will make meal; it is used for buckwheat cakes now. It can be used for feeding any kind of stock, especially fowls. It is about the right size for chickens and birds, but for larger animals it is always necessary that it be prepared in order to get its full value, and the most interesting experiments in this direction have been made by the factory at Rio Grande, N. J. They preserve all their seed carefully, and use it to fatten hogs, and they keep enough hogs to eat the seed which the crop produces. They find that they can keep five hundred hogs from the product of five thousand tons, so that every hundred tons of cane that you will produce will fatten at least five hogs. It will make as much starch as corn, pound for pound, but the color of the coating is so intense that it is hard to get a white starch, so that I do not think it probable it will ever be used for that purpose to any extent. I think it will find its use as feed. You cannot find a finer breed of hogs in the United States than those at Rio Grande — more

slick, more contented, more happy. They are as happy as if they were in the stock-yards of Chicago, which is supposed to be the paradise of the hogs of the whole world.

To prepare the seed they put it in a large tank, similar to the water tank on railroads, with a copper coil in the bottom where steam can be supplied. They put water on it, and then heat it with steam until it boils, and the seeds break open, and feed it to their hogs in the form of a barley soup. In the three years they have never lost a hog from any form of epidemic disease peculiar to that animal, so that as a result of three years' experiments, you may regard it as pretty definitely settled that there is no better feed in the world for swine than cane seed. I do not believe you can find anywhere a feed which is superior to it when properly prepared. If you feed it in its natural state it is a very inferior feed because so much escapes digestion; it is hard and small and perhaps not well masticated, and you lose two-thirds or three-fourths of its value in feeding it in that way. It might do to grind it, but I do not think it would do as well because grinding does not break up the starch kernels as steam does. It is all threshed just as you would thresh wheat before it is steamed. A great deal of the seed remains on the head, and they feed that to their horses; throw it in the stable and let them pick it up.

The profits of the sugar beet industry in Europe depend wholly on the by-products. The production of the sugar just about pays expenses in Europe. They make their profit on the alcohol and on the pulp which they sell for feed to persons who have horses and cattle. It seems to me also we must utilize the bagasse. Two methods have been proposed, and it will take several years to determine which is the best. One is that it should be used as fuel in furnaces prepared for that purpose. In western Kansas this is very successfully done, by spreading the bagasse out and letting it dry. As the climate is very dry there, it becomes suitable for fuel in twelve or twenty-four hours. At Champaign, Illinois, they burn the bagasse directly from the mills. They have a chute which carries it directly into the furnace. At Rio Grande they take the bagasse out on the tram-ways

that bring the cane in, and drop it into the pig-pens, and let the pigs use it for bedding and to root around in during the winter, and by spring they convert it into manure; and this, I think, is the most rational use to which I have seen it put.

In taking anything from the soil you must take more or less of the mineral substance of which the soil is composed, and sooner or later every field which is used constantly for agricultural purposes must be fertilized. If it is as rich as the soil of Wisconsin, the time will come when it will require fertilization. Hence, in any great agricultural industry we must look to a supply of fertilizers. That must be one of the chief things to consider. Hence, I think that the idea of placing the bagasse back on the soil in the form of manure is perhaps the wisest one which has yet been devised. They find there that, on an average, one acre of cane will produce enough seed to keep a hog during the year, and that this hog will produce enough manure in the pen to manure that acre of land, so they get a constant circle from the hog to the land, from the land to the cane, from the cane to the seed, and the seed to the hog, and finally get the hog free above all expenses.

There is another problem we have not yet had to confront in this country, but which we will probably have to some day. When they started the beet industry in Europe it was supported by bounties so that they could start their industry. The state of New Jersey gives one dollar bounty on every ton of cane grown, and one cent per pound for every pound of sugar made. They did the same thing in France and Germany. Napoleon put this industry on its feet by bounties of this kind. Every one gets a bounty on sugar indirectly by the bounty which is paid on sugar by the government. But when in Europe the government found the industry supporting itself, they removed the bounty, and when they found it more than supporting itself, they put a tax on it, and now the tax which the sugar industry pays to France and Germany is no small part of the income of those countries. We will come to that in this country some day, when we have to have money to carry on the government.

It is a wise economy on the part of our government to support every infant industry so that hereafter it may become a source of wealth. When the industry is well on its feet, we will have to do our share towards supporting the government which has given us a start. I believe this country will make its own sugar. You ask me "when?" I prefer not to say. In the infancy of the sugar industry we found enthusiastic men who prophesied that in five or ten years the country would make its own sugar; but those dates have been passed time and again in the march of time, and still the sugar is not made; so I will place no limit, but I believe the time is not far distant when we will make our own sugar; but to say five years, or ten years, or twenty, is being, I think, too enthusiastic. I should say in fifty or a hundred years from this time, by wise fostering of this industry, by bringing to bear upon it all that science can do towards helping it out, all that skilled labor can do, all that the wisest agriculture can do, in twenty-five, fifty, or seventy-five years we may expect to see this country make its own sugar from these three sources together, the southern cane, the sorghum cane, the sugar beet.

DISCUSSION.

Mr. D. R. W. Williams — Can you give us the reason why the beet does not thrive where the temperature during the summer averages above seventy?

Prof. Wiley — It has been the experience in Europe, where they tried to produce beets in southern Europe, as they do in northern Europe; all the factories that have been established south of the line of seventy degrees of heat have succumbed to their more prosperous neighbors above that line, so that in southern France now you will not find a beet sugar factory, or in Italy, or in the extreme south of Germany. They made money at first, when the competition was not severe, but as soon as the competition grew sharp they had to give up, and the result is that all the successful beet sugar regions of Europe lie north of the line where the temperature averages seventy degrees F. during the three months I have mentioned.

Mr. D. R. W. Williams — I would like to ask, whether the reason for that, is not from the fact that below the point where the temperature rises above seventy there are periods of dry weather, and whether it is not the dry weather that interferes with it instead of the temperature?

Prof. Wiley — I think that the precipitation has almost as much to do with it as the temperature, but where you get a low temperature you do not need so much rain; it dries out so much quicker south of seventy degrees F. These countries have an average precipitation of two inches during June, July, and August, and the number of rainy days is very great compared to more southern portions of Europe; that is, they will average eight or ten rainy days during the month; that is, cloudy days and some rain; and this cold, wet, cloudy weather is best suited to the development of the sugar beet in northern Europe.

Mr. D. R. W. Williams — I do not like the production of alcohol, but, as the gentleman has raised the question, I would like to know how much alcohol a gallon of beet or sorghum syrup would make, and what it would cost to manufacture it as it is done.

Prof. Wiley — I could not answer those questions as I have not been in the distilling business, but I could tell about how much it would make. The sugar of both kinds, both the inverted sugar and the crystallizable sugar present in the syrup, will make about half its weight of alcohol. In a gallon of syrup which will weigh eleven pounds you will find about seven and one-half pounds of both kinds of sugar, from that to eight pounds; so that the amount of absolute alcohol made from a gallon will be about four pounds or eight pounds of ordinary whisky or rum; that is, a gallon of syrup would make a little over a gallon of whisky. You know what whisky costs in this country. It costs six or eight dollars a gallon if it is three years old, and they make that three year old whisky in about three days now.

A member — I would like to know if there is any difficulty in making sorghum syrup so it will keep.

Prof. Wiley — When sorghum syrup is properly made it keeps better than any other syrup in the world. New

Orleans men are aware of that and ask us how we can make our syrup so that it keeps while theirs spoils so easily. There is no difficulty in keeping sorghum syrup during the summer, but when you make it good enough to keep during the summer you will have no opportunity of doing so because everybody will want to buy it. A poor syrup will not keep. The syrup you want to keep you cannot keep, and the syrup you could keep you will have no opportunity of keeping. By being properly made I mean that all impurities should be removed, especially those of a nitrogenous nature, those in which fermentation first begins, and then it should be boiled thick; but to get those nitrogenous matter out, defecation should be practiced. You cannot make a syrup that will keep if the juices are boiled raw. Those syrups, no matter how thick, will ferment in warm weather. On the other hand when you defecate your syrups well you may boil them very thin and they will not ferment. You may boil them to a semi-syrup and keep them for months, much thinner than molasses. It all depends on the method of treating the juices.

A member—Is not the manufacture of vinegar a factor to be considered?

Prof. Wiley—I think it is, but I did not mention it because I think it is a very small consideration. The market is already supplied with a very cheap article. It is very easy to make a good article of vinegar.

A member—Is the sorghum syrup better for food than the beet sugar syrup?

Prof. Wiley—I think so because the sorghum syrup does not contain as much mineral matter as the beet. The percentage of ash when you burn beet syrup is much greater than in sorghum syrup, hence sorghum syrup is much more suitable for food than beet sugar syrup.

THE AGRICULTURAL COLLEGE.

By DR. A. C. BARRY, Lodi.

Mr. President and Gentlemen: I had scarcely sent forward the theme of this paper to your secretary before I was sorry I had chosen it; and when I began to measure it, and its largeness grew upon my sight, I was scared and felt like running away. There was the thought, also, of how presumptuous, in one of my profession, setting for himself the task of enlightening you farmers in relation to matters pertaining to your calling, or even attempting to suggest agencies for its elevation, and the more successful and remunerative prosecution of its labor. At last, however, after much perplexed and perplexing thought, I solaced myself for the embarrassing blunder I had committed, with the apology of Dr. Holmes on a lecture occasion: "I have been sent," he said, "to fill the place of Mr. Sumner—that I cannot do—but I will rattle around in it to the best of my ability."

When a boy, like many another who afterward mistook his calling

"I mowed, and hoed, and held the plow,
And longed for one-and-twenty."

And although I may know no more, and most likely a great deal less than Mr. Greely about farming, I can see as clearly as anybody that since then, through new helps joined to the old ones, or else taking their place, many and great improvements have been made in the high art or profession which, you, gentlemen, represent. I can see, also, and your labors in the line of reform testify to your own clear-seeing, that there is both room and need for other and greater improvements. For, after all of growth and progress as relating to agriculture, scarcely the A B C of the science of farming has been learned. While a higher intelligence and an improved practice characterize and set apart a few progressive farmers, there is evidently a disposition, on the part of the great majority, to hold fast to old modes and prac-

tices, and to shut their eyes to the new and clear light that is shining on their way.

I no more believe that mere book knowledge, important as it is, or the agricultural learning usually obtained in the schools, will make men good and successful farmers, any more than I believe that scholastic training alone, or knowledge of theories and principles, can make them good and successful lawyers or physicians. That which is really essential is fitness or aptitude. By the law of human pursuits each man has his place, and is fitted for some untransferable work in the grand economy of things. No analogy holds out more persistently, it has been said, than the commonplace one of society and of the human body. Thus some men are limbs and others are organs. There are those whose specialty is *executive*. The world cannot afford to spare them any more than you or I can afford to spare our fingers and our arms. Here, again, is a class whose distinctive office it is to think and to speak. They are tongues and brains, although sometimes the tongues and the brains get separated. And, still again, this corporate humanity has its eyes — men whose function it is to look — the investigators, the discoverers, who in nature and throughout the realm of truth, see more than you or I can see. Now, this diversity of gifts or aptitudes appears to be the result of a fixed purpose, so that one man is born a musician, another man a mechanic, and another a farmer. Sometimes, indeed, we find those possessing an organization and mental equipment by means of which they readily adjust themselves to any or every place. Both hands so to speak, are right hands, or each is used with equal facility. But these universal geniuses are rarely successful in any place — spread out over such a large surface, they are reduced to such extreme thinness as to amount to little or nothing.

There is only one thing, generally speaking, that a man can do well. People of one idea are by no means to be sneered at. It requires much diligence and some brains to take care of one solid idea; and if he who is so fortunate to have one, persistently carries it out, it may become a reputation, or a fortune, or an institution. But if he goes on

speculating and experimenting in twenty different ways, we shall probably see twenty fizzles; for the crown of all faculties—I had almost said the crown of all virtues—is common sense, and common sense holds everything close to execution.

Right here is a good place for reaffirming, that a man to be a farmer in the best sense, magnifying his art of calling, must possess what in New England is called "faculty," or what is known among Scottish people as "gumption." If, however, with this practical element abounding in him, having "faculty," he has the wisdom that comes from books, or that science imparts, how much more skillful he will be in his profession, and what advantages of every kind will accrue to him.

No one will for a moment question that for the successful prosecution of the business of agriculture, the main line of that with which he has to deal should be well understood by the farmer. He should be more or less familiar with the wonderful story geology tells. Faculty needs the "backing" which a knowledge of some parts of this science, and of allied sciences, alone can supply. He has to deal with wonders—he walks over them every day—he drives the plowshare through them—he stands face to face with them in the planting time and in the harvest—and it is important that of them he know something. Of the laws of electricity, of chemical change, of the atmosphere, of vegetable growth, of light and heat, a great deal may be known. And just as the mechanic may know, and therefore ought to know, what is the nature of the material, whether iron or wood, which is to be wrought into shape under his cunning hand; so that the farmer may know, and it is essential he should know, what are the soils of which his acres are composed, and what the kind of treatment required for a remunerative yield, whether of grass or grain. If he is not able, as he walks over his farm, to say, this clay ridge wants sand and muck, and perhaps lime; or this field needs certain treatment to produce a full yield of a certain crop; or here is a strip, somewhat unpromising now, but when drained and dressed with lime, sand, and perhaps a little

burnt clay, will produce wonderfully well; if he is not able to say this, if every foot of his land is not as familiar to him as the face of a friend, and if he is not able so to tickle the various soils as that they shall laugh great hearty laughs, in the shape of richest harvests, then he is not master of the situation, and is the slave and not the "lord of the soil."

Evidently there is no business or occupation in which men engage which, in addition to natural aptitude, requires such largeness and thoroughness of preparation, such varied equipment, such mastery of principles and details, as that of farming. And long ago the question was asked, and long ago answered: What is it that shall give to the farmer the needed preparation, furnish him with the essential knowledge, and develop within him the strength that will enable him to achieve success in his high calling? Reading, observation, experience, the farmers' club, the convention, the county society, friendly competition, may help him on in the way of all improvement; but the right answer to the question is found in the agricultural college and the special or professional training it furnishes.

At last, as you see, after much rambling, and near losing my way, I stand face to face with my chosen theme.

Thirty-five years ago, while in charge of the editorial department of *The Wisconsin Farmer*, I furnished a series of articles for that journal on Agricultural Colleges. And I said what was beginning to be said in New York, Maryland, Virginia, Pennsylvania, and elsewhere, that while all along as then, large amounts of money were expended for the planting and liberal endowment of colleges and universities, and the rich stores of science, literature and art were laid under contribution, to train and discipline and thus to qualify men for the bar, the pulpit, the teacher's desk and the practice of medicine, the claims of agriculture, which were not inferior to those of law, divinity, teaching and the healing art, should be considered. It, too, should have its schools founded, endowed and fostered by the state. And this, in order that the calling of agriculture might be elevated in character, and take rank among other professional employments in which men, by reason of learning and special training, added to natural fitness, earned wealth and fame.

To Pennsylvania, I think, belongs the honor of first providing a school devoted principally to scientific and practical instruction in farming. This was in 1854. Then followed New York, Michigan, Iowa and Maryland, each of which states had its agricultural college previous to the year 1860. The result was, that, notwithstanding the smallness and feebleness of the beginning, and the timidity natural to a first experiment, agriculture began to rise from its abasement through the inspiration of this new movement. At last, like other professions, it had its students, although few in number; and these were shown, in a partial, limited way, the advantages of an agricultural education.

A memorial address to the New York legislature, and made the subject of a report in 1849, gives a quite correct view, in the main, of what an agricultural college should be.

A separate school for the professional training of farmers is meant. First, an experimental farm is named; the memorialists proceed to set forth, with considerable minuteness, what in their judgment should be the courses of study and instruction in such an institution as they propose. Place is given for mechanics, mathematics, and other sciences of a physical and practical character; then for agriculture proper, embracing agricultural geology, chemistry and physiology; the management of the farm, and everything relating to practical husbandry; next, for veterinary science, including the subjects of anatomy and pathology, the best methods of improving stock and of remedying defects in breeding, and all that relates to the care, treatment and rearing of animals; and in the last place for dairying in all its details, and for horticulture and gardening.

The idea thus defined, of an educational institution for the promotion of the interests of agriculture, seems to have entered as an informing and shaping element into the legislation of the country on the subject of agricultural education, and especially into the legislation of congress, when in making a grant of 9,600,000 acres of public lands, to be divided among the several states on the basis of senatorial representation, it stipulated that the money arising from the sale of these lands "shall be inviolably appropriated by each

state * * to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, to teach such branches of learning as are related to agriculture and the mechanic arts, * * in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." In compliance with this provision of congress, or rather with the condition imposed, as interpreted by their legislatures, the several states in which agricultural colleges, or agricultural departments have been created, have provided for substantially the same course of instruction.

In most cases, or so far as I have any knowledge, the provision made in this regard is in some sort an answer to the question, "What should be taught in such a school or college, established for the benefit of agricultural producers, and what appliances are needed in teaching?" If there is a difference in the form or length of the answer, the substance is the same. Put into the words of the asker, it is this: "Farming is a *business*, a *trade*, and must be more and more made, as it is now made by every intelligent and successful farmer, an *applied science*. The youth about to engage in it must have his studies and training directed to this three-fold aspect of farming. It is unnecessary to say that he must have the elementary branches of a public school course, before beginning, as a basis. To perform the *business* of farming, he ought to have in addition a knowledge of farm arithmetic, farm book-keeping, business forms, farm mensuration and land measuring, practical mechanics, and a general knowledge of the laws relating to real and personal property, and of the markets of the world. To be skillful in the *trade* of farming he must serve years of apprenticeship, as in every other trade, and that can only be perfected, never acquired, in any school or college, no matter how large the farm attached may be. Yet in every such school, or college, just because farming is a trade, a course of apprenticeship must be joined to a course of study. Lastly, farming is, or should be, an *applied science*. * *

There are two meanings to be attached to the statement. A

science in one sense, and that the most important one, is a collection of the principles and laws that are to be deduced from the facts of observation. And those principles and laws again become the rules of practice. If, therefore, we can gather together the rules of practice of the best farmers, and from them deduce any laws, we will be making what may in one sense be called a science of agriculture. * * But closely connected with agriculture are many of what are universally recognized as sciences. The three main things dealt with by the farmer are the soil, the plant and the animal.

Connected with the first are plainly such sciences as geology, physical geography and chemistry; connected with the second, botany and chemistry; and connected with the third, zoölogy, veterinary anatomy, physiology, and pathology. Whilst, therefore, to the students of an agricultural college who were unable to take a full course, it would be sufficient to give the science of agriculture in the science of practical husbandry, to those who could spare the time necessary to have a thorough knowledge of that subject, it would be necessary to teach such subjects as geology, physical geography, etc.

In conclusion an answer is made to the question. "If such are the subjects that should be taught in an agricultural college, what are the appliances required to teach them?"

"Speaking in a general way * * * * * they may be said to be: a farm with all the necessary farm buildings, permanent improvements, stock and implements and farm buildings; lecture rooms, laboratories, libraries, museums, boarding houses and teachers."

The idea here furnished of what an agricultural college should be with respect of its courses of instructions and its appliances, has been realized in some of our states, where the congressional endowment has been legitimately used in founding and sustaining schools for farmers, not forgetting the mechanical classes.

The best realization, I think, has been furnished by Mississippi, Michigan perhaps excepted.

Truly comprehending the intention of the general government in its acts of appropriation, its legislature, in accepting,

the tendered grant, finally after the departmental system had been tried, provided for "the establishment and maintenance of a first-class institution, at which the youth of the state may acquire * * * a scientific and practical knowledge of agriculture, horticulture, and the mechanic arts; also the proper growth and care of stock, etc." Keeping within the plainly defined limits, the people of Mississippi established a college of which they said that its "leading object" must be "to benefit agriculture and the mechanic arts. Should other studies be taught, than those relating to these interests, they should be considered secondary, and rather as instruments, to more readily comprehend the sciences which would underlie agriculture and the mechanic arts."

To this it is added, evincing a just comprehension of what are the needs to be supplied, and what, therefore, should be the character and work of the college, that "the varied conditions, contributing to an intelligent understanding of agriculture, as a science and art, comprehend an education as broad and liberal as that needed in mastering any profession. The education must necessarily, however, differ in kind. Students, whose education is intended to promote the interests designated in the acts, must omit some studies taught in other colleges looking to general or special trainings. The education, too, is to be practical and industrial; students must be familiar not only with farms and labor, but must also labor themselves, and this labor is also a part of their education. It is educational, in so far as it is an illustration of studies taught in the lecture or recitation room."

Following a statement of the action of the board of trustees in locating the college, the purchase and partial equipment of a farm of eight hundred and forty acres, the erection of buildings, the opening of the school, and of the matriculation during the first session, of three hundred and fifty-four students, we have a quotation which tells the truth wholly and exactly. That a protracted course of study without labor "wholly removed from sympathy with the laboring world during the period of life when habits and tastes are rapidly formed, will almost inevitably produce

disinclination if not inability to perform the work and duties of the farm. * * * If the farmers are to be educated, they must be educated on the farm itself; and it is due to this large class of our population, that facility for improvement, second to none other in the state, be afforded them. It is believed that the three hours' work daily, that every student is required to perform on the farm, or in the garden, besides serving to render him familiar with the use of implements and the principles of agriculture, is sufficient also to preserve habits of manual labor, and foster a taste for agricultural pursuits."

Of agricultural colleges, pure or mixed, there are in the United States twenty-three, or one in each of the following states — Georgia excepted, which has two, and Virginia which has three: Maine, Massachusetts, Pennsylvania, Maryland, Florida, Alabama, Mississippi, Louisiana, Texas, Kansas, Arkansas, Kentucky, Ohio, Illinois, Michigan, Iowa and Oregon. The whole number of students pursuing agricultural studies in these twenty-three colleges and branches in 1880, was 2,133; that of Kansas having 303, and of Virginia 255. The aggregate of acres in the farms of these colleges in the year named, was 12,377, valued at \$751,270; and the sum total of annual interest on land scrip endowment, \$261,272 — an average of \$13,000 for each college.

Of university departments there are sixteen, or one in each of the states of New Hampshire, Vermont, Connecticut, Rhode Island, New York, New Jersey, Delaware, North Carolina, South Carolina, Tennessee, Indiana, Missouri, Minnesota, Wisconsin, California, Nebraska. The whole number of students pursuing agricultural and mechanical studies in these several departmental schools, in 1880, was 855; that of Connecticut having 230 — nearly all, however, pursuing mechanical studies — and of Minnesota six. Three, at least, have no farms — the others possess farms, so far as known, aggregating 2,191 acres; and the sum total of annual interest on congressional endowments is \$192,269 — an average of \$12,016 for each of the sixteen departments, and an average for each student of agriculture or the mechanic arts, of about \$225; for each student in agriculture alone, of \$900.

In a report on agricultural education, submitted to the Ontario Agricultural Commission in 1880 — to which report I am indebted for many of the foregoing facts and figures — the author, Mr. Johnson, concludes a sketch of our agricultural colleges, independent and departmental, embracing all that is important as to plan, course of study, work, management and measure of success of each, by naming five conclusions as the result of his investigation. One of these is, that "The agricultural departments of the universities are total failures." Another is, that "Where the Land Scrip Act, in its entirety, has been carried out, and a liberal and practical education of the industrial classes in the several pursuits in life, given by the establishment of industrial universities or agricultural and mechanical colleges, the union has been found to be simply an adhesion, not an amalgamation, and agricultural education has been very partially if at all successfully imparted." A third conclusion is, "That those institutions alone have been successful which have been purely 'agricultural' colleges, and they can be counted on the fingers." And, finally, "That the most successful of all, for instance, those of Michigan and Massachusetts, have been so, in so far as they not only adhered closely to agricultural subjects, and the sciences relating to agriculture, but also in so far as they exclude the merely literary from the purely technical studies, and in so far as they exacted a fair share of daily labor, and thus made the theoretical and the practical go hand in hand."

I have gone carefully over the ground forming the field of Mr. Johnston's investigations, in order to satisfy myself whether he was justified, by the facts he elicited, in drawing the conclusions just recited, especially the one conclusion that the agricultural departments of universities are failures.

I find this: that in the several classes of the Cornell University, 1882-83, there were, according to its register, twelve students, all told, who were pursuing the study of agriculture — twelve out of 370 in attendance.

Now the income arising from the sale of 990,000 acres of land, granted by congress to aid in furnishing instruction

mainly in agriculture and the mechanic arts, has been appropriated to this university by the legislature of New York, on the condition, as it only could do—that it should carry out the declared design of congress in making the grant. This yearly income amounts to about \$35,000, and was used the last college year to “promote the liberal and practical education of the industrial classes in the several pursuits and professions of life,” by furnishing instruction in all branches of classical and scientific learning to three hundred and fifty-eight students in the several classes, and instruction to twelve students in agriculture! From the time the university was opened, in 1868, down to 1880—a period of twelve years—out of six hundred graduates in all departments, it graduated eight as bachelors of agriculture. With this saying before us, we can only join in saying, that “in Cornell, with all her fame, agriculture is simply a university department, and a failure.” And yet I do not know that it is the fault of Cornell that it is a failure in this regard. Most likely the farmers of New York could have made it more successful as a means of agricultural education had they been disposed. At the outset they were indifferent as to the disposition of the congressional endowment fund, and ever since have been looking in a listless sort of way to see brick made without straw.

In New Hampshire “the congressional endowment was appropriated by Dartmouth College, * * whose authorities bought a farm of 365 acres, worth \$21,000. The result is, that out of 439 students attending in 1879, 24 only were taking the agricultural course. The sum of \$4,800 is realized annually by the endowment, or \$200 an agricultural pupil. The total number graduating in agriculture out of thousands graduating, is 26, of whom 12 (in the year mentioned) were farming. If these figures be not enough to show the utter folly of an agricultural department to an ordinary college, it may be mentioned further, that the stock reported on the farm (in 1878) was eight cows, fifteen heifers, two horses, one Durham bull, and four pigs.” And yet of the agricultural department of Dartmouth College it is said that it is one of the best. It would not seem to be so, however.

If a departmental school of agriculture could succeed anywhere, we are vain enough to suppose that it surely would in connection with our own State University. Has it succeeded? Are the farmers of Wisconsin satisfied with the results it has yielded? Are those more immediately in control of the department satisfied of its employment of from \$12,000 to \$17,000 of annual revenue appropriated it for the specified purpose of teaching "such branches of learning as are related to agriculture and the mechanic arts?" What account does it render? I mean to ask what has come of its use so far as giving instruction in agriculture is concerned, and in promoting that interest? By reference to its catalogue for 1883-84 it will be seen that at last commencement out of 89 graduates, only two were graduated as bachelors of agriculture; and that from 1854 to 1883 — a period of twenty-nine years — embracing a course of the years of its reorganized existence — while it graduated 982 in the several courses of study, no mention is made of even *one* graduating in an agricultural course. We learn also from the catalogue that in the several classes of the present year, only nine students are set down as pursuing the study of agriculture. The income of the agricultural fund divided equally among these would give each something over \$1,800, wherewith to meet the cost of tuition.

The mention of these facts does not fault the University, so far as its own proper work is concerned, nor is intended to do so. It is wisely and efficiently organized, its equipment far from inferior, its curriculum of study quite up to the best standards, its several faculties among the ablest, and if it has failed, judging from the point of view of true agricultural education, I cannot see that blame lies at its door. In its several colleges of Arts, Letters, and Law, its work as to quantity and quality, has scarcely been inferior to that of the best of our state universities; and year by year it achieves better results as an educational agent, and deepens its hold upon the confidence and regard of our people. But while it has what it terms an agricultural course of study, it has no college of agriculture, as of Arts, Letters, and Law, and only makes room for agriculture in its college of Arts — save in a

small way — giving it two additional professors, and providing an experimental farm, and what is termed an “Agricultural Experiment Station.” That it has been of use in contributing to an increased interest in the general subject of agriculture, and aided in the work of agricultural improvement, and added in no small degree to the fund of agricultural knowledge, is to be conceded; at the same time it is to be confessed, that, so far as meeting the wants of our farmers, and others of our young men, who would engage in agricultural pursuits — that so far as the doing of this is concerned, it has largely failed. Why it has failed is apparent from reasons already presented in this paper. Its “leading object” — in the language of the congressional act — has not been, cannot be, and is not claimed to be, “to teach such branches of learning as are related to agriculture and the mechanic arts.” And here I may repeat, that only those colleges exclusively devoted to the work of agricultural education, or have adhered closely to agricultural subjects, or the science relating to agriculture, excluding the merely literary from the purely technical studies, and exacting a fair share of daily labor, thus combining the theoretical with the practical, have been a success in affording the means of a thorough agricultural training to the farming class.

What Prof. Henry had to say at your convention two years ago, of the agricultural college of Michigan, is just in place here as showing how much more wisely the people of that state have chosen than we, and how immensely superior the advantages they possess, in their college, for promoting the great interest of agriculture, by furnishing the means of a specific and practical education to their farming population. You recollect what he said in description of this farmers' college, of the room it occupies, its working facilities, the number of its students, the magnificence of its surroundings, the grand scale on which all its operations are conducted — of its distinguished achievements on its appointed field. How broad the contrast between that school and the departmental schools of our colleges and universities!

In conclusion let me call attention once more to the language of the congressional act, entitled “an act donating to

the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts." After appropriating a certain quantity of public land for the purpose named, and providing for its distribution, sale, and the investment of proceeds, it sets forth that the money, so obtained, "shall be inviolably appropriated by each state, which may take and claim the benefit of this act, to the endowment, support and maintenance of at least one college, *where the leading object shall be*, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning, as are related to agriculture and mechanic arts, etc." Now, what was the plain intention of this act but to assist in founding and endowing in each state an independent agricultural and mechanical college, and not simply a department in some existing college or other institution of learning, and this one college, so provided for, "not to be in the strictest sense either literary, classical, or military, but specially and technically a school for agricultural and mechanical training?" Thus deciding, a considerable majority of the states have established, with greater or less faithfulness of conformity to their decision, each its separate agricultural and mechanical college.

"The grant," said the commissioner of agriculture in his report of 1867, defining the intention of congress, "was intended for the benefit of farmers; for those whose leisure or whose means do not allow them to pursue an extended course of study in existing schools, and who design to follow the business of farming. It does, indeed, provide the means for becoming skillful in the mechanic arts, but the masses in our country are farmers, and farming is the foundation on which our national prosperity rests. * * Instead of regretting, with a writer in the *North American Review*, that the term "agricultural colleges" has been popularly used, it may be deemed an appropriate designation for institutions of learning, formed for the express purpose of educating the young for the noblest pursuits in which man is ever engaged. It is the term used in all the reports on the bill, and in all the discussions on its passage, both in 1858 and 1862."

This is quite in accord with the expressed views of the framer of the bill, Mr. Morrill. Speaking of the different governments of Europe, he said: "They have established ministers of instruction, model farms, experimental farms, botanical gardens, colleges, and a large number of secondary schools for no other purpose, and they need no higher or nobler than the improvement of the industrial resources, the farms and farmers of the respective countries." After making mention of our colleges and classical schools, and saying that they are chiefly occupied in supplying the learned professions, he continued: "Other institutions are wanted, where the idea of labor shall be uppermost, and where the *esprit du corps* of those instructed will seek highest honor in no other direction."

Thus, in a crude and clumsy way, have I given you the result of my broken thought and reading in relation to the agricultural college. If it serve no other purpose, it may help to keep the subject of agricultural education before you, and lead you to inquire anew, with increased earnestness, what most is needed for the greater promotion of the leading industry of the state. Many of our states have answered this question, as we have seen, by founding, endowing and equipping their schools of agriculture; and the answer of Michigan, given long ago, is a ringing one, and worthy the applause it has received. To its grandly embodied reply I invite your attention, in the hope that by it you may be moved to insist that you be placed—rather, to place yourselves, in the matter of agricultural education, on an equality with your brethren of the peninsular state.

MANAGEMENT OF THE UNIVERSITY FARM AND EXPERIMENT STATION.

By I. C. SLOAN, Madison.

I have not chosen this subject because I think I can throw any light of value upon it, nor with any disposition to indulge in undue criticism, but because I think it a subject that needs thought and discussion, which I hope to awaken.

The farm has been in operation for several years. The

station has been established for so short a period that it would be unreasonable to expect that much could have been accomplished. These two establishments, so far as I am able to understand the purposes or objects of their existence, are expected to aid or perfect the agricultural education of farmers' sons and such other persons as from taste, inclination or interest, may be inclined to make farming the occupation of their lives; both of these branches of what out of courtesy is called the agricultural college of the state of Wisconsin, are under the control of the regents of the State University. The farmers who are accustomed to assemble here annually upon the invitation of the Agricultural Society of the state, for the purpose of discussing questions connected with and supposed to promote the agricultural interests of the state, had been complaining for several years that their interests were neglected, that in the appointment of university regents, lawyers and those engaged in other than agricultural pursuits, were appointed to the neglect and injury of the farming interests. The complaints have been listened to, and the governor has appointed upon the board of regents three practical farmers, who are among the most intelligent and enterprising in the state. The rest of the board of regents have recognized the importance of promoting, so far as possible, the farming interests of the state, and have yielded, as I understand, the management of that interest, so far as they come within the province of the board of regents, to those members who are farmers and who were appointed with the expectation that they would take these interests especially under their fostering care, and there have been appropriated such funds as were asked for to carry out their plans. Under these circumstances two questions arise:

First. What has been done by these establishments to promote the agricultural interests of the state?

Second. What have the farmers of the state the just right to expect will be accomplished in that direction in the future?

The answer to the first question may, I think, be properly a short one. There has been some testing of seeds for the

purpose of ascertaining the relative yield of various kinds of crops, such as corn, potatoes, barley, wheat, and also whether fall wheat might again be grown in this part of the state with profit to the farmers, but these experiments, conducted upon no fixed plan, were of short duration, and although I think they resulted in some benefit to the agricultural interests of the state, they were, with a change of management, abandoned, and the good which had resulted has, to a considerable degree, been forgotten and lost.

There were also instituted, some years ago, experiments having for its object to show how different kinds of fertilizers, barn-yard manure, and the various commercial fertilizers would affect crops; but these were of short duration, and so far as I am able to ascertain, proved of no value to anybody.

There has also been kept upon the farm for a very considerable period of time, quite a large number of cattle — the word “large” is to be taken in connection with the size of the farm — it has been a genuine medley, ringed, streaked and speckled, a few Jerseys, a few short-horns, a few Holsteins, a few grades and a few scrubs. What has been the object of keeping this mixed lot of cattle I have never been able to find out from any one connected with the farm. It certainly cannot have been for profit, for every animal kept there, I suppose, has eaten its head off, as the saying is, at least twice a year. I believe the milk of some of the different breeds of cows in respect to the amount of its cream and butter percentage was analyzed and tested a year or two ago, as for instance the milk of the Holsteins and Jerseys was tested, but as it is well known to every intelligent farmer that individuals of the same breeds vary greatly in the percentage of cream and butter products which they yield, what was supposed to be proved by these tests is not very apparent.

I believe I have enumerated about all that the most sanguine friend of the University farm can claim has been so far accomplished. I may have omitted to mention some experiments in feeding pigs skim milk, and some other feed to test the relative amount of growth and weight produced by

each, but so far as I can learn the results have been so obscure as not to attract much attention, or be of much value in the business of practical farming.

The farm has cost over and above income, \$2,000 or \$3,000 a year, and the results have been very meagre in proportion to the cost.

But the second is the important question. What have we a just right to expect from these two branches of the Agricultural college?

And here I confess I do not take a very hopeful view. In my judgment the farmers who are members of the board of regents, and have as I am informed, assumed the control of these interests, have a task so difficult, if not impossible to perform, that it might well appall the most sanguine men. They are to devise some practical plan to educate the sons of farmers, and others who desire to make farming the principal occupation of their lives, so that they may prosecute the business with more success and profit than their less favored competitors, who have not had the advantages of such an agricultural education as the state offers to all her sons who are willing to avail themselves of its advantage.

But the great difficulty which at once presents itself in this undertaking is, that agriculture has not advanced to the dignity of a science; agricultural knowledge is crude and scattered; it has never been reduced to a system. There is no systematic and orderly arrangement of what we know about farming. We have no established, demonstrated general principles, which are reduceable to practice. Almost every problem which has been proposed not only remains undemonstrated, but there has been hardly any progress toward demonstration. Take the important question of fertilizing land, so necessary to maintain its producing power to such an extent that farming will continue to be profitable. It is agreed, on all lands, that barn-yard manure is the best general, permanent fertilizer that can be applied, but when we reach the question as to how farmers can produce it in sufficient quantity, without loss, we are all at sea. What stock shall they feed? What grain or other food shall they use? When, as to the season of the year,

and to what stock shall it be given? The good sense and experience of the farmer is his only safe guide, and that even is an uncertain guide. Prices of stock, beef, mutton and pork are so fluctuating, that the solution of the problem seems to depend upon instinct quite as much as reason. One farmer will feed stock at a profit, whilst another is doing it at a loss. Can farmers ever be aided by experimental farms and stations supported at public expense, in this branch of farming? This is extremely doubtful.

But suppose the manure to have been produced; when and how shall it be applied to the land? Shall it be drawn out in the fall and winter and immediately spread on the land, or shall it be put in small heaps and spread in the spring? Shall it be kept on the surface or plowed under? What quantity will be sufficient and profitable for the various crops? How deep shall we plow our land? How shall we seed it? Shall we apply a large or small quantity of seed? And so with commercial fertilizers which the farmers purchase, and which are, or are supposed to be composed largely of mineral substances beneficial to growing crops. There are numerous kinds in the market, and although the farmers of this state can hardly be said yet to have reached the question of their practical application, the time is not distant when a resort will probably have to be had to them to sustain the fertility of our land, and at the east and south they are now being largely used. But the problem is almost wholly unsettled as to what kinds can be profitably used on the various crops, and in what quantities? It is true that chemical analysis will show the percentage of each particular kind of mineral element in each sample accurately, but when we come to apply them, the question of how much potash, how much phosphoric acid, how much ammonia will be beneficial to growing crops of certain kinds, nobody seems yet to have been able to find out.

A farmer will apply a given quantity to a certain crop, and the increased yield will appear to make the application profitable. But another farmer tries a similar experiment and meets with loss. While with the same man what

seemed to produce a profit one year, will result in loss the next.

It was once thought that by analysis of soils and crops it might be ascertained how much of the various mineral elements would be required to produce maximum crops, but this theory is now pretty well exploded. It is said a New Jersey farmer sent a portion of the soil of a field to the experimental station of that state and asked to have it analyzed, to ascertain how much corn the land would be likely to produce, and the answer was made that the soil was so lacking in necessary elements that it would not produce corn at all, when the fact was that it had produced fifty bushels of shelled corn to the acre that very season.

Besides the manufacturers may vary the ingredients in each lot of fertilizers so that an analysis of a sample from one lot will be no evidence of the value of another sold under the same name and purporting to be the same in quality and thus we find that chemical analysis in this respect, while useful in certain cases, is by no means always a reliable guide.

Questions of this kind might be multiplied almost without limit and we have no established and demonstrated rules which will answer them. And so with all the varied operations of farming. When shall we cut hay, timothy and clover? Shall it be done when first in bloom or later?

For some time the advocates of early cut hay seemed to have it all their own way, but lately many experienced farmers contend, and some chemical analyses seem to show that this method involves loss and that the more matured product is more profitable.

Shall we plow under the second crop of clover, or shall we cut it as hay, and apply the manure made from it? Shall we plant large or small potatoes? Shall we plant them whole or cut them to a single eye, or make some other sub-division? Shall we take corn from the tip or butt, or middle of the ear to plant? And these unsolved questions which the farmer meets in his every day practical operations, might be asked, until the patience of everybody was exhausted.

I have thus glanced at the crude and unsettled condition of

agricultural knowledge for the purpose of showing how far from a scientific system it is at present, and to thus indicate some of the difficulties under which our farmer regents and the professors they employ are laboring. And I repeat that the task that is imposed upon them may well be regarded as appalling.

So far as I know, there has not been made even a respectable beginning to raise what agricultural knowledge and experience has been collated and published into a science; it exists in a scattered and fragmentary state. Enlightened investigation of the numerous and almost innumerable problems with which the farmer is met on every hand and every day, has been conducted for a long series of years, in this country and for a much longer time in Europe, but who has had the patience, industry and ability to collect all this scattered mass of desultory investigation and the facts established by it, and by applying the philosophic method of reasoning by induction establish some general rules.

Messrs. Lewis and Gilbert conducted a series of experiments at Rothamsted, England, for the purpose of showing the value of various kinds of fertilizers for more than forty years. Yet who knows the results of these experiments; they labored with a pains-taking, intelligent diligence that deserved to be rewarded, if it has not been.

There are scattered all over western Europe agricultural schools, colleges and universities that have been attempting to teach agriculture for many years, some of them for more than half a century in England.

The Royal Agricultural College at Cirencester in Gloucestershire; the agricultural department of the University of Edinburgh in Prussia, Saxony; the Grand Duchy of Baden, Wurtemberg, Austria and Hungary. They are so numerous that the naming of them would be tedious. But as to what has been the result of all this pains-taking, laborious teaching of agriculture, the American farmers are as yet entirely ignorant. Here, at least, in this state, we are turning our backs upon all that has been so far wrought out by the expenditure of so much labor and money, and we propose to

work out a system of agricultural knowledge for ourselves, by beginning at the stump, as it were. And how are we beginning? So far I think no one will be able to give an intelligent answer.

What I have so far said has been intended to show the difficulty under which the regents and professors who have charge of the agricultural education of the youth — sons of farmers — as the favorite expression is, of this state. You set them a task, but they have no tools or implements to accomplish it with; they have no books containing the knowledge which they are required to teach; all that has been wrought out in their field of labor is in so crude, scattered, unformulated condition that it is unavailable.

The task of making bricks without straw, which the Egyptians set the children of Israel, was light compared with that which has been laid upon the regents and professors having in charge the farm and experiment station for the purpose of teaching the science of agriculture, which has no existence in fact. Now, if it were teaching mathematics, in all their broad and abstruse range, or of chemistry or botany, or civil or military engineering, or Greek or Latin, or the modern languages, physics or mechanics, or any other branch of knowledge that might be mentioned in the whole of the University curriculum, the task would be comparatively easy. We have books in all, in which the whole matter to be taught in each has been formulated and systematized by long years or centuries of thought and labor, and has been elaborated and elevated into a system or science. But when you come to teaching agriculture, you have no means of teaching it.

As well might you have set the most skillful mechanics in the world to work to invent and construct a steam engine before one was known, without tools fitted to accomplish the work.

I have inquired of those who are strenuously advocating the education of farmers' sons in agriculture what they would have them taught and they generally reply chemistry, botany, mineralogy, engineering, surveying and mechanics. But these are all established sciences and arts only touching

agriculture incidentally and are not part and parcel of any practical system of farming.

What is an agricultural education, which is to be taught so as to fit those who graduate in it for the practical business of farming?

I believe this is a question that is unanswerable and I recommend some of these ideas which I have thus suggested to the consideration of those missionaries who are as I believe, unwisely, not to say foolishly, advocating the separation of the experimental farm and station and the agricultural college, whatever that may mean, from the State University. Who are advocates for building up a grand separate and independent institution having a large domain, expensive buildings, a large corps of professors, to teach what? and echo answers: To teach what?

I do not believe any of the advocates of this scheme can give an intelligent answer to this question. So far as they name any of the established sciences, languages or arts now taught in the University, it would involve a foolish and unwarranted duplication of the expense which must be borne by the public for the purpose of teaching what can be much better taught in the University as now established.

Before we urge upon the legislature and people of this state to indulge in any such extravagant expense, let us look the ground over carefully and see what capabilities our present farm and experiment station possess, and how these capabilities are being developed. There are, I believe, some experiments going on in the growing and fertilizing of crops, and some in the analysis of the food and excrements of animals; but the question at once arises, whether these same experiments have not been made many times before at the agricultural colleges, farms and stations in this country and in Europe; if they have, it would seem to be labor and expense thrown away; but who knows whether they have or not. So far as I can learn there is no one who can tell what, if any, advancement has been made in agricultural knowledge, in all the endowed schools and colleges, which have here and elsewhere existed so long. In my judgment the first great field to be explored in the attempt

to establish an agricultural science, is that which lies behind us. The first great work is to gather up, arrange, and analyze the fragmentary and scattered knowledge which has been gained at so much expense and pains-taking labor. In all the civilized countries where agriculture is recognized as the primary and most important industry of the people on which all other industries rest, as a foundation, systematize it and see what of general principles have been established. Until this is done, I fear there is little hope of progress in such knowledge, or of even beginning to establish it as a science.

It seems that in all other fields of knowledge there have appeared master minds at intervals, capable of grasping and arranging the facts elicited by experiment, and arranging them in logical order. But in this branch of knowledge none such have appeared. Liebig, the German chemist, is the only one, so far as I know, who has ever attained any distinction in this direction. But what did he do, and what did he demonstrate, if anything, of practical value in farming? This is an unknown domain to the American student. Is it ever to be known? We lack teachers, we lack the means of teaching; as far as agricultural science is concerned we stand upon the very borders of a *terra incognita*, a great unknown land. Is it ever to be penetrated? I fear not, even a little way, at least in our time, if ever.

I have thrown out these crude suggestions in the hope that they may lead to reflection and discussion.

In looking over the agricultural field, I see one hopeful sign, and that is in the cattle interest. Heretofore there has been much uncertainty and confusion in the breeding of these animals so important to the farming interests of every country. Whilst many valuable breeds, with fixed characteristics in many respects, have been formed, the individuals of each breed have differed very much in their most profitable points.

Cattle may be divided into two general classes. 1st. Those that are bred for beef. 2d. Those that are bred for the dairy. Heretofore the two classes have been judged mainly by the breed and by the pedigree and not on their individual mer-

its. An important and I think very beneficial change is taking place in respect to judging and valuing cattle, which I believe is to end in an entire revolution in that respect.

Beef cattle, reared for beef are now being judged as to their value by their early maturity, the amount of weight they will attain in proportion to the feed consumed, and by the proportion of useful parts to offal which they show upon the butcher's block. And dairying cattle are prized according to their products in the churn and cheese hoop; and records are being made up in these respects on which they are sold instead of as formerly, on the breed and the length and purity of pedigree.

I look upon this new method of estimating the value of cattle as promising great and beneficial results to the farming interests of the country.

The fat stock exhibition at Chicago demonstrated that cattle may be bred and fed so that when placed upon the butcher's block they will yield 70 per cent. of useful parts to 30 per cent. of offal, instead of 50 or 55 per cent. valuable products to 45 to 50 per cent of offal, as the cattle of the country usually yield.

In the dairy class, results that are little less than astounding have been produced.

Who would have believed a few years ago that any cow was capable of producing one hundred pounds of butter in a month. And yet recent tests have established the facts, that the Holstein cow, Mercedes, belonging to Mr. Wales of Iowa, produced ninety-nine pounds, six ounces of unsalted butter in one month, whilst the Jersey cow, Mary Ann of St. Lambert, belonging to Mr. Fuller of Canada, produced in the same period of time one hundred and two pounds of salted. And the record of cows that have produced over sixteen pounds of butter a week has already reached into the hundreds and is constantly increasing. The great problem to be solved is; can cattle, giving these extraordinary and valuable results, be reproduced with reasonable certainty, so that hereafter the value of a breed of cattle will be found by its products on the butcher's block, in the churn and the cheese hoop, and not in the length of the pedigree? I have great faith that an

affirmative answer will eventually be worked out and if so, the benefits which will result to the farming interests of the country will be almost incalculable.

The question here presents itself, whether the medley of cattle now on the University farm are to be made to contribute to these important results, or whether these branches of our agricultural college are to lag far in the rear of private enterprise and only imitate and adopt what is discovered and established by such enterprise? The answer will depend upon the intelligence, enterprise and energy of those who have the management of the experiment farm and station.

I do not want to be misunderstood as to the effect of the remarks I have made. I am not opposed to carrying on the University farm and experiment station; but, on the contrary, I am heartily in favor of both, and I am in favor of having all the money appropriated to them of which any reasonable use can be made. My object has been to attempt to awaken more interest in their management and more discussion as to the proper method to be adopted in conducting them. I have endeavored to point out some of the difficulties which I think are in the way of attaining any immediate practical results. Still I think great improvements can be made in the conduct of these branches of the agricultural college, and far greater beneficial results for the farmers of the state be produced than have yet been reached. But above all, I believe that in the present condition of agricultural knowledge it would be folly to attempt to separate the agricultural college farm and experiment station from the University. If it could be accomplished, it would involve a very large expenditure of money, with no adequate benefits. Everything which could be taught in a separate institution can be taught more thoroughly and effectively by the trained and capable professors of the University, than could be done in any new educational establishment, at least for a long time and at very much less cost.

I hope to see the scattered knowledge which now exists in relation to agriculture, collected and systematized. Then, and not till then, shall we have a foundation laid for the

intelligent teaching of practical agriculture in some of its branches.

DISCUSSION.

Mr. Hinton — After the severe censure that I received not far from here for having questioned the benefits that had accrued from the University farm, I must confess that I have been singularly gratified to-day when I heard my venerable friend here confirm every word that I had said, and found myself backed up by a gentleman who is distinguished throughout the state for his deep research, certainly in all questions of law, and who has shown us to-day, I think, that he is fully as competent to search out this question of agriculture as any one who has ever spoken here. I know the feeling is abroad among the farmers generally, and that feeling cannot be ascribed to an ill feeling toward the University, that the agricultural department needs a larger and different farm than the one they have. Whether that could be achieved by the addition of another tract of land to that I do not know, and I have nothing to say about that, but I think we are forced to the conclusion by the two exceedingly able papers we have listened to, that the character that the University farm bears as managed heretofore is about like that of the Irish pilot who tried to recommend himself to a captain going up the Irish channel by saying, "captain, you ought to take me for a pilot, for there are rocks and stones and shoals and sandbars here that neither you nor I nor anybody else knows anything about."

I think that had my friend, who just sat down, been prosecuting me for any offense and shown that close research, all that subtlety of law, that singular knowledge of the intricacies of pleading which he has, I would have said as the coon did when Scott pointed the gun, "I will come down; don't shoot." The gentleman tells us that all these experiments that have been tried have been failures and all their results are forgotten, and that as for the experiments with fertilizers, nobody knows anything about them. Now I am sure he did not intend to be unkind. I know something of his good nature, and I know that when he spoke of those

ring-streaked and speckled ones there, I thought it was very, very unkind, when he neglected to give us one word about that memorable piebald Holstein bull whose picture has adorned, if not disgraced, the walls of the agricultural room for so long. He forgot it; that was all. He tells us of the obscurity of these results. He tells us that every animal they have had there has eaten its head off. I do not know what became of the tail or the hide; and he tells us about the expenses every year being about three thousand dollars over the income on each one I think, or something like that.

Now I remember my friend, the Secretary of the Agricultural Society, telling about the marvelous results of that agricultural farm. He said that it had actually produced one man, a young man at that, who knew so much that he had gone out of the state and was receiving six thousand dollars a year for, I suppose, planning other agricultural farms where the experiments, if conducted like these, would lead to simply an extension of ignorance.

Mr. Babbitt — I referred to Prof. Swenson, who is superintending a large sugar refinery in Kansas.

Mr. Hinton — I agree with Mr. Sloan fully. It has been my fixed opinion for some time, from some considerable reading on this subject, that agriculture is no more a science than political economy. I venture to say that you will find the most successful farmers of this state have accomplished their ends through a something — they do not know what — nobody knows what, and it was a very happy and appropriate term to apply to it — instinct. There are men who are instinctively farmers, and there is no question about it. Any farmer will tell you that. The paper read by Dr. Barry showed a great deal of care and research and a very happy arrangement of facts taken from all over this great country and brought down into the small compass of his paper. I must confess I never listened to anything more instructive. The two papers taken together seem to bring us to this single point, happily stated by Mr. Sloan, that agriculture is not a science and never can be taught as such.

Mr. D. R. W. Williams — The agricultural farm is an insti-

tution in which I have taken a deep interest ever since its organization. I believe it is established for the benefit of every class of men in the state of Wisconsin, for the lawyer, the doctor, the merchant and every other one, and in making it the common property of all, I believe we can contribute more to the improvement of agriculture than in any other manner. When Frederick the Great first came into authority in his nation, a little over a hundred years ago, not a single literary man was known in Germany. He called from France and from England distinguished men in mathematics, in literature, and in every art and science. He called around him as it were a cabinet of the most intellectual men. He established colleges, and in that way encouraged the disposition of inquiry, until to-day Germany is one of the most distinguished, if not the most distinguished, country in literature of any in the world.

When the United States made its splendid donation to the different states, it was done with the intention to promote agriculture. But I ask in what manner this can best be done? and in asking this question I shall leave it for your consideration. Can it not be done by opening our agricultural college to every member of every college in this state, so that every member of every university in the state can enter by passing an examination in such studies as are requisite for understanding the principles of farming? If the farmers of Wisconsin are to become improved in agriculture, it is to be done by adding knowledge to the science. Instead of having Prof. Henry and Prof. Swenson as the representatives of the great ideas of advance and progress in the state, we want to bring the most highly talented, the most intellectual, the best educated in every branch of science connected with the subject of agriculture, and make them interested in the subject, so that instead of one Henry and one Swenson, and a few others, we will have those interested in agriculture scattered all over this country making experiments, and have every class equally interested. Instead of our experiment station being confined to ten acres of college grounds, let them make investigations and analyses of the soil in every part of the state, and thus, after a while, get

such an accumulation of facts and knowledge as will enable us to draw conclusions that will make agriculture a science.

Mr. Broughton — It was hard to sit still and listen to all that has been said. The gentleman last up said there were no scientists in Prussia at a certain period. I have asked him if there were any lawyers there. Frederick the Great visited London and saw how they conducted matters at the Old Bailey, how the lawyers wrangled and called each other liars, and befogged and befooled each other. He said, "there is one lawyer in Prussia; I have a notion to go right home and hang him." That is what is the matter with the whole thing; the lawyer is king. I studied law myself four weeks, but I have been a practical farmer for forty years. Brother Sloan says that it is unreasonable to expect much to be accomplished. Of course it is, in the direction of benefits to agriculture, because lawyers, and a majority of them, have been regents of the University, including the agricultural college, ever since its foundation, and of course if we had Frederick the Great here to hang them, perhaps we might do better.

Who are the regents? A few years ago they were all lawyers. Now there are three farmers, so-called, and a majority of them are lawyers. He says farmers have complained. Of course they have complained, and they have complained so it is being heard, and pretty soon it will perhaps be dignified by action. Heretofore it has been like the squalls of a child, but by and by what will be heard? We will hear the complaints among the lawyers probably. What kind of a farm have we? Was the agricultural farm selected for the benefit of Madison, or for the benefit of the farmers of the state? Were the farmers made for the University, or the University for the farmers? The facts of the business are, it is a barren marriage, a marriage where there are no fruits, the marriage between the agricultural college and the University. I believe there has been one student graduated, perhaps, and a good many abortions. And it is a marriage where there is incongruity and an incompatibility, and probably it would be better for the farmers if there was a divorce, but it would not be as well for the University. What kind of a farm is it? It looks as though the farm

was composed of land that scooped out of the lake that lies north of it. Perhaps it was scooped out by glacial action, or perhaps the land was turned square over, as you would turn a pan cake. It is composed largely of jack oak ridges and a quicksand marsh that they are undertaking to tile-drain. If any of you farmers do not believe it, go and look at it; and in particular look at the boulders that have been rolled off into the lake. Now, he says, what the farmers had a right to expect will be accomplished. What they had a right to expect! What have they a right to expect? It makes me think of the story of lawyer Norcross, in Janesville. A lawyer and a grain dealer were at law. He was fighting the case for the grain dealer. The jury were all farmers. He said, "you farmers are the biggest fools in the world, and as long as you are quarrelling with each other you have no right to expect anything different from this. It is like the old story of one farmer holding the cow by the head and another one by the tail and a lawyer on each side complacently drawing the milk." It is just so with this University. The lawyers sit complacently by drawing the milk while the farmers are holding the cow, and it is too bad that that cow was not one of the ancestors of the short horns, and if the lawyers did not get kicked over, the farmers who were fools enough to hold it by the horns would be cast aside immediately. If we had that kind of a cow, not many lawyers would milk her if they were not experienced milkers. They would have us farmers raise the cow, feed the cow, milk the cow, and they would take the cream.

I do not want to be personal in this matter, but brother Sloan has done it so scientifically that we hardly see the trick. What we farmers do, we do bluntly and directly, but these professional men do it scientifically. The cattle that he has ridiculed were put on there when the lawyers had full control. The ridicule heaped on the management might be heaped on all farmers; and not only that, it might be heaped on all professions. How stands the lawyers' profession? What kind of a set of lawyers have we? We have barristers, attorneys, shysters, and the most of them pettifoggers,

and some of them undertake to be legislators; and see what kind of confusion we have. Those ringstreaked and speckled cattle at the University farm are nowhere compared with it. They are from the lowest kind of a dead-beat up to the highest kind of a thief. He says agriculture is not a science. If it is not a science, what is? What is science? Some say it is exact knowledge. Is there any exact knowledge but mathematical knowledge? If there is, I have not found it out yet. All the sciences except mathematics are of the doubtful order. You can make objections to them in some shape or other, or criticise them to death. Brother Sloan criticises the agriculturalist almost to death. He says the solution of the question must be left to instinct. Are we going to leave the progressive civilization of the human race to instinct? If we are, we will retrograde instead of progress. Instinct is good in its place; intuition is good in its place; reflection and reasoning are good in their places. We had better employ the whole, and if that does not answer, pray some. Now, is it not just as well for the farmer to criticise the lawyer as for the lawyer to criticise the farmer? Which has the greater prerogative? The fact of the business is, would you not live just as long and be a great deal happier without the lawyer? Is the lawyer necessary to the welfare of the community? Is he not like the louse on a calf; a thing that the calf could do very well without, but what would become of the louse? This thing, not only applies to the lawyers, but many others perhaps that it would be invidious to mention. In speaking of the analysis of the soil in New Jersey, he says scientists did not know by analysis whether it would produce anything or not.

It is said of a certain governor of this state, when examining the horses at the agricultural fair in Janesville, speaking of a thousand dollar Clyde colt purchased on the grounds by Secretary Babbitt, that he remarked, "What a splendid colt for speed! were his ancestors trotters?" A good share of them don't know a beet from a turnip. If any of these scientists undertake to analyze the soils — I presume none of them at the University have undertaken it — they would find the soil of the University farm would not produce anything

probably. I should not want to undertake to farm it on that soil with a view of making money. He says when shall we cut hay? That is uncertain. I presume it is uncertain with him whether we shall cut it in the winter or the summer. Again he refers to the matter of the seeming degradation of the farmers and the uncertainty of the management of their affairs, particularly farming, so very often that it is necessary to refer to the lawyers often to keep even. Are the questions of the lawyers settled? Not by any means. Is the question of the study of the classics settled? Not by any means. It was said by Charles Francis Adams, in his address to the Harvard graduates, that it was unnecessary and was not beneficial, and I have an article here from a newspaper showing that the same thing was said by Canon Farrer, in England, that it was not necessary. That it is not necessary for what? Why, for the benefit of the industrial man. It is a good thing for those who wish to sell their aristocratical wisdom at a high price, a sort of blue-blooded fancy stock that is good for those that sell it, but it is a bad job for those that buy it. There is a grand science in buying things, as well as in selling things; and we farmers, as well as merchants, had better study these questions and be careful what we buy of this class of merchants. Is not the science of religion uncertain? We have a thousand different sects, and here we have Mormonism right among us making inroads among the Christians. Is the science of government settled? Not by any means. Some claim that the natural government is aristocracy; some claim that it is monarchy; and some say a representative government; and some say it is mixed; but there is no mixture about the government we have; it is a government by lawyers. If that is the case where is your science except mathematics? He says apply philosophic wisdom. Who shall apply it? Why, we farmers of course should apply it to ourselves; each one judge himself for himself in his own affairs.

The true doctrine is, let no man stand between us in the management of our own affairs. We should use our own self-judgment, and, if we are not fit, educate ourselves till we are fit. He says our colleges are failures. Here is an

example of another, the college of Oxford. As related by history, a certain expert in the science of education in the year 1380, asked what they had going on at Oxford. The answer was, "They have three thousand boys there studying bad latin and worse logic." That was nothing compared with this country. Here they probably have a hundred thousand. That was the idea of a wise, practical man in that day. He says: "What has been taught in agriculture?" We have all been to the school of experience, and experience gives knowledge from actual trial, the best school that ever has been. It is applied science in one sense. We have all been taught in that way, and we would like to have a little more of the secrets of nature unfolded to us. If nature is a secret society we would like to see what is in there. Adam and Eve undertook the job, but it was a miserable failure, but we would like to have it developed to us; it would be a good thing. What has been taught in the science of government? We are just as much at sea, and more. They have been trying all sorts of experiments from time immemorial in the science of government, some figuring to rule the people, some to manage the people, and mostly to make slaves of the people so that they would be building palaces, while those who did the work lived in hovels, and it is a fact that there can be no splendid palaces built for the benefit of kings without the industrial class living in hovels. Another thing is equally true, the scales of education between the industrial class and the professional class cannot be balanced in any way; if the industrial class comes up the other goes down; that is inevitable. There are uncertainties in all things, and the farmers take the most risk of any class. They take the risk of the elements, the seasons, and all that. See the effects of civil war, see the effects of contending armies, of rival nations, and even the crusades, eating them up. The human locusts were worse than those that flew in the air at devouring each other. It has always been so. Are there obstacles in the way? We are sometimes disposed to say, "Blessed be nothing," for then we have nothing for these professionals to steal. He says everything is crude in regard to the knowledge of agriculture. Is it not also crude in

regard to all other things? What profession has a pre-eminence over the farmer? Not one. What one is equal to them? Not one. There is more practical and beneficial knowledge to the human race obtained by and through the farmers than through any and all other classes combined. Are we not at sea on the tariff question? Who agrees on it? It is just as bad as religion. It is just as Dow said about Calvinism. He said the real doctrine of Calvinism was "you can and you can't; you shall and you shan't; you'll be damned if you do, and damned if you don't." It is all in that crude state. Who says that this kind of military tactics is right?

Napoleon said it was all wrong, and he took a new kind of tactics and wiped them all out. In the science of naval warfare, the Monitor cleaned out all the science that existed before that. In the science of locomotion, who can say that the railroad will be the future means of conveyance from one region to another? In metaphysics, who can say that Bacon was right in his dissertations on Locke? Who can say that the steam engine will not be done away with as the self-raker has been by the self-binder? Who can say that the self-binder will not be supplanted? Do the lawyers agree how they should be educated? Webster says they should be educated with reference to getting in the upper story. Suppose we all get in the upper story, the edifice will fall, like the south wing of the capitol. The mudsills will not be satisfied. What will be the consequence if you educate the mudsills? They will question by what authority such immense weight is put on them. It is unsafe for the superstructure to educate the mudsills. They must be kept in ignorance. They must learn enough to become good slaves and no more. They must be so environed in their position that they cannot get out of it, and that has been the game from time immemorial. Rulers have said a little learning is a dangerous thing, and a good deal of learning is more dangerous to the industrial class. What could a nation of lawyers amount to? It would be like a nation of lice without any calves. He says: "First of all, go and gather the materials." Employ even scientific fellows to gather material, that is, to build pyramids. What is left on the Upper Nile but a vast pile

of stone in a desert? That is what will become of every country. What is there left of Babylon but the ruins of the tower of Babel. What should practical farmers do? They should use wisely the materials at hand for the public good, and be careful that parasites do not get more than their proper share. They should go ahead, for the matter is before them. They should be on time in all their business, and be prepared, not by moaning over the past, but by looking at the bright future, and be ready for the spring when it comes. He says: "Let us consider." The time has come for action. It reminds me of the case of a council of physicians. A lady was in convulsions. One said: "I am going to bleed her." Another one says: "Let us consider." The one who was going to bleed her said: "While you are considering, the woman will die. Get out of my way!" And he bled her, and the woman was saved.

This stopping to consider and paying these fellows that consider a hundred times more wages than we get, is the greatest folly in the world. Let God consider, and let him teach us by intuition and experience, and let these considering fellows take care of themselves. He says we lack teachers. What kind of teachers? We lack self-teachers. We should teach ourselves. Each avocation should teach itself by teachers from that avocation. The rural schools should be taught towards the farm and not away from it. The education of the schools has been away from the farm by teachers who set the ideas of the boys and girls towards the city. He says there are some improvements in cattle and the pedigree is excellent. Is there any pedigree for the lawyers? Not by any means. Lawyers' sons have always been failures. Look at the sons of Henry Clay and Daniel Webster! The sons of lawyers are universally failures.

He says you may look for great improvements, but he might as well have said none in the lawyers. What are these things for? He says for the benefit of the farmers? Do you think he thought it was for the benefit of the farmers? "Come out of the wet," as the crocodile said when he swallowed the negro. Was it for the benefit of the negro or the crocodile? Do you believe it? Does Mr. Sloan believe it?

He says scientists are base imitators from the experience of the farmers. If that is so, if their experience is so good, they should utilize it and put it in shape so that it can be imparted from one to another. That is what this convention is for, to impart our experience to each other so that the leaven which leavens one may leaven the whole.

On motion of Mr. Wood it was resolved that speakers be restricted to five minutes.

Mr. Wood — While I am on my feet I am going to administer a rebuke to my brother farmers in this matter. I am a farmer, pure and simple. I am proud to be a farmer. I am tender toward the position of farmers, and when I come to this convention and hear speeches in which we as farmers are tilted against any other class, as though we were inferior, or as though others looked upon us as inferior, and it is received by my brother farmers with pleasure, as though it pleased them, it hurts our reputation as farmers among thinking people who are here, because we do not come inferior to anybody, and there is nobody here who puts us down as inferior. (Applause.) When I shake hands with a lawyer I stand up just as straight as he does, and I am his equal in every way and am recognized as such. There is no farmer in this convention who could have put the facts in reference to the University farm and the University in general before us as intelligently as Mr. Sloan has done it. I differ with him in opinion, but I am glad he has done it, because if we cannot look at the facts in the case, if we cannot stand straight up and see it as it is, we are not fit to be judges in the matter. We must act intelligently, and both sides must be shown to us, and I am glad he has done it. I think Mr. Sloan showed us one side of it well. He put it perhaps a little too strong, but it was his business to present his side. No man can get up here without preparation, on the spur of the moment, and meet Mr. Sloan's arguments, for they were carefully considered and well put. We have got to go home and think about it. We can carry home food for reflection. There were some expressions I might criticise. He said some dirt had been sent to a professor of an agricultural college and he said it would not raise corn. I do not believe that. No

professor would say it. That was out of character and out of keeping. The experimental farm is yet in its infancy. Look at the progress of all science. Look at chemistry, which is to-day a science, and but a few years ago it was but alchemy, and but a few isolated facts were known. It has been developed and the science stands before us. It is possible that agriculture may never be reduced to the same absolute terms. We deal with inconstant elements and chemistry deals with constant elements. We have winds and rain and drought and frost, but we want to learn to meet all these contingencies, and as we progress we can make improvements.

When I look back and remember agriculture as it was when I was a boy, and see what it is now and what improvements it has made, I feel greatly gratified and I hope much for the future. Our progress may be slow, but it will be sure, and we will make progress through the studies and efforts of these men. There was a time when pleuro-pneumonia was almost certain death to our cattle. The matter was taken up at one of the great experimental stations, and the great principle of inoculation which Jenner discovered was applied, and our only hope to-day of the prevention of the spread of the disease is the discovery made and worked out at that experiment station. We will get benefits from it, and I hope we will go ahead.

Mr. B. F. Adams — I simply desire to say a few words to place the short-comings of the legislation we have upon the proper class. If you will examine the records of the legislative bodies that have met in this capital in the last twenty years, you will find that the farmers, when they exerted themselves as a unit, could control legislation in regard to these matters. When the University was reorganized in 1863, they controlled that legislation. They organized it in the way it is, with the agricultural department attached. With the limited knowledge they had at that time of this system of agricultural education of which we hear so much, they thought that was the best thing that could be done. That we feel some interest here in Dane county in the success of that department, I admit, and we have reason to feel an interest in it. We have invested forty thousand dollars

in this department, the gift of Dane county, and we think now, with the light we have, if you gentlemen will give us your united support in building up that department and making it what you designed it should be, and what the votes of men of your class decided it should be, it can yet be made to serve your interest. I speak as a farmer and from a farmer's standpoint. I have always been identified with you in feeling and interest. For the last thirty years I have been engaged in farming. We grangers differ in regard to the policy that should now be pursued by the state in regard to this institution. A portion want the department severed from the University, and a college built up at some other point in the state, but my idea is that we had better first devote our energies towards building up this department. The time may come when the ideal institution which some of you now have in mind may be demanded, but at the present time it certainly is not, and I think I tell you the truth when I say that the rural population of this state and of other states have not yet manifested any great demand for agricultural education. In my view this education differs from other education only in regard to the studies pursued; a little more attention to geology, and a little more to botany and some other branches, and it is almost identical after all with courses marked out for students having other occupations in view. There is one thing more I wish to speak of in reference to this department of the University; send your sons there. Prof. Beale tells us that where we have one educated young man in the rural community now we need a hundred. Send your sons to the University and you place them side by side with students who have other occupations in view; and I contend that young men in one sense educate each other at such an institution. They are better situated to become acquainted with each other, and become better acquainted with the relations which they as a class sustain to each other.

Mr. Babbitt—Prof. Wiley will please give us his opinion of this work.

Prof. Wiley—I ask permission to say a few words to this convention on this subject. I have been surprised to find an

effort in a farmers' convention to throttle an institution to give agricultural education to the people, and especially an institution which, though so young, has gained so great a reputation beyond the borders of the state of Wisconsin as the Agricultural College of Wisconsin. I do not believe much in proverbs, but I am about convinced of the truth of the proverb that a prophet is not without honor save in his own country, for I can assure you that the work which has been done by the Agricultural College of Wisconsin is most highly appreciated by agriculturists and scientists in all parts of the country, and I have been astounded to think that gentlemen would get up here and attack it as they have done. They seem to think that an institution should do in two or three years what it will take half a century to accomplish. Suppose the French government had said to the experimental stations in the first few years of their existence, "Give us immediate results," they would have strangled those institutions, and where would France have been to-day? The few hundred thousand dollars spent in France in experimental stations now add nearly one hundred millions of dollars annually to the wealth of Europe which would not have been there if it had not been for the experiments of those stations. You cannot judge by the actual outcome of a few years. You must look to the future as well as the present for the benefits to be derived from those institutions. I was astonished at some of the assertions of the gentleman who read the paper. He said there was no such thing as agricultural science, that absolutely nothing was known; that what knowledge we had was fragmentary and disjointed and scattered. In his mind there was only one idea of agricultural education, and that was to get somebody to write a book. The idea of that being agricultural education! It is experiments at experimental stations. I suppose experiments have been made in every part of the country. Every state has its own climatic conditions and its own crops and peculiar conditions of soil, etc., all of which must be developed by experiments on the ground. If they have been gone over in some other parts of the country, it is no reason why they should not be repeated at home.

It seems to me the farmers of the state of Wisconsin should stand by this institution, and not be like the little boy, who, because the kittens would not open their eyes, knocked their brains out against the side of the house. "Now," he said, "your eyes are open, but your brains are out." What you want to do is to encourage this institution and build it up, so that in the future, as it has already made a beginning to do, it will do much for the advancement of agriculture in this country. The practical results that have been obtained at this institution in sugar making are of world-wide fame, and have done more to encourage the sugar industry in this country than anything else that has been done. This one work alone would well repay what has been spent upon that institution. It is worth thousands and thousands of dollars not only to this state but to the country at large. Mr. Hinton says that they had sent one young man out of the state who, at a salary of six thousand dollars a year, was founding institutions for the dissemination of ignorance. It seems to me that such a statement shows that he has been remarkably successful in doing that at home. It seems to me that putting down an institution by such allusions, by mere story telling, by twisting words and making black look white, is not what intelligent farmers want, and I mistake the intelligence of the farmers of Wisconsin if they are influenced by any such remarks. If there is anything that needs encouragement it is the science of agriculture. It is yet young. It is in its infancy. What it needs is encouragement everywhere, and especially by farmers. This encouragement by farmers will not only be of advantage to the agricultural class but to every class of the community, so that every class will be benefited by this industrial education. I thought it was my duty, being from without the state, to tell you how your institution is regarded out of the state and to bear my testimony to the high opinion which is held of your agricultural department, and of your agricultural station and of the work which has been done by the eminent man who graduated from it at a \$6,000 salary, and others connected with them. (Applause.)

Mr. L. G. Kniffin, of Milwaukee — *Mr. President:* We have been given to understand that it is a most stupendous thing for this experimental station to reach any possible benefits for us farmers. Now, aside from the very abstruse subjects which this institution has taken hold of, there are many simple questions that Prof. Henry could solve to the immediate benefit of all of us. The great trouble often is that people undertake to write or preach or speak away above the people. Now it is very possible that the institution may overlook a great many subjects which in themselves are of immense importance. Mr. Carr, of Milton Junction, told me to-day that a tobacco grower sat up all night for two nights with a tobacco crop and saved it from the frost. I sat up every frosty night to save a tobacco crop from the frost. My process was entirely different from that of the man at Milton Junction. What authority is going to take the system practiced there and my system and compare them and demonstrate to farmers in Wisconsin how to save their crops from these untimely frosts. So simple a question as that, I apprehend, is not without the pale of the agricultural college. There are several gentlemen here who are interested in cultivating cranberries on marshes, ex-Gov. Taylor, Mr. Mills, Mr. Peffer, Mr. Smith and several others, Mr. Mills pursuing a different system from ours. For twelve years I have been cultivating cranberries on upland sand, on what you call grapevine sand. We have thousands of acres of cranberry marsh and we have thousands of acres of worthless sand. What authority is going to take my experiment, which has cost me thousands of dollars, and these gentlemen's experiments, which have cost them thousands of dollars, and tabulate them and bring them together and tell the coming generation which is the best way to raise cranberries on these two kinds of soil? Manifestly the agricultural college. We as farmers develop facts in every direction. Let them take those facts and reduce them to a science. There is ample room for such an institution, and ample work for it, and we are willing to wait and give it a fair trial and see its results.

Hon. H. Robbins, of Platteville—These two papers have been fairly presented here to-day, and I think they can be discussed so that we can gain some information. In the first place, I believe that farming is a science, and one of the noblest sciences in the world. I believe that the agricultural college established here at the University is a failure, and one of the greatest failures in the world. I mean now according to the act of congress. Let any lawyer here take that act of congress and read it; and I say that as far as carrying out the intention of that act is concerned, it is one of the greatest failures in the world. It has been established here as long as the Mississippi college. We got 240,000 acres of land, and they got 240,000 acres of land. They have an agricultural college there that is worth a hundred per cent. more to-day than it was ten years ago. It is going in the right direction, but as to carrying out the intention of the grant they never attempted to do it. They never expected to do it. I was chairman of the committee on education, and Mr. Sanderson was chairman of the committee on agriculture. You look at the Assembly Journal and you will find our report. We were honest, and the legislature was honest, and the University was honest. We did not know what they had the capability of doing. I did not know but what they might establish an agricultural college as well as a scientific college, and I believe they can do so. I am in favor of an agricultural college, and I would have been in favor of it some years ago if I had known we could have taken that department from the University without hurting the University. We cannot do any such thing at this time. We have got to go slow. Now, the question is, is it an advantage to the University to have the agricultural college there? I say it is not. Is it an advantage to the people of Wisconsin to have an agricultural college? I say yes, and if they can not get one anywhere else it is better to have it there than not to have it at all; but I say we farmers who want to send our boys to an agricultural school do not want to send them there. I would not send one of my boys there if I expected him to go on to a farm. Why? A farmer's boy can not coast with the girls there; he cannot do a thing; he

is ostracized. He cannot dress as well. He cannot spend as much money, and that is no place for him. He had better stay on the farm if he calculated to be a farmer, or he had better go to Mississippi or Michigan to get a practical as well as a theoretical education. I do not believe in pulling down the State University. Talking about lawyers, lawyers in the senate of Wisconsin in 1858 scattered the University to the four winds. A bill went through the senate redistributing the fund of the State University over the state of Wisconsin and destroying it, and the farmers in the assembly saved it. I was chairman of the committee on education and you can find my report there. When it was organized, a lady was not allowed to go to the University; but it was reorganized in 1868. I was chairman of the committee. We farmers have done the University good every time we have touched it, and I believe if it were placed in our hands to-day, we would not destroy it. I am not an enemy of the University. How did they get such cattle there? They sent a lawyer to select them, and he charged \$100 for selecting them. Look over the records and you will see I am correct.

Mr. B. S. Hoxie, of Evansville—I presume that every intelligent farmer when he picks up reports from the different colleges through the United States and sees the results of the works of those colleges and compares them with the workings of those departments which are attached to state universities, asks himself why it is that the state of Wisconsin cannot have a college which will show results equal to those in Michigan or some of the others. It has been clearly shown to-day that those colleges attached to universities are almost a failure, and when I say this I do not wish to criticise our own college, because I am proud of the results brought out by that college. and I was sorry to hear the criticisms from Mr. Sloan. Mr. Sloan is one of the professors of the law class. He has about \$4,000 I think in his department, and he says, I think, that in the agricultural department, Prof. Henry has about \$3,000. I would ask him if the results in Prof. Henry's department have not shown just as well as the work in Prof. Sloan's department? What have

those lawyers done that he educated in his department? We are all proud of the results of Prof. Henry's work, but our state agricultural college in connection with the State University farm is not just what we want in this state. What do we want? If we want anything better, how are we going to get it? We must say we want it, and we have funds enough in the state treasury to buy a farm somewhere and have an agricultural college. It seems to me that this Agricultural Society should appoint a committee whose duty it should be to gather facts and set them forth and draw a bill which shall be presented to the next state legislature, which will have for its object the foundation of a state agricultural college. We have time to do it, and it seems to me it is a good plan, and then we shall stop these discussions we have every winter. I believe this is the third time we have had a discussion similar to this, and I am glad to have them because it enables the people to understand about what we want. At least they ought to by this time.

Mr. Scoville, of Columbia County—The question this afternoon is in regard to our college, and not whether the farmer is better than the lawyer, or whether we have done right in the past or what we have done in the past, but what we shall do in the future. I feel impelled to speak when the gentleman last on the floor charged that a farmer's son could not go to our college and come out a farmer. I say that when we send our sons to the college, we send them there with a purpose, and it is to make farmers of them, and that is why the college is not a failure. I sent my son to the college. I encouraged him to spend his time there all he could when it was the custom to give a shilling an hour. He went through the college and graduated two years ago last June, and he has returned to the farm, and he did coast with the girls, all I cared to have him, at least. If we send our sons there, and go with them heart and hand, it is not going to disgrace them, neither are they going to be disgraced in the eyes of others. I say with pride that the best young men that have been graduated there rose from the farm, and the farm influence is felt to-day. They feel their position and do not feel it any less because they have graduated at an

agricultural college connected with the State University. We have an agricultural man at the head of our agricultural department. If farmers are made by instinct, we have a farmer by instinct at the head of our department, and he is doing noble work, and if we keep on as we are doing, connecting the two schools together, we shall have something that we will be proud of in the future, but if we attempt at this time to sever and divide our interests, and as farmers to go away by ourselves and undertake to pull down lawyers and doctors and all other men to make stepping stones for us to step upon, we never will get up in the world.

Mr. C. L. Whitney — When I heard the eloquent and well written paper first read, in which Michigan was so eloquently applauded, I felt as if I wished I had a tongue, but when I heard that agriculture could not be a science I vanished into the air, for we think in Michigan that our agricultural college has done something, and as far as experiments are concerned, I hold in my hand a long list, of every one of which Michigan farmers can swear by. I ask is all this experimenting lost? Has all our experience as farmers been lost? What are we here for? Let us go home if we cannot do anything for the benefit of our country and mankind, for the use of commerce and manufactures. We have the finest market of any state for flour and winter wheat. Some man got up a report that we were putting so much Paris green on our crops that we were poisoning our flour with Paris green, and that there was danger of poisoning the people in this country and Europe. The report went out and somewhat affected the price of flour. What did the college do? They put on ten times as much Paris green and killed the tops, burned them up, and after the crop was ground, analyzed the chaff and wheat, and bread made from it, and published the result. There was not a trace of Paris green in any part of it—chaff, straw or bread. That experiment was worth more to our state than the college ever cost us, for we had it in fourteen languages and sent it abroad through Europe. If your college has performed one experiment, it has done something. I have been asked time and again in regard to sorghum and sugar, and I re-

ferred to that little pamphlet that Prof. Henry sent out two years ago, giving Prof. Swenson's experiments. I was proud to write an article to the press, setting forth its merits. It is one of the most practical reports that has ever been made.

They ask me about silos. I visited your silo last year. I tell them to send to Prof. Henry and get a pamphlet that will tell you how to build a silo. Now, do not think an experiment can be tried in a year. One experimenter tells us it takes ten years to try an experiment in farming, and many of them are incomplete in that time. All the changes and vicissitudes in soil and climate are to be taken into consideration in order to bring about success. I am glad there has been so much truth spoken here to-day. I am glad that the article first read was given you. It is true. Consider it well. I am glad that the other article was given. There is some truth in it. Consider it well, and then not rush blindly to any conclusion, but weigh the facts in the balances of thought and tell where the truth lies, and then as farmers make up your minds and then act like intelligent, thinking men, for the balance of power lies in your hands. It is for you and for your sons and daughters that the work is being done. I remember a time in Michigan when an intelligent, earnest lawyer saved the agricultural college. He told the farmers they did not know what they were doing. He told the truth, too. I am told that your agricultural college is only an experiment station. Make it bigger. If it does not meet your wants, ask and you shall receive. Find out what you want, and then ask for it. Ask in no uncertain tone. Ask as though you meant to have it, and when you have it, use it for the good of all. You can not use it selfishly if you use it aright.

Prof. Daniells, of the State University — It was a long time after the establishment of the Michigan Agricultural College before the farmers of Michigan would consent to say that it ought not to be annihilated. Sixteen years after it had been started, when it had more money from the state than the Wisconsin University had had up to six years ago, the farmers just began to learn that there was some good in the college, but they learned it slowly then. It was not be-

fore about 1878, when the college had been going twenty-one years, that it had the good will of the greater part of the intelligent farmers of Michigan. It has been going now twenty-one years, and it has now the good will, I think, of the entire farming population of Michigan. It was the lawyers that made the college, and saved the college for the first twenty-one years of its existence.

Mr. Seaman—I would like to present the question to the people of Wisconsin, whether it is not best to separate the Agricultural College from the University. The people of Wisconsin are paying now about forty to forty-four thousand dollars that goes to the support of the University proper without any reference to the Agricultural College, and that amount alone would buy them a good farm for the establishment of an agricultural college, and judging from the results in Michigan, would it not be better to separate it from the University proper, and then the boys who go there to attend an agricultural college and work on the farm, would take more interest in the study at that college than if it were connected with the University of Wisconsin.

ALFALFA, OR CHILI CLOVER.

Read before the Wisconsin Agricultural Convention by LEWIS CLARKE, Esq.,
Beloit.

I was in California from 1850 to 1856. Then again, from 1877 to 1881. When I first went there, alfalfa was not known. On my second visit I found it growing there, and was told it was a Chili clover. In speaking of it there, it is called alfalfa, and in advertising in San Francisco papers, it is called "Cow Hay." I know nothing about it from books. My knowledge was obtained from those raising it, and my own experience.

The natural question that arises with those unacquainted with it will be, What is it, and what is it good for? It is a grass, and good for hay and grazing. It is quite extensively grown in some portions of California, on such land as are adapted to its growth. Being interested in some lands adapted

to its growth, I gave it my personal attention, practically and otherwise. I had time and opportunity to consult with prominent and practical dairymen and stock-growers of different kinds, who have cultivated and used it the year around for many years. I also worked among it by preparing the land, sowing the seed, cutting and curing the hay, and fitting the seed for market. I will here state that I am not offering or wishing to sell any land adapted to its growth, and that I am not directly or indirectly interested in seed, and do not expect to be. At present I am only farming 120 acres of land, and on account of age, expect to reduce instead of increase the acres.

I have thought and still think (since my experience in California), that it is worth experimenting with upon a small scale, that it might attract attention at the State Experiment Farm. What is it good for, or what is its value for feeding and grazing purposes? Probably more than one-half of those I had an opportunity to consult with, that were interested in its culture, had previously known the value of our different kinds of clover in the Atlantic States. Not one rated it of less value, and many gave it the preference. I have no doubt of its value over and above all other grasses for grazing purposes, as it will continue a steady growth through times of drought on account of the great depth of root which it will always have if it has anything like a fair chance to get down. Swine do well and fatten on it. Horses for light work and driving are well kept on the hay without grain. Say the dairymen, How about cows? It is being so generally used among all branches of the dairy industry that it originated the name "cow hay." It is safe to calculate on keeping up a uniform full supply of milk by grazing, when a third mowing will produce two and a half or three tons to the acre, when the surface of the ground has not been moistened by water in any form for four or five months. Dairymen needing more feed will pay from \$15 to \$30 per acre yearly rent for ground seeded to alfalfa.

Through the summer time it is mown about every six weeks, or when in blossom, averaging about three tons to the

acre. For soiling cows cut much oftener. It is not safe for a man to state the number of cows and other stock that can be kept upon a certain piece of land, the ground seeded to alfalfa — who wishes to keep up a reputation for truth and veracity. This land that has produced nine tons to the acre at three cuttings, is grazed five or six months, including the winter. Milch cows are fed during that time more or less of the cured hay, but other stock generally nothing. Another feature comes in here that it will not do to repeat too often, that the more and the closer it is fed in winter the better the summer crop of hay, provided the stock is taken off when too wet. Persons interested in cows, of course, will wish to know (if they are kept on alfalfa) whether the milk is good or not. I never heard any complaint arising from the quality. I have never seen better gilt-edged butter between the two oceans, than comes from the alfalfa districts. When last in California I think it commanded from three to four cents per pound in Sacramento markets above any shipped from the eastern states. The shipped cheese I think stood highest (not as much attention paid to manufacturing it there). I was raised on a dairy farm in New England, and have been interested in it more or less since 1828, and claim to be something of a judge.

A Mr. Hoit, who went from Walworth county, Wisconsin, in 1849, to Sacramento, located some alfalfa land. I have known him more or less since 1850 to be a reliable man. He told me that from a certain piece of land he had taken twelve tons per acre in one year, mowed six times. Hay is generally baled there at so much a ton, and all weighed, so that it is not guess work. In this case four cuttings were weighed, and the two last winter cuttings estimated. Could not be grazed on account of a young orchard. None of the lands I am referring to are irrigated. First crop more or less rain, second and third none. The alfalfa has one tap-root and goes down for water and nourishment from one or more feet to ten or twelve feet, according to condition of soil. Further south, where they irrigate, much larger yields are reported. Very little of the good wheat land will grow it successfully without irrigation. The hay is worth, when

it is grown, about \$10 per ton. Capitalists have invested in these lands at from \$1 to \$300 per acre to commence or continue its cultivation. We have a different climate and different soil here, and the question arises, first, can we grow it here, and if so, over and above all the other grasses to our pecuniary advantage?

HOW TO EXPERIMENT.

First, find out when to sow, how to prepare the ground, and how to sow. Then further investigation will be necessary to find the kind of soil to which it is best adapted.

A prominent agriculturist at our last annual meeting remarked, that there was no use in spending time with it as *he* had tried it and it would not stand our climate. He would come to the same conclusion in California if he did not know when and how to sow, where it seldom freezes too hard to plow or sow garden seeds.

An old and experienced farmer in Rock county said to me: "I would sow in March." Another asks, by letter: Will it, if sown on rough, unbroken, stony pasture, succeed and run out all the weeds, wild grass, etc.?" It will be shown before I get through, what erroneous ideas we often get upon matters that we know but little about.

Suppose our friend, unacquainted with the growing of our leading crops, should plant corn, beans and vines, and sow buckwheat in March, sow winter wheat in April and spring wheat in July. Alfalfa, when first up, is as tender as buckwheat and vines, and will not stand even the light frosts of California. Their heaviest frosts are about Christmas and New Years. Many sow in October and February. If sown at the former time, it gets age enough to stand the frosts mentioned. If sown in the latter month, it is calculated the frosts will be over by the time it will be up; hence, the cause of my selecting the time mentioned. On the 19th of May, 1882, I sowed five pounds of seed upon thirty rods of ground. On the 8th day of August, I put the reaper over it, cutting the oats sowed with it seventy-one days from sowing. It was well stocked—thick enough. Did not find a top or root injured by the hot July sun, as in case of late timothy

and clover sowing. Pulled some with tops sixteen inches high, with roots the same length. This patch is in a field of about ten acres, mostly to grass. It was grazed close by sheep until snow came — the middle of December. Had intended to top-dress it with manure, but failed to do any part of it. In the spring of 1883 it was grazed close till about the last of May. Then again, after the second cutting, till freezing up — November 26th. Then finished top-dressing what was left, all being green and all uninjured by frost. Took up some, and put it in boxes to see it grow in the winter. Subsequently sent a sample to Professor Henry, at Madison. I have some at this date, January 23d, about two feet high, *third* growth.

It is checked considerably by transplanting, and more so as I only obtained a full length root in one instance. Mowed it first the 6th of August. All the three kinds of clover and many weeds among it. Mowed again about the middle of October. It had been very dry, and little fall feed. But at this last cutting when alfalfa was sixteen inches high, Mammoth clover was not more than three or four inches, standing near. The ground has been constantly cropped since 1847, by a rotation of clover and crops, usually upon dry land. It is black prairie, mixed with sand, about two feet to a hard pan, one foot to gravel, and sixty feet to water; The roots are in this hard pan, the reason I cannot pull up one the whole length. Such length of root will defy a very severe drought, as proven in California. Our timothy and clover will kill every year there without irrigation. So far I have only tested to find its adaptation to our climate, and the time to sow.

I will give my opinion of the kind of land to get the mammoth yields. It is not unlike wheat, corn and other crops. Does best on lands adapted to it, and as we vary from that, comes down to less and less until we have little or no yield. I am of the opinion that it will be difficult to make land too rich for alfalfa. Only give it a chance to go down. I have had sorrel land in mind on the Fourth river bottoms, near Beloit that I would like to see tried. I believe the rich bottom lands owned by Secretary Babbitt, near Beloit, the

right soil for its growth, and am assured by that gentleman that he will make the experiment. Where I have examined, it is dark, sandy and porous. Produces large straw and little grain, not many feet to water. I suppose there are large quantities of similar lands in the state. If successful and should prove to be number one for alfalfa, it would add at least \$50 per acre to the value of the land. California state fair has a record of a root on exhibition that was thirteen feet long. I failed to state in the proper connection how to sow. I plowed once, it being free from sods; sowed at the rate of one-half bushel of oats to the acre. Harrowed many times over. Then sowed the seed and covered with crusher.

A gentleman farmer in California expended much time and money upon a few acres of abode land to get a good stand, and failed, it not being more than five or six feet to water. This land would, under favorable weather, produce from thirty to fifty bushels of wheat to the acre. I refer to this more particularly to show that the alfalfa is not unlike, in *one* respect all our grain and grasses, by having a right and wrong soil and location for its successful production. We do not expect, to raise winter wheat and corn upon low, wet and clayey ground, nor redtop grass on high, sandy land. I will digress to state that I have seen two good crops of alfalfa grown in one year without irrigation upon very sandy land.

Judging from my own experimenting thus far, I am of the opinion that we can raise two crops a year, each equal to one of Mammoth clover, upon all land which is good for corn and wheat. California has one advantage by not having grass roots and seeds to prevent a good start while young and tender. At that place, if there is a good stand, it is monarch of all it surveys after the first mowing.

My little piece is completely covered with white clover. Time will determine which will come out ahead. June grass I dread the most. The two larger kinds of clover will not injure except in saving seed, and will soon surrender.

If this piece comes out all right, as I anticipate, next spring, I have in mind the following, viz.: to manure heavily, early in the spring as is practicable, not less than about

fifty loads to the acre. Plow and harrow time enough to clean the land, plowing each time some deeper, so as to get down as low as I can. In July, sow to turnips and raise enough to pay for the use of the land and labor. The next spring will have clean land. Plow early, and at sowing time sow as before directed, at the rate of twenty pounds to the acre, and will expect about one and one-half tons to the acre of hay composed of alfalfa and oats. The following year will be a fair trial of what it will do on such land as described, where my present experiment stands.

A mole, called a gopher in California, living in the ground, eats off the roots near the surface in some localities. That and floods sometimes kill, otherwise I have no knowledge of its ever running out, and can be mowed and grazed for an indefinite time, as far as I know.

January 31st. My Sacramento paper just received has reports from counties that are despairing of getting feed for want of sufficient water to irrigate in sections where it is necessary. Bakersfield, Kern County, California, is one of these counties. Rain has not averaged over an inch in the county. It says as follows of alfalfa: The drought neither has, nor will, materially affect extensive alfalfa fields, and there will not only be sufficient feed for all the live stock, but to spare; and this, by the way, is the principal agricultural interest of the county. I had finished before quoting from the Kern County report. But let us consider for a moment their "situation." A burning, sandy plain, where not a spear of our grasses can live. Only two inches of rain in a year. No snow, and the irrigating streams dried up, with a large stock of choice horses, cows, and other stock to care for, such as we raise in this country. See their faith in their extended fields of alfalfa that never fail them. They are going to have enough and to spare. I have understood that some of those Kern County farmers have many hundreds of acres each.

DISCUSSION.

Mr. A. A. Arnold — I want to know whether this alfalfa on heavy land would not branch out and lodge. I have

sowed some, and it branched out and lodged. I found it very good for stock to feed upon, but it did not seem to me it was practical to mow it.

Mr. Clark — I have mowed it. A good deal of it is grown on the high priced land in California where they pay three hundred dollars an acre. There is no richer land between the two oceans that I have seen. The soil is fifteen or twenty feet deep, and it does not trouble them there.

Mr. Arnold — Doesn't this have a white blossom?

Mr. Clark — No; it is a sort of pink.

A member — Isn't it identical with what is called "sweet clover?"

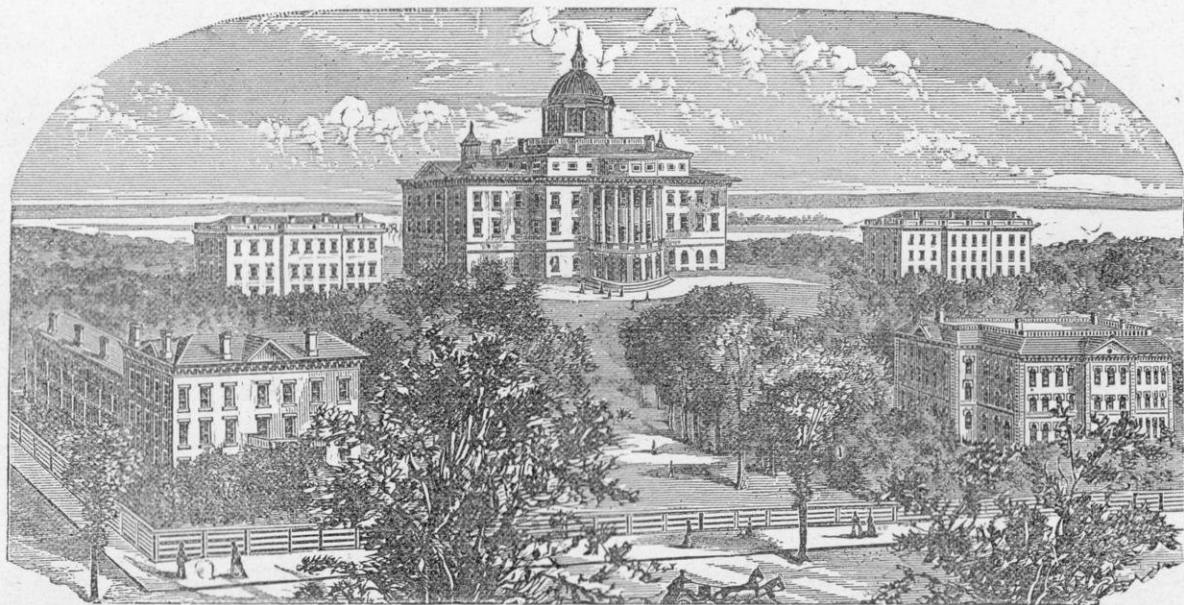
Mr. Clark — No, sir. The seed resembles our clover.

FIRST PRINCIPLES.

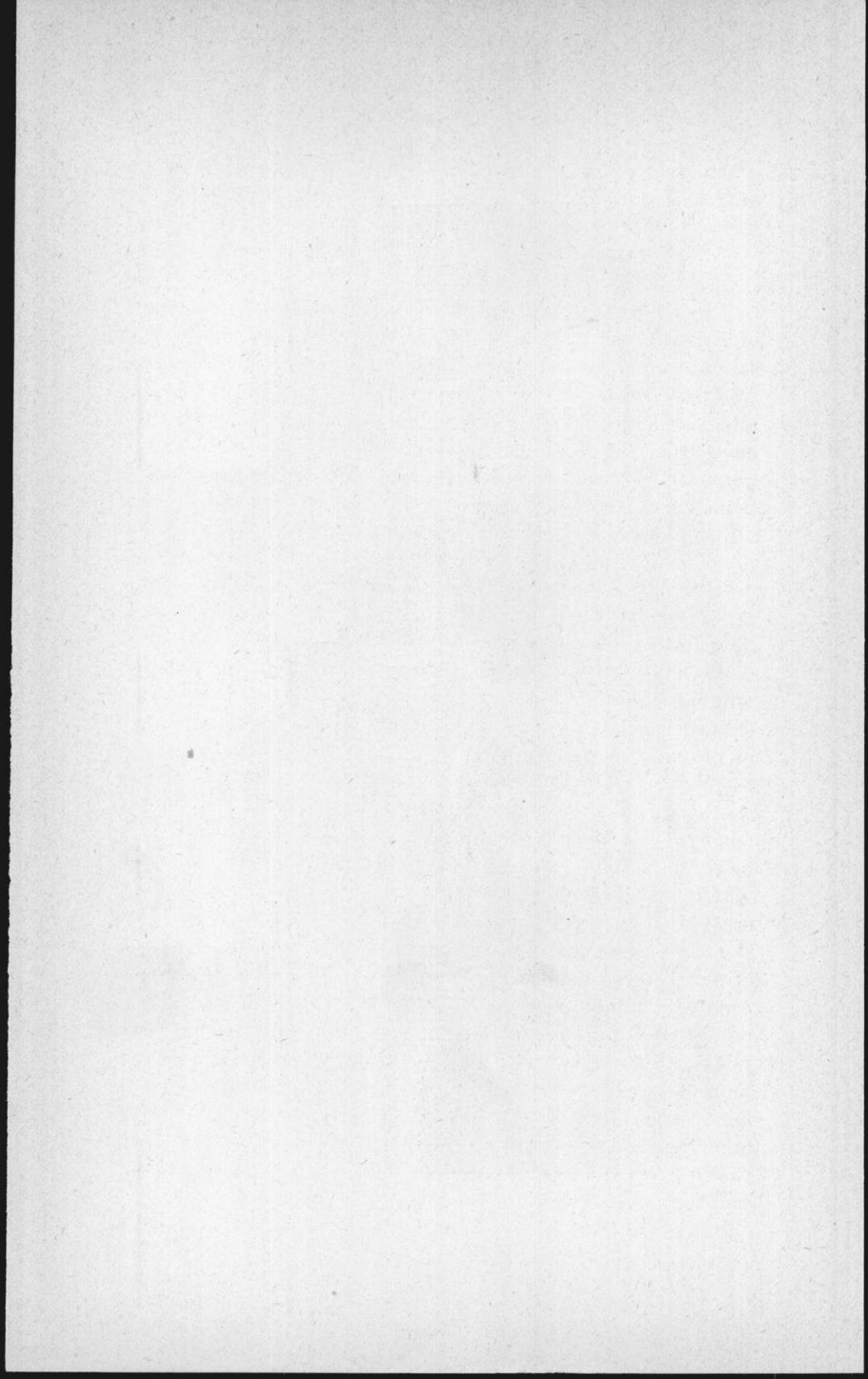
By JOHN BASCOM, Madison.

I have now listened to, and taken part in, the discussions of the farmers of Wisconsin during ten years, as they have gathered in the capitol at their winter meeting. There has been much to interest and to instruct almost any intelligent listener in the papers presented, and in the remarks made upon them. There have also been opinions earnestly advanced and warmly defended, of a very extravagant and inadmissible character. If these assemblies were to be judged wholly by the wisdom of the things said, while we might esteem them highly, we should not hold them at their true value. This value is found not simply in the correctness of the conclusions reached, but in the mental activity, the spirit of inquiry, the sense of power, the feeling of responsibility called out by the views presented, and the discussions had upon them.

Men no more act collectively with entire wisdom than they do singly. There is no organization, not even the best, that has any history behind it, whose action has not been marred by error and wrong-doing. When labor organizes itself, the



UNIVERSITY OF WISCONSIN AT MADISON, JOHN BASCOM, D.D., LL.D., PRESIDENT.



sober and critical public is very severe on its misjudgments and misdeeds. Trades unions have been guilty of some flagrant violations of the rights of men; but they have in England successfully resisted and overcome a still more determinate violation of the rights of labor, both by law and by custom; they have enabled those especially in need of this assistance to feel the force of organization, to consolidate themselves into a formidable power, which must be treated with on terms of justice; and they have systematized and made effective the aid which working men can render each other. It is idle to ask, it is foolish to expect, such organizations to be complete in counsel and perfect in method from the outset. It is in the last degree unwise and unphilanthropic to resist these organizations of labor because their plans are not on the instant wholly just or completely successful. Discussion, deliberation, effort, organization, still remain in them, not merely redeeming facts, but facts of new and wonderful import in their social promise.

We have the same feeling in reference to all the ways in which farmers are being organized. Are these men all wise? Certainly not. Have they all complete respect for the rights of others? By no means. Will they not be led into some foolish and unjustifiable action? It is entirely probable. Yet they will come to discern common interests; they will feel deeply about them; they will plan for them and make sacrifices for them; they will gather that collective thought which will compel others to take these interests into consideration; they will put themselves on terms of manhood in the community and with the community in seeking the ends of general well-being. For one, I say to all kinds of laborers, organize; if not wisely, then as wisely as you can. Proound and pursue your own ends; if not discreetly and justly, then as discreetly and justly as you are able. All the more, because the path upward is long and full of obstructions, enter on it early and pursue it faithfully. When a laboring man speaks, it is healthy for the community to feel that a thousand, ten thousand, a million men have spoken, and that every word challenges attention.

But while organization is a great and a just instrument of

power, it plainly calls for corresponding wisdom and self-restraint in its use. We rejoice in it chiefly because it is a school of wisdom and self-restraint. If we are to organize we need more than ever a firm hold on first principles, and a disposition often to return to them. It is of these principles that we are now to speak.

A first principle is, that every workman should have special knowledge of his own work. No class of workmen can long succeed otherwise than by good work of their own, than by intelligence and diligence applied in their own calling. This is the tap-root of prosperity, and all effort and all organization should start with it and return with it. Men who can do good work, can treat on terms of advantage with the world; those who cannot do good work, will be shaken out and shaken off by every movement.

This is true of no class more manifestly than of farmers. The variety and the difficulty of their work is very great; the ways in which it can be botched, and bungled and neglected are innumerable. Clubs, fairs, conventions, colleges, books, journals, reports are not too numerous, if all are faithfully used, to bring the average farmers up to the level of his business. It is in this direction of effort primarily, in improved methods of farming that all success, all influences, all respectability are to be achieved. There is here such opportunity, such urgency of motive and promise of growth, that the most far-sighted and sanguine among you but feebly conceive the facts. I cannot say how many circles of flight farmers may yet make in the social and political world, but of this I am sure, they must ever return to and settle down on this principle: good farming is the one condition of success. When the swarm has lighted on this branch it can be hived. Good farming can take care of itself, can wait for opportunities and can use them when they come.

A second first principle is, every class of workmen must add, as a condition of success, general intelligence to special knowledge. The two are inseparable; we shall not win our special knowledge, or make it effective in practice, without uniting it to general intelligence. This assertion is particularly true of farmers. They are more liable than most per-

sons, owing to their secluded habits, to slip into slovenly ways, to run in ruts, to contract crotchets, to acquire a cranky habit of mind. No one who has attended farmers' clubs has failed to observe the firm opinions that are expressed on very insufficient grounds, and the wise views and fine-spun theories that are associated with very poor practical work. The only test of effective intelligence is a man's farm. There is where you wish to see the farmer, and measure the force of his ideas. Ideas cannot be broadened corrected and put in working order without general intelligence, the productive energy of the entire mind and man. When one begins to spin and weave ideas like a spider, and his eyes are shut to the world about him, he is in a bad way; cob-web comes to be the only production. One must accumulate motives as well as ideas. One of the worst of good-for-nothings is a wool gather, a man who picks up ideas without force enough to put them to any good service.

I have been astonished at the contrast between the words and the works of some ready talkers. It takes time to find out how much of a humbug a nimble-minded man may be. Real intelligence implies broad, substantial, practical force; implies momentum enough, social and moral, to set a man at work and keep him at it. A machine that will not run is not much of a machine after all.

Theoretically, small farms and personal supervision seem to be the thing; a passionate devotion to the land from the "rising of the lark to the resting of the lamb." All our philanthropic impulses are on this side. Only one fact makes against it. The men of small holdings are not apt to be men of large ideas; they do not have weight enough of intelligence to make their work effective. As long as the large farms of England show twenty-eight bushels of wheat to the acre, and the small farms of America but thirteen, we have economic reasons for large holdings which will ride down our foot-sore philanthropy like horsemen in armor.

In the discussions had in this place year by year, there has been a tendency to overlook this need of general intelligence as giving direction and efficiency to the entire life, and so to each portion of it. General intelligence is to special

knowledge what the head of the axe is to the blade of the axe. No matter how keen the edge of the tool, it must have weight to do work. The reason why the University so far has failed to be as profitable to farmers as it was intended to be has been due to a fact which, beforehand, I should have said particularly fitted it to render aid — the fact that it gives general knowledge as well as special knowledge; that it combines many classes in many departments, instead of a single class in a single department. It has struck a rock in, may I not say, the clannish feeling of farmers. They have felt that the knowledge there acquired would run away with them; that the wind in the mill would blow into air chaff and wheat alike. I will not say that this feeling has no color of truth in it, but it is certainly not as wise as the wisest feeling.

Take farmers as we meet them everywhere; they are suffering more from the lack of that general intelligence, that social interest, that sturdy citizenship which supply the motives of labor, and give momentum to life, than they are from the want of knowledge of how to do their own work well. Indeed, they will never add very much to this special knowledge till they become good workers, and they will not become good workers, till they are caught in the current of general life. Many farmers, like drift-wood cast high upon the bank, lie resting. Nothing but a deluge can get them afloat. Give us weight first, weight of thought, weight of character, weight of citizenship, and technical skill later. Technical skill that does not make a man, will not make a workman.

We have heard professional men, doctors, lawyers, ministers, spoken of here as parasites. This language shows a want of the general intelligence for which I am pleading, as my second first principle. There are doubtless doctors, lawyers, ministers, who make the least possible return to the world for what they receive from it; but are there not farmers who scratch, tear and batter the otherwise beautiful face of nature in an unpardonable way? Shirks do not belong to one class, but to all classes. The infection of indolence is universal. If we look with the wisdom of history at the

health of the body, the safety of society, the soundness of the mind, we shall see that the learned professions have done as much for the general well-being as any class of men. We may revile the doctors if we choose, and laugh at their drugs, but if it were not for them we should, like those who have gone before us, be eager partners in a pow-wow, with a medicine-man to invoke or to evoke a devil. Doctors do this much at least for us, they prevent, or strive to prevent, our killing ourselves with old women's doses. Little as we still know of hygiene, these men know more than the rest of us, and instruct our ignorance. Of the ministers and the lawyers in the country I hardly need speak. If their merits are little—and in many cases they are not great—their rewards are less. If they can be punished in more ways than they now are, humanity would seem to forbid it. If they are parasites, they are parasites on a dead calf.

The real underlying feeling of the talk about parasites is an irrational one. It is due to the misjudgment or the envy or the ill-will begotten in farmers by city life; and in the poor by the successes of the rich. The mind is confused and subverted in its judgments by these painful contrasts, and detraction and demagogism find an open path. There are profound questions here, and clamor, complaint and abuse cannot settle them. We have other principles to advance which bear upon them. If it is true that the country nourishes the city, it is as profoundly true that the city nourishes the country. That high intelligence, that refined social life, that poetic and spiritual inspiration which give light to us all, and scatter broadly the later, better gifts of Heaven, come chiefly from the city. Envy toward other men is only one form of disrespect toward ourselves.

He who respects his own calling is assured of the goodness of his own labor, and is turning the opportunities of life into life itself, will be disposed both to recognize and rejoice in those who contribute in other ways to the common good and his own good. It would be just as wise for dwellers in the city to speak of the areas of tillage as Cimmerian fields of darkness which absorb the light of the world without reflecting it, as for farmers to regard merchants, business men,

lawyers as parasites, who suck out the substance of their labor. The head can not say to the foot, or the foot to the hand, I have no need of you. There is nothing in which wisdom shows itself quicker than in the discovery that all men are needful to all men. In the mutual ministrations of city and country, one furnishes food to the body and the other to the mind. Neither has any occasion to boast itself against the other, or to disparage its contribution. If our bodies are rooted in the country, our spirits are rooted in the city; and body and spirit are not more one than country and city. If we wish to be real partakers in the life of the world we need general intelligence. This is exactly what general intelligence is, the power to range the world and take our part in it.

A third first principle is, that each class should demand perfectly free and equal conditions of labor, socially, economically and politically. It does not seem to me that the farmers of Wisconsin have very much to claim under this principle; and in making their demands the chief difficulty lies not in obtaining their wishes, but in formulating them, in agreeing among themselves what those wishes are. Our country has this high fortune, that no rights are long withheld when they are clearly seen, and firmly pushed by those to whom they belong. I shall satisfy myself by referring to a few things which I think farmers may well ask in self-defense, and then pass them without extended discussion, as they are still the subjects of divided opinion with you, and with many good citizens.

The farmers may well claim, and claim with more emphasis than any other class, that protective duties should be rapidly removed. Farmers are one-half of the community; the direct benefits of protection lie almost wholly with the other half. It follows then, that the burdens of protection fall chiefly on farmers. The one grand promise of the theory of protection, that with which it fills the mouths of friends, is, that if the burdens of protection are quietly borne for a few years, they will then be withdrawn, and will be replaced by free trade, low prices and general prosperity. The value of protection, its soundness as a theory are found in its ful-

fillment of the promise. I am not disposed to deny that the promise may be made in good faith, and, in favorable circumstances, if fulfilled in good faith, may be followed by the results indicated. This part of the problem is no longer necessary for us to discuss. We have accepted the theory; liberal protection has been granted for many years to many industries. We are a great, productive people, hardly any greater. Capital has accumulated with us in large amounts, even when we compare ourselves with the nations of the old world. Our natural resources are unbounded. Our home industries have guaranteed to them forever the protection of a broad ocean. Now, having borne these duties patiently for long periods, has not the time come in which the promise of protection should be fulfilled? More than one generation has passed away, while the hope of cheap goods has been deferred; how many are to follow in its steps still waiting on these renewed assurances to be met somewhere in the future? Is all time to be given to this theory to evolve itself in? We may well insist that the place and date of settlement should now be named. It looks as if there were profound justness in the objection to protection, that its promises are not to be trusted, that it adds reason to reason for indefinite postponement, that it has never been known to say enough.

Another direction in which farmers may well seek legal protection is in the sale of intoxicating drinks. More slovenly farming and slouchy manhood can be traced to saloons than to any other one cause. There is no such direct and undeniable connection in social economies as this between intemperance, unthrift, poverty, vice. Here is a class who help to debauch and betray every interest of the community that nourishes them. 'These are the true parasites; you have nothing to do but to comb them out.

Farmers in seeking simple justice may well wish a thorough revision of the methods of taxation. The net of the law now catches minnows and lets the whales and the sharks go through. The burdens of the nation fall mainly on the middle and lower classes as regards wealth.

Farmers may also in justice ask for a general school tax.

The country is at great disadvantage as compared with the city, in all that pertains to good schools. These natural disadvantages may well be a common burden, and not the private load of those on whom they fall in the first instance. We are too timid in applying the collective, the organic idea. No state can prosper save as a whole; the country must sustain the city, and the city the country. If we let ignorance creep into outlying portions of the state, if we allow a part of our population to be overwhelmed by the hardships of their condition, we shall slowly reduce our productive power and draw down our common life. The state, as one organic structure, should watch over education as a common interest, and not subject it wholly to local accident. Farmers are above all interested in this redistribution of educational funds. The twenty-five thousand dollars now devoted to the encouragement of high schools might well be doubled, with great advantage to farmers.

A fourth first principle is, that every class should be willing to grant freely to all other classes equitable conditions of growth. We are too quick to repay trespass with trespass. This is unwise as well as unjust. The farmer looks about to see if he cannot get a little protection, and very little protection it is that he gets. He is sent home with tags of wool that have been pulled from his own sheep. He protects a manufacture till it can run on protected wool. He gives a shilling and is pleased that two pence is paid back to him. Farmers, more even than other classes, should stand for equal justice to all. Not only do their simplicity and honesty unfit them to enter on a game of give and take; farmers are too large a class to prosper by such methods. A few can steal, but when all try to steal, shortly there is nothing left to steal. Farmers are one-half mankind, and they must find and feed prosperity in the other half, or they themselves have no source of gains. We must see something to buy in a good market, as well as have something to sell in it. What we buy tells the story as much as what we sell. The farmer is pledged to an invincible love of fair play. In a long scramble, he is sure to carry off his full share of scratches and bruises, and to suffer also from the

scratches and bruises of others. Take the railroad controversy, the last of which, nay, the first of which, we have hardly yet seen. Railroads, telegraphs, express companies, and other forms of industry associated with them are in possession of a great franchise which can no more be given away for their exclusive benefit than water or air or light can be turned into private property. In no direction is the simple justice applicable to new circumstances to be sought for more diligently than in the management of railroads. Railroads are an absolute necessity to farmers. They should be willing to grant them the last title of every just claim. But the advantages they confer will be in a measure lost, if railroads are to seize a franchise, confiscate a public interest and turn a common opportunity to personal advantage simply. Land and transit on land belong to us collectively, and must be subject to collective claims, and to an adjustment profitable to all.

The line of arrangement we are now trying — and it remains to be seen with what success — is private management under public inspection. If this method is to have any chance of reaching its end, the people must choose as railroad commissioners their wisest, boldest, firmest men, and then arm them with power sufficient to watch over and protect all the rights involved. There is that occurring constantly which farmers may well criticise in this connection. The pockets of our legislators and our prominent citizens are full of passes. One may say, with only reasonable exaggeration, that no man goes out of Madison who is able to pay his fare and pays it, and no man goes out of Madison who is unable to pay his fare who is not compelled to pay it. A gift blinds the eyes as certainly in our time as in any time. Passes given on any other than purely business principles constitute a tax on the people, and one that is liable to be extended far beyond its face value.

I have now given four first principles, special knowledge, general knowledge, special justice, general justice. These taken collectively, constitute integrity, and can only be gathered up and consolidated in strong character. I need not, therefore, add or enforce morality as a distinct item;

these are morality. First yourself and then your substance is the divine principle of procedure. If we seek first our substance we shall soon be brought back to ourselves as after all the permanent term in prosperity. I am more interested in the farmers of Wisconsin as possessed of sound minds and honest hearts than I am in their wealth; yet these mean wealth for them and for us all.

DISCUSSION.

Mr. John Hinton — *Mr. President and gentlemen:* I am one of those happy beings who came to this country to enjoy first principles. The first time in the history of the world that first principles were enunciated was by that band of men who announced them in Philadelphia in 1776. Those principles you all know, that we were all created free and equal and that we had certain inalienable rights. I am very well aware that in the limit of five minutes it is an utter impossibility to answer any of the arguments or assertions made by a gentleman whose vocation is study. Those great men who for the first time in the history of the world announced the first grand principles which came from him who made us, after six years of bitter trial, from 1783 to 1789, and after independence was achieved, found that the mere enunciation of the first principles amounted to nothing, but that they must be put in force; and after that long trial, finding that the confederation would not give them to the people of the free colonies, they through their convention formed a constitution, and then for the first time in the history of the world enunciated the doctrine that American manufactures must be encouraged and protected. That is the first time in the history of the world that that great first principle was enunciated. You all know the condition of the country during those six years. You know that meetings were held to reunite the people with England and that the constitution and the first act of congress ever passed of July 4, 1789, made this country what it is to-day. I might challenge any man here to name any great protectionist,

Henry Clay or anybody else, that ever promised that protection should last only for a few years.

To-day we stand the richest nation in the world. The internal commerce of this country exceeds the entire foreign and home commerce of England by millions and millions, upon the highest authority known in the world, and the sun never sets upon American soil that it does not add two millions five hundred thousand dollars to our wealth. We stand to-day not only the pride, but the envy of a large part of the world. Now, why is it? I attended the National Wool Growers' Association in Chicago, in which every state and territory in this Union were represented. There were many democrats and many republicans, and I believe some greenbackers. There was not one dissenting voice to restoration of the 1867 tariff upon wool. You will find as you go through this country that there is a change going on in the farmers' minds such as this country never saw before. There are two millions of people more or less interested in wool growing, and I have failed yet to find one (and I have as large a correspondence on this subject as any single individual, I think), but what is in favor of the restoration of that tariff because they felt that its repeal hurt them badly.

Prof. Wiley — Land in the southern part of New Jersey, four or five years ago, was worth not to exceed five dollars an acre, but through the protective policy of New Jersey, and the bounty which the government gave to the manufacturers of sugar, a factory was established in southern New Jersey for the manufacture of sugar. Three years ago that factory was established. They bought 3,200 acres of land, nearly all of it for five dollars an acre. They built the factory, and it is in operation. The effect of that factory is, that there is not a farmer within ten miles of that factory who would sell an acre of his land for less than \$100 an acre. Such has been the advantage of protection to farmers in southern New Jersey. They think it is worth that much to them from the effects of this industry. I give you these facts not expecting to make any argument. I think that we farmers should look at this question very candidly.

Mr. Aaron Broughton — This five minutes rule gives us

practically no chance. It divides us up into small squads. I had a notion not to get up at all, but I suppose it is necessary. This skirmish will probably not amount to much, but I will undertake to make a few points. He says farmers are getting positive. Who is not? Every man in every avocation that is ever successful is always getting positive. He who doubts is damned. Those who succeed must have faith and perseverance. We should be sure we are right and then go ahead. He says farmers are clannish. Who should not be? A house divided against itself always falls. This capitol building should be as clannish as the Chinese. That part of the building which was not clannish fell. It should be homogeneous, and a nation to stand should be homogeneous. "Professional men are not parasites." If they are not, who is? In all ages the cities have ruled empires. Madison rules Wisconsin, although Milwaukee is a little jealous. A prosperous town always has a good country around it to support it. Did you ever hear of a city supporting the farmers? Did you ever hear of the country being supported by a city? "He who respects his own calling is to be respected." Good. "The farmers do not agree on what they want." Of course they don't, and this is the reason why: They have been a football of the lawyers who seem to scientifically fool them, and the farmers have always been divided against themselves. He says the farmers should be all free traders. They should allow all the wine to be made in France, and allow our manufacturing to be done in England. We would have a grand show. Mankind is not a common brotherhood. Each nation is a brotherhood in itself. We have no need of nations. Each individual is a government, himself for himself, to take care of himself. Just so with the town; just so with the county; just so with the state; just so with the nation, and just so with the race. The Caucasian race had better take care of itself. He says we all want cheap goods. Brother Bascom is on a fixed salary. If everything becomes twice as cheap, it doubles his salary. That is what is the matter. Cheap goods means cheap labor; it means cheap slaves. He says a certain class is

never satisfied. The horse-leech is never satisfied. But who is the horse-leech?

He says intemperance is the cause of these things, and the rumsellers are the true parasites. Now, there is a first principle about intemperance. Mankind naturally desires stimulants from infancy to old age, and they will have them in some way or another. Some take it in alcohol and some take it in Greek and Latin; some in mathematics; some in horse-racing or base-ball playing. The only thing we can do is to give it proper direction. He says farmers are taken at a disadvantage in schools. We would like to know in what they are not taken at a disadvantage in. He says country and city are necessary to each other; that is, reciprocal. They should be, and if all conditions could be made equal, they would be. The city is just as necessary as the country in this progressive civilization, but we do not want the city to monopolize everything.

[The speaker's time having expired, another five minutes was given.]

The word political is derived from *polis*, a city, and policy is derived from the same word. Civilization means cityization. It means that everything pertaining to civilization comes from the city. If we brought all of the vices and follies of the city into the country, the whole nation would be utterly ruined. In all past ages the cities have ruled politically, and political is derived from the same word. Some say it is from *polio*, to polish. A city is where they want to polish fellows, and if you want a young lady or a young man polished, send them to a city.

He says we should double the \$25,000 for the high schools. Where did the money come from? Money comes from somewhere. When the rural schools are being practically starved, take \$25,000 more to build a St. Peters church in Rome. That is what is the matter with the Catholic church now. They fairly robbed the world to build that church. They got all they could by legitimate means, and then they went to selling indulgences to build that church, and that is where Luther got his best hold. France thinks it is better to pay four thousand francs for a school house than forty

thousand for a church, hence they are going to put in new school houses all through France, and put in practical business teachers. He says few can really steal, and that is only those who can hide successfully. Now the farmers and the general class of men can not hide, so they need not undertake to steal. Hiding is a cute business. You want to have two or three lawyers to help you do the hiding. Some cats stole some cheese once and got into a quarrel about dividing it. They left it to the monkey, that is the lawyer, who took the whole, and told the cats to go to the devil. He says the railroads are necessary to the farmers. What would the railroads do without the farmers? What was heard here the other day in the Teachers' Association? I think it was the president of the National Teachers' Association who said: "The railroads are our friends, and they will do almost anything that we ask of them." That is as much as to say: "We are doing good service for the railroads and the railroads are willing to pay us." Pay for what, to educate the people to worship the railroads? They expect to be carried on free passes to Madison, and from Madison through Oregon, and some of them even to Louisiana. Don't that beat any cheek the farmers ever had?

I. C. Sloan — A complaint is very frequently made that the farmers in this race for life with the other industries and professions stand at somewhat of a disadvantage, but I think the principal disadvantage is that the general intelligence and sense of the farmers in conventions on public occasions in meetings of all sorts where their interests are involved are not fairly represented. I have noticed always that the sensible part of the farming community are modest men, not accustomed to public speaking, but if there is anywhere in the community a crank or a blatherskite he will always be put forward, or put himself forward, or be allowed to go forward, and represent and speak for the farmers. (Applause.) In my judgment, this very thing, the sensible intelligent farmers allowing such characters to speak for them and represent them in meetings and conventions, does more to keep down and keep below their just weight and influence the great farming classes of the country than almost any-

thing else. You will always know such a man by his casting flings at other people, especially those who live in towns and cities, and especially lawyers. He always pitches with great venom and bitterness into lawyers. That class have existed ever since the law has governed and controlled the rights of property and persons in human society. It was put early in the old distich "no rogue e'er felt the halter draw with good opinion of the law." If it were not for lawyers and the administration of the law, these blatherskites and cranks and erratic characters that rush forward to represent the farming interest would run wild in the community. They would be disorderly characters. It is the fear of the law that keeps them somewhere within bounds, for fear they will overstep the bounds beyond which the hands of the law will be laid upon them. It is surprising to me that sensible farmers seem to applaud by laughing at silly empty nonsense — approve it. I think there are in all these conventions enough serious questions for discussion.

One of those questions now of importance to the interests of the American people is that of protection. We have been paying for the last twenty years enormous taxes by the way of tariff. The whole people of the country have been taxed to build up such great manufacturing establishments as the gentleman referred to, which made a little spot of New Jersey valuable in its land. The whole people have contributed to build those extensive buildings and employ expensive workmen and great capital and make the proprietors of that manufacturing establishment enormously rich, perfect nabobs in the land. The people, the farmers, the mechanics, the laboring men have paid for it. The absurdity of attempting to tax a people into prosperity, compelling them to pay higher prices for every article they consume, every thread of cloth they wear, is so great an absurdity upon its face that it is wonderful that sensible men who think of it will tolerate it for a moment. Our country, with its vast resources, its great energy, its great industries, has grown rich and prosperous in spite of this enormous drain upon the earnings and wealth of the people; but the time is coming, it is now here, when the American people must

look this question in the face and see how long they can be taxed to support these special industries. (Applause.)

Prof. Bascom — My friend at the right here has a skein of his own which he tangles up in his own way and unravels in his own way. I, of course, do not propose to touch that. I wish merely to emphasize the two points which I made on this question of protection. What I claimed was not at all extravagant on the free-trade side, but I rather accepted the theory of protection. One of these points was, that the farmers and farmers' families constitute about one-half of the population of the United States, and almost all of the advantage of protective duties goes to the other half of the people. A very trifle comes to the farmers. The advantage which comes to the farmers must come to them indirectly by building up the prosperity of the other half, and then sitting quietly down in the shade of that prosperity which they have built up. It is an absurdity on the face of things to suppose that one half of the population of the United States can build up such prosperity in the other half by perpetual contributions; that the little reflex gifts that may come back to them from this prosperity in others shall compensate them for this constant drain which is going towards building up in this method the prosperity of one-half of the people. It is involved in the whole theory of protection that this protection shall come to an end. Protection never offers itself than on any other theory than "if you will help us for a limited period of time, then we shall be able to compensate you for your help." Protection does not claim, in the outset, that it is to be without compensation, but that there shall come a compensation. That is my second point; that we have taken protection at its word. We have conformed to its own terms year after year, and now we simply come forward and say to them "give us time and the place when this promise shall be redeemed." That is the second main point, and it is one which it seems to me every one here can fully understand and see that we are entitled under their own theory and by the words of their own mouth to have a definite settlement of this relation which we have accepted at their hands.

Mr. Ames—I am a common farmer, and I doubt very much whether the average farmer understands the wrong that this free pass system perpetrates upon us. If one class of men ride upon free passes, the others have got to pay so much more for what benefits they have, and I am well aware there are very few of our societies and very few of our legislators or judges or professional men that ride on free passes. I have had some little chance of finding out how these things are managed, perhaps more than the average of farmers, and I think it is time that the farmers should wake up to it and in electing their members of the legislature, should see that they go pledged to do away with this pass system. I think the legislature of one of the states has very lately passed a law to punish its members for riding on free passes, and I think it is time that we looked to it. I am interested in this Agricultural College. I do not believe the farmers want the Agricultural College destroyed or done away with, but I think from my own feeling they want it separated from the University, and I would like to ask if these prosperous agricultural colleges are not separate from the schools of letters and the universities?

A member—They are separate in Iowa.

Mr. Ames—The way the agricultural colleges prosper is by their becoming separate, and that is all we ask, and it seems to me that these professors want them to remain together for the benefit they are deriving from the agricultural fund, as we are getting nothing from it. I think there is a misunderstanding here. This subject is brought up every year. Prof. Bascom is here and others who discuss this subject, and I think if they understood each other there would be no flinging. I hate to see this flinging dirt at each other. I feel disposed to fellowship all mankind. I am a farmer trying to live by my business. It is said that farming has not arrived at anything in the shape of science. Where have we yet received benefits from the State University, except from one experiment in sugar? I have seen sugar manufactured there, but our learned man says that we cannot successfully make sugar in Wisconsin, though we can make syrup, and consequently they do not amount

to any certain sum to us. In regard to farming, I would like to ask the president and all these gentlemen if they don't know that farming has improved within the last ten years. Look about us at the men in our towns who are prospering, and where have they got this? They have not got it at the University, nor from the teachings of the University, and I claim that if I wanted to learn to raise calves or steers that would fetch me \$75 at four months old I would go to a practical farmer to learn. I think we have several practical farmers in our town that lessons could be learned from by their practical operations.

Mr. Babbitt— Since Mr. Ames alludes to the divorce of the experimental farm and the University, I would like to ask you gentlemen, who have boys of your own, whether any of you can cut out a pattern for his boy. I am a farmer, and have boys of my own, and I have an interest, of course, in common with the rest of the farmers of the state of Wisconsin in this matter. I would like to ask any of you, within the hearing of my voice, what one of you there is who can cut out a pattern for his boy. You may think you can do it. You may have a little boy baby and you are going to make a lawyer of him, or you are going to make a farmer of him, but if you have made him a man and put a soul in him and put brains in his head he will make himself. That is where you are off the track, gentlemen, and when you undertake to sectionalize interests, and when you undertake to draw lines between parties in this country, when you undertake to map out for this party and that party what course shall be pursued, then you do what you know, when you come to think of it, is without sense and without reason. The party which legislates for self-interest alone is a corrupt party, and that individual who legislates for personal interest alone is a corruptionist. You must give to every interest its equal and exact rights. Now the University represents the farmers of the state of Wisconsin liberally and grandly. It represents the lawyers of Wisconsin liberally and grandly. If I have a boy of my own who goes to the University with a mind of his own he will gravitate to his place. If he will not gravitate to his place and become a man in the line of his chosen

profession he never ought to go to the University. I believe I am right in this matter, and I advise real, candid, sober consideration of this question. There is not a father or a mother here who can map out the course of a boy with brains in his head. If you will excuse me, I want to read from a letter of an old resident of this state to the farmers of this state, although it is addressed to me.

[It is with great regret we must acknowledge the loss of the interesting letter from our old friend and former citizen, J. G. Knapp.]

Mr. Wood — The question of the tariff seems to be fairly before us, and to me it seems to be one the most difficult questions to get at the bottom facts on, that I ever undertook to look into. The literature that pertains to it is voluminous and endless. The discussions are endless, and it would take a man of more ability than I possess to get at the real merits of the question. I know I am talking before men who are able to criticise me, and who probably understand the matter better than I do. I just want to speak of it historically. I remember that in our early history the mother country always threw all possible obstructions, and prohibited, as far as they could, the manufacturing industries in the Colonies. We know that at one time it was one of the grievances of the Colonies that they were not allowed to smelt ore, to make their own iron, and were not even allowed to recast broken iron. All that had to be done in the old country. It was one of the grievances of the Colonies that they were obstructed by the mother country in all these manufacturing enterprises. Now we broke loose from those bonds, but the interest of England has never changed. Her commercial policy and her manufacturing policy remain the same. Now as we watch the current of affairs we find that the capitalists of England, as represented by the Cobden club, are very anxious for what they call free trade with America. If they could accomplish the removal of our tariff by spending millions of dollars, it would be spent I think. They scatter tracts and pamphlets all over this land. They have even reached my house. I remember that I read one in the presence of my wife in which the statement was made that every

American lady paid two dollars more for a calico dress than she would if the tariff was removed. Mrs. Wood spoke up and said, "I can get an excellent calico dress for less than a dollar," and that is true. Now there is a screw loose somewhere. There is something wrong. Their interest is remarkable, and they affect an interest for western farmers. Are not the English selfish, and do they not want the tariff removed purely for their own interest? I believe the policy of England never has changed. They are a manufacturing people. They want our breadstuffs. They wanted to prohibit manufactures here in the first place. They are just as anxious to destroy manufactures here now as they were then.

Dr. Morton — You can get at the bed-rock of protection in two minutes. When I was a boy I sold wheat at Beloit for two shillings a bushel. Now you can get a dollar a bushel for it. This government has three millions of dollars in the treasury to-day that it does not know what to do with, and they still keep taxing you. I can go to England and buy as good a suit of clothes as you would wish to wear (Scotch tweed) for fifteen dollars, and here you have to pay forty or forty-five. Still protection goes on. I think you would get everything cheaper under free trade, and still you would have a market for your produce, all you could ever raise.

Mr. Flint — I rise to make a correction. Judge Sloan says that the farmers generally applaud these derisive remarks in regard to the other professions. I deny it. As one of the farmers of Wisconsin I deny it. We do not applaud. We do not approve of any attacks upon the learned professions as a class.

Mr. Ford — I rise to what might be called a point of order. This is the third or fourth annual meeting of the State Agricultural Society of the state of Wisconsin in which the tariff question has been up, and it has taken a very large portion of the time of this convention, and has been discussed without end and without decision. Now, I hold that this question, as well as the temperance question, are social or political questions, and entirely aside from the purpose of this Society, and that if we are going into that line of dis-

cussion, we are going to fritter away our time and do nothing practical, and this convention is going to end in smoke. It seems to me that we have had this question up enough, and there is no stopping the debate when it opens, and there is no arriving at a decision when it is open. We have practical questions before us, questions which the farmers need all the four days here to discuss, and I would like to see the tariff question and the temperance question ruled entirely out. [Applause.]

OUR BOY CROP.

By J. C. BARTHOLF, Milton.

Much of care, thoughtful study and earnest labor are properly employed by farmers in ascertaining the best methods and affording the best conditions for securing the greatest possible return from the land. But is this all that there is in the study of agriculture? When a man succeeds in sending a load of wheat to market that is A No. 1, or sells a drove of hogs that tip the beam at a high notch and brings a price that means "extra fine," when he can boast the handsomest horse in the county — when he has done all these things, has he established his right to the name of a first-class farmer? Positively no.

When you visit the first-class farmer, he will show you over his broad acres, explain to you his system of fertilization, fencing, drainage, water supply, etc., take you through his conveniently arranged barns, invite your attention to his well grown herds of cattle, horses, sheep and swine; point to his granaries, groaning with the ripened grain of the golden harvest; but yet he is not done. Soon you hear the welcome note of the dinner bell, when there at once begins in your mind an earnest longing to respond. Much to your joy, the farmer says: "I guess dinner is ready. If you can put up with such as we've got come in." You gladly "put up" and once in the house, you can but note the evidences on all sides, of intelligent good taste and sound common sense, the rich heritage of a model mother, the wife of our first-

class farmer. The father then calls your attention to his boy crop, and there they are on the opposite side of the room, with clean faces and hands and well kempt hair, a fine row of boys, such as are produced only on the farm, in size ranging from the little one nestling in its cradle up to the brawny-armed, sun-browned, stalwart, intelligent young man of twenty-one. "This," says the farmer, "is my boy crop, the finest product of the farm — except — except — the girl crop." Though the farmer may make a truthful exception, yet the writer of this article cannot digress from the subject in hand to contemplate that delightful exception, as much as he would be pleased to do so.

Whether orthodox or heterodox, followers of Darwin or Moses, we can all unite in a firm belief in evolution. A follower of Moses a believer in evolution? Yes. The evolution of man from the boy. This process of evolution is one worthy of our most careful study. It is highly important to thoroughly understand what laws govern this development. Knowing this, we can judge more readily what conditions will best foster this growth and how we may afford opportunities that will aid most in evolving from our boys, the best possible specimens of manhood.

The boy, as he first appears on the scene of action, is generally thought, by his parents, to be the funniest, fattest, prettiest boy in the world. To an unprejudiced observer, he appears more as a little bundle of undeveloped humanity, at times petulant, at times pleasant, sometimes willful, sometimes cheerful, and always impressible. Is our little boy given cross, angry words? These he will soon learn to repeat, and thus will he be started in the direction of a sour, morose disposition. Does the mother greet the child at its waking with the warm genial smile of love? This kind look the child will reflect. Thus do we find our boy at first, and ever will he be impressible to the influence of good or bad. How important, then, that the influences with which he is surrounded be the very best.

There is in the boy an undeveloped physical, mental, social and moral nature, and opportunities for their culture, ample, both in quantity and quality, are needed. Home, so-

ciety and school—these three constitute a trio, to which we justly look for these opportunities.

Home! Who can fathom its meaning or measure its influence? To most, an ever present, all pervading power that centers our lives and efforts and shapes our destinies for good or ill. If fortune smiles, man's inheritance at birth, his creation in after years, and in old age a haven of rest. Home makes the knave, the knave the man that he is. Home points the way to the prison or to the position of honor and trust. Home prepares the world's gallows' roll and the gallery of her good and great. Incalculable then is the importance of providing our boy with the best possible home. Where shall he find it if it be not on the farm? The statement can be safely made that the boy who has a good home in the country is much more fortunate than his young friend in the city. Though he may look a little seedy, a little fresh; though his clothes may not fit just to a T; though he may not make a courtesy in strict accordance with the best etiquette of a Chesterfield; yet he possesses the elements that ripen into a dignified manliness, which will make clothes fit, which will give an ease and grace of bearing that comes only of upright integrity and solidity of character, the results of honest, intelligent, well-directed labor.

The fact that the surroundings of the country lad are far more favorable than are those of the boy who lives in the city is the latter's misfortune, not his reproach. If he overcomes the disadvantages of his environment, he is deserving the more credit. The town boy contends against many odds, many temptations, many evil influences that our boy on the farm knows nothing of, and if he succeeds in subduing these adverse circumstances and making himself an industrious, honest man, we all freely say "all honor to him."

But it may be properly asked, In what respect does a country home afford advantages superior to the home in the city?

1st. Young life is ill adapted to come in contact with all the fierce, social and political commotions of metropolitan life. The conflicting interests of densely populated sections engender passion, hate, malice, contention, and the very air

becomes infested with the spirit of these evils. Such is the moral atmosphere which is breathed over and over again by the majority of boys compelled to live in our large cities. These same evils exist, to a less degree, in our smaller cities and villages. It takes the moral strength of an impregnable character to successfully withstand this downward current. Why should we be surprised, then, that the young in our cities are what we find them? Should we not be rather surprised that so many do as well as they do?

2d. The country home affords greater freedom, more room to grow. The oak that stands out in the open field has more room and attains to its full size, unimpeded by surrounding trees. So the youth. Later on, the tree may be surrounded by a dense grove, but it suffers not. It towers above its neighbors, is deep rooted, and able to hold its own in spite of the encroachments of others of its kind. So with our boy. He has greater freedom, more room to grow, a richer soil from which to draw nourishment for his better nature.

3d. On the farm the boy can learn better the lesson of industry. One of the great advantages of farm life is the fact that there is something for all to do. Each member of the family at the home of our first-class farmer has his task to perform. One brings in the wood and gathers the eggs, another, a little older, drives home the cows, helps milk, and still another helps take care of the horses, feeds the hogs, the calves, and the sheep. All have something to do. No drones allowed on the farm. Thus each one learns, early in life, that he is in the world for some purpose, to bear some of its burdens, not to be served, but to serve others, to *do* something, and by *doing* that, *be* somebody. By the very conditions of farm life, our boy learns better than any other industry's great lesson that life is action and action gives character.

Happy we, then, when circumstance commands us *do* something! The listless, inactive, self-seeking, spoiled child of wealth kills the golden time of his life, and approaches his death with bitter self reproaches, without character, and with nothing good to show as the result of his living. The energetic, generous, self-forgetting child of industry makes

happy his fellows, adds to his own joy, and when his three-score years and ten have completed their round, with much golden grain as the fruit of his labor, he approaches his grave—

“Like one who wraps the drapery of his couch about him
And lies down to pleasant dreams.”

Young life needs change, rest, recreation, amusement, opportunities for which are too often lacking on the farm. Dull care must not press too heavily upon the young. Enough of joyous pleasure must be added to the sum of their lives to relieve their duties of irksomeness. Let there be a steady flow of joy-giving opportunity. Our boy's life should not be a great desert of dullness, with only now and then an oasis of happiness, when he may chance to go to the Fourth of July, the Sunday school picnic, the “greatest show on earth,” or the state fair. Let his life rather be the beautiful landscape of youthful good cheer, everywhere luxuriant with the rich growth of kind words, hearty laughs, pleasant looks, good books, interesting games, father's anecdotes and mother's lullabys. “Duty first, and pleasure afterwards,” is a good rule. Too many make it read “duty first and duty all the time.” Let this not be the rule, but rather let there be something of the Fourth, the picnic, the show, and the fair at home on the farm all the time. Make the farm home the brightest, the cheeriest and the most attractive place on earth, then our boys will not seek their pleasure in the gilded saloon, and when they are twenty-one will not leave the farm because life there is so dull and monotonous.

Another important factor in shaping the course of our boy is society. When the boy learns that there are other families than his own, that in these families are other boys like himself, and that these other boys have sisters, he at once desires to enlarge his circle of acquaintances. This is the first awakening of his social nature, which becomes subject to the forms and institutions of society. He attends church, the debating school, the spelling match, the husking bee, the neighborhood picnic, and all these have their effect upon his character, sometimes to beautify and embellish, at other times to tarnish and blacken it. All these privileges are

good, but, like all good things, may be so used as to conduce only to evil. Every person is created with a social nature and early does it crave advantages for development. This is a natural craving and should be gratified. This social nature of our boy needs careful direction and a grave offense it is to deny this training and dwarf his social faculties. By judiciously mingling in good society, the youth will acquire a great ease of bearing and a more dignified manner. He will learn the better to adjust himself to any and all of his surroundings and circumstances in life—an achievement than which there is scarcely anything more desirable. Many families shut themselves up within themselves and know nothing of the world outside, nothing of the good human nature and kind-hearted souls that move about them. The more mind comes in contact with mind on the basis of social equality, the greater will be the capabilities of all for benefiting their fellows. It is not well to remain always in the valley of solitude. It is a great benefit, as it will become a great pleasure, to ascend the mountain's height and broaden the horizon of our social vision. By so doing, the rough edges of our natures will be worn off and the ungenerous prejudices dissipated by the pleasant and beneficial influences of friendly relationships.

While home and society are still influencing the evolutions of our boy crop, the school supplements these, emphasizes, and makes potent their power for good. The great desirability of a system of public instruction, such as we have, requires no argument. The question is, having educational privileges before him, how shall our farmers' sons use them? What kind of education does he need? What training should be provided for him in his boyhood and what culture should he seek when he chooses for himself? If farmers of the future would maintain themselves among other classes, have their interests protected, their wrongs redressed, and their rights vindicated, they must be equal in the contest with the mightiest of other classes—they must be as fine brained, as carefully disciplined, and as well cultured as the best of those working against them. To produce such a farming community, our boy of to-day must not only have

a training in the principles of agriculture, his education should be as broad, as generous, as complete, as that of any boy on the foot-stool. But one asks, should not his education be more practical? This same person urges that a purely industrial and business culture should take the place of our present courses of instruction. It is insisted that every study that a young man pursues, should have a direct bearing on the "bread and butter" problem of life and every other study is considered as unfruitful of good and a sheer waste of time. It is forgotten that education is a leading forth of the powers of the mind and person, and is essentially broadening in its results. No schooling is broadening that causes the mind to follow always in one channel, to contemplate but one line of thought, viz.: "How shall I clothe and feed myself." Such is not education. It is a leading on instead of forth. It is the involution of one's powers for the benefit solely of the possessor.

This practical idea, now so popular, is essentially narrowing in its tendencies and constitutes a gospel, whose chief and controlling purpose is self. Yet this call for industrial training indicates a certain lack. This idea, when considered in its true relations, when not overestimated, constitutes a part—not the whole—of one's education. That our common and high schools and colleges have had courses of study with too little of the practical is a fact well known to any careful observer, and no well posted person will deny that more instruction of this nature should be given in our schools, yet it cannot be wisely conceded that those studies that have been proven good by long years of test, should be thrown out and superseded by instruction purely practical and industrial. Let industrial education be incorporated with our present courses of study, as an added part, not as a substitute for something taken away. The truly educated man—and such men we want on the farm—has both an education of practical ideas and an education of discipline, wherewith to make the farmer of service. A system that proposes anything short of this is signally defective and will surely fail. Study in all that may concern human life,

in literature, mathematics, philosophy, science and art, are highly beneficial and should be encouraged.

This work of acquiring an education cannot be accomplished in a few months; it requires years of hard study. But to many this seems too slow. Everything must be done at a lightning rate. By too many a boy is considered but half witted if he cannot "complete" his education by attending a high school or college two or three months. As a consequence, young people easily tire of the prospect, even of spending several years of their lives in diligent, earnest study. They are anxious to "get into business," and go out into the world, merely to occupy medium positions among their fellows. In student life the motto of every one should be not how soon, but how well. If it takes seven or eight years to complete a course and do it well, take that much time, and never in after life will there be the least cause to regret it. The prime object of education is not to store the mind with facts. The first and most important end is to discipline the mental faculties, to make stronger and more comprehensive the mind's grasp, to develop all that there is in the boy to make him the man.

With this object in view, with a high moral sense, and an earnest and lofty ambition to do good in the world, let our farmers' boy seek the benefits of the most liberal training of the best schools of our land—then will he develop into a symmetrical, evenly balanced, well poised, well rounded-out, complete specimen of manhood. Thus have we traced our boy crop through the different stages of its development, until now we have it fully grown and ready for market. The question at once arises, where should the product be marketed, or in other words, what shall our boy do? This, I take it, depends upon a proper answer to a question, which every young man may well address to himself, viz.: "In what vocation can I make my life of the greatest possible value to others and thus to myself?" Many young men evade this question by asking another: "How can I have the 'softest snap?'" and this they answer by a complete failure in life. To properly answer the former, our young man should carefully study himself, his abilities, his tastes, and

his attainments and, from a careful estimate, he will know in what occupation, he can accomplish the most.

If he is confident that he can do the most good as a physician, let him be a physician; as a lawyer, let him be a lawyer; if as a clergyman, then a clergyman; if as a mechanic, then a mechanic; if as a farmer, then by all means, let him be a farmer, than which there is no calling more worthy, more honorable, more ennobling. It is by no means an evidence of lack of ability to remain on the farm. One of the boys in a family is better fitted to follow law; his brother may be better qualified to follow the plow. This does not prove greater ability in the former. The latter may be just as strong in character and as capable to fight life's battles as the former. The difference is in kind of ability, not in amount. The relation of country life to that of the city should have a direct bearing. Cities, left to themselves, naturally degenerate. The scum of the world's society naturally drifts toward the great centers of life, and the evil, thus imported is, apt to overcome and entirely overwhelm the good. Honesty, virtue, and integrity are burned out by the consuming fires of corruption, vice, and crime. Justice becomes only a name, law a mock form, and morality a stranger. The city, left to itself, soon becomes powerless to regain its lost estate.

Verily, the salvation of cities depends very much upon the country. City life stagnates and becomes corrupt, if there be not some immigration from the country — of upright, unimpeachable men and women, to restrain passion, check dishonesty, to make sure defenses against the aggressions of evil, and to infuse a healthful, moral tone into the life of our great cities. If our boy is fitted, with a clear head and honest heart, to do this work, none will bid him stay; but will say go, not with a motive to have life easier, to enjoy the frivolous, exciting gayeties of the city, not with the prospect of eking out a miserable existence and becoming a dead weight on society; but rather, let him go, if go he must, with his education, his habits of industry, his integrity, and a noble determination to make happy and benefit those among whom he may live. With such motives and with such an

object let our boy, now a man, go forth and act his part in life honorably and well whatever may be his calling, and wherever he may be, and all of us with one voice will say, success to Our Boy Crop.

THE DRAFT HORSE, THE FARMERS' FRIEND.

By MATT ANDERSON, Pine Bluff.

From the earliest history of man, and in every country where mankind has made any progress in becoming civilized, and among the most refined and enlightened nations of the present day, the horse has been selected from among all of the brute creation, as the grandest, the noblest, the most useful servant and friend of man.

The horse, for thousands of years, was used principally by man for carrying his rider and for hauling chariots of war and other conveyances.

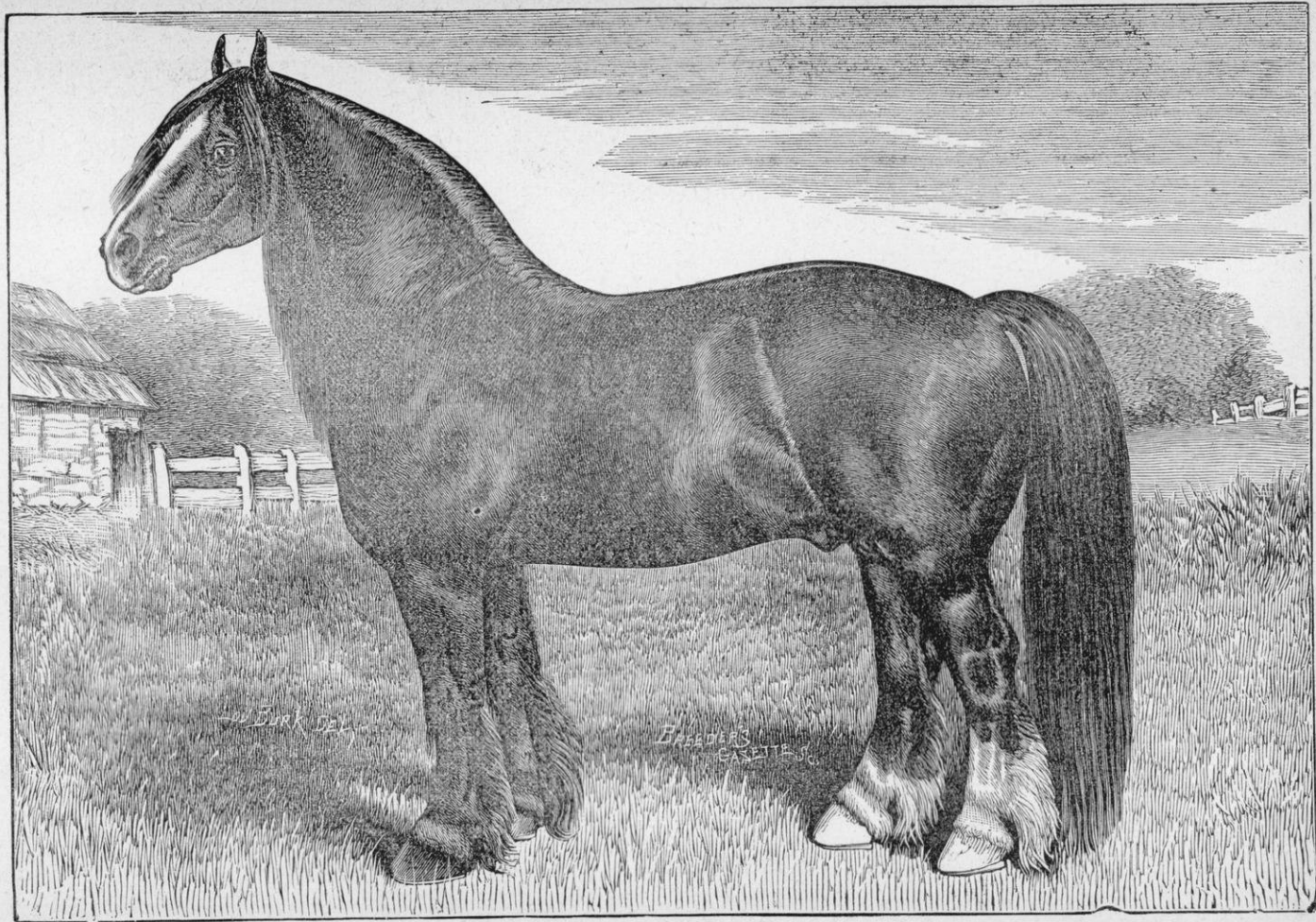
The camel and the ass were the bearers of burden. The cow and the ox were used principally in agriculture. But as the earth increased in population and agriculture became the principal occupation of the most civilized nations, and the source from which the people had to depend for food and clothing, the horse was harnessed to the plow and cart and compelled to do the most menial work for man. But my subject is the

DRAFT HORSE.

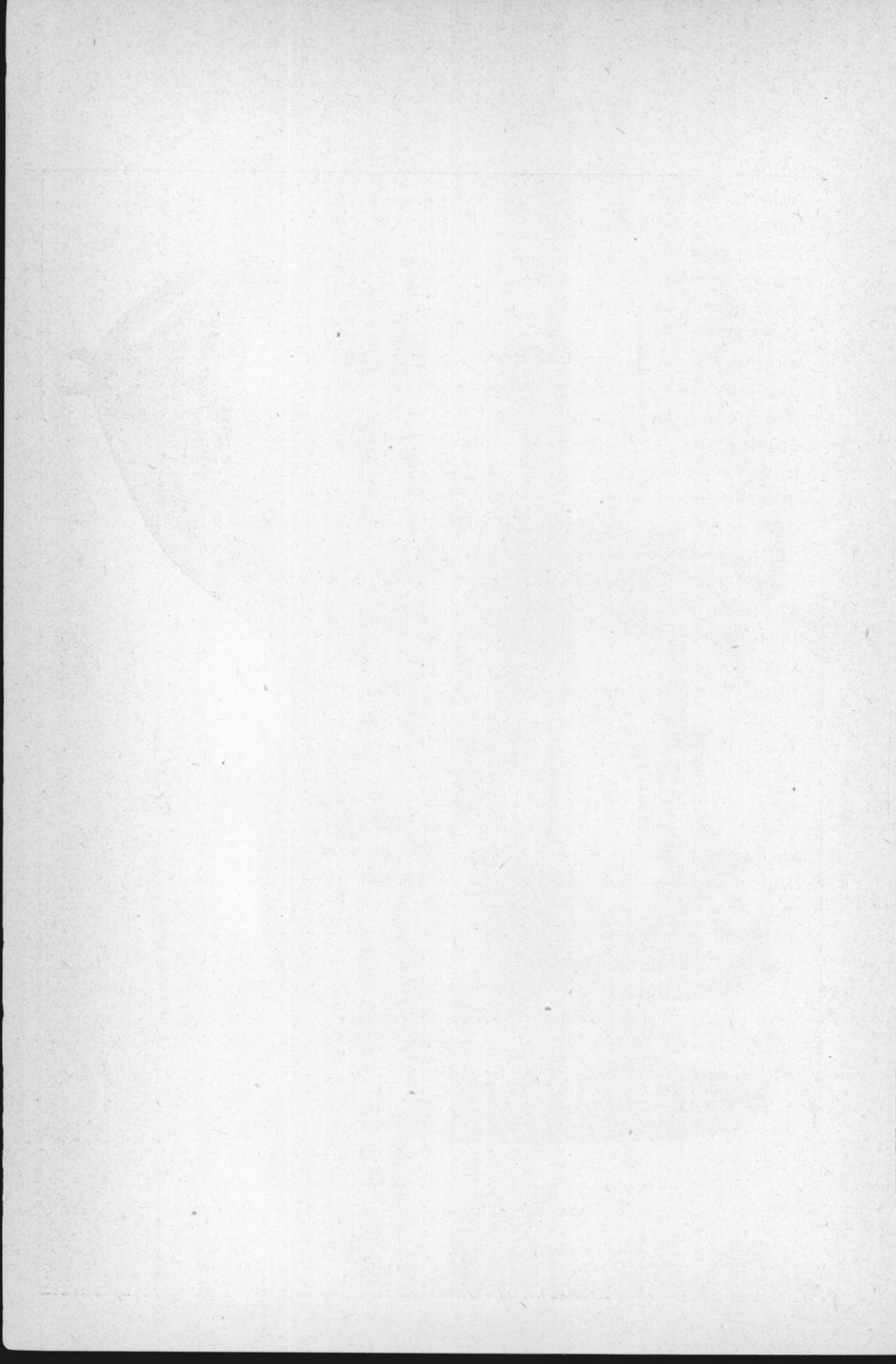
The farmers of this state need not be told that but few horses raised or used upon our farms can be classed as draft horses, under the present and popular opinion and classification of draft horses.

We should first understand what kind of a horse is required to be classed as a draft horse. On this there is, of course, a great difference of opinion.

A few years ago a horse weighing 1,200 pounds and well proportioned, was considered by many as a draft horse. But now such a horse would stand no chance in a show ring among horses weighing from 1,800 to 2,400 pounds. I at-



"GLASGOW CHIEF, 1442." PROPERTY OF J. & C. HUSTON, Blandisville, Ill.



tended the great horse fair at Chicago in 1881, and the Illinois state fair last year at Chicago, where the heaviest horses of this country were on exhibition, and the heaviest horses generally took the premiums. The demand for heavy horses appears to be large and the supply deficient. When such horses as Donald Diney and Johnie Coope sell for \$5,000, a 1,500 pounds horse can be bought for one-fourth the money. It is a common remark to be heard at our fairs made by farmers, "I do not want such a large horse." But if a farmer has a large team of horses he can sell them much quicker than a small team, and at about double the price. I have never seen an over-supply of heavy draft horses; frequently when small horses are unsaleable, large ones are in demand at good prices, so no farmer need fear to breed from and raise large horses.

Forty years ago I lived in Lancaster county, Pennsylvania, where I believe the farmers cultivate their farms better than they are cultivated in any other section of this country, and they had heavy horses, that could plow the land 10 inches deep, and haul heavy loads to market.

I know that there is a strong prejudice among western farmers against large horses, but my experience with large and small horses is in favor of the large ones. They can haul a load upon roads deep with mud, when a small team could do no more than haul an empty wagon, and they can do heavy plowing without having to rest at every end of the land; and I wish to say here that the shallow plowing that has been done when the land was new, which a small team could skim over, will not do when the land becomes worn out and has to be clovered and plowed deep to be renewed. The use of light horses that cannot pull the plow when we want to plow two or three inches deeper than the land has been plowed, is one of the reasons of poor crops on old cultivated farms.

Another reason why farmers should consider the draft horse as his friend is, it pays to raise them for sale.

In all my experience I never knew a farmer to lose money by raising draft horses. But I have known men to become bankrupt by breeding and training what are called blooded

or fast horses. In fact training horses is a trade which in this fast age the average farmer had better not engage in. But so long as good heavy working horses sell from four to six hundred dollars a span, it will pay farmers to breed their largest and best mares to the largest and best draft stallions. And I wish every farmer to understand that there is no danger of crossing their medium sized mares with heavy draft horses, as colts are like calves from a large short horn bull no larger when they come, than if they were from common stock, but will grow if properly cared for, to be much larger than the dam. Small mares, weighing nine or ten hundred pounds, will often, if bred to an 1,800 pounds horse, raise colts that at full growth will weigh 1,300 to 1,400 pounds. And it costs but little, if any more, to raise a colt than it does to raise a steer, and at three or four years old the colt will sell for more than double the amount that the steer will sell for. I have often thought that if I had made the breeding of draft horses a specialty, it would have paid me better than to follow mixed farming, as I have done.

It is only about twenty-five years since the importation of draft horses into this country, and more especially into the western states, has been carried on to any great extent, and within the last ten years the importations have been greater than in all former years. There has been a great demand for heavy stallions and mares, and as there was money to be made by importing them, there are many energetic men engaged in bringing from France, Scotland, and England, some of the best horses raised in those countries. The question is often asked, which is the best breed of draft horses. It is easier to ask than answer such a question. I answer that there are good horses in every breed, and that no one breed is best for all purposes.

The man who expects to find perfection in any breed, or even in any horse, will be disappointed. It may seem strange, but I believe it is true, that the average farmer is not a good judge of a horse, nor can they expect to be unless they have a better opportunity of seeing and comparing the best specimens of the various breeds. It will pay any farmer who is engaged in breeding horses to go to our state fair for the

sole purpose of examining the horses. Mr. President, I wish here to call your attention to one of the greatest causes of complaint made against our fairs. It is in having the horse stalls closed up so that the horses cannot be seen. At every fair on our grounds there is much dissatisfaction. Horses, like everything brought to exhibit, ought to be arranged so that they can be seen. The doors to the horse stalls should be half doors, so that at least the upper half will be open during the most part of each day. Horsemen ought to know that their horses are brought to be exhibited, not to be hidden in locked stalls.

Mr. President, as I make no charge for this advice, I have no apology to offer for giving it. If the convention will excuse this digression I hope you will also.

I will now try to describe the different breeds of draft horses. In doing so I will give the opinions of men known for their ability to judge. I will quote largely from the *National Live Stock Journal*, as it is one of the most reliable publications we have in this country on that subject, and should be read by every stockman. If it was so read there would be less ignorance than there now is in regard to the various breeds, of not only horses, but of all kinds of live stock.

The Hon. Samuel Dysart, of Illinois, one of the commissioners appointed by the president of the United States to represent this country at the Paris Exposition in the year 1878, in a letter to the *National Live Stock Journal*, says: "Generally speaking, they are very much in the same condition as the horses of this country, with regard to their breeding. With but few exceptions of distinct types, they are very much mixed in blood." In speaking of Norman horses, Mr. Dysart says: "Normandy is the great horse-raising portion of France; and there, recently, the English race horse has been extensively used in crossing, and most of the horses raised are used in light work, and for cavalry purposes in the army. There was a large number of what they call Anglo-Norman horses shown at the Exposition; and while they plainly showed their mixed origin in the variety of type, there were in my judgment many excellent ani-

imals in form, of about 1,000 pounds in weight, that had good speed and fine action. They were mixed in color, but the larger portion were dark bay." This description of the Norman horse will disappoint many who have seen the name Norman and Percheron-Norman used to describe or indicate a large draft horse. I believe, with many others, that the name Norman should be left off and Percheron be the only name by which the French horse that originally came from the district of La Perche should be known.

The late J. H. Klipart, of Ohio, who visited France about 20 years ago, and obtaining all the history to be had of this breed, in writing to the editor of the *National Live Stock Journal*, says:

The only name by which those horses are called in France is Percheron, and by that name they should be designated in this country. There are no draft horses in France that are called Normans by the French people.

The editor says:

Names do not change things—"the rose would smell as sweet by any other name"—and whether they are called Percherons, Percheron-Normans, Norman-Percherons, Normans, or French horses, the fact remains that *the famous draft breed of France is the Percheron*; and the more nearly the horses imported into this country have conformed to the recognized Percheron type the better they have been. As a rule, all the draft horses imported into this country from France have been largely impregnated with the Percheron blood; but too many of them show traces of admixture with the coarser and more sluggish type that prevails in the northern part of France, near the coast—the type that years ago was recognized as the Flemish horse. It is eminently proper that such horses should not be called Percherons, for they are a libel upon the Percheron race. The unwieldy name of Percheron-Norman has been used as a sort of compromise term, by which all the French draft horses may be designated.

Mr. Dysart, who is not, I believe, a breeder of horses, and can be considered as not being prejudiced, says:

The heavier horses are more or less mixed in breeding; but here there seems, as a rule, to have been more system followed to produce a uniform type of a distinct breed. As to how long that course has been pursued, or what was the foundation used to build upon, no one knows. No record has been kept, and there is no history other than tradition. We must take them as we find them at quite a recent period. The race of horses that is best known in French history, and has more friends than any other race as a medium-sized draft horse, is the small Percheron. That they have

for a long time been bred without any strong mixture of blood, their uniformity in form and color is strong proof. There are thousands of them used in Paris on the street cars and omnibus lines, where the labor they perform is very arduous and severe on the physical powers, yet they appear in fine condition. The average size of the small Percheron I would estimate at 1,300 pounds. They are of medium height, with a square, compact body, indicating activity and great strength for the size of the animal. The limbs are long, joints short, and muscles strong, with a well formed foot and hard hoof.

There is what is called the large Percheron horse, which has a similar color and form, that is about 200 pounds heavier than the small Percheron. Their limbs and feet are proportionally larger, and they have a slower gait. They are mostly used as cart horses. So far as I could learn, the large Percheron is the produce of a cross between the larger Boulonnaise horse and the small Percheron.

The Boulonnaise draft horse is the largest and most valuable of that kind of horses in France. They were first brought to notice in the vicinity of Boulogne, but they have spread generally throughout the region of Paris. They are of about 1,600 or 1,700 pounds weight, and have a handsome form for a large animal. Their action is more clumsy than graceful, and they are principally used for very heavy draft purposes, where great strength is needed instead of speed. The moving of the heavy blocks of stone used in the buildings of Paris is done with these horses. It is not unusual to see six or eight of them hitched in line, drawing blocks of several tons weight, which of necessity must move very slow. They are mostly gray in color, but bays and blacks are not uncommon. For the purpose to which they are by nature adapted, they are entitled to be classed among the best draft horses.

The Flemish and Picardy horses do not seem to be favorites, nor valued as much as either the Percherons or Boulonnaise. Very few of them are seen in the countries where the others are used. They are similar to the Belgian horses — large, rough, and ill-shaped. They evidently possess more of the original form of the large horse history finds on the coast of the North Sea. They have not been bred so much as the others to improve their form; yet we have reasons to believe that all the different varieties of draft horses of Western Europe had a common origin.

Either from the effect of climate and soil, or the use of the shears by their owners, I saw no French draft horses in public, nor at the exhibition, with long hair on their lower limbs, as seen on the same class of horses when imported to our country. In the western part of France, I am of opinion that there is a large percentage of good draft horses, as well as roadsters, but the American who goes there — I might say to any part of Europe — with the idea that all the horses are very good, will be sure to come home disappointed.

Perhaps it is not generally known that some six years ago at a meeting of importers and breeders of French horses, it was agreed to establish a stud-book; and that the name Norman was agreed upon; but Mr. Sanders, the publisher, after collecting all the information he could, thought that Percheron-Norman would be more appropriate, and issued the first volume under that name.

Since writing this much on the French horse, I have received from Mr. M. W. Dunham, of Wayne, Ill. (who is the largest importer and breeder of Percherons in this country), the proceedings of the meeting held in Chicago, the 15th of last November. The preface to the pamphlet containing the proceedings, reads as follows:

In years past, the owners of stallions imported from France have labored under a great disadvantage in competition with other breeds of draft-animals whose pedigrees were established and recorded in their respective stud books, although it is doubtless a fact that the Percheron is one of the oldest and purest of all draft breeds, and is the race that has established the reputation of the French horses the world over. In the absence of public records, all breeds, grades and crosses possessing characteristics of the race have been drawn upon by American importers to supply the demand of this country. The organization of the "Société Hippique Percheronne" of France, with a membership reaching into the hundreds, and including all the prominent breeders and "stallioners" of the Perche, and the publication of a Percheron stud book under the authority of the French government, presents the business of breeding Percheron horses, both in France and America, in a new aspect, and the pedigree of these horses may now be as definitely traced and as well authenticated as any other breed of draft horses in the world. In fact some of the Percheron pedigrees are traced in Vol. I of the Percheron stud book of France, as far back as nine or ten generations.

The organization of this society and the publication of the stud book has excited the enmity and aroused the hostility of some of the horse dealers of Paris and other cities (who have built up a large trade with a certain class of importers who were willing to buy any horse in France without knowing or caring anything about purity of blood), as well as the animosity of many American importers, who see that they can no longer palm off half-bloods, grades, and mongrels of every race, upon American purchasers as purely-bred horses. The best interests of American breeders demand that, after this season, no imported horses should be accepted by the American people or recorded in our stud book that are not previously recorded, with their full pedigree, in the Percheron stud book of France. Heretofore we have had nothing to base our record upon, except

the fact of importation, valueless in itself, except as a means of determining between horses imported from France and grade horses bred in this country; and doubtless hundreds of vile, cheap animals have been imported and recorded; and while the indiscriminate importations of pure-bred Percherons, Belgians, or those of mixed or unknown blood, from France, may be a temporary advantage to importers, it is sure to react against them, as the success of no class of men can for any length of time be sustained in opposition to the best interests of the people. Now we have a reliable basis for record in the French stud book, supervised and controlled by a committee of twenty well known, reliable, and thoroughly representative Percheron breeders; and the sooner we anchor our records upon that foundation, the better for all interested in this most famous, as well as the best established and purest of all the breeds of draft-horses. With these facts before us, we can be assured that no intelligent man, who has his own interests or the interest of his patrons at heart, will countenance the importation of any animal whose origin is unknown or whose purity of blood cannot be fully established by any authenticated pedigree entitling such animal to registry in the Percheron stud book of France, as the people of the country have suffered enough from the imposition practiced in the past, possibly through ignorance — an excuse which cannot be offered in the future.

The following resolutions were adopted by the Chicago meeting, November 15, 1883:

Dr. Ezra Stetson moved to drop the word Norman from the name of the society, and designate it hereafter as "The American Percheron Breeders' Association."

In moving this resolution, Dr. Stetson said, that at the regular meeting of the society of Peoria in 1878, he had made substantially the same motion, believing then, as he did now, that the use of the word Norman, either alone or in combination with Percheron, was a misnomer, and in contraversion of facts that were known to all intelligent men. He was induced at that time to consent to an amendment to his motion in the interests of harmony and fraternal feeling. But as the very men in whose interest the word Norman had been adopted as a compromise, and which they then voted for and accepted, had since that time themselves gone back on the compromise, he saw no longer any reason for retaining a word which was a positive misnomer, and which was not recognized as belonging to this breed anywhere in France. He believed he was right when he first offered the resolution at Peoria, and time and research had served to confirm his views. Several others followed, presenting the same opinion, and, on a call for the question, Dr. Stetson's motion was unanimously adopted.

The following resolutions, after some discussion, were unanimously adopted:

Resolved, That we recognize the Percheron Stud Book, edited and published by J. H. Sanders, of Chicago, as the only reliable and authoritative record for Percheron horses in America, and that we recommend and urge all importers to record their stock in this book.

Resolved, That no horse imported from France after the close of the present year, shall be admitted to record in the Percheron Stud Book, unless the same shall have been previously recorded in the Percheron Stud Book of France; but this resolution shall not be considered as invalidating the record of horses imported prior to the 1st of January, 1884.

Resolved, That the rules for record of animals bred in this country remain substantially as adopted by this society at its meeting at Peoria, in February, 1878.

Believing that the farmers of Wisconsin will be interested in a correct history of this famous breed of horses, is the only excuse I have to offer for giving so extended a history of this horse, and of the transactions whereby the name Percheron has finally been adopted.

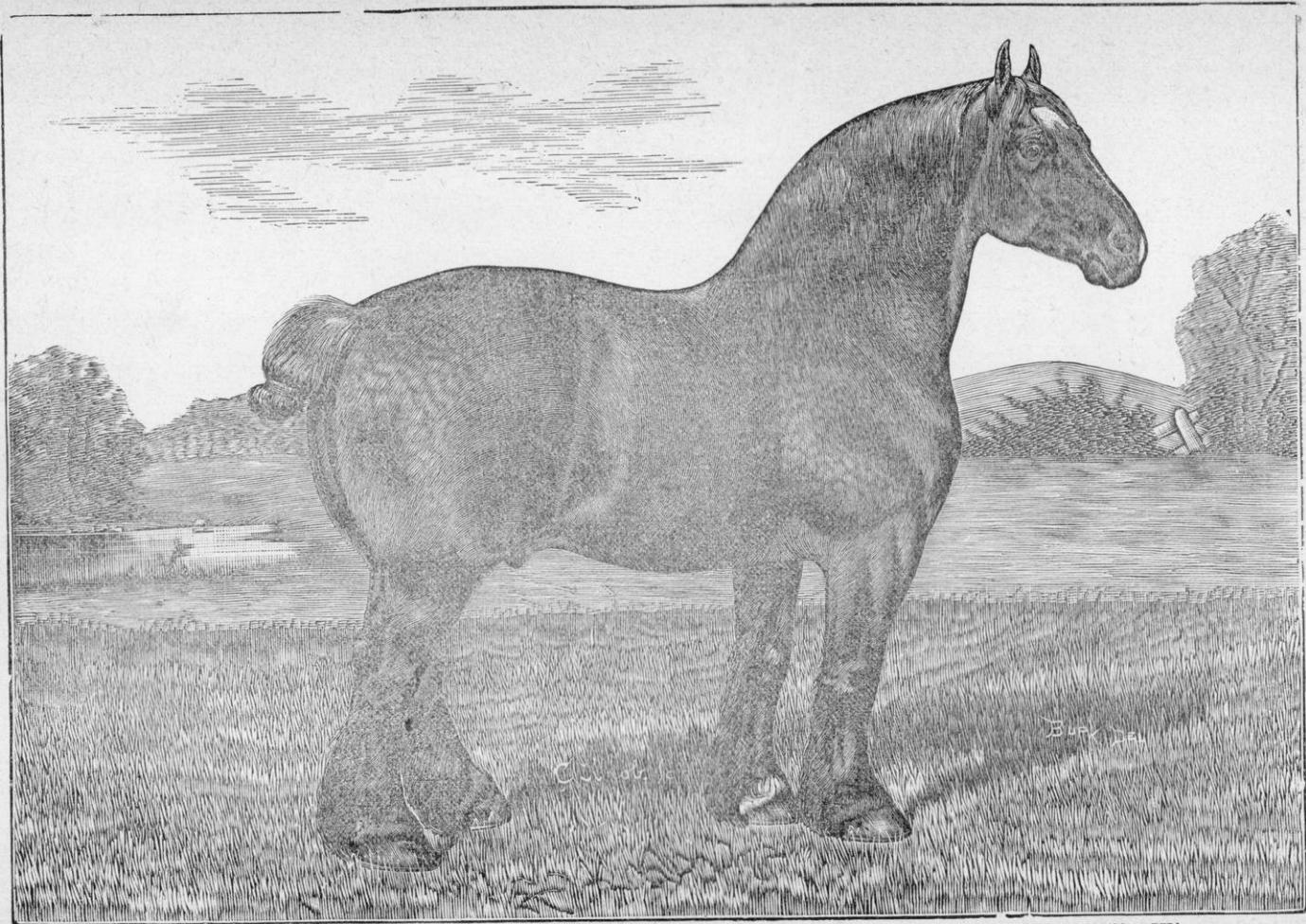
THE CLYDESDALE HORSE

Is perhaps one of the best known in this country as being one of the best heavy horses of any known breed. The Clydesdale horse is of Scotch origin. Their history extends back for hundreds of years. I copy the following from the second volume of the Clydesdale Stud Book of Great Britain and Ireland, concerning the early periods of draft horse breeding in Scotland. We find in the same volume the following translation of an official document from the *Rotuli Scotiae*, dated 1st July, 1352, which has an important bearing upon this early history:

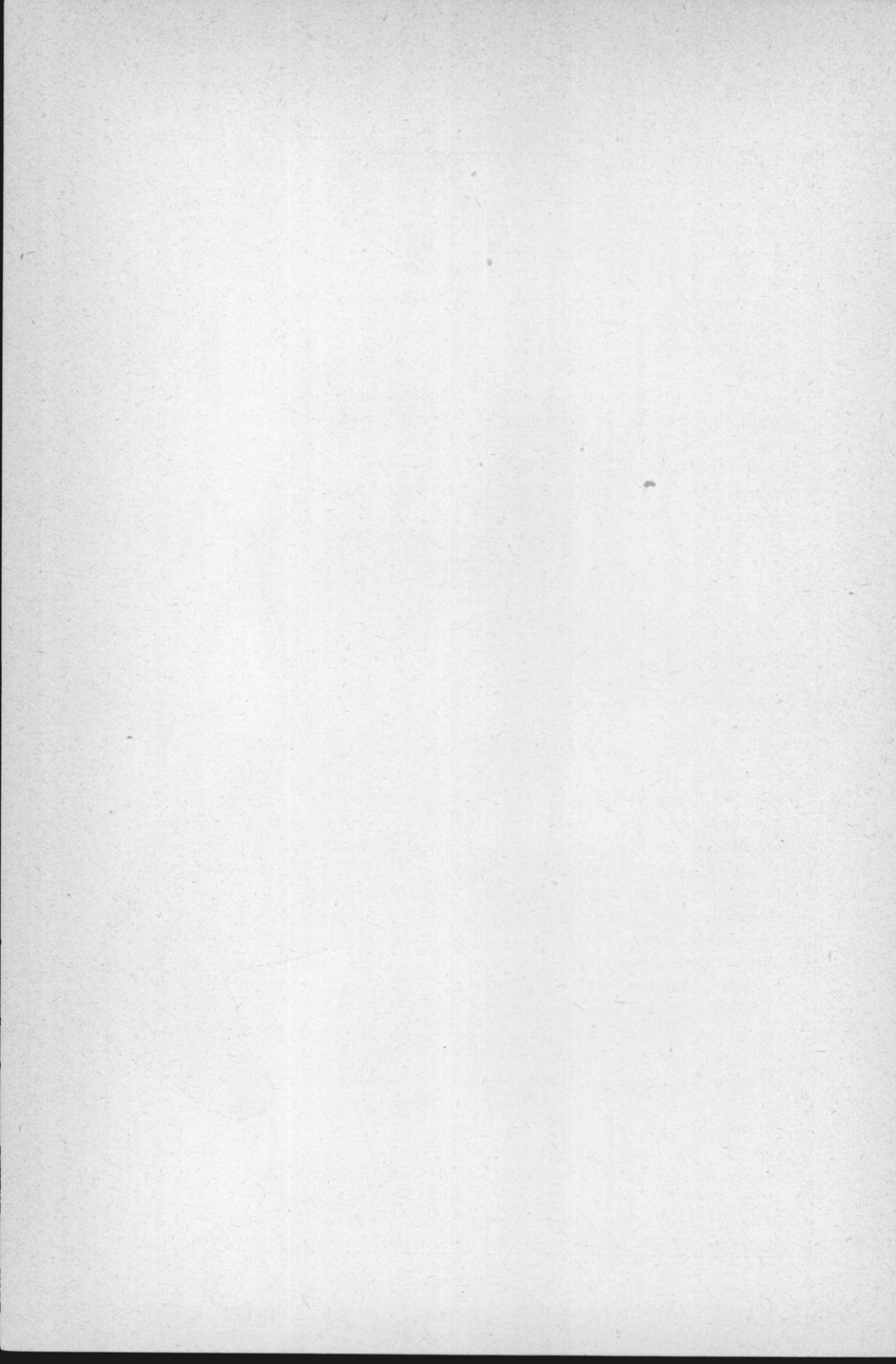
Safe conduct for the retainers and large horses of William of Douglas, Knight.

The King, to all and each of these "vicecomitibs," greater bailies, officers, and other faithful subjects, to whom greeting. Know then that as William of Douglas, Knight of Scotland, is causing 10 grooms and 10 large horses, belonging to the said William of Douglas, to come from certain places in Scotland to certain places in parts of Teviotdale, in his (the King's) dominions — know that he remains there under our protection. We have received these same horses and the grooms having charge of them, under a special protection and safeguard. And therefore we order you, giving strict injunction, not to do harm, or as far as in you lies, to allow others to do harm to the same horses and grooms thus remaining in the said parts of Teviotdale, etc., as in all like cases. In testimony of which this peace lasts to the feast of St. Michael.

T. R. Westminster, the first day of July.



IMPORTED CLYDESDALE STALLION "LORD COLIN (3346)." PROPERTY OF GALBRAITH BROS., JANESVILLE, WIS.



This safe conduct was granted to Douglas when in London arranging possibly as to the ransom of the captive King, David II, as there is another in almost similar terms on the same date in favor of Archibald Douglas, Andrew de Ormiston de Scotiae, and William de Douglas to return to Scotland.

It does not, unfortunately, say where the horses came from, but as Baliol held the Douglas estates, it would appear as if they were to be taken from Lanarkshire into Teviotdale, then in possession of the English. Douglas' quarrel with his kinsman, William of Douglas, the Knight of Liddesdale, whom he slew, taking possession of his estates; his rupture with King Edward of England, and his turning of Baliol out of the ancestral estates of the Douglas family in Liddesdale, Annandale, and Clydesdale, leave little room for doubt that, if large horses did not exist in Lanarkshire previous to this date, as the extensive trade done with Flanders by the Scottish merchants led us to believe they did, some, if not all, of the black stallions found their way to Douglas Castle in the Upper Ward of Lanarkshire.

It will be recollected, by readers of the Retrospective Volume, that Mr. Ure, of Rutherglen, stated that there was a tradition that an ancestor of the Duke of Hamilton brought six coach horses to Strathaven, and that Aiton disproved this tradition satisfactorily to himself from local inquiry. The above extract shows, however, that the tradition originated from a circumstance which occurred much more than a century previous to Mr. Ure's time of writing. The Earl of Douglas, it may be remarked, was one of the ancestors of the Duke of Hamilton, the families having become joined in marriage; and it is possibly owing to this that so many mistakes have arisen as to the introduction of these black horses. It is noticeable, however, and it is indeed mentioned by the reverend chronicler of Rutherglen, that the farmers of the Upper Ward in which the Douglas estates are situated, were the first to rank as improvers in the breed of horses in Scotland. Possibly certain of the horses may have been stationed at Strathaven Castle, which was occupied by Lord Douglas soon after his return from England, when he ejected Baliol, who, as has been mentioned, then occupied his Castle of Douglas and other important strongholds in Clydesdale. These horses, there can be no doubt, were the large, sooty black horses of Flanders — (Flanders was then in the occupation of the English) — and the Flemish archives show that during the dynasty of the Plantagenets many of them were taken to England. Moreover, in all the safe conducts granted to knights, merchants, and others, mention is only made of the word "equos," so that the addition of the word "magnoes" plainly shows that the horses were larger than common. That Edward I was subsequently jealous of the Scotch obtaining this breed is shown by the fact that he would only allow a German dealer permission to embark a stallion on the condition that he would not take it to Scotland.

The Scottish breeds of horses at this time must have become much mixed, as Douglas and other knights having fought in France no doubt brought back some of the cavalry chargers used in that country, while the French

knights who returned with him to Scotland must also have brought with them numerous horses. During the time of David II rich caravans passed from Scotland through England and into the continent, attended by large retainers of horsemen, sixty-five passports being granted on one occasion to a party of sixty-five merchants, whose warlike suite, says Tytler, "amounted to two hundred and thirty horsemen." That Scotland possessed good horses at that time is clear from the fact that they were then and for some time afterwards numbered among her exports, with wool, hides, skins, and cargoes of fish, in return for wines, spices, and arms and armors.

There can be no doubt, therefore, that in the reign of David II there were introduced into Scotland several varieties of horses, which, mixed with the smaller animals, supposed, if not indigenous, to have been introduced by the Norwegian colonists, generally improved the breed. Except, however, that James IV began to import horses from Spain and Poland, to improve the Scottish stocks, there is no mention subsequent to the reign of David of any individual effort in that direction, though there is little doubt that much new horse blood was introduced by traders in their commercial intercourse with the continent.

The farm horses, up to the commencement of the present century, and for some time afterwards, were much lighter than they are now, and were generally capable of being used as saddle horses by the farmers when attending fairs. A turn of speed was then desiderated; for there was many a rough-riden race homewards from the market town, and "riding the broos," — an ancient wedding contest amongst the horsemen, now out of custom — was very common.

In the reports of statistical writers appointed to give accounts of the agriculture of the different counties of Scotland in 1794, excellently abridged by Mr. A. Ramsay, of Banff, in his history of the Highland and Agricultural Society, much information is given about the modes of cultivation and the quality of the horses used by farmers. Previous to that time, it may be mentioned, prizes had been awarded by the Society of Improvers in Edinburgh, the first in 1759, when the premium of "15 guineas for the best draft stallion was won by William Whyte, tenant in Bows, Polmont, for a bay stallion called Red Robin." "In Ayrshire," writes Col. Fullarton, of Fullarton, "the horses are short and active on their legs, hard in hoofs, large in arm, and very deep and powerful in the counter.

It has been remarked that the Clydesdale has been improved as regards size and strength during the past thirty or forty years, or since the period when Young Clydesdale's type was fashionable. A good deal of this is due to the admixture of blood from the south, which has, however, been done at the risk of losing ancient important characteristics of activity and quality. Those breeders who have worked in this direction have generally, however, kept the Clydesdale type in view, and no doubt many of the animals brought back were crosses from the Scotch horses or mares, which the south country buyers purchased from time to time at the Scottish fairs,

but the pedigrees of which could not, unfortunately, be traced. The breed, therefore, has not been so much improved as some writers would try to make out, and at Kilburn Show the merest tyro in horses could distinguish in their classes the Clydesdales from the more ponderous but less active draft horses of the English shires.

It is well known that the Clydesdale owes its quality and other good characteristics to the pasture — sluggishness and coarse, greasy legs being the characteristics of animals reared in low-lying lands with moist pastures, while on dry hill, or mixed sandy lands, the grass of which contains plenty of lime, active animals, with sound, clean legs and healthy, durable hoofs are bred and grazed to advantage.

The Clydesdale horse, in the ordinary "coup"-cart steps freely out; and the business-like fashion in which he will lay his whole weight into the collar and drag heavy loads up hill, stamp him as a splendid work horse. In the streets of Glasgow he is possibly seen to the best advantage. There he is to be met with at every corner singly dragging heavily-laden lorries, to which in London a pair would usually be attached. Though active, he is generally possessed of a good temper, and is easily broken.

His constitution is, as a rule, very healthy, and he stands wet possibly better than any other particular breed of horses.

His many qualities have gained for him a very heavy demand during the last fifteen or twenty years; and large numbers of our best brood mares and noted stallions have been exported to Australia and New Zealand, where the breed is in particular favor, and not a few have gone to the United States of America and Canada. This demand has, during the last few years, caused a very heavy rise in the price of good, shapely, well-bred animals which are likely to breed well themselves.

Twenty or thirty years ago, £100 would have bought the best brood mare, but during recent years £300, £400, £500, and in some cases larger prices have been realized for such; while prize-winning fillies of one and two years old have brought from £150 to £200, and animals not so successful from £80 to £120. The demand for heavy brood stock from the Colonies, though contributing largely to the increase, has not been the main cause, which is to be found in the heavy demand for good cart-geldings for street traffic. Three or four years' work on the streets of Glasgow, kills many of them, and the very best do not last longer than eight years, so that the work of replacement continually goes on.

Enormous though the advance in the price of mares during the past few years has been, it is nothing compared to the increase in value and service of stallions. Ten years ago, £500 would have been esteemed a fabulous price for a stallion; but recently animals have been reported as selling for £1,500. A comparison of the service fees during the past half-dozen years will indicate the extent of the rise, and is possibly more reliable than a comparison of the prices.

The rise in price has, no doubt, been largely owing to the brisk competition for good stallions at the Glasgow Agricultural Society's stallion

shows; and the key-note to the liberal terms was, indeed, first sounded by the Glasgow Society itself. When it is taken into consideration that the Society allows each horse to serve eighty mares, it will readily be seen that stallion hiring has become, during the last few years, a much more remunerative business than it formerly was. The rapid growth of the Glasgow Society's Spring Stallion Show calls for passing notice. In 1861, when the committee of the Glasgow Agricultural Society met in a corner of the Cattle Market, on market day, to select a horse for the district, at a premium of £40, only three animals were brought forward; while in 1877 there were brought forward 209 stallions, and premiums amounting to £4,000, exclusive of service fees, were awarded. Indeed, the Society has been forced to arrange a special day for the exhibition, and to rent for the occasion the whole area of the market.

I quoted from Mr. Dysart's report to give his opinion of the French horses.

I will now give you the opinion of Professor George E. Morrow, a gentleman well and favorably known to the farmers of Wisconsin, who visited Scotland, and in a letter to the *National Live Stock Journal* of September, 1879, has the following to say of the Clydesdale horse:

Out of the 253 entries of horses at the Highland and Agricultural Society's show, 190 are of "horses for agricultural purposes;" and although the name Clydesdale is not mentioned in the catalogue, these are all more or less pure specimens of that breed. A number of the leading prize-winners were bred by Mr. Drew, whose views on making use of English blood are known; and it is quite probable that a good many of the horses shown have some mixture of blood; still it is a Clydesdale show, and a very fine one it is. I did not arrive in time to see the judging, but have seen them in three parades, and have examined the horses in their stalls. There are seventeen stallions over three years old, out of twenty-four entries, and among them are the best of the breed, although the noted old Darnley is not shown, and Druid, first at Kilburn, appeared in bad condition, and after taking second prize, was removed from the ground. The winner, also winner of the silver cup as best stallion for agricultural purposes, is Luck's-All, six years old, owned by David Riddell, and bred by Lawrence Drew. He is of large size, smooth, symmetrical, and has been a great prize-winner. He slightly disappoints me; why, I can hardly say, for he is clearly a very fine horse. The three-year-old stallions were also a large and very fine class, some of them being very fully developed. The first here, again, as also in the yearling class, was bred by Mr. Drew. The two-year-olds and yearlings seemed to me more uneven in quality. The first-prize colt in the last class is a remarkably fine one; but some were quite plain.

The mares struck me as a very fine lot. Those with foals at their sides

were uneven; but the first prize mare is a very noted prize-winner. She is pronounced, by so competent a judge as Mr. Macdonald, of the *Scotsman*, as "altogether a good specimen of a typical Clydesdale." I find I noted in my catalogue, as she passed me, "lightish in bone; a little leggy; fine action; good bone, and good muscle." She certainly is a remarkably fine mare; but, as my notes express, she seems to have less depth of body than we look for in a draft horse. For American "agricultural" use, I should count her very fine. The class of mares in foal was larger and better. The first prize and cup, as best mare in all the agricultural classes, was given to a mare more after my ideal of a draft horse, which, however, is not that of a huge, slow-moving mountain of flesh. She is only four years old, but is well matured, and has a capital body. I asked two or three good judges, as this class of 11 were being paraded, the probable value of the lot, and each gave the same answer—"about £3,000." The first prize yearling stallion was purchased, last spring, for 385 guineas.

Without further mention of individuals, I may say I am well sustained in my former appreciation of the merits of the Clydesdales, and yet I see they are not free from defects; most of which, however, seem to be found in all breeds of large horses. I do not think any horse shown here is so heavy as Jonnie Coope. Most are bays or browns; a few blacks, one or two chestnuts, and one gray gelding. White on the face and feet is found on most, but not all. Heavy feathering, or hairy legs, is liked—I wish it was not. I have noticed no indications of bad temper. The action of many of the best horses is very good, especially their walk; the long step being exceedingly good. On the other hand it must be said a good many have not first-class feet nor legs, although in these they will average better than the English cart horses. Some even of the prize-winners have faulty pasterns and hocks. A lack of depth in body is also not an unknown fault; and a good many have far from a prominent, bright eye. Much importance is attached to the feet and legs; but it seems to me, in some instances, that, while flatness of bone is preferred, a large-limbed horse is better, even though his joints be not clean.

Most of the horses are shown in high condition; but I was glad to see that a good many of the yearlings gave little indication of having been forced. One practice I hope will never become common in America—that of either docking the tail, or cutting the hair off close, leaving about eight inches of the bone nearly bare. The yearlings and two-year-olds were shown with their tails as nature grows them, and I see no reason for being ashamed of them.

Aside from the agricultural horses, some fair hunters and roadsters, a very few thoroughbreds, and an interesting, miscellaneous collection of ponies are shown. There is no room for complaint of excessive attention to fast driving. Not a horse has been shown in harness. A very little "jumping" is shown each day—to-day with a slight accident as a result. The interest in seeing these horses jump rather low, extemporized hedges, walls, and ditches, I have not found intense in my own case.

As Professor Morrow is not a breeder of horses, and is supposed to be unbiased in his opinion of horses, I think his good opinion of the Clyde horse will have its influence in this state. I will now give another extract from the *National Live Stock Journal* in regard to this breed of horses.

White markings are now very common, and have come to be regarded as a sign of purity of blood; few of the Clydesdale horses of the present day are without white on one of the legs, while a white star or stripe on the face—"ratch," as some breeders term it, if of the latter form—is highly prized.

In examining a horse when standing, a good judge will, in addition to running his eye over the various points, see that he stands even and firm on his feet, which in some horses are inclined slightly inward. To be the least inclined outward is a bad fault, and one which gets worse with age. As regards the hind legs, a glance will tell if they are all right with the animal and hocks close to each other, and the feet at the proper place for supporting the weight of the body, while at the same time giving the animal the fullest power for the use of the hind leg, in which lies nearly all the propelling power.

In walking, the horse should, if approaching you, come with his head well carried, and with an apparently measured stride, lifting his feet well off the ground, and placing them down again regularly, evenly, and with apparent deliberation.

On a side view one can notice if his action be even, *i. e.*, if his fore and hind action be in unison; for in horses with long backs and weak loins the two ends seem to be under different control, and the hind legs, being in a manner dragged with the toes along the ground, an unpleasing effect is produced.

In going away at a walk, a horse should plant his hind feet forward as deliberately as his fore ones, at the same time raising and bending the leg at the hock, which should be evenly carried forward. If the hocks are turned out in moving them forward, the action is not good; and a Clydesdale breeder considers this an exceedingly bad fault in either horse or mare, though it is one which is commonly overlooked south of the Tweed.

In trotting, the horse should bend the legs at the knees and hocks, and from a hind view the inside of the fore hoofs should almost be seen at every step. If the animal be inclined to move wide behind, this fault will easily be discovered at the trotting pace.

Undoubtedly the place where the Clydesdale horse is seen to the best advantage is at work; and there can be no finer sight to a lover of the draft horses than a West of Scotland plowing match. At such gatherings thirty or forty pairs may be seen at one time, each yoked abreast to the plow, moving slowly along, with that decisive, long, measured step which is one of his finest characteristics. He proceeds very cautiously withal, as though

he were well aware that the success of the plowman in a great measure depended upon himself.

The animals are all guided by words from the mouth of the plowman, reins in many cases being dispensed with altogether.

I have said this much of the Clyde and Percheron horses as they are the principal breeds that are being imported and bred in this country. (So you can pay your money and take your choice.)

THE ENGLISH CART OR SHIRE HORSE

is being imported into this country to a limited extent. I recollect over thirty years ago of reading in the *New York Tribune*, a description of these horses, by Horace Greeley, upon his visit to Liverpool. Greeley said a Liverpool dray horse could haul a New York dray horse and his load.

The *National Live Stock Journal*, in describing this breed, says:

These are now the largest draft horses known, and with these the Clydesdales have been so extensively crossed that it is often difficult to tell just where the Clydesdale leaves off, and the Cart or Shire horse begins. It is, as the name indicates, an English breed, and the stallions frequently reach enormous weights—considerably over a ton. In color they are more often black than otherwise, although bays and browns are occasionally seen. They have not been so largely introduced into this country as the two other draft breeds mentioned, the impression having prevailed that so very large and clumsy a horse was not suited to our wants.

THE SUFFOLK HORSE.

The same journal, in speaking of the Suffolk horse, says:

We have often wondered why the Suffolk breed was not more popular than it is in the United States. It has seemed to us that, as a breed, the Suffolks were better adapted to the necessities of our agriculture than the more ponderous draft breeds, and yet we do not remember having seen a Suffolk horse in the show ring within the past ten years. Indeed, the breed is practically unknown in this country. The English breeders of Suffolk horses have not been aggressive, but have been content to jog along without proclaiming the especial merits of their horses, while other breeds, more striking on account of their greater size, have monopolized the attention of buyers for the American market—whether wisely or not, we shall not attempt to decide. Personally our knowledge of the breed is limited; but from what we do know of its characteristics we are free to say that we shall be glad to see them more extensively introduced into this country.

Concerning the color of the Suffolk, we find on page 27 of the stud book the following:

The recognized color is chestnut. Bays were very prevalent some years ago, but the presence of that color can, in nearly every case, be traced to the introduction of extraneous blood. Of the chestnut there are seven shades — the dark (at times approaching a brown-black, mahogany or liver color), the dull, dark chestnut, the light mealy chestnut, the red, the golden, the lemon, and the bright chestnut. The most popular, the most common, and the most standing color is the last named. The bright chestnut is a lively shade, with a little gradation of lighter color at the flanks and at the extremities, but not much. It is, in most cases, attended with a star on the forehead, or thin "reach," "blaze" or "shim," down the face. The flaxen mane and tail prevalent one hundred years ago, and occasionally found at the present day, are usually seen on the bright chestnut. This shade is also not unfrequently shot with white or silver hairs, hereditarily distinctive of certain strains.

The red chestnut is a very popular color; and a red chestnut is almost sure to be a whole-colored horse. There is no variation of shade in it, not even at the flanks, quarters, or extremities. It is said to come of a taint of bay origin, especially the lighter variety — the cherry-red.

The golden is a beautiful color, not many removes from the bright chestnut, but is not unfrequently faced up with white heel behind. The lemon is a very light golden shade, known sometimes as the "yellow" chestnut.

I have given this extended history of various breeds of draft horses, so that farmers who have not had an opportunity of reading the stud books may know something of the history of the draft horse, or horses. I must acknowledge that the histories of the various breeds are not very satisfactory, nor are they of as much value to the average farmer as a guide, as the historians may suppose. Yet a history to show that a breed has been long enough established to be reasonably certain to transmit its good qualities to the offspring, is certainly valuable to all breeders.

One of the greatest drawbacks to our profits from farming is the breeding of scrub stock, and scrubby horses are the most unprofitable of all the scrubs raised on the farm. The country is overrun every spring with scrubby stallions, with high-sounding names, that any farmer who has any horse sense would not use. Yet they find plenty of customers. This does not speak well for the intelligence of the farmers. But all farmers do not use or breed scrubs. There are many

intelligent farmers that are anxious to have the best horses stand in their vicinity. Yet there are but few that are willing to pay the prices that are paid, and have been paid for many years, where good horses have stood. This is one of the greatest drawbacks to the introduction of high priced horses in some sections of this state. The risk to life and health of a valuable horse is not always taken into consideration when a high price for service is asked. Yet such risks are very great.

In selecting a draft horse we should keep one important point in view: that is, that he has a good constitution; and also that he is of kind, gentle disposition. A horse will transmit both these qualities to his colts, but will not transmit his flesh, and as flesh frequently hides deformities, many are deceived by appearances. Horses are generally too fat for the best interests of the owner, or the man who hires their service. I need not describe all the desirable points in a good horse. But one other point I wish to recommend, that is a good, heavy bone. There is no danger of horses' legs being too large, if sound, to cross with the light boned mares owned by most farmers. In fact a good draft horse should be built so as to be able to pull a heavy load. Having short, heavy legs, broad breast, deep chest, short back, broad rump, stifle heavy and well down to hock. With such horses, farmers can do more and better work on our farms than we are now able to do with the light horses in general use. I do not expect soon to see all farm horses modeled after the Rosa Bonheur style. Yet her portraits were not overdrawn as can be seen by any one who will visit some of the best horse shows in this country.

In conclusion, I wish to say that Wisconsin has the soil and climate that is well adapted to raising first-class horses, and our state and other fairs show that we are awakening an interest among the farmers that I hope will continue until we shall be second to no state in the Union in the breeding of the draft horse — the farmer's friend.

DISCUSSION.

Mr. Robbins, of Platteville — I am surprised that the best horse in the state of Wisconsin has not been mentioned. The best breed of horses in the state, or that ever will be, has not been mentioned in that paper. I allude to the Morgan horse. (Applause.) There is a span of horses in the state of Wisconsin to-day that came once to Madison with the Clydesdales. The farmers were not far from where I lived. One of the Morgan horses weighed 1,175, and the other weighed 1,200. One of the Clydesdales weighed 1,600, and the other, I think, 1,700. I think that was as long as seventeen years ago. Now the Clydesdales have gone with their master to tell what good deeds they did here, the powerful plow that they pulled and the truck that they hauled. The span of Morgans you may see to-day, one 26 and the other 27 years old. They have to be kept in a yard. Last year they ran out, but you can not prevent their running out, because there is not a fence on the farm that will hold them. I saw them no longer ago than yesterday morning. You go where they are to-day and you will see them in the barnyard, and you have to water them there. They have not had a mouthful of grain, not an ear of corn or any oats, this winter. They did not have last winter, and they did a good summer's work on the farm last summer. I suppose they would not weigh over 1,000 to-day. Like their master, they have passed their meridian. The sun is not over their heads to-day, but it shines in an oblique direction upon them, but for all that, there is not a blemish upon them of any description. Cold fact is worth a thousand theories. I have driven that team fifty miles a day, twenty-five with a load and twenty-five empty, not one day in the week but three days in the week. I live twenty-five miles from Galena and have driven there and back with them three days in the week. I have driven from Platteville to Madison with that team in a day. It took this gentleman two days to come here with the Clydesdales.

Mr. Ford — I think I can indorse all that Mr. Robbins has said about the Morgan horse. I have owned a Morgan horse for ten years. He is now I suppose twenty-five years old.

I suppose he has carried me further than would go around this globe, has always been faithful and true, always gone faster the more I pulled on him, always wanted to run away, and, when he got a chance, never would do it, kind and true, tenacious of life, and with more strength for their weight than any horse I know of. If any one wants to know about the history of the Morgan horse and what he has done, he wants to get W. H. H. Murray's book on the American horse. You will see there the history of the family of horses from the Green Mountain Boy. The English with their thoroughbreds can show nothing his superior, and that horse's pedigree nothing is known of. You cannot find whether he had any blood in him at all, and yet he started a breed of horses whose blood, like a stream, has flown through every channel, through the thoroughbreds that have been imported from England, through the Star and Messenger, and all those horses, and to-day you can pick out that horse just as distinctly as you could the original horse. What has been said by Mr. Anderson about the draft horse was very well said, and I think the farmers of Wisconsin very much need a little of that instruction, but that the draft horse is going to be the farmer's horse I do not believe. These great cold-blooded horses that weigh 2,000 pounds and sink into the mud of our roads and draw four tons, are the horses for our cities, for our railroads, for all this heavy work, but they have got to be bred for that special purpose. The American farm horse is another thing. If the American farmer were going to be satisfied with the qualities of these great, heavy horses, he might as well take the mule, because the mule is longer lived and tougher, and kicks a great deal harder occasionally. I think something must be found and bred in America intermediate between the American trotting horse and the great Scotch draft horse. What shall it be?

Mr. Anderson describes very nearly my ideal of what the farmer's horse should be, in what he calls the Little Percheron. I saw horses very nearly similar to that in Paris in 1878, that were before their 'busses, that would draw fifty and sixty people at a load on a round trot, going between

the city and the exposition. The 'busses there are as large as three of ours, and they were loaded down on the top, not less than fifty people in them, and I think I have seen sixty, and those horses would step right off on a round trot drawing that load. Those horses were a hardy, muscular horse, weighing, I should judge, 1,300 or 1,400 pounds a piece, with heavy shoulders and square rumps, and strong, fat legs. They did not look like our Clydesdale horses, or our heavy Percheron horses. They looked like what might have been a cross between an English thoroughbred and one of these heavy horses. It seems to me we want to get something of that kind for a farm horse, something that will not sink into the soil too deeply, that has a lively, quick step, that is lively on the road, that can be used for general purposes, and strong enough to draw the loads on the farm, and we have got to breed that horse; there is no such breed that I know of.

Sen. Anderson—How do you expect to breed them unless you breed from a heavier horse to our mares? A cross between a heavy horse and a light mare will produce a medium horse.

Mr. Ford—I understood the recommendation of Mr. Anderson to be these heavy draft horses.

Sen. Anderson—You misunderstood me. I said if you cross a 2,000 pound horse with a 1,000 pound mare you would not probably get more than a 1,500 pound horse.

Mr. A. A. Arnold—I think we breed horses the same as we do cattle, for the money we get out of them. Farmers raise colts for profit, but while we do that we may make mistakes that we will feel in the future. This indiscriminate use of heavy draft horses all through the state, I think, will ultimately injure the horses of the state of Wisconsin, and I think that is the opinion of the farmers generally. If we could be more careful in our breeding and breed to heavy mares and breed for draft horses for use in the cities and sell our horses in that kind of a market that no doubt would be profitable, but the heavy draft horse is not the horse for the farm for general farm purposes, and any man that has observed can not help but have noticed that an ordinary sized, well bred American horse is far better on the farm

than a heavy draft horse. We talk about scrubs. We may call every American horse a scrub. In my opinion many scrubs are better for the farmer than heavy draft horses, if he wants to do work on the farm and travel on the road. I do not say they are more profitable to raise. I grant that at the present time there is more money in raising heavy draft horses than any other class of horses. It is a sure business. It is surer than to raise speed horses, but he should be careful and not breed them on light mares, because then he will have something that is good for nothing; he will spoil the blood on the mare side and the horse side too. A horse that weighs over 1,300 or 1,400 pounds is no better for the farm than if he weighed less. I had rather have a 1,200 pounds horse on the farm than a heavier horse, and 1,200, 1,300 and 1,400 is better on the farm than 1,600. Any man that has tried plowing on soft ground with heavy horses must have observed the wasting away of their flesh by sinking in the ground. If they have a hard road, doubtless they can draw more. They are better for draft, but not as good for speed or plowing in low ground.

Mr. Boyce—I think Mr. Arnold has overshot the mark when he ruled out a 1,400 or 1,500 pound horse for farming purposes. I once raised a pair that weighed about 1,800 and I tested their power of pulling with a pair of common horses. I had a piece of tough, hard ground to break up, and I put four on it. The ground was very dry, and we could not plow it; we had to give it up, concluded it was a bad job and we would have to get a breaking team, and go at it in the old fashioned style. I had this heavy team that I was breeding for the fair, and I did not want to work them very hard, but after the fair was over I concluded I would test that plowing with them. I saw the team start and calculated they were going to handle it perfectly easy. I told the driver not to drive them too hard because they had not done anything. He was a Canadian, and a good judge of plowing and a good plowman. I asked him how he came out, and he said that he could plow a third more with them than he could with the four, and do it better. That same team could get to town with fifty bushels and get back

home, whereas your common scrubs would barely get to town. The Clydesdale horse, as far as I know, is an excellent walker, and one of the best breeds on the farm in my judgment. In dragging, you take a team weighing 1,600 or 1,700 and plow your forty acres a day and do it up nicely. If you go poking along with two drags and light teams, you have used up almost twice the amount of oats, you have hired an extra man at twenty dollars a month, and the work about even. Give me the big horses and one drag and as few hired men as possible. I think that a farmer who attempts to farm it, and use light teams and a good many men, is fifty years behind the times. The more a man can get out of his hired help by the farm implements he uses, the better he is off. If a farmer can drag forty or fifty acres a day it is a good deal better than ten or twenty. He does it better, for this fast dragging is one of the greatest improvements in the business. About forty years ago when we used to drive a drag with fifteen teeth, and a yoke of oxen, I thought it was pretty good work, but now it is in the shade when we can use drags with one hundred teeth. The farmers are the last men in the world to learn anything. You take the miners, and you cannot sell them one of these little scrubs. One gentleman referred to the mule. It is a good animal, but if you have one you want a big one the same as you want a big horse. You go up into the lumber country and you can hardly sell them a scrub team. They want big ones.

Mr. Ford—I think the gentleman misunderstands me. I think that for the pinery and for the city there is plenty of call for that kind of horses, but I do not think it is the horse for the farm. I am not talking about scrubs, but I think a horse weighing 1,300 or 1,400 pounds, with good activity, is the thing for the farm.

Mr. Charles Clark—I heartily indorse every word Mr. Robbins said about the Morgan horse. I have a horse at home thirty-three years old and not a blemish on her. She has traveled far enough and done hard work enough to break the heart of any four draft horses in existence. For the last eight or ten years I have indorsed this principle of big horses.

As long as old Dolly was in condition I always had something that I could depend on. If I wanted to go anywhere I did not have to do as I would with a lunk-head, go afoot, but I hitched her up and got there, and I believe to-day if all other families were to be wiped out of existence and only one left, if we would have the original Morgan type and commence with them and from them raise horses for the world, that there are more good qualities combined in them than any family that ever existed.

Mr. Gill — This is a subject that interests me as much or more than any other that will be before this convention. I thought I would like to get up when Sen. Anderson sat down and indorse every word he said, but I am glad that Mr. Boyce took the floor and gave me an opportunity to offset something that he said in reference to these big horses. I was raised where they raised big horses. I drove a team of four horses from the same mare. The heaviest one weighed 2,240 pounds, and probably there was not more than fifty pounds difference in their weights. I know something about these heavy horses. I often thought in those days if I ever got from under their feet I never would get there again, but when I came into the state of Wisconsin I found, as I thought, that their horses were too light, and I have tried to get into a somewhat heavier grade of horses. I believe Sen. Anderson when he was on the floor did not say a word against heavy horses being profitable to breed, but I think what he said was that they were not really adapted for the farmers. In spite of what Mr. Boyce has told you about his breaking exploits with this big team, I think there is only one place on the farm where a team weighing over 1,200 will do any good, and that is in breaking grass sod. I can take a team of that weight, and in any other place than breaking grass sod, I can beat them to death. There may be money in them, but when you come to adaptability for farm purposes a large horse is not there, and never will be in this climate. He can not stand the climate. I mean by a large horse anything over 1,400. I do not call 1,400 a heavy draft horse, but when you get over that I call him too large.

If you want a large, sizeable horse you are not going to get it at one step.

The gentleman spoke about his old Dolly. I would like to shake hands with him and with old Dolly, too, if I knew her. There is no question but that is the way to fetch them up with that old Morgan mare of his, but not to take but a step at a time. You can take the old Morgan horse for a foundation, and you can grow up to these draft horses, and when you get a horse built on that foundation and get him up to 1,400 pounds, you have a horse there! But I do not want any of your 1,600 pound horses. They are no use to me. I am of the opinion that a horse that weighs from 1,100 to 1,200 pounds is the best horse for actual use on the farm that a man can get, but if you are breeding to make money you have got to breed big horses at the present time, but this breeding horses is almost as much a matter of fashion as women's bonnets. You can never tell what will be in fashion next year, and you have got to breed horses to suit the market. You can not be sure you are right. They will probably be out of fashion in a year or two, but I think a well bred horse that weighs about 1,400 pounds will always be a marketable article.

Mr. J. M. Smith—I want to say a word in favor of the Morgan horse. In 1866 I bought a young Morgan horse said to be a full blood. I set him at work and worked him as hard as a horse can very well work, and drove him hard from that time until about one year ago, when he was near twenty; we drove him constantly. I never struck him a blow with a whip. I never saw one of my boys strike him a blow with a whip, not enough to hurt. During that time I had as many as six or eight horses. He laid them out one after another. One would last six months, and another a year, and another perhaps two years, but he broke down every one of them; and about one year ago, when he was apparently just as good to work as he ever was, one of my other horses broke loose one night in the stable and broke his leg and we had to kill him. But I do not believe there is as good a breed for all work on the farm on the face of the earth as the Morgan horse. They will work and they

will travel. If I wanted to hitch him to the buggy I could make my eight and ten miles an hour, and he would not even puff or blow over it, while the horse by his side would be worn out entirely.

Dr. L. A. Squire, of Poynette — There is a race of horses that do not seem to have any friends here, that is, the Hambletonians. I was brought up in Vermont where the Hambletonian lives. My idea of the farmer's horse is, give me the Hambletonian and the Morgan and you have got a good reliable horse, and you can go to church on Sunday without starting the day before.

Sen. Anderson — I would like to say a word in conclusion. If any of you gentlemen want a fast horse you had better go and get Jay Eye See. My subject was the draft horse, and the draft horse is even a heavier horse than the farmer generally uses. I only urged that crossing common farm mares with draft horses would produce a good farm animal. I do not advocate putting on your farms horses weighing a ton. I want to say to the farmers of Wisconsin that many of you do not know anything about heavy plowing. When you come to plowing ten inches deep, as you cannot help but do or abandon raising crops on your farms, the same as they are doing in the eastern states, you will have to have a heavy team of horses.

Charles Clark — To change the subject a little, horses get lousy as well as cattle. I have tried a little remedy which I never heard of till this year, and it is the best thing I ever saw or heard of. It is a powder known as the Persian insect powder. It can be applied any weather, at any time, and very readily. It has been very commonly used in households for insects. Last year the lice got amongst my cattle, and I was preparing a remedy of snuff and oil and one thing and another, and the druggist suggested that I try the Persian insect powder, which he said was harmless, and I took a tablespoonful of it and applied it to a heifer that was literally covered. The result was that the next day I could hardly find a live louse. I tried it on a colt and the effect was the same there. I got half a dollar's worth and went through the herd, and I virtually exterminated the lice

from the whole herd. To show you how harmless the powder is, my daughter's canary bird got a little lousy. They lifted the wings and put a little of the powder on which killed every one, but did not injure the bird at all. You can buy the powder for eighty cents or a dollar a pound, and a pound of it will go over forty head of cattle. I believe it is an effective remedy for lice on cattle, horses and fowls. I do not know but it is good for ticks on sheep. I never tried it there. It is applied with a little bellows, which costs twenty-five cents.

THE HORSE.

By GEORGE E. BRYANT, Madison, Wis.

At the February Convention of this Society in 1873, at the request of your then secretary, I read a paper on "Jersey Cattle." I remember that in closing the address I used these words: "I have spoken plainly! I beg no man's pardon! if I have stepped on anybody's toes, I am glad of it! I meant to do so!" I believe that address was the "seed" that produced *equality* "before the law" on *fair* days, of the *dairy* with the *beef* breeds. Your present "lion hearted" secretary has asked me to say a few words on the subject of horse breeding, and I preface my remarks by saying that the horse that is of the greatest use to, and is the best friend of the farmer and everybody else, is a well bred, polygamous horse that weighs from ten to twelve hundred pounds. By a polygamous horse, I mean a horse who comes from an inbred family, and *not* a mongrel from all families. Britain has two families of horses that reproduce themselves. One is the "thoroughbred," the "blood horse," the "racer, or running horse;" the other is the "Clydesdale," bred to themselves, these two *breeds* of horses *always* produce a certain type of a horse, and the breeders of that country are too sharp, too smart, to mix their horse bloods — they keep them clear and pure as they do their flocks and herds.

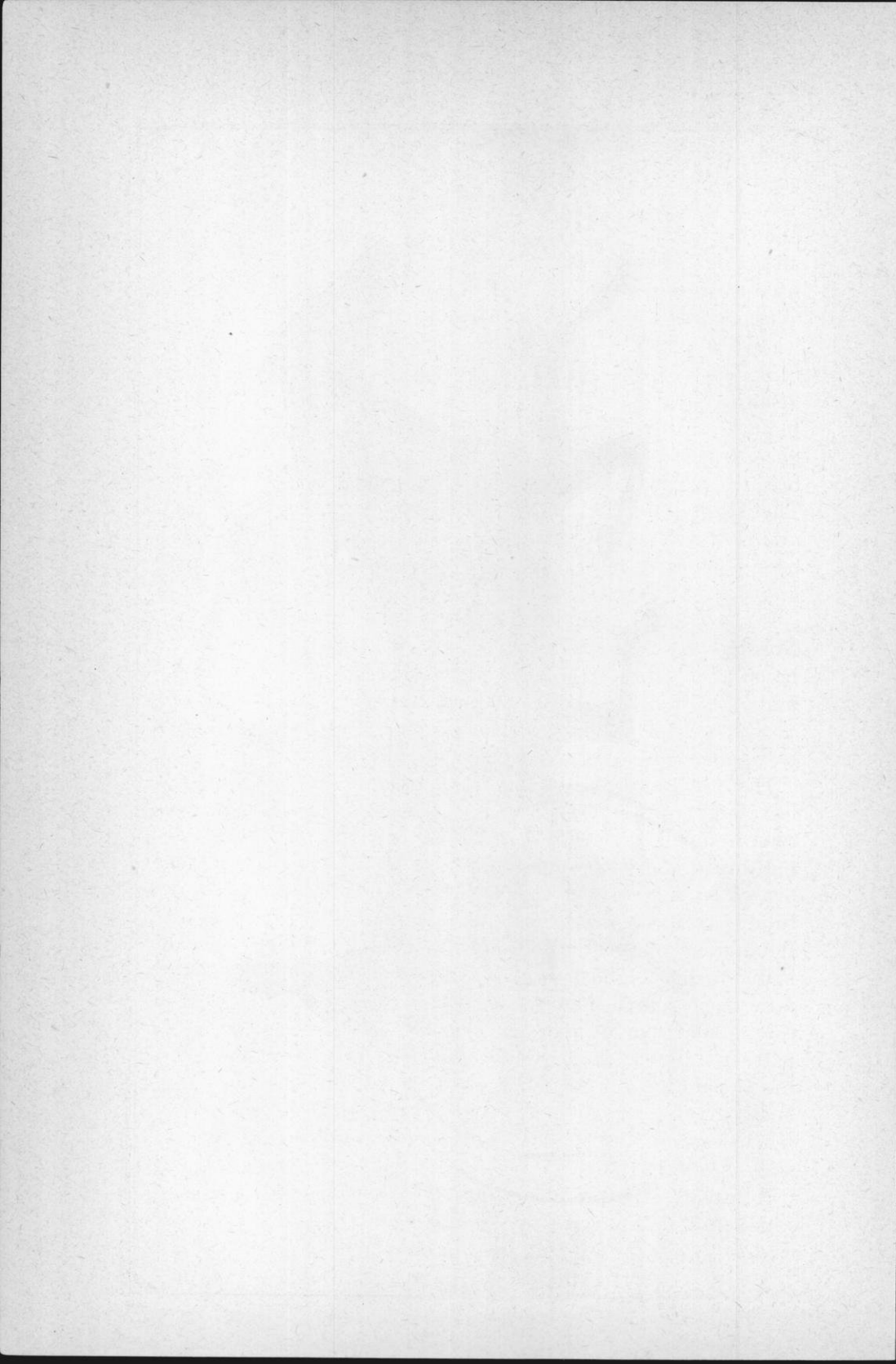
A horse that weighs more than twelve hundred pounds is only good in this country to drive *to* funerals; he is too slow



Jay Eye See, 5 Yrs Old. - 2-10 $\frac{1}{2}$

MOSS ENO CO. N.Y.

PROPERTY OF J. I. CASE, OWNER OF THE CELEBRATED STALLION "PHALLAS."



and logy for us fast Americans. In France the Norman is as valuable for the shambles as he is for work, and the surplus *beef* horses of Europe find a market in *meat* stalls of all French cities; but in the United States their flesh is only used by glue factories, and as food for the "American hog." Wisconsin is a good state in which to raise Clyde horses — when I say Clydes, I mean *thoroughbred* Clydes. The lanky, funky half-breeds are of little lasting value; they are like the "Shanghai chicken," short lived, with no gimp in their bones, joints or muscles. These half-breed "Clyde" horses are a good deal like the "Holstein" cattle — they have a great breadth of ribs and paunch, but are peaked at both ends. The Norman Percheron is a tender-footed animal, full of fat and fever; he has been bred for many years for beef, and as beef, is valuable only in France, our people don't relish him, and the "American hog" can live on clover!

If there is profit in breeding horses of either the Clyde or Norman breeds, let our farmers breed them pure, as they breed the "lordly Short Horn" pure. We might as well make the profit as to give it to the importer; get the mares as well as the stallions, and not be fooled or fool ourselves by raising half-breeds any longer.

The draft horse that is most profitable to raise, that readiest sells in the market, is the horse that weighs ten to twelve hundred pounds — that can pull the load that the half-breed, above mentioned, faints at the sight of — that can draw a plow, a cart or a coach, with some vim and with cheerfulness. That is a coacher and a merchants' delivery horse, that can draw the farmer and his wife to a three hundred pound buggy eight to twelve miles an hour, and who don't faint if he gets in the mud or snow. This is the draft horse that is the friend of man. These long prosy articles, so often extracted by our convention talkers, are written, or the writing is paid for, by these interested importers who are kept busy carrying the gold of the west to France and England, when we should raise what they import ourselves, or else we should establish our own breeding.

Kentucky bred running horses before the great rebellion. Since then, finding our people preferred trot to run, they have

sought to make all the world believe they alone could breed trotters, and too many Wisconsin men have "toadied" to them. I am one of those Wisconsin farmers, who believe there are as intelligent breeders, as pure water, as good grass, as white a people north of the Ohio river, as there are south of it.

So, too, a few cunning men have preached to our people that we needed great big horses, and that all we wanted was "Clyde" and "Norman" stallions! The get of these big horses from the mongrel mares to whom they are stunted, have too much dirt in their bodies, too little ivory in their bones, their brains are too thick, their blood too sluggish.

It is all buncombe to say that a pair of twelve hundred horses can't pull a plow and dig deep enough to raise a crop in Wisconsin. The fact is we plow too deep; just deep enough to cover and well mix the manure plowed under with the dirt, is the right depth to plow in Wisconsin. This talk about burying the top earth is another yarn of these big horsemen. The great cause of poor crops on long cultivated lands, is this idle talk of deep fall plowing; *burying* the mold that nature provides for the young plant to feed upon.

I have never known a man who engaged in breeding fast road horses or fast draft horses, but what made money by such breeding, and while I cannot say that farmers have lost money in raising these mongrel draft horses, they, or the men to whom they sold, have generally lost the horses themselves by death before they were twelve years old. This cross of imported stallions on common mongrel mares, has resulted a good deal as has the cross between the Indian and the white man — it may have been good for the white man, but it has terribly demoralized the Indian. A farmer, because he raises a fine, fast carriage horse, is not obliged to train him on a race track. If he can trot in three minutes off the plow, when four or five years old, he is always saleable at from three to five hundred dollars, and there is no fortune lost in that kind of breeding.

The kind of draft horses Wisconsin wants is such mares as Col. Wm. F. Vilas drives on his two-seated family carriage, as James Fisher drives on his furniture wagon, in the

city of Madison — either of these mares, "Catherine," or "Elizabeth," can out-pull any sixteen hundred pound half-breed in the country. Hitched to a wagon, they can walk off twelve to fourteen miles an hour without worrying, and they can snatch a sulky on the track, without training, in a manner that is "child-like and bland" to a jockey. I will give you a history of one family of horses, and show you how, by inbreeding, a man has not only made money, but has produced trotters, and while these horses are all trotters, they are also draft horses, weighing from ten hundred to twelve hundred pounds, and they can out-pull, out-walk, out-live, by *double* of years of usefulness, any of these half-breed, half-made mongrel draft horses so much "puffed and blowed."

I am sorry this experiment was not made in Wisconsin. I am glad it was made in California, for the men on the Pacific shore have the money and the *bravery* to compete or dispute with Kentucky for honors, and they do not bow down to either her blue grass or her arrogance.

On the 6th of May, 1862, there was foaled on the farm of Mr. O. N. Gould, of Franklin Furnace, Ohio, a colt whose dam was sired by "Old Pacing Pilot," the progenitor of the Pilot family, from which family came the queen "Maud S.," and the king "Jay Eye See." The sire of this colt was "Neaves Cassius M. Clay, Jr.," and this colt was named "Clay Pilot." When two years old he was brought to Wisconsin, and at that tender age showed his driver, Mr. Orrin Hickock, the unprecedented time in those years for a colt, of 2:28. The late Geo. C. Stevens, of Milwaukee, a cousin of the distinguished lawyer, Mr. Breese J. Stevens, of Madison, owned a mare of unknown breeding, which he called "Belle of Wabash." This mare was bred by Mr. Stevens to "Clay Pilot" and foaled in Milwaukee, in 1867, a black colt called "The Moor." This *Wisconsin*-bred colt when two years old — with four *yearling* fillies — was purchased of Mr. Stevens, by Mr. L. J. Rose — of the firm of "Sterm & Rose," proprietors of Sunny Slope Vineyards, San Gabriel, California, and taken to lower California, as a breeding venture. Of these four *Wisconsin*-bred mares, I have been able

to trace the breeding and history of but three. First, "Minnehaha," a daughter of "Nettie Clay," cousin in blood to "Clay Pilot. Second "Maggie Mitchell," a daughter of "Clay Pilot." Third, "Barbara," a daughter of "Bald Chief." These five Wisconsin colts were taken to Los Angeles, in 1869. In the spring of 1870, "The Moor," then three years old, was bred to some wild native California mares—there being none others in that country—these native mares, as Mr. Rose says, being of about the value of twenty-five dollars each—and they produced in the spring of 1871, eight colts, every one of which when one year old, could trot at the halter in better than three minutes. When this half-bred "Moor" colt crop was two years old, Mr. Rose sold seven of them to a gentleman up the coast for two thousand dollars each, keeping one that was lame from an injury obtained from jumping over a gate, and who afterwards turned out quite a trotter in "Tommy Gates," record, 2:22.

These half "Moor" colts were subsequently sold at auction, the mares bringing more than two thousand dollars each, for breeding purposes. Of these "Moor" colts, "A Rose" got a record of 2:37 as a two year old; "Sable," 2:26 as a three year old; "Becky Sharp," 2:37; "Daisy C.," 2:50, as a two year old; "Tom Stout," 2:32; "Blacksmith Boy," 2:38. When these Wisconsin bred mares were three years old, Mr. Rose bred them to the "Moor." "Minnehaha," his cousin, produced from him "Beautiful Bells," record 2:29; who being bred to a son of her mother's cousin, produced "Hinda Rose," record 2:19½; "Alta Belle" and "St. Belle." "The Moor" sired "Sultan," record 2:23; "Del Sur," record 2:24; "Sir Guy," record 2:28; "Silver Threads," record 2:35; "Atlanta" and "Mabel," about forty colts in all, and died. What was remarkable, there was not one of these colts but what could beat three minutes. "Sultan," in turn, has sired "Eva," 2:25; "Sweetheart," 2:21; "Ruby," 2:24, and others. So, too, "Del Sur" has sired "Don Carlos," 2:30, and other fast ones.

Mr. Rose, in showing a Wisconsin gentleman his colts, said: "I believe all the trot which came so uniformly

through the Wisconsin horse, "The Moor," came from "Clay Pilot," and that it is the Clay leaven that makes all the trot."

Mr. Rose has now, 1884, nine mares got by "The Moor," all of which, including their inbred daughters, as well as "Minnehaha," he is breeding to "Sultan" and "Del Sur." In short, Mr. Rose is rearing a Wisconsin Clay family in California from these Wisconsin bred colts and their produce, and what is true, they are *all* large and stylish, and they ALL trot. I find that at the coming state fair in California—for the colt stakes of three thousand dollars—there are entered ten grandsons of this Wisconsin-bred horse, and that both sire and dam of five of them were by "The Moor."

One of our large Wisconsin horse breeders who "toadies" to Kentucky recently said, that "the pleasure of breeding was in the uncertainty of it." It may be fun for a millionaire to know and feel that he is only going to get one first class colt in fifty, but that ain't what the farmers of Wisconsin want, and the farmers are the real breeders. What they want is to know that they are reasonably sure of a first-class colt every time. To do this Wisconsin must establish a family of horses, same as the noted breeders of cattle have established by inbreeding families of cattle. The farmers must follow in the steps of Bakewell, Charles and Robert Collins, Tommy Bates and Flat Creek Williams.

An old farmer friend of mine, who for fifty years has bred, raised, bought and sold as good horses as there were in the market, says: "George, I believe you are right. I think we have been breeding Poland-China horses too long and hain't infused Berkshire blood as much in the horse as we have in the hog; but what shall we do to begin this family?" My answer was this: buy the twenty daughters of Clay Pilot that are in Wisconsin. They will average eleven hundred pounds in weight and twelve years of age. You can buy them for \$500 each. Get a horse that is as close up to Andrew Jackson as you can, giving preference to his son Henry Clay, because he was never beat a heat or a race at the trotting gait. Stint these mares whose sire was Clay and Pilot and had no Abdallah blood to the horse you may

get, inbreed his sons and daughters, using your level head in selecting such as are to be mated, and in twenty-five years you will have a Wisconsin farm and road horse that will be more noted than were the Morgans of twenty-five years ago.

The old farmer's eyes glistened for a minute as he thought of the grand opportunity and of its probable glorious results. Then his face saddened as he replied, "I am past seventy years of age, and have not the time; some younger men must take up the work. I see it, but it is in my last days; tell your son he can accomplish this work, even though he commences in a small way with a limited number of mares, if he will adhere to this principle." No state has ever had such an opportunity. Henry Clay was the best son of "Andrew Jackson" because he had the best mother in "White Surry;" so "Clay Pilot" though lost to Wisconsin in self, was the best son of all the "Cassius M. Clay's Jr.," because he had for a mother a daughter of old "Pacing Pilot" and his daughters are worth in dollars to-day double the amount of a like number of any other horse's daughters in the state. All honor to the Hon. N. S. Green and H. C. McDowell, former officers of your society, for retaining him so many years within our borders.

WIND AS A FARM MOTOR.

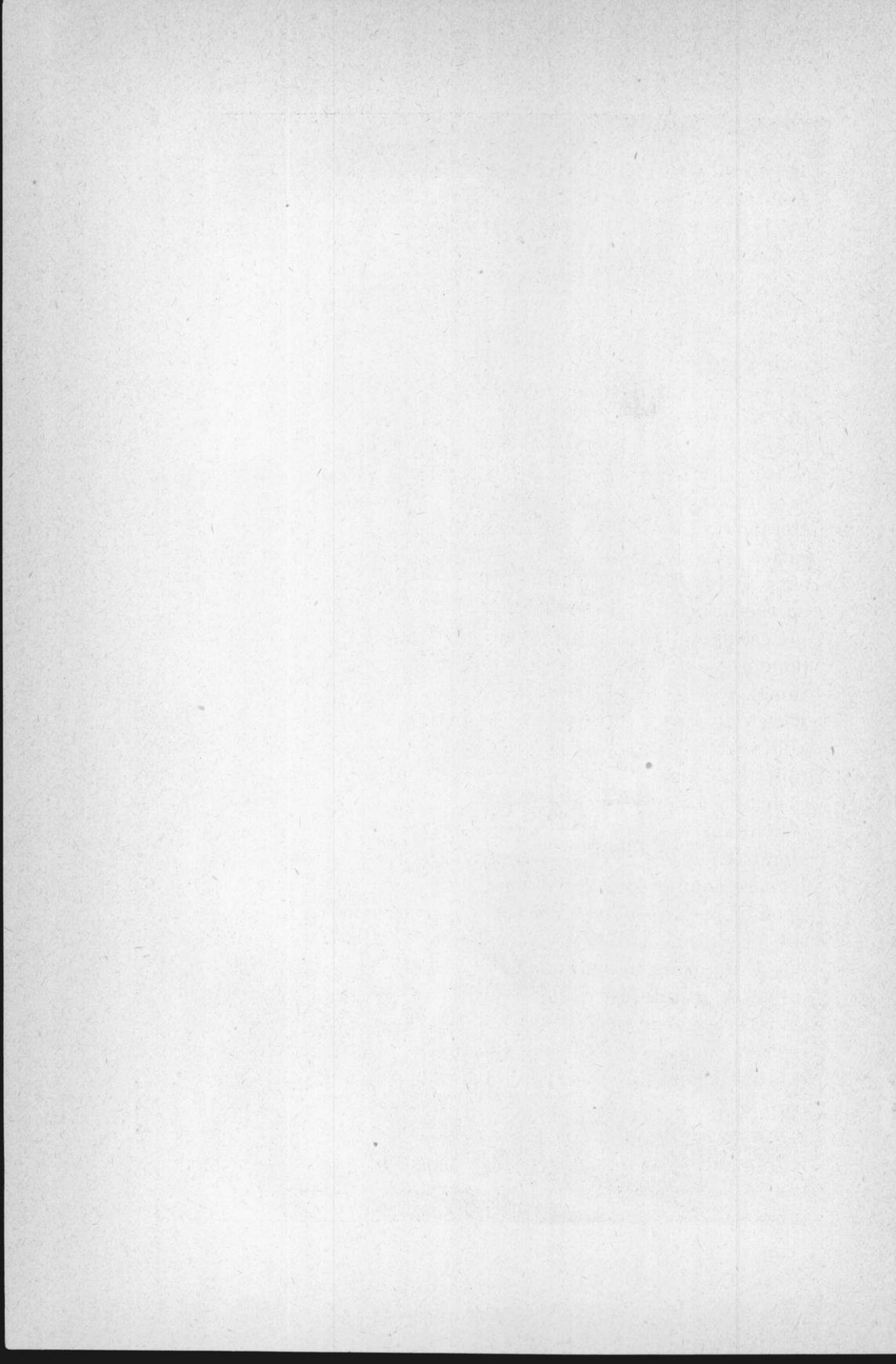
By C. D. Fox, Roscoe, Illinois.

A windy subject; but I propose to show it to be a practical one. And why not? Wind is first force of nature made subservient by man to the uses of industry; suggested no doubt by birds in their flight, by the nautilus with its membranous sail, and by the squirrel, coon and fox (apocryphal), crossing rivers dry shod on a bark or other light substance, spreading their tails to the breeze.

That wind is a power for evil, witness the destruction on land and sea in the track of the whirlwind, or the terror of man and beast at the first appearance of the dreaded cyclone. That wind is a power for good, witness the whitening sails



SUBURBAN WIND MILL WATER WORKS, AS ERECTED BY THE ECLIPSE WIND ENGINE CO., Beloit, Wis.



of commerce on every sea on earth, successfully competing with steam to this day, even in the British navy; witness the fertile plains of Egypt reclaimed from arid wastes by irrigation by the help of the antique windmills of the olden time. Witness Holland, beautiful Holland, fairest of the daughters of Europe, rise from the North Sea by the same agency. Also the draining of the Zuiderzee, a body of water nearly equal in extent to our lake Huron, being made year by year a veritable garden, mainly by wind-power; one of the boldest and most successful strokes of modern engineering.

But the real, practical application of wind-power, after all is of modern date; and thanks to the inventive genius, mechanical skill and business tact and push of *our* cotemporaries and countrymen, the Yankee nation has placed within easy reach of every farmer a wind-engine that is a marvel of useful industry if set to work and properly cared for.

Leaving out the account of the wind-engine in its more ponderous of towns, cities and railroad water-supply operations, or of driving heavy machinery, this paper has to do with our every day farm life and labor; and I think I am able to demonstrate that a sixteen foot Eclipse geared windmill is doing day by day, and month by month, and year by year, one-half of the manual and team labor on a farm of two hundred acres, mixed husbandry. And if I have occasion to mention "Eclipse" oftener than any other windmill, be it remembered it is not because there are no others as good or perhaps better, but because when I am talking about the "Eclipse," I know what I am talking about, as it is the one I am using in these experiments. I have no axe to grind, no personal interest in the manufacture or sale of *any* kind; therefore I can say my say without partiality, favor or affection. I have no interest to serve in this matter but the interest I hold in common with my brother, the average farmer.

A simple statement of my windmill experience is all that will be necessary in presenting my subject; and no doubt that will seem sufficiently extravagant to those who have not paid much attention to the late progress in windmill im-

provement. Three months ago I talked windmills to my visitors a good deal, but now I just set it to work and let it talk for itself, and they generally go away declaring it is only a question of time with them.

My first windmill was a ten foot "Eclipse" manufactured by O. B. Olmsted & Co., Beloit, Wis., and put up in 1866. Pumping was the main object, but thinking it capable of other work, we set it to churning (dash churn), then sawing wood (buck saw), and then grinding feed (ratchet grinder), with fair success. In fact, novelty included, it was pronounced quite satisfactory, and at the time attracted a good deal of attention. This was a lever mill, a common pumper, and all the attachments were worked by levers and quadrants or elbows. With a little ingenuity a ten foot lever mill can be made available for many kinds of work besides pumping. But to look back now over the lapse of say fifteen years at what we then thought a marvel of triumph, with all of its racket and clatter-te-bang and imperfect work it seems more like child's play. But the world moves, and so do windmills.

This mill did what we called satisfactory service about seventeen years. About two years ago, noticing the windstorms that were playing sad havoc all over the country, and being besieged by a cyclone insurance agent in addition to a thousand and one agents of other kinds, it occurred to me that the wind might be made to pay its own damages by harnessing it up and setting it at work, and now in the light of one year's experience, I would as soon think of dispensing with the horse, because he sometimes smashes a wagon, or steam because it sometimes bursts its boiler or ditches a train, or electricity because of its tantrums, as of the wind because of anything it has done or is likely to do. In the meantime the windmill factory in our neighborhood had not been idle, but had brought out a geared mill that was absolutely self-governing in the severest gale, and at the same time so sensitive as to do light work, as pumping, churning, etc., with almost no wind at all. I also became satisfied that a sixteen foot wheel is large enough, if properly made, and everything about it perfect in finish and adjustment, if as much care and skill is used in its construction and setting up as a first class

machinist would use with his steam engine, to do all the work that can be done on the farm by wind power, threshing included. Such a wheel and tower, and machinery to correspond, is not very expensive, whilst a twenty-five or thirty or forty foot wheel is so huge and costly as to be out of the reach, if not beyond the control of the average farmer.

Accordingly, last winter the old mill gave place to a sixteen foot Eclipse wind mill, straight-gearred, and my somewhat sanguine expectations have been more than realized, a result especially gratifying in these days when efficient and reliable farm hands are becoming year by year more and more expensive and beautifully less, until they are really an ornamental luxury few plain farmers feel able to sport.

I will now give what I consider a good tower for a sixteen foot wheel for farm use. Height, fifty-three feet to center of wheel, or high enough to carry the wheel above all objects that would obstruct the wind. Base, thirteen feet square, resting on eight-inch sills, firmly secured by iron rods to solid mason work of brick or stone, five feet deep and three feet square at the corners. The tower should be guyed at each corner from near the top, to solid posts, set say, seventy-five feet from the base. If a portion of the tower is sealed up and roofed, it will add to its strength and durability. In this case we sealed three stories, two of ten feet each, and one of eight feet, the first for mill, the second for grain bins, the third for shelter for gearing, sheaves, etc., used in connecting tower with barn and wood yard. Above the roof, sixteen feet lattice work to platform, twelve feet in diameter, leaving eleven feet of naked tower to dome. The platform is surrounded by two and one-half feet paling, to guard against accident from falling, and a little for ornament. The tower is ascended from the ground to the third story by winding stairway on the outside, with landing and door at each story, and by ladder the rest of the way to platform, and from platform to dome. Windows where needed, to light each story, and the whole protected from the weather by two or three coats of good paint. There is no good reason why a windmill and tower thus constructed, of good material, will not stand as long as any other farm building; and if it should

be demolished, or uprooted by a tornado, there would be some satisfaction in the reflection that there would be nothing else standing in the neighborhood. As the guying costs but little, it is a wise precaution, and should be used on all towers, great or small. If well done, it is comparatively safe as against all ordinary wind storms or tornadoes, which, by the way, demolish vastly more buildings after all than the cyclone. A cyclone, of course, would tear it out; so it would also everything else standing in its track.

The tower in this case stands between the house and barn. We connect to the well-house adjoining the kitchen (used also for churning) with counter shaft 25 feet, operating main lever extending into and across the well-house by means of face plate and pitman; to the churn by counter lever worked by main lever, and to the washing machine by an elbow and pitman worked by the same. We connect to circular saw 35 feet through the shop to the wood-yard by means of a 3 foot sheave and cable, from counter shaft in the mill, and back again from saw shaft into the shop to operate any grind stone, turning lathe, or other machinery there. We connect with the barn 200 feet by $3\frac{1}{2}$ foot sheave on counter shaft in upper story in tower and cable, to another 3 foot sheave over main door on a short shaft, which by means of friction gear in turn operates a main shaft across the scaffold over same door and parallel to the threshing floor, which drives by means of belts and pulleys, or sheaves and cables the threshers, sheller, feed-cutter, fanning mill, and whatever else we find it desirable to attach. Although we enter the barn at the awkward angle of about 20° , yet by means of the said friction gear, at a slight loss of power. The machinery is ranged nearly abreast across the floor, the thresher next the bag, the sheller opposite next the corn crib, and the fanning mill and feed-cutter between. The granary being in the basement under the threshing floor, the threshed and shelled grain is delivered to the bins by spouts.

It makes but little or no difference as to distance or direction of tower from buildings or yards to be connected; and

the power can be transmitted at any desired angle at small expense.

Now for the practical application. As to pumping, of course it will pump whether the wind is high or low. The same of churning or any other light work. This is secured by holding the wheel more or less to the wind, according as the wind is high or low, or the work to be done light or heavy. Uniformity of motion is secured by means of a "governor" on the line shaft. Either rotary or dash churn may be used. The sheller used is a "Cornell" No. 3, three horse power, fan and sacker attached, manufactured at Ithica, N. Y., and furnished by the Eclipse Company — does good work. Have shelled, cleaned and sacked at the rate of 300 bushels per day with two hands. In running fanning mill have as yet to select a steady wind to secure a steady motion, but think this difficulty will soon be overcome by means of a regulator on the pulley of the fanning mill. The chief attraction now is threshing and running the buzz saw. We use a two horse "New Champion," manufactured by Krauss, Berks Co., P. A., furnished also by Eclipse Company. It has a vibrating attachment for separating straw from grain. Have threshed without help at the rate of 300 bushels of oats per day. Might run one of double its capacity in a full working wind, but everything considered this is about the right size for a sixteen foot wheel. For sawing we use at present an eighteen-inch saw; would handle a twenty-two inch saw with ease, giving it all the force and speed of a six horse sweep power. Of the various feed grinders tried, I find the "Eclipse," manufactured by the Eclipse Company, best adapted to wind power. It will do more and better work with the same power — an important consideration in selecting machinery to be operated by a windmill — especially in light wind; we are using a pony team, not Clydes nor Norman.

This comprises the list of practical uses of my windmills up to date; but expect to be able to report progress at some future time. There are, however, two or three indirect uses of the windmill on the farm that must not be overlooked. First, it is a school of mechanics; second, it is a diversion;

and third, if constructed and finished with an eye to symmetry and beauty, it is an ornament to the homestead.

As a school it will furnish the boys (and girls as well), hired help and yourself a constant supply of mechanical problems at once attractive and profitable, also mechanical principles and terms acquired and familiarized and stored up for practical use on the farm or in the shop. No doubt if the youth of the rural districts were generally supplied with facilities of this kind, affording a wholesome mental stimulant, we should hear less of the disposition on the part of farmers' boys leaving the quiet, honorable life of the farm for some doubtful if not questionable business in "Chicago," or some other hole.

A generous supply of mental food is as desirable on the farm as anywhere else. Formerly, when a man presented himself to a farmer for employment, muscular development was the chief recommendation. Not so now, but we look, instead, to the countenance for indications of intelligence and good disposition. These being wanting he is rejected, though he possess the muscular development of a Hercules. In fact, skilled laborers are nowadays as necessary on the farm as in the shop.

As a healthful diversion, I know of nothing that will break up the monotony of our farm life, like getting interested in some enterprise of this kind, that combines pleasure with profit. It is not the young farmer only that is thus affected and stimulated to a warmer zeal and truer devotion in his purest and highest of all callings, but we, too, who are beginning to walk with sober pace the declivity of life, will by means like this find that we have taken a new lease of life, giving us something new to think about and do what is useful, curing us of our dyspepsia, giving us a better appetite for wholesome food, better and sounder and more refreshing sleep, a clearer conscience, by keeping us out of mischief, and maybe, thereby add ten or fifteen years to our days.

The other valuable consideration in this connection, is the satisfaction of having at a moderate expense added to our homestead an improvement that is attractive as well as profitable; ornamental as well as useful. A little poetry

mixed with the prose of our farm life is a good thing. Whilst it is the religious duty for every man to furnish himself and family with as good and substantial a home as his means will admit, it is equally his duty to make it attractive also, by a few touches here and there, by way of ornamentation, so that it will be a double delight for the children and grandchildren to cherish in fond remembrance, and visit from time to time the old home. A taste for the beautiful thus fostered at a few private homes, is contagious, and apt to spread through large districts. The beauty of the far-famed Mentor street, a street made historic as the home of the lamented Garfield, is owing largely to the correct taste and personal example of one of its pioneers, Col. Nathan Corning. That stretch of ten miles between Willoughby and Painesville possessed no especial natural attraction over thousands of other ten miles of highway; and many a locality might be made equally attractive by exercising the same good taste of the Colonel, and the outlay of a few dollars. Then in the place of ugly scenes of dilapidation, now quite too common, there shall be seen everywhere the original of Dr. Johnson's good photograph of model rural life —

“Lo, yonder vale unfolds its pictured sight,
And meads and corn fields spread their gay attire;
Sheep, oats and herds, and sprinkled cottages, white,
Steam busy mill, deep wood and tufted spire.

Now here untouched by city broils,
Is the reign of rural comfort, cheerfulness and ease,
With health embloomed in every sweet briar'd lane,
And faith and morals wholesome as the breeze.

But how many farmers there are who, instead of taking any interest in making home attractive, are looking in every direction but the right one, to invest their spare funds, putting it into all sorts of speculations that they know nothing about, and into lands they know nothing of; and when once in, good-bye to it, unless the order of nature so changes that the little fishes eat up the big ones. For my part I had rather have the few hundred dollars that I have put in the wind-mill and fixtures, where it is, than to have it in any railroad, cotton factory, wagon factory, checker-board factory or any

other factory that I know of *two to one*. Be it remembered that money in a home is as truly *wealth*, as government bonds, bank stock, mortgages or cash in hand. Furthermore, it is about all any one farmer will find time to do in this short life to build up one good substantial, attractive home, raise a good substantial family, give his sons and daughters a good substantial education, and send them forth into the world well anchored in temperance, morality and self reliance; and if he undertakes much more than this he is quite sure to go to the wall. Then stick to the farm, and if you do not like the business, stick to it till you do like it, especially if you are getting well on in life. Don't allow yourself to be wheedled into the folly of selling out and engaging in new and untried business in town, in which you have had no experience.

It is hard to teach old dogs new tricks. There are more tricks in trade than you and I ever dreamed of. They are learned at the commercial college, and we have never attended commercial college. If you have doubts of these statements, try it; and my word for it, in an average of three years' time there will be another *good* farmer made over in a very *poor* something else, if not altogether discouraged and homesick, broken down in health, spirit, morals and purse, and "*grocery for sale cheap*," written in capitals over another dilapidated place of business. "Go to now, ye that say, to-day or to-morrow we will go into town, and spend two or three years there, and trade and get grain; whereas ye know what shall be on the morrow."

Another important consideration in favor of the windmill as a farm motor, is *economy*.

Such is the competition among the manufacturers of that class of implements that they are within easy reach of the average farmer. And it is the average or small farmer after all that is the back-bone of American industry. Let the large farmers with their thousands of acres and cattle on thousand hills, with their scores of steam threshers and steam plows look out for themselves. Or if they get swamped in the immensity of their operations, conducted more like mining or lumbering, they will hardly be missed;

for be it remembered that for one Dalrymple or Strawn there are five hundred thousand small farmers working from five to five hundred acres each, that feed the multitudes and give vitality to every other industry. It is the small farmer who, like the fabled atlas, bears the earth with all its gigantic enterprises on his broad shoulders. It follows then that any agency that comes to his relief, enabling him to compete successfully with individuals and corporations that count their capital by the million, *is a godsend. The windmill does this.*

I will now give the approximate cost of the sixteen foot geared Eclipse windmill, together with the machinery attached and now in use on my place. I suppose it will not be far from the cost of any other windmill and outfit of equal merit:

Sixteen foot geared mill, fifty to sixty feet tower, and say 56 feet shafting, including gearing, couplings, etc	\$385 00
Two horse Champion Thresher	70 00
Three-horse Cornell Corn Sheller	38 00
Eclipse feed grinder, No. 2	50 00
Twenty-inch saw and first-class frame, shafting, etc.	40 00
Fanning mill	25 00
Force pump, pipe and cylinder for fifty foot well	27 00
Churn	5 00
Washing machine	15 00
Belting 50 feet, 4 inch oak tan, 40 cts	20 00
Rope cable, 25 rods, 50 cts. per rod	12 50
<hr/>	
Total	\$687 50
Add, say \$12.50 for placing machinery in position	12 50
<hr/>	
	<u>\$700 00</u>

In connecting tower to house, barn or stockyard, the distance is not taken into the account only so far as cost of cable is concerned. My longest connected distance is 200 feet, and it might be double without inconvenience.

The rope cable is treated to a coating of equal parts of pine tar, gas tar and New Orleans molasses, rendering it sufficiently pliable and water-proof; and being held in position on the sheaves by idlers, it is not affected by the wind which ever way it may blow.

The following facts and figures will give a fair statement of its economic value as compared with the usual method of doing same work. The statement is made with reference

to what it is now actually doing, not what it may be made to do at some future day.

On the farm where it is used there is raised yearly on an average, sixty acres of oats, fifty acres of corn, twenty acres of rye, and ten acres more, or less, of buckwheat.

The oats will average say 30 bushels per acre.....	1,800
Corn, 30 bushels per acre.....	1,500
Rye, 20 bushels per acre	400
Buckwheat, 20 bushels per acre.....	200
Grinding for self and others, 1,000 bushels	1,000

It will cost to thresh this grain, shell the corn, and grind the feed with steam or horse power, as follows:

Oats, 1,800 bushels, 6 cents.....	\$108 00
Rye, 400 bushels, 10 cents.....	40 00
Buckwheat, 200 bushels, 6 cents	12 00
Grinding 1,000 bushels, 5 cents.....	50 00
Shelling corn, 1,500 bushels, 5 cents	75 00
	<hr/>
Add sawing wood, 12 cords, \$1.50.....	\$285 00
Pumping one hour per day, 36 days.....	18 00
Churning one-half hour, 200, 10 days.....	36 00
Washing one-half day per week, 26 days.....	10 00
	<hr/>
Total	\$375 00

This amount is all saved and more too; as one man by the aid of the windmill will do this work in connection with the chores of the farm and save enough in grain, fodder and utilizing foul weather to more than offset his extra labor, and of oil, etc., for machinery. Then the amount saved each year is just about equal to the cost of a good hand a year. The cost of the entire outfit is \$700, just about equal to the cost of a good hand two years. Consequently it will pay for itself in two years. Thirty years is a low estimate for its life-time. The wheel itself would have to be replaced, but the rest, if properly constructed, of good material and and cared for, is good for that length of time with the exception of some light articles of little cost. Or the the statement may be made in this form: The wind mill is at work at something on an average of ten hours a day the year round, much of the time at work that requires two to four men and as many horses to do, and most dreaded of any work on the farm.

Gentlemen, I have demonstrated my proposition, viz.: that a sixteen-foot geared windmill will do, if kept at work, at what it can be made to do to advantage, one-half of the manual and team labor on a 200-acre farm, mixed husbandry. If any of you still have doubts, or question these statements of facts, and figures, all I can say is, come over to "Hack-bury Farm" some day of fair working wind, and I will give you the ocular proof.

I cannot conclude this paper without recording a tribute of respect to the memory of the inventor of the "Eclipse windmill," the late Rev. Leonard H. Wheeler. As farmers we do not yet, and will not for years, fully appreciate the benefit we will ultimately reap from this invention. As a christian missionary, Mr. Wheeler was the compeer of Eliot, of Hennepin, of La Salle, of Bingham and Judson, doing very much the same missionary work for the pagan Chippewas that the lamented Riggs did for the Dakotas. Starting out in his early life with his young wife, at the call of duty, into the regions beyond the pale of civilization. devoting the best portion of an active life in the noble endeavor of lifting a barbarous people from savagery to a fair plane of christian civilization and intelligent citizenship; raising a family of nine children, amid privations known only to the frontiersman, giving them all a good, practical, and some of them a classical education; and at the same time of that practical turn of mind that enabled him to recognize the fact that so long as "what shall we eat, and what shall we drink, and wherewithall shall we be clothed," are things after which gentiles seek; the question of bread and butter is not out of the line of intelligent christian missionary endeavor; that temporal is the handmaid, at least, of spiritual regeneration.

So in the midst of the manifold duties of his holy calling and as a part of it, the "Eclipse windmill" is evolved from his practical mind and sent forth to bless the human race more and more as the years roll on. Mr. Wheeler lived to see his invention barely able to stand alone. But luckily it fell into the hands of his energetic sons, who have on its merits pushed it in an incredibly short time, to the ends of the earth. No mention need be made of its merits. It is well known.

But this much may in all fairness be said, it has inaugurated a new era in the idea of utilizing one of the most powerful, as well as the most fickle of the forces of nature. It has also enlisted the inventive genius of hundreds in the same direction. And if we listen attentively to the voice of the prophet, we shall hear him declare the time is at hand when the geared windmill is no more of a novelty on every well equipped farm, than is the reaper and mower now.

Then all honor to those quiet thinking men. Men who have given their time, their energy, their life that we might be richer and happier. Men without whom this world would drift back to the days of Adam and Eve in half the time it has taken to come from there here. *All honor I say to the memory of that class of men. DON'T YOU?*

I wish also to express my appreciation of the gentlemanly courtesy and friendly aid of the Fairbanks and Morse Eclipse Wind Engine Co., in my endeavors to prosecute this series of experiments. Without this aid and encouragement I should not have been able to attend to my other duties, and accomplish as much in this line as I have for years, if ever. My intercourse with all the employees of that company has been, on my part, most satisfactory, alike from manager, superintendent, foreman, mechanic and roustabout. And many have been the valuable suggestions from the skilled workmen they have from time to time sent to my assistance.

This kindness is all the more grateful when we remember how natural it is for most persons to regard the man who is making an effort to lift himself and neighbors from an old rut, with a sort of patronizing sympathy, if not a distrust of his mental status. But success makes it all right. Nothing like success. And now as I go into my barn of a cold, stormy day, shut too the door, move a lever, mount the feeder's platform of the "New Champion" and away she goes, single-handed and alone, with the power and execution of four horses and as many men; or throw the belt on the corn sheller, or feed cutter or fanning mill with similar satisfactory results; or, better still, as I apply this obedient and tireless motor to the self-regulating "Eclipse Feed Grinder," take my seat at the dinner table or comfortable stove with

book or paper in hand, and in one hour go out to find a generous grist of feed, toll and all, ready for use; or, best of all, as I take my stand under the south lea of the woodshed beside the buzz-saw and cut more stove wood in any given length of time by the aid of an absolutely invisible power, than can be done by eight horses, to say nothing of the misery of the poor driver, stamping his feet and slapping his hands and rubbing his ears and nose to keep from perishing, feeling more like swearing than singing the doxology. I own up to an impulse that looks very much like triumph. Eureka.

DISCUSSION.

Mr. A. A. Arnold — When we hear papers of that kind read by men of the age of this gentleman, it may well make the young farmers of the state ashamed of themselves. There are very few young farmers who are able to write a paper like that. We cannot say that all the improvements are due to the young men, the men who have had modern advantages. I feel proud of the farmers of the state of Wisconsin that we have men of that age who are capable of writing and reading as practical a paper as the one we have just heard.

A member — You spoke about a mixture for dressing rope for making it water-proof. What quantities should be used?

Mr. Fox — Equal parts. Put it on liberally. Put on an old mitten, and put it on liberally enough to fill the rope full. Have it hot.

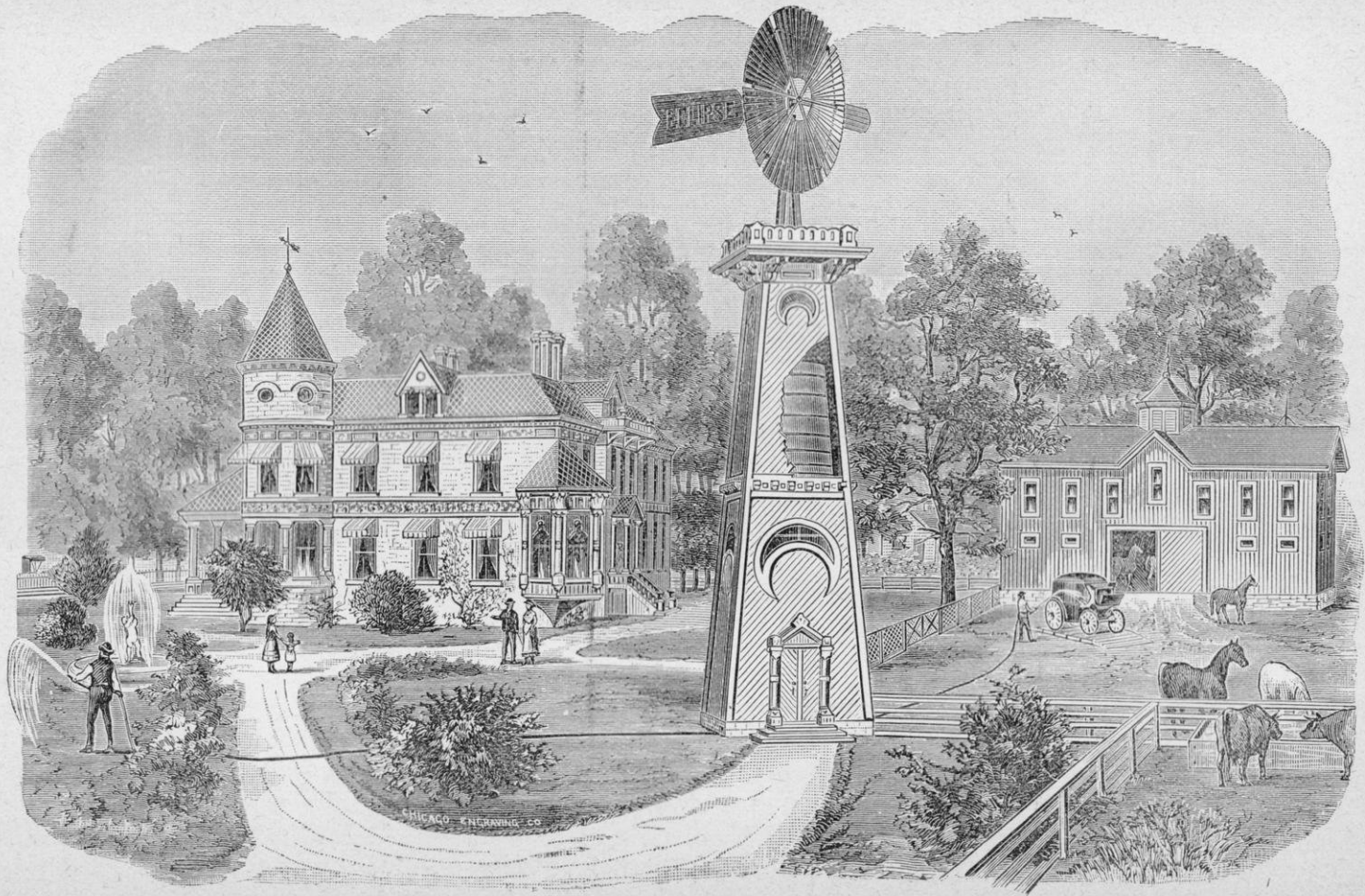
Prof. Henry — I wish to add my testimony in this matter. I had the pleasure about a year since of a drive to the farm of Mr. Fox, who, by the way, we cannot claim, because he lives in the state of Illinois, and I saw his windmill in actual operation. We made a test while I was there of its grinding capacity. I will not tell you the incredibly short time it took to grind a bushel of corn fairly fine. It was shorter than I had anticipated, and only when I had it corroborated by friends who were with me could I believe the times when I came to think of it; but I know this, that, standing in the

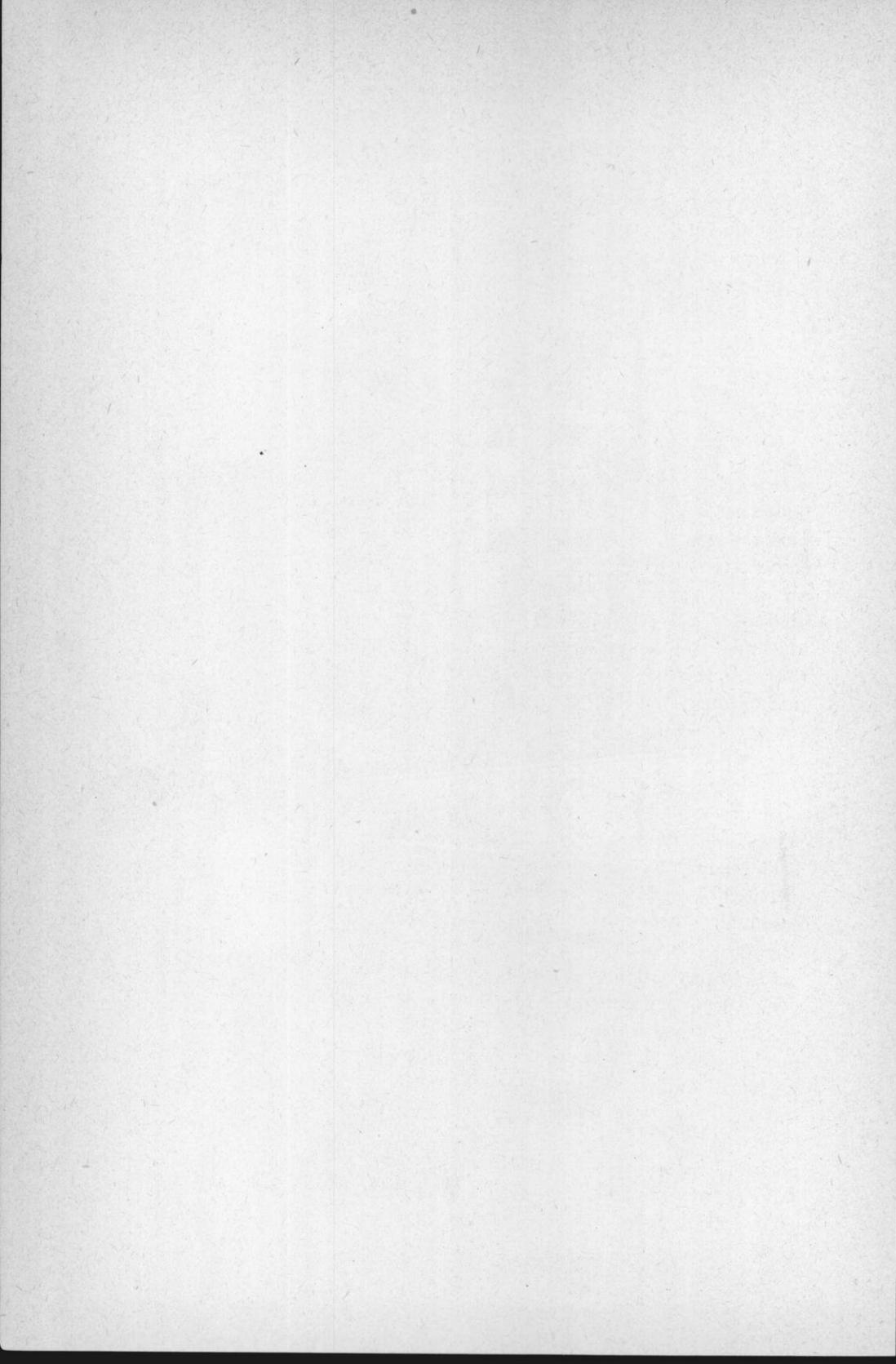
tower, the tower being annexed, standing by the machine, when Mr. Fox put his hand on the lever and the lever began to go and the grinders to move, I know I backed out. I thought the fly-wheel was going to fly. I got around the corner and listened. It seemed to me that there was the power of at least ten horses at work on that grinder. I did not believe that a sixteen foot wheel of any kind could do the work that was done there. I am very often asked by farmers whether the gear wheel windmill is practical. I should say that the windmill on Mr. Fox's place is a practical mill.

I am often asked whether it pays to grind feed. The farmer that asks that question wants an answer that suits his particular case. Does it pay to take a worn out old corn sheller and have two men to work it, to grind out fifty bushels of corn, load it in sacks, draw it through the mud ten or twelve miles to the mill, pay from six to twelve cents for grinding it, and draw it home again? I doubt if it will pay. But if Mr. Fox can just attach this power to his corn sheller and do the work himself, or have one hired man feed the corn sheller, then put this corn in the hopper up over his grinder, and allow the shelled corn to feed into the grinder as fast as it does, and he sitting in his room reading his paper while this is in progress, it may pay Mr. Fox to feed ground feed much better than unshelled and unground.

I hope our farmers will look up this windmill question. There are several geared mills offered and the prices for them are low, and I think many should consider the advisability of placing one on their farm. I wish to say of Mr. Fox that every word he has told you, as far as my observation has gone, is correct. He runs a washing machine. He was running a buck saw when I was there, but he is now running a circular saw. He runs a churn, pumps water all over the house, the buzz saw, the corn sheller, the grinder, the threshing machine, feed cutter and fanning mill. His barn is two hundred feet, and at an angle off from the mill, so that you see he has about the location of the common farm as far as buildings and well are concerned.

Mr. Babbitt—Mr. Fox, living within three miles of the





door of your secretary and getting his mail at the post-office at Beloit, and being a member of a first-class Baptist church in that town, it seems to me that we ought to claim him as a citizen of the state of Wisconsin.

SOME UNDERESTIMATED FACTORS IN BUSINESS ENTERPRISES.

By E. P. WHEELER, Rock County.

It would be a foolish conceit, indeed, to assume that this body could easily be instructed on most questions of business enterprise. The representative character of this gathering is presumptive evidence that the men who compose it are successful business men, and, as such, of demonstrated business capacity. On any of the ordinary business maxims, therefore, I have no suggestions to make. But there are more remote and indirect elements that enter into industrial problems that our best men overlook. These obscure causes are also likely to assume greater relative importance as the country grows older and its business enterprises more diversified. I therefore invite your attention to the subject, "Some Underestimated Factors in Business Enterprises," as a theme of timely and practical importance.

The element in business ventures most commonly calculated, is the greatness of the cost in starting them. Most people do not take into sufficient consideration the expense that must be first laid out before any new venture can be made to pay. They do not provide enough for that critical period in every enterprise between the *paper plan* and the working organization. If we recall the many wrecked enterprises that have come under the observation of each one, we shall find that the greater *bulk* of them died in their birth. They were surrendered before they really got under headway — and why? Because the cost of the starting period was underestimated, and hence unprovided for. Take a few illustrations of this common experience.

A well-to-do farmer comes to the conclusion that he has already worked hard enough to be entitled to a rest. His

children are quite sure he has, and that he ought to go to town where he can enjoy what he has so dearly earned. The farm is rented and the man and his family are soon reveling in the excitement and novelties of town life. Once in town, the old gentleman and his boys are sure they ought to go into the grocery business. It would not take much to learn it, they think, and as for the profits they are more than farming can show in any case. A store is rented and stocked with goods on ninety days' time, and business opens. Their first customers are of that class who cannot get trusted anywhere else. These, of course, are warmly welcomed. But beyond these worthless customers no other additions are made to the trade, except occasional purchases from the old gentleman's country friends, who come out of curiosity to see how he is fixed. But these latter soon drop off and the new store is left to confront its ninety-days' bills with a lot of dead-beat accounts. The details of this grocery enterprise might be extended indefinitely, but perhaps it is sufficient to say of it that it was a failure. Two pay-days were enough to show to that graduated farmer that business was more than buying a stock of goods and opening a store.

Another instance. In an enterprising town, not a thousand miles away, the leading citizens thought that it was time for them to go into manufacturing. After much deliberation a woolen mill was decided upon as the best adapted to give a local market to the farmers, as well as a profitable return to the town. The stock was soon subscribed for, and a committee of exceptional prudence elected. Thus far everything about the enterprise seemed guaranteed. But the building was hardly finished before trouble began. It took a good deal longer to get the mill turning out merchantable goods than was expected. This and that machine had to be adjusted over and over again, and this and that workman changed around, before the work of experimenting was finished. These delays were necessarily long and expensive. But they would not have ruined the concern if it could only have sold its goods after they were made. Here, again, things were different from what was expected. The trade looked suspiciously at the goods of a firm that as yet had no

record. The cloths which merchants wanted, were those the people would buy, because known to be standard. This compelled the new factory to content itself with leaving here and there a sample lot of goods and at bankrupt rates of discount.

No wonder, then, that the stockholders got sick after running a year and a half, and that an eastern man bought the whole thing out for twenty-five cents on the dollar.

But just one more example. A prosperous agricultural town had no railroad. This seemed a great drawback to many of its citizens and a discredit to the place. To remedy this evil, a narrow gauge road was projected to the nearest railroad connection. The people all along the line took shares in the stock, and in one year's time the road was completed for business. The cost of construction and of equipment was not much more than was expected. No serious obstacles thus far impeded the way, and there appeared no legitimate reason why this enterprise should not prosper.

But, true to the history of such ventures, this scheme also in one year's time showed signs of weakness. In two years a special committee of the stockholders was appointed to consider the emergencies of the road and the best way to meet them. After two years more of trying to bond the road, and mutual charges of corruption between the several managements, a majority of the stock was bought up by a trunk line railroad for one-half its worth.

Thus — in the language of the Episcopal prayer book — endeth the third lesson.

If we will pause a moment and investigate these representative experiences, I think we shall find their failures to be due to two elements involved in the cost of starting them. One is that all successful business concerns are thorough-going organizations, and not mere aggregations of separate parts.

In the case of the woolen mill already referred to, the employees were all men having the highest recommendations for their several positions. The secretary and treasurer was an exceptionally shrewd and calculating financier. The

general foreman was reputed to be the best posted in the manufacture of woolen cloth of any man in the west. The workmen, too, were brought into town with a great deal of expense. But with all these individual qualifications of the employees, the establishment never had a day of successful running. The different departments were woefully at loggerheads all the time, and everything went with a continual jar. The secretary, though an excellent financier, was a small, petty, peevish man, when he came to talk on the manufacturing side of the subject. The general foreman was, to put it mildly, a headstrong Englishman, whose ideas of authority were too domineering to suit this section. Then there was a mixture of race prejudice among the hands, as some of the workmen were Irish and others English. The whole aim of these two classes seemed to be how little they could accommodate each other, and how much they could stand in each others' way. Of course delays and mistakes were the natural consequences of all this pulling and hauling, and the expense of it was the loss of the firm.

If the factory had possessed the capital to have held on long enough, doubtless a good share of these difficulties would have been eliminated from its works, but the friction and cost of an unorganized crowd of men, estranged by differences of race and social precedents, was too much for it, and it succumbed.

The harmonious adjustment of the different parts of a business enterprise is one of the largest elements of its success, as the want of it is one of its greatest sources of failure. A team of horses will not work to advantage if miss-mated. It is said that even a cow will not give her usual mess of milk when put into strange surroundings. Man, with his higher powers and more complex relationship, is still more dependent for his highest achievements on a proper adjustment of himself to his environments. When these environments are of the nature of a business organization, bringing him into co-operation with his fellow men, complication has reached its maximum, and the liabilities of loss by the incongruity of related parts are the greatest.

The organization of a business, therefore, by which we mean the harmonious and thorough adjustment of all its parts, is a leading element in its success. It is an element which takes time and money to secure. It is an element the want of which has resulted in a large percentage of the failures which strew the pathway of our progress. Again, a successful initiation of business involves the question of securing public confidence. People must be assured that they are getting all they bargain for, if they are to begin or continue their patronage. The work of every enterprise in thus convincing public opinion and securing public confidence is, in most cases, a protracted one, involving great effort and expense. It includes a period of trial of the goods produced and the dispositions and methods of the new concern. The usual assumption that business is simply a matter of supply and demand, is but a half truth.

Trade is an interchange of personal confidences as well as an exchange of commercial value. Over and above the mere questions of cost and profit, there is a play of personal qualities of character in business which go to make up a large element in its successful working. Our farmer-grocer overlooked this matter when he assumed that all there was in the grocery business was to buy a stock of goods and rent a store for them. He did not stop to consider that people do not give their undivided confidence in trade till they have been smiled at and accommodated in a thousand ways in which the grocer shows his energy, his reliability and his methods of dealing generally.

That railroad corporation, with its new board of control every month, did not give its road a chance to have any stamp of individuality put upon it by continued management. If nothing else had been the trouble, this would have defeated it. We say, "business is business," but the known motives of men in business have a large influence in determining the attitude of the public toward them.

A. T. Stewart tried to allay popular prejudice against his grinding methods towards his sewing girls by building a home retreat for them when they were used up. Vanderbilt's notorious remark showing his selfish contempt for the

public, was circulated purposely by his Wall street opponents to injure his stocks in the market because it was known it would certainly do so.

The moral qualities of benevolence, justice, impartiality and reliability, do more to give an enterprise a permanent place in the confidences of the people, than all the other questions of barter and sale put together. But the moral qualities of a new business require time and experience to make themselves known and appreciated. This necessitates delay in getting a business started and is a source of expense often unprovided for.

Organization and public confidence, then, are two elements in business which make it slow and expensive in starting, and a frequent source of failure in all enterprises. These factors are constant ones, always present in every venture of a commercial character.

But there is one other element in business which often fails to be taken into consideration, and which has special reference to the commercial situation of our state at the present time. I refer to the element of public spirit. By public spirit I mean that disposition among a people to liberally sustain the institutions and enterprises which are for the common good. This disposition finds its appropriate exercise in building and supporting churches, schools, colleges, universities, public libraries, agricultural societies, improved highways, parks, etc. It will also manifest itself in sustaining a just and progressive legislation, in creating high standards of public sentiment, and will itself be felt a power to initiate and diffuse the blessings of improved methods and advanced enterprises in every community.

Such a spirit, we repeat, is necessary to a permanent business prosperity, and the lack of it one of the crying needs of our commercial interests in this state.

The reason of this proposition is that public spirit alone is capable of sustaining those agencies which enrich the popular mind, enlarging its capacities for both supply and demand. Why is it that our age requires such a variety and continuous supply of the commodities of our trade? Why is it that our people have so constant a demand for the re-

finer products of our civilization? It is because the people generally have had centuries of education and stimulation from our public institutions. It is because their tastes have been developed through generations of enlightening influence, furnished them by agencies which only public spirit can create or maintain.

Public spirit, therefore, is the great agency which, through the institution it sustains, keeps alive the aspirations and motive influences of our modern civilization and of business. You cannot retrench public spirit, therefore, without affecting vitally the business interests which depend upon its influence for existence. You limit the one and you restrict the other. You neglect the interests of the one, and the activities of the other will languish and die out. The operation of this principle is very effectively set forth in the commercial effect of christian missions upon the heathen. Heathenism is the ideal of a selfish individualism, as missionary work embodies the highest and fullest expression of public spirit. The commercial influence, therefore, of the one upon the other will, measure most fully the relation of public spirit to business enterprises.

Now, what are the statistics of this influence? According to the report of English publicists, every dollar of money spent in English missionary operations has developed ten dollars' worth of trade. That is to say, English missions, considered as a mere financial investment, pay a thousand per cent. This testimony is not alone in supporting the truth that the public spirit of missionary work is profitable for the life that now is. Every year the developing power of christian philanthropy is enlarging the commerce of the world by hundreds of thousands of dollars. The old American Fur Company made it a definite policy of its operations to follow in the wake of Indian missions with trading posts, on account of their known commercial value. Much to the same purport was the early history of the Pilgrim Fathers in this country. In the many anniversaries that have been held of late in their honor, no one characteristic has been more commonly noted than their public spirit. Perhaps more than any class of men that ever lived they made sac-

rifices for the common good. They anticipated their arrival in New England with well matured plans for the highest order of public institutions. So when they had reached their destination, schools, colleges, churches, libraries, parks and improved highways sprang into existence simultaneously with their humble dwellings. The culture they thus provided for themselves, kept their minds in the highest discipline for achievement, while their large interest in the public good committed them to the greatest tension of endeavor.

The two great factors of trade—consumption and production—were in a maximum condition of efficiency with them. No wonder then that such a people should, from the very outset, show an unparalleled commercial vitality. The same spirit of devotion to the common good has continued among the descendants of the New England Fathers with the same marked results in their commercial prosperity. Boston, the center of Yankee enterprise, is still the “solid” city of this country. It has more banking capital to-day than New York, which exceeds its population by three fold. It has more banking capital than eleven of the largest cities of our land, exclusive of New York and Philadelphia. New England capital is a controlling influence in our leading railroads and of our largest manufacturing enterprises. The savings banks of Yankeedom have money enough to buy out the whole south and have enough left to pay a handsome installment on the national debt. In fact, the average wealth of New England is said to be greater than that of any equal section of the known world.

These historic examples, wrought out on the largest and widest scale, leave no reasonable doubt but that there is a commercial value in public spirit of no small significance in the business prosperity of our country.

I should have been glad to have followed up these general illustrations with citing the influence of particular public enterprises—such as the Pike roads of Ohio and the village improvement societies in the older sections—but time and space forbid. Let me, however, call your attention, in con-

clusion, to some of the reasons that make the commercial claims of public spirit the duty of the hour.

For several years past, the foreign population of this state has been gaining relatively and rapidly on the native born, until to-day nearly every third man among us is a foreigner. If we add to this number the children of foreigners, and though native born, more or less foreign in their sympathies, and doubtless their voting power is considerably more than one-third. Now, while we welcome these accessions to our ranks from abroad and make plans for securing still larger numbers, we must not be blind to the problems which their coming creates in our public affairs. As is well known, these people are to a large extent indifferent to the claims of our higher institutions if not openly hostile to them. As a general thing, they will be found opposed to giving but the most meagre support to public enterprises, upon whose highest efficiency depends the public weal. Wherever they settle in any great numbers, public highways fall into neglect and ruin, school houses become dilapidated, the quality of public instruction degenerated and the cause of agricultural societies and universities left to starve for want of maintenance. Doubtless there are noble exceptions to this rule, yet the general truth of this statement will not be called in question. There are whole counties in this state, I am told, where the principal school fund for public instruction is that furnished by the state.

But the influence of this element of our population is not restricted to the localities where it predominates. It has permeated the whole public sentiment of the state, deteriorating it, and making it satisfied with lowest ideals of public policy. It has affected politics so that it has become a qualification of our public men that they shall be able to advocate the most niggardly policy possible. Economy, by which is meant parsimony, is a standard watchword in our campaigns, and it is all a man's political life is worth, when he is elected, to advocate more than the barest subsistence to our public institutions.

I am not here to maintain that all this is in direct contravention of the influences that founded this state and that

has given it the record for progress it has. Nor am I here to say that such a course is jeopardizing the highest interests of our state in its educational, moral and political relations. All this and more could be proved beyond a doubt. What I am here to advocate is, that it is a poor financial policy; gentlemen, it is money that is at stake here. It is your farm and mine, your manufacturing interest and mine, your property and mine, that is put in peril by such a course. These public interests have a commercial value of incalculable influence, and you subvert them, and the underpinning of your whole financial structure is taken away. Already whole towns and districts have been desolated by this suicidal policy, and if there is any one interest more than another that demands the united effort of representative men, it is the reconstruction of public sentiment in our state on this subject of our public obligations.

It is encouraging to find this influential body already entertaining the problem of our public institutions. We may differ as to the special form in which these institutions shall do their work, but let all be agreed that from henceforth we shall make them an honor to our commonwealth by the liberal support we shall accord them. "For there is that, that scattereth and it tendeth to increase, and there is that, which withholdeth more than is meet and it tendeth to poverty.

DISCUSSION.

Mr. A. A. Arnold—I will take back what I said about the young men. The reason I said that about the young men was that the young men of the state were not growing up to be practical men and practical farmers. The public sentiment is such that they are not among us as farmers and do not take an interest in conventions of this sort. We have, I am glad to say, some young men that know enough and have sense enough to appreciate a convention of this sort and can entertain us and instruct us. I agree with the sentiment advocated by the last paper.

Mr. Robbins—I do not want to criticise this paper, but I tell you there are generally two sides to every question. If

there was but one side, that side would not be appreciated. Now, in order to appreciate this paper, and do it thoroughly, I am going to start out by saying that the farmers of the state of Wisconsin are not represented in this convention. The men that do the voting and pay the taxes of the state of Wisconsin are not represented in the conventions that meet annually at Madison. I presume I stand here alone to represent as large a county as Grant county. I do not believe that the farmers of Grant county are in favor of an agricultural college. It may be strange, but I do not believe there are ten farmers in that county that are in favor of it. The time is coming when our real estate is going to be owned by foreigners. Where I live now they are gathering up all the farms of the American boys that want to get an education. The American boys leave the farm never to return, and the Germans take the farms of 80 and 160 acres, or three or four hundred acres, and the question comes up, what is the American boy going to do for a living? That is the vital question that stares us in the face to-day. What are the young men growing up in Grant county going to do for a living twenty years from to-day? I say the German element is going to govern the state of Wisconsin unless there is a different policy held out to young men. I say, "Young men, leave the office and go on the farm." I believe I could do better for a young man in the years to come than any agricultural college could do. If you will come on my farm and work ten hours a day, get up in the morning and make the fires and milk the cows, I will give you your board and what clothes are necessary, and I will send you on somebody's farm and you will be worth something. I believe I can learn you so that you will like farming, or that you will like horticulture. I will learn you whatever you like, and it shall not cost you a cent.

I taught school in 1834, '35 and '36. I worked eight months in the year, and the most I spent in any one year was three dollars, and then I paid a dollar and a half to take my girl to the Fourth of July. I think we went to Niagara Falls or somewhere, and we bought about ten cents worth of ginger bread, and I think she put half under her arm and I put half

under mine. In those days their wool was carded into rolls, and they took their toll out of the wool. The families spun the wool and made the clothes they wore. When we wanted leather we killed an animal and took the hide to the tanner, and he made it into leather and took his toll out of the leather. We had a cobbler come into the house and he made our boots and shoes, and we had a sewing girl come into the house and she made our clothes. If any young man talked about studying law, or anything of that kind, they would say he was a poor, shiftless fellow, and fathers would tell their girls not to marry him. That is the kind of education we got fifty years ago. A young man starts out now to get an education. You ask him where he is going. "Oh, to the University." What are you going to do there? "Oh, get an education." What are you going to do then? "Oh, I am going into some light business; I am not going to work any more." He does not care to go on the farm. I tell you the farmer is not represented in this convention. The idea I want to get abroad is this: We want to have the boys own ten acres of ground. If they cannot own ten acres let them own half an acre. Let him own some of the soil of Wisconsin if it is not more than a quarter of an acre. Let him make up his mind "I will dwell here; I will make a living here; I will not be driven out of the country; I will live here with my family and earn my living by the sweat of my brow."

Mr. Ames — I think the boys would learn more from the practical instruction that such men as Mr. Robbins are able to give than the University has ever been able to give yet. I am a farmer and labored under great disadvantages, coming into the country poor. I worked for seven dollars a month the first year after I became twenty-one. I came to Wisconsin and settled down on a farm, and I have made it a business to farm. It is something I always took pride in, and I have to-day, and if I had strength and youth I would be a farmer yet before I died, if I did not die suddenly. I came to the University with my oldest boy. I asked Prof. Sterling about what I had better do with him, and he thought I had better send him to the college. I asked the best men

in Madison what I had better do, and they said if I wanted to make professional men of my sons to send them to the University, but if I wanted to make practical men of them as farmers or something of that kind give them a business education. I have raised two girls and three boys, and they all have a good practical common school education. Two of them are teaching now and three are in successful business of their own. I have a son living in this county who could give this convention practical information in regard to fattening hogs. He sold seventy-two hogs three weeks ago, and I do not suppose there was another drove of hogs in Dane county that would compare as evenly and favorably as they. He is to-day a practical farmer, and he is worth five dollars where I was worth one at his age, and I am proud of him. I have been a man of industry, and I think my boys took their industry in a measure from their industrial training. I have another boy in Dakota, doing comparatively well. The third boy stays on the farm with me in summer at good, liberal wages, and is teaching in the village of Oregon this winter. I have often asked him if he wanted to stay on the farm. I asked him not long ago. He said, "I am willing. It is my desire." I think if we would be with our boys more they would stay on the farm.

Mr. Babbitt — We do not want to go back on the record. Whoever read the biography of a first-rate man or a first-class woman, where the mother did not get all the credit, as she deserved.

Mr. Ames — My children have got a splendid mother. I give her credit for three-fourths.

Dr. Squire — We have heard a forlorn prophecy of what we are coming to. We have some foreigners here, and they do not fraternize very well with us in some neighborhoods, perhaps. Gentlemen, I have got all the confidence in the world in the United States of America, and in the state of Wisconsin, and the reason I have got it is that because there are scattered all over it a few Yankees. Our nation likes foreigners. They work faithfully if you do your duty by them. Let us go to them and shake them by the hand and say, "the Yankees do so and so." I have been a resident of

Columbia county for thirty years, and I find as a rule they ape the Americans. It is their pride. We have heard a little about the agricultural college. I have yet to learn that it is dangerous to have a little knowledge about any business, and the more he can get the better the farmer. If it is necessary to devote a little money to the support of agricultural societies and agricultural colleges, let us do it and we will come out all right.

Mr. Broughton — Knowledge is power, but there are various kinds of knowledge. There is useful and ornamental knowledge: There is no danger of having too much useful knowledge. What is useful knowledge? That which is useful to the individual and useful to society. Any other kind perhaps ought not to be supported by the state.

FARM DRAINAGE.

By J. J. W. BILLINGSLEY.

To the Farmers' Convention of Wisconsin:

GENTLEMEN — It is the purpose of the writer, in a brief paper, to give a summary of the benefits to be derived from farm drainage, and some advice as to the work of drainage.

WHAT DRAINAGE DOES.

The under-drainage of the soil by drains constructed of any material which admits of the passage of the water, in sufficient quantity, will relieve the soil of its excessive moisture or water of saturation. By under-drainage, swamp lands may be reclaimed and brought into a high state of cultivation, which in their natural state are worthless, and not unfrequently the source of malarial diseases.

By under-drainage, low level land, not commonly called swamp land, may be so changed in its character as to double its value for agricultural purposes. The underdrainage of undulating lands prevents the waste of fertility occasioned by surface washing, and also adds to the depth of the soil. The same is true of more rolling lands, but in an increased ratio.

In the use of under-drains the water of rain-falls passes down readily through the soil and out through the drains,

thus relieving the soil of excessive moisture. The water in its passage through the spaces in the soil, leaves it open, admitting the air into the openings, which gives the aeration so necessary to promote the germination of seed and the growth of crops.

DRAINED SOILS ARE MOST EASILY CULTIVATED.

The open, friable condition of the well drained soil is increased by the deeper freezing of it which separates it into finer particles, thus preparing it to yield more readily to the touch of the husbandman. The well drained soil is not liable to become packed and hard by heavy rain-falls in the spring and summer, or by the tramping of stock, and will be found in good condition for stirring a few hours after a long continued rain, so that the cultivation may go on without the liability of injuring the soil by stirring it too wet. Such a condition of the soil requires less labor to cultivate it, as all practical farmers well know.

DRAINAGE INCREASES THE TEMPERATURE OF THE SOIL.

The excess of water in a soil not under-drained, is removed by slow percolation and evaporation, the latter being a cooling process. Farmers have generally tried the wrapping of the jug with a wet cloth in the harvest field to keep the water cool, and know that so long as the cloth is kept saturated with water, the water in the jug keeps cool. So it is in the spring, low wet lands are cold and unfit for cultivation as long as any considerable quantity of water remains in the soil, to be removed by evaporation. A particular piece of land is called cold or sodden when it would be warm and friable if the excess of water was removed by under-drainage instead of evaporation.

Careful tests prove that the temperature of drained soil is eight or ten degrees warmer than wet soils. The increase of five degrees of temperature will often cause seed to germinate and grow, when the less temperature would cause the seed to fail altogether or, if it barely germinated, the plant would have a sickly growth.

That a warm, friable soil is desirable in promoting the better growth and maturity of crops, is well known to every

practical husbandman. In this connection we make the statement that

DRAINAGE LENGTHENS THE SEASON FOR MATURING CROPS.

A soil freed from excessive moisture early in the spring may be plowed and planted ten or fifteen days earlier. The seed germinates quickly and the increased warmth favors the rapid growth, and regular cultivation if it be required. In the fall season the warm soil is less injured by early frosts. The Champaign sorghum sugar works located at Champaign, Illinois, the past season had fifteen hundred acres in sugar cane, four hundred acres of which was grown on tile drained land, and this cane was all that was sufficiently matured to make sugar. The early frost damaged the other to the extent that it made only a poor quality of molasses. In northern Ohio, Indiana and Illinois the early frost last fall damaged much of the corn to the extent that it was worthless. Yet the corn grown on tile drain land was by far the best — in some instances good.

DRAINAGE SUPPLIES NEEDED MOISTURE.

This statement to some may seem paradoxical. Yet it is true that we tile drain to get water out, and water in. While it is desirable to get rid of an excess of water, it is also true that water is essential to plant growth.

Experience in the tillage of the soil teaches us that finely pulverized soils retain the moisture necessary to plant growth better than a hard, compact or cloddy soil — hence the better condition of the tile drained soil favors the retention of the needed moisture. The air in its circulation through the spaces, gives off moisture which is held by the pores in the soil, adding to the needed supply, and the upward or capillary flow of water, brought up from below, is another source of supply. In a deep-drained soil, the roots of growing crops descend to a greater depth, and gather the food necessary to their growth, of which water is an important part. In the light of these facts we believe our paradoxical statement to be true — that is, that we tile drain to get water out and to get it in when it is needed. And the truth of the statement is supported by hundreds of instances, where the

protection afforded against damage from extreme droughts, was almost marvelous.

In this connection, it is but a step to the statement that

DRAINAGE DEEPENS THE SOIL.

The superiority of a deep soil to that of a shallow soil is well understood. The roots of corn, wheat, oats, barley, grasses and vegetables will go down into the soil a depth of from two to five feet, yea, more, in some instances to a still greater depth, if the conditions are favorable; and the conditions are: freedom from excessive moisture, porosity, or open spaces, admitting the roots, and an inviting supply of plant food. The writer believes it to be true, supported by his own practical experience and that of others, that most of our clay soils will yield plant food as deep as we under-drain them. Not to a depth of four or five feet the first year. But the porosity of the soil affected by the under-drainage will widen and deepen each succeeding year, until that which was considered of little value in the production of plant food, will prove an unearthed treasure when brought under the influence of heat and air and the needed moisture.

The circulation of the air through the clay, made porous by the passage of the water, will promote chemical changes, the importance of which in the preparation of plant food we cannot estimate. In fact, the soil over which we walk day by day, is but a great laboratory in which is being prepared supplies needful to the well-being of vegetable and animal life. The roots of vegetation passing down through the spaces in the clay serve their purpose and then decay, and again other roots come down and do their office work and decay, adding to the store of fertility year by year, until it is true that we have, by under-drainage, a soil yielding bountiful supplies of plant food as deep as the drains are laid.

MANURES AND FERTILIZERS.

The benefits derived from them are greatly increased by tile drainage. After they are spread upon the surface in the usual way, the rain-fall carries the best of the fertilizing elements down into the soil where it is held for plant food — the water passing out through the drain as clear as spring

water. The discolored water passing over the surface of a soil already full of water to the brim, tells a different story — tells of the loss of the best elements of the manure, the decayed vegetable matter and the finer particles of the soil rushing into the rivulets and streams and on to the sea.

The important question, however, with every practical agriculturist is,

WILL TILE DRAINAGE PAY?

Will it pay to expend ten, fifteen or twenty dollars per acre in the drainage of land (which needs it), for agricultural purposes?

The answer to this question depends in part upon the present value of the land, and the market facilities. If the lands are worth only a few dollars per acre and are remote from market, it may be advisable to buy more land and use the best until prices advance.

If the general value of farm lands be from twenty-five to fifty dollars per acre, then we answer that it *will pay* to tile drain all the land which will be made much more valuable by it for agricultural purposes, provided the material needed in the construction of drains is accessible.

Through drainage will usually increase the annual yield of agricultural products from twenty-five to one hundred per cent. if the soil is naturally good, and needs draining to make the elements of fertility available.

The following statement is in point:

W. I. Chamberlain, the present secretary of the Ohio State Board of Agriculture, in an address delivered at a meeting of farmers in his own neighborhood, in the Western Reserve of Ohio, some four years ago, said: "I drained eleven acres two rods apart at a cost of \$23 per acre, completing the work in April. I then plowed in twelve loads of manure per acre, and then sowed the field to Hungarian grass and seeded the field to wheat in the fall. The following harvest I had, as most of you know (addressing his neighbors), a yield of forty-six and a half bushels per acre, machine measure, and the land being carefully measured. The best three acres of the field were cut separately, and yielded sixty-one bushels per acre." He further said: "You will bear in mind that I

had just had on this field two almost total failures." Subsequently, Mr. Chamberlain made the statement in presence of the writer and many others, "that this field had averaged in a run of four years since draining it, forty-one bushels of wheat per acre." The increased product of the first wheat crop more than paid the entire expense of drainage, manures and labor, and the increased products which he has annually are certainly a very satisfactory per cent. on the investment of \$23 per acre in tile draining it.

Dr. S. N. Townshend, of the Ohio Agricultural University, who is also a practical farmer, tile drained a field of retentive soil, three rods apart, to an average depth of three and a half feet, on which, before drainage, he had an usual average yield of twenty bushels of barley per acre; after tile draining he had a yield of forty-six bushels of barley per acre, which was sold at \$1.00 per bushel, paying the entire cost of the improvement and leaving besides a handsome sum of money in the Doctor's pocket.

Robert J. Swan, near Geneva, New York, purchased a farm of 300 acres, badly worn, and his first crop of wheat averaged five bushels per acre. He was disgusted, and determined to drain it, and did so, at a cost of \$22 per acre. The same forty acres which before drainage produced only two hundred bushels, or five bushels per acre, after drainage rewarded him with a yield of one thousand seven hundred and sixty bushels, or forty-four bushels per acre. It is not claimed that the drainage did all this, but it was the chief corner stone. After drainage, the soil readily appropriated the elements of manures and fertilizers applied, making results possible which were not so before.

T. Dagger, of Newton, Indiana, writes in the *Drainage Journal*, June, 1882, as follows: "Last year I tile drained a pond containing three acres, laying the drains three feet deep and three rods apart. The result was that I gathered three hundred and eighteen bushels of excellent corn — one hundred and six bushels per acre. I also tile drained twelve acres of wet land, upon which I had tried to raise corn for eight years, but never got a good crop. After drainage I averaged eighty bushels per acre." Soils underlaid with

clay, if under-drained, will average fully one-third increase of products, in many instances more than double the former yield; and in some instances it insures an abundant yield where little, if anything, could be grown before.

Money invested in the improvement of lands, by tile draining them, will pay from twenty-five to one hundred per cent. annually upon the investment, and the work, if well done, will last for generations. It is better than bank stock, for the clay bank will not fail, and it is a thousand fold better than margins.

THE GROWTH OF THE DRAINAGE INTEREST.

The best evidence of the benefits to be derived from farm drainage is the wide spread and growing interest now being manifested among progressive farmers. Twenty-five years ago only a very few had done anything in the drainage of their lands, and there were only a dozen tile factories in the United States.

At this writing there are over 2,000 factories. Ohio has 500; Indiana 660; Illinois 600; Michigan and Iowa each about a hundred.

It is estimated that Indiana and Ohio each laid over fifteen thousand miles of tile drain in 1883 — that Illinois laid over twenty-five thousand miles, and other states drained in proportion the number of factories reported.

PRACTICAL SUGGESTIONS.

The efficiency of the drain will depend largely upon the thoroughness of the work. If an outlet can be had, drains should be laid at a depth of not less than three feet, and four feet is better.

In the beginning of the work the lines of the drains should be carefully laid out, the grade marked on stakes, and the whole should be platted and carefully preserved for future reference. If it is not possible to complete the work soon, begin right, do a part, and secure it, looking forward to the time when it shall be completed as a whole.

In laying the drains, it is well to strictly adhere to the following rules:

1. The drain should have a sufficient outlet for the dis-

charge of all the water that may be required to pass through it, and should be well protected.

2. The drain should be deep enough to drain the widest space possible — and should be as deep as three or four feet, and deeper if necessary, to get the water out by the most direct line.

3. The bottom of the drain should be a regular line of descent, so that the current of water will have a smooth flow from the head to the mouth of the drain. The tile should be laid evenly so as not to shoulder, and set as close together at the ends as possible. Where there is quicksand the joints of the tile should be covered with clay, to the thickness of two or more inches.

4. Every tile should be perfect in form, and well burned, having a metallic ring. Round tile are best for the reason that they may be turned to make close joints.

5. At the junction of drains, the currents of water should be brought together, flowing as nearly as possible in the same direction. Otherwise a crossing of currents will diminish the capacity of the tile.

6. The size of the tile to be used depends upon the grade, the character of the soil, and the area of land shedding its water, so as to require its passage through the tile.

7. At the point where the work ceases for a time, secure the end of the drain so as to prevent the dirt or silt from flowing in, and set a stake, so that the work may be resumed without difficulty, at any time.

8. If the drains be laid at a distance of forty feet apart, sixty-four rods of tile are required to lay one acre; if fifty feet apart, fifty-two rods; sixty feet, forty-four rods.

The foregoing suggestions are the result of the practical experience of over twenty-five years.

The writer well knows that many professional ditchers who prefer to dig only shallow drains and do their work largely by the guess rule, will object to many of the suggestions made. The laying of tile drains is not a temporary improvement, to be renewed every few years, but one which, if well done, will last a thousand years. Tiles laid for draining two thousand years ago were recently dug up in the city of Rome, and found in a state of perfect preservation.

In the hasty preparation of this paper there are points of interest merely hinted at. The subject demands investigation and should be carefully considered by every tiller of the soil, philanthropist and economist.

The benefits to be derived, the security of the investment, the durability and efficiency of the work, demand that it should be done well.

DISCUSSION.

Prof. Henry—I would like to refer to the subject of tile drainage. It has attracted so much attention in some of the states that it is no wonder the people are inquiring in some directions as to what Wisconsin shall do. In parts of Ohio, Indiana and Illinois it is the main topic of agricultural conversation. Tile factories have sprung up in those states in every direction, so that as you take a ride through the country you will find dotting the farms—not in the neighborhood of cities or villages, but out on isolated farms you will find tile factories wherever they happen to find the clay for making the tile favorably situated. Millions of dollars are being invested in this improvement, and yet the state of Wisconsin is just beginning to ask whether it will pay. There is always a reason for people's doing this. If you will take a geological chart you would easily see why the people of Indiana, Ohio and Illinois are so interested in this work. Take northwestern Ohio, formerly called the Black Swamp. An impervious clay subsoil, covered by a peaty surface soil, forms the whole district. The farmers there sometimes lose their entire crops during wet seasons. In dry seasons the land which has been flooded by water during the wet seasons will crack, and the crops which one would expect, are lost by reason of the condition of the soil induced by previous wet seasons. In Wisconsin in many places our soil is very different from that, and the question of tile drainage might always be a very secondary consideration, and yet there are places in the state which are calling loudly for the use of tile.

The regents of the University, in trying to meet the popular demands of the state, foreseeing that this question must come up, have wisely, it seems to me, undertaken the tile draining of a portion of the experimental farm. No matter whether the farm is well adapted for all kinds of experiments, it is eminently well adapted to experiments in tile draining. We are draining some of the farm with a view of turning it into experimental plots, so that when farmers visit us they can see as much of tile drainage as they can anywhere. The farmer, when he tile drains, covers them all up, but we shall arrange it so that the water can be followed from one tile to another till it empties into Fourth Lake. I have taken farmers to our drains this winter, and after our severest weather we found that four or five feet down, the water is pure and limpid, no sign of ice or frost, and where it pours into Fourth Lake, it melts the ice for quite a little space. All this time the frost is going down deeper and pulverizing the soil, and we can go on the land in the spring three or four weeks sooner than formerly. We could not formerly get on it before June, and I think in two or three years we will be able to get on it as soon as any farmers in the state. Farmers by the score are writing me and asking about drainage. When I came to consider, I didn't know of a single tile factory in the state. I had letters to find out where the tile could be bought, and I found out that there were two tile factories located at Jefferson, there is one about to be established at Kenosha, there is one at Oshkosh, there is one at Fond du Lac, and that is the extent of my knowledge at present. There are probably others in the state; if so I would like to know it.

Mr. Passoldt, of Pewaukee — I bought some ten years ago, of Mr. Bauer, of Milwaukee, who is at present at Oconomowoc. I had land on which I could raise nothing but wild rice and flags. I couldn't cut any hay. I put in drains about ten rods apart, the tiles about three inches, I think, in size, and since then I have plowed it, and pastured sheep and manured, and I can cut it as well as I can my other land.

A Member — Was there any outflow of water from that tract of land, either surface water or by way of spring?

Prof. Henry — Formerly we had a surface drain, but the water accumulated to such an extent, and seemed to work through the soil from other places, so that we could not use it for early crops. We are getting a set of surveyor's instruments. We will have them all hanging up in the tool room of our farm, and a farmer can come there and see the different tools with which the drains are laid. Our farm hands are learning to cut ditches. An English tile-drainer will cut a four foot ditch only twelve or fourteen inches wide at the top, while an American farmer would cut it two feet wide. By cutting it so narrow very little earth is thrown out.

A Member — About what grade do you lay them?

Prof. Henry — Tile should not be laid at a fall of less than one foot in four hundred. In Central Park they were laid one foot in twelve hundred in some instances, but they were laid very carefully. I wish some young men, who are going to take their fathers' farms and take up where their fathers left off, would examine the subject of tile draining and such things as that, and make some of their farms as good as some of the farms in the old world. The fathers had to clear up the farm. Now, let the sons come on and add to their value. I believe that Emerson tells us that the farmers about Concord found a new Concord under old Concord by means of tile draining. Instead of putting your money into another eighty acres or forty acres, and keeping your houses so far distant from your neighbors', put your money in the land you have by tile draining and make one acre do what two or three do now. That can be done as well as not, and the money will be a better investment than if put into Dakota lands or in your neighbor's farm. At any time when I can get two or three young men to come and stay on the farm for a week, and take lectures in tile draining and go out and dig two or three rods of ditch to get familiar with the tools, we will form a class. We will have a class in March, if you like, and another in April, and another next October, if you will. Your expenses will not be great. Instead of taking a four years' course in agriculture, come

and take a week's course in tile draining. I will form any kind of a class of agriculture you want, and in this way, perhaps, I can get more students than Prof. Freeman.

A Member — I will inquire what the cost of the tile is?

Prof. Henry — The tile costs about ten dollars a thousand, the tile being a foot long and an inch and a half in diameter, and about twelve dollars for two inch pipe. We were told yesterday that if the experimental work had been done in Europe, all we had to do was to bring that over here, put it in our terms, and it was at once valuable. We are finding we do not want to lay the same tile they do in Europe, where they have a rainy growing season. They lay inch and a quarter; we prefer two to three inches. The experimental farms have got to work out these questions.

Mr. Boyce — What factory did you get your tile at, to cost that much?

Prof. Henry — The one at Jefferson.

Mr. Boyce — I got six inch tile for less than that.

Prof. Henry — They were bankrupt goods then, because they cannot be made for that.

Mr. Boyce — What is the cost of laying tile drain.

Prof. Henry — Our experience would not be of any value to others, because we had to lay the most of it through quicksand; but the usual expense of tile drainage is from twenty to thirty dollars an acre.

A Member — What sort of tools do you use for putting in these drains?

Prof. Henry — Where a farmer is doing the work as economically as possible, the best tool at first is a plow, by which you can throw out a furrow or two. Then a subsoiler, if you have one; if not, a common spade, until you get down about where your tile is to lay. The last tool that is used only cuts four and a half inches wide. It is a long, narrow spade, eighteen inches long. Then the bottom of the drain is cleaned with a scoop. A drain four feet deep, when cut and ready for the tile, by a skilled workman, would be about thirteen inches wide on top, and the necessary width of the tile at the bottom. If we were laying a two inch tile, it would be about three and one half inches across at the bot-

tom. Two inch tile is the diameter of the bore inside. We have scoops of different sizes, and the bottom of the ditch is graded by these scoops. We use a scoop corresponding to the tile which is to be laid. The scooping is the last thing. It narrows up until, within a foot of where the tile is to lie, it is just the width of the bit of a common spade. We have men who know how to do this work. If you will send on your boys, we are going to have a level from an eastern manufactory, by which your boys will be taught to run lines, to grade, to determine the fall of the ditches, to dig small spaces and put the tile down, and then he can go home and give the old gentleman a few lessons. We do not put anything under the tile unless there is quicksand. Any good brick clay or pottery clay will make good tile as a rule. It needs good brick clay.

Mr. E. W. Daniels, of Auroraville — I would like to inquire if any one has tried any other material except tile for drainage. I live in the northern part of the state where timber is plenty, but tile is not easily obtained. I have tried some of the timber that is lasting in the ground. Tamarack and butternut will last. I drained a cellar years ago, and I looked over it twenty years after and it was sound. I have never tried it on a large scale, to know how long under-drains made of these materials will last. I tried a little last summer; I used tamarack for the sides and butternut across.

Mr. Passoldt — I would try stones, if you have got them handy. I cover them with slabs; they will last as long as you and I will. If it does not get dry, most any timber will last.

Mr. Daniels — My cellar drain lasted over twenty years, and I have put in other drains recently. I have taken them up more than twenty years after having been laid, and they were sound, and I think tamarack and butternut are the two best materials to last under ground.

Mr. Passoldt — Would that include hemlock?

Mr. Daniels — I think it would. I live where I can get tamarack and butternut. I think they will last twenty years, and I think land that is once drained will never get as compact as before.

Mr. Foster — Mr. Daniels' home is within about eight miles of mine. I have about three miles of drain on a little farm in Winnebago county where I have used nothing but the earth itself. A drain of that kind has been on a farm of my brother-in-law for eighteen years. I was on his farm some months ago and was examining the drain on the soft part of the ground, and examining the ditch and it was just as perfect as it was the day it was made, and when it was put there the marsh was so soft that he was unable to drive on it with one of these large kinds of wagon wheels we use in taking hay from the marsh at the present time. I have about three miles of that kind of drain on my land, about five miles east of Berlin, and I have about four miles of tile drain on the same farm. I am somewhat interested in this thing. They talked of taking me to the insane asylum near Oshkosh. They said I was putting down more money than I would ever see again. They thought I was throwing it away, but my neighbors who were so frightened five years ago are now coming every Sunday, when I go home in the summer time, and looking over those lands that I have drained, and they see what has been produced by this drainage. If Prof. Henry will come home with me sometime, and I give him an invitation to come, I think I can show him some drains older than those they have made, and he will be able to tell the boys something more about drainage.

The father of my work was one of the old presidents of this society, who now lies within the soil of Winnebago county, Eli Stinson. When he first commenced draining, he laid about a mile of tile drain. He had a very large farm and of course he could lay more than those who had smaller farms. He wanted to know who would follow him draining. I followed him with his mile of drainage, and before he got his second mile, I had my third of tile drain. I think, perhaps, when he died he had more drain than I had. He used boards, as Mr. Daniels has spoken of, but he abandoned the use of boards entirely before his death, that is wherever he used it upon the soft ground. I put mine some three feet deep. Upon land where five years ago I was unable to get any amount of pasturage that was worth calling pasturage,

to-day I will get from four to five times the amount I would get when I commenced tile drainage, and it is perfectly astonishing to see the effect that it has upon soil to put down the spade first and follow it with the tile afterwards. I am not a member of this society, but I am a farmer, although my home is in this city during the week time; but I am a Winnebago county farmer, and proud of that fact, and I do like to see the people come together here and talk about those things that interest us as a farm community. I am, like any other citizen, interested in those other things that have been talked of here. But it seems to me the object of getting together in these meetings is to talk upon those greater questions which not only pertain to our interests, but reflect credit upon us as farmers or take away the credit that we ought to have reflected upon us. There is something interesting in this. I have been waiting for this and one other paper, and that is on the Russian apple, and I see the gentleman over there, and hope he is going to tell about it before I go home. I wanted to get something on those questions.

I do not talk here because I want to talk upon these subjects because I am out of the insane asylum yet, but I do know that where five years ago I hired a man to pole off the hay from the marsh which I have drained, and carried it after it had been mowed and stirred up and rained on three or four times, and then carried it off with poles eighteen or twenty rods, now I can drive over it with horse teams as well as you can upon your hard soils. This is the practical effect of putting the drain in the soil, and the most of this drain, where I carried the hay off in this manner years ago, is what we call the sod drain, and if you have any of the Englishmen here who have made the old sod drain in the old country, and will make it as honestly as this was made on the farm of my brother-in-law, and he will come to your farm and make a sod drain, and make it well, so that the carriages and horses as they pass over the ground will not affect it, will remain there in my opinion for fifty years, just as well as when it was put down; and yet, if I was worth money enough, I think I would put in the tile drain instead,

because we know that those, when well put in, will last for generations. Let us put in the tile drain. I will put in more just as fast as I can get the money to do it.

Mr. Boyce — Where do you run your water to?

Mr. Foster — I have a stream running right through the center of this land. It shelves both ways, and I opened up that stream very much larger, so as to make perfect drainage, and drain into that.

Mr. Boyce — Was this a peat marsh that you drained that was so soft, or was it quicksand and clay?

Mr. Foster — A peat marsh, generally. Wherever I strike the quicksand I have to use boards to keep the quicksand from coming into the drain.

Mr. Boyce — Have you succeeded in getting tame grass in place of the wild stuff?

Mr. Foster — The tame grass comes in almost naturally, and if you sow it, it will grow as well as it will upon the higher lands.

Mr. Boyce — How deep did you lay your drain in the peat marsh?

Mr. Foster — Three feet, as soon as I could get back from the stream far enough to lay that depth. Some places it is five. Some places I think it is but two feet, near the stream.

Mr. Boyce — When the stream rises, does it not backset up your drains?

Mr. Foster — It does to a certain extent; but on my farm the slope is of such a character that it goes back but a short distance. Of course the water in this small stream goes into larger streams, so that we are not affected by that as much as we would be in a more level country.

Mr. Boyce — How long since you put them in?

Mr. Foster — I commenced about five years ago.

Mr. Boyce — I have laid a little tile, but not much. I first tried an experiment of laying it with boards. I dug my ditch a good deal wider than I ought to, not knowing how to do it, and laid down an eight inch pine board in the bottom, had a couple of two by four scantlings and set them edgewise, leaving a space four inches square in the middle, and took a two inch plank and covered it over; but the wa-

ter has risen so much in that time, it has submerged the whole thing. Last fall I had an English tile drainer. He sent back to England and had all the tools sent over—had to pay a heavy duty on them. He had his pointed spade, etc., and he will dig a very nice drain, taking out very little dirt. The scoop he finished up with is a long handled concern, with which he can reach down six or eight feet and clear it out the width of the tile. I have quite an amount of marsh land. My idea was that the water in the stream that runs through it, at high water, would back up the drains so far that it would take a long time to empty them again. Water enough runs across the farm to run a large mill, but there is fall to it after all.

Mr. Wheeler — I am not expecting to follow Prof. Henry's advice by going on my father's farm, and yet I am exceedingly interested in this tile question, and more particularly in regard to its possibilities of irrigation as well as drainage. It seemed to me for some time that the same tiles that are laid in the ground could be made the medium of distributing water for the benefit of the ground when it is parched and suffering from drought, as well as to drain it when it was wet; and while querying in my mind as to the possibility of utilizing tile in that way, I happened to visit a florist in the vicinity of Columbus, Ohio, about a year and a half ago, and he showed me a specimen of that kind of work and that use of tile. I had heard that for years he had led the floral interest in the vicinity of Columbus, and it seems that that was his method. He put underneath his flowers and underneath his garden these tiles, and he pumped water into them and kept those tiles full of water, and they distributed the water into the soil, and in that way he secured a floral growth that was phenomenal. Now, we all know that in this vicinity the crops are often ruined by very severe droughts in midsummer, and the query is, why can we not make use of the same tile for watering farms as well as for draining them? In California they are using irrigation with very great profit in ordinary farm operations. Wheat fields and corn fields, as well as vineyards, are being irrigated to great advantage, and those western people tell us that the

future success of our farming is going to be due to irrigation, with as much as the eastern people tell us it is going to be due to drainage: and this proposed system would satisfy both ideas. I would, therefore, suggest, if it be practical, that Prof. Henry add this experiment of tile irrigation to his list of experiments, and give us some report on the subject.

A Member — Where would you get your water from in a dry season?

Mr. Wheeler — Most of the farmers have windmills and wells and they could pump it into them. Whatever machines they use for pumping water could be utilized for that purpose. There are very few wells that cannot be made perennial all through the year by a little extra expense.

Prof. Daniells — A well drained soil does not need any irrigation.

ONE ASPECT OF SOIL EXHAUSTION.

By PROF. H. P. ARMSBY, PH. D., Madison.

Mr. President, Ladies and Gentlemen — I count myself fortunate in the fact that this, which is practically my first introduction to the farmers of Wisconsin, is to an association, and before an audience, representing so much of the intellect, the wealth, and the hard, practical sense of the agriculturists of this state. It is no small privilege to one entering your state an entire stranger, to assume a position necessarily involving considerable responsibilities, and affording abundant opportunity for hostile criticism, to meet as friends, almost at the outset of his work, those for whom that work is to be done; to have an opportunity of listening to their discussions, learning their opinions and wishes, and of expressing to them, collectively and individually, his earnest desire that his work here may prove to be of some real service to them. Whether this desire is to be fulfilled, time will show; but of one thing I feel assured, that I shall receive from you, the farmers of Wisconsin, the same hearty welcome to your community which I have already received from

so many individual members of it, and find in you the same cordial disposition to overlook shortcomings, and to accept the promissory note of good will, in lieu of the hard cash of actual achievement, which, from the outset, has rendered my stay in the "Badger State" one of the pleasantest experiences of my life.

I shall speak to you to-night, as I shall almost always speak to you on such occasions, from the stand-point of agricultural science. It would be presumptuous, were it not ridiculous, were I to attempt to instruct this audience, or any similar one, in either the art or the business of agriculture. You would, doubtless, soon conclude that on either of these subjects you were well fitted to instruct me, and I may as well frankly confess that you would be quite right in your conclusion.

What I may hope to do is to present to you, in as plain and simple a manner as I can, those great general laws of nature — those "first principles" in the domain of physical science — which underly and condition all successful farming. It may well be the case that you may not always see any direct way by which these principles may be made to increase the profits of the farm. Often there may not be any *direct* way. The first effect of "first principles" is upon the *farmer*. He it is that is benefited, in the first instance, by a knowledge of them, and I may safely rely upon the intelligent farmers of Wisconsin to perceive that the man, of any occupation, who knows the most of the natural laws in accordance with which he must work — in short, who knows most fully the *reasons why* he does as he does — will work most successfully and take most pleasure in his work.

The subject of soil exhaustion, then, I ask you to approach with me, from the scientific side. Just here, however, arises a difficulty. It is said that there is no such thing as a science of agriculture. We are told, by those who are — or who think they are — authorities upon this subject, that there have not yet been discovered any general principles of agriculture, and that those which have been discovered have been forgotten again; that the literature of the subject is a confused mass of conflicting observations, without system or

order; that since Liebig, no master mind has arisen to set in order this confusion and collect heterogeneous facts into a symmetrical science, and that even whether he accomplished anything nobody knows; that we have no books on agricultural science from which students may learn what little, if anything, is already known; that, in short, we know nothing about a science of agriculture, and that there is little prospect that we ever shall. Now, Mr. President, I am not ready to set myself up as an authority in this matter. I have spent only some ten years in the special study of agricultural science, or of what I supposed was such, and I ought, I am aware, to be very modest in criticising the opinions of those who bring to the consideration of the subject, minds specially prepared for it by training in totally different directions, and who have been able, I doubt not, to devote to it the leisure moments of lives filled with varied and beneficent professional activity. Nevertheless, I cannot refrain from expressing my astonishment that intelligent men can at this day be found who will publicly make such astonishing statements as those I have referred to.

No science of agriculture! Why, what is agricultural science? It is a knowledge of the laws of nature which must be obeyed by the agriculturist. In other words, it is a knowledge of chemistry, physics and biology, using those terms in their widest sense, *in their applications to agriculture*. We might as well deny the existence of these sciences, as to deny that we know something — much — of their application to agriculture. Not, indeed, all that we would like to know, by any means, or that we may reasonably hope to know in the future, but very much that is of immediate practical utility.

What has been done is forgotten or inaccessible! Forgotten by whom? Chiefly, I suspect, by those who never knew it. Inaccessible? Yes, to those who have never tried to find it. So is the literature of any science inaccessible to those who will not take the pains to search for it, but want it brought to them in a sort of "six easy lessons" style.

Nobody knows whether Liebig accomplished anything for agriculture and if so, what? What, then, has become of

the seven or eight editions of his "Chemical Letters," and "Chemistry in its Application to Agriculture and Physiology," published in Germany since 1840, and of the almost equal number of editions translated into English? Has the world already forgotten that Liebig was practically the originator of the idea of concentrated commercial fertilizers? Has it forgotten his contributions to the physiology of stock feeding? Has it, above all, forgotten that which was his chief merit, his faculty for so grasping and treating the great questions of agricultural science that others were stimulated to seek solutions for them? I trow not.

No great minds, since Liebig, have devoted themselves to the pursuit of agricultural science. Why, I might weary your patience with the mere names of men — Englishmen, Germans, Frenchmen, Danes, Swedes, Russians, Italians, Americans — who have devoted themselves to the pursuit of agricultural science; and not only that, but have made substantial contributions to its advancement. I have in my possession a book of which one hundred and forty-six octavo pages are taken up with a list of the titles alone of papers published by European experiment stations between 1852 and 1877. A large proportion of these papers were valuable contributions to the advancement of agricultural science, and were published in reputable scientific journals, whose files are accessible to-day.

But I have no time to pursue this topic further. Suffice it to say that there is no more doubt that there is a science of agriculture, than that there is a science of chemistry. Agricultural science is a young science, hardly yet fifty years old. No one can be more ready than I to concede that it is imperfect and uncertain in many particulars, but it is none the less a science. It has a large and increasing periodical literature, and books and pamphlets innumerable. Its past growth has been marvelous, and its future advancement promises to be yet more so. I have no manner of doubt that Wisconsin will share with other communities in the benefits resulting from that advancement, and will do her full share to promote it.

And now, advancing to particulars, let us see, very briefly,

what agricultural science has to say concerning soil exhaustion:

That animals require food in order to live is one of those facts the only excuse for whose statement to an audience is that it may serve to illustrate some other truth, either by analogy or by contrast.

That the same thing is true of plants has come to be almost equally well known, and yet it is by no means so obvious to the hasty observer. We feel, ourselves, the keen demands of hunger and thirst; and the strife for "bread and butter" is, with most of us, too constant and earnest and requires too much "brains" for its successful prosecution, to allow us to forget that man, like other animals, if he may not live to eat, must yet eat to live.

The plant, on the contrary, seems to have no such wants. The lilies of the field toil not, neither do they spin, in any fashion visible to the casual glance. But the farmer, who makes it his business to produce plants of one sort or another, and thus has his vision sharpened by self-interest, speedily sees that this apparent quiet covers an incessant activity, and that the plant, as well as the animal, must eat or die. Especially if he is located upon a soil from which many successive crops have been taken, does he find that constant and liberal supplies, of one sort or another, must go into the soil if anything is to come out of it, and you shall find no surer road to his attention than to talk to him of superphosphates and potash salts, of bone, blood, fish, azotin, of nitrate of soda and sulphate of ammonia, and a score of other substances with which he may feed his crops. Indeed, at times you might be ready to think that he took more interest in what he put on his land than in what he took off it.

But the farmer learns more than the simple fact that plants need food. His experience teaches him where some, at least, of their food comes from, and that, so far as his efforts to supply it are concerned, he must work through the soil, feeding that, in order that it may feed the plant. Furthermore, he finds that while some soils need to be fed — or, in other words, manured — liberally, others can produce

luxuriant crops with little or no manuring, and he distinguishes between rich soils, which can feed plants themselves, and poor soils, which, like poor men, must have constant receipts to balance their expenditures. Sometimes he pursues his education still farther, and learns, in the second generation, if not in the first, that a soil, like a man, may become bankrupt, and fail to respond to his just demands upon it.

In short, the power of a soil to feed crops is limited, and after a certain point has been reached—after a certain number of crops have been taken off—the supply of plant food becomes inadequate to produce the desired results. This state of things is expressed by the term *soil exhaustion*. A soil is exhausted when the supplies of plant food which it contained are exhausted, so that it can no longer feed crops.

Just here, however, it is necessary to guard against a possible misconception. When we think of the soil as a source of plant food, we are not to regard it as a great store-house from which the plant can draw in any needed quantities until it is empty. It is, rather, like a sponge. When the sponge is saturated with water, a very slight pressure will cause water to flow out, but as you continue the operation, it becomes more and more difficult to squeeze out anything. So with the soil. When it is full of plant food, the crop satisfies its needs easily and is correspondingly luxuriant; but as crop after crop squeezes the soil, the flow of the plant food becomes less and less abundant and the crop more and more scanty. But we never reach the point of no-production any more than we can squeeze a sponge dry. There is always a little water left in the sponge, and always a little plant food left in the soil. No man ever yet saw a soil on which absolutely *nothing* would grow when the proper conditions of heat, light and moisture were supplied.

The term soil exhaustion, then, is a relative one. It means, not the reduction of the supply of plant food to zero, but the reduction of it below the point of *profitable* production. Moreover, since the profits of production vary, the same soil might be relatively exhausted at one time or under one

set of conditions and not at another time or under different circumstances.

Thus far, I have spoken of the plant food contained in the soil as if it were one single substance. It is now time to inquire whether this is the case, or whether plants, like animals, require a certain diversity and complexity in their food. Here we pass beyond the farmer's sphere of observation, and must call to our aid the more refined and exact methods of the professional scientific man. The farmer's observations are, in one sense, scientific also, so far as they extend. They are accurate, and logical conclusions are drawn from them, and just this is the essence of the scientific method of studying nature.

It is very plain, however, that a man who makes it the business of his life to study nature scientifically, must have many advantages over one whose main business is something else. He has the means of making more minute and exact experiments, and, if we regard an experiment as "a question addressed to nature," he can better understand the exact import of her replies.

In the matter which we are now considering, careful and laborious investigations (more careful and laborious than most of you, probably, have any idea of) by numerous observers have yielded results entirely in harmony with the conclusions drawn from common observation, but vastly more detailed and minute, and, therefore, more useful. They have shown that the food which the plant takes from the soil is not a single substance, but that no less than seven distinct substances besides water must be present in order that the plant may grow. They are: potash, lime, magnesia, iron oxide, phosphoric acid, sulphuric acid and nitric acid. Not one of these can the plant do without. They are the seven links of a chain, and if any one link is missing, the rest are of no use. If any one of these substances were entirely removed from a soil, nothing would grow on it. Moreover, just as a chain is no stronger than its weakest link, so here. If a soil contains only potash enough for half a crop, no matter how much of the other six substances may be present, we shall get but half a crop,

and manuring with any of these other six substances will do no good. It is plain, then, I think, that a soil may become hausted, in the sense in which we are using the word, not only by having its stock of plant food as a whole reduced to a minimum, but by having its stock of any one of these seven substances which I have named thus reduced. In other words, to weaken the chain, it is sufficient to file away one link. I desire to call your attention, this evening, to one, in particular, of these seven links of the chain, and ask you to consider briefly some of the ways in which it may be weakened, and how we may hope to prevent such a result.

The particular link of the chain which we are to consider is the one last named, viz.: nitric acid, or better, nitrogen, because it is the nitrogen which is the important part of the nitric acid, and we cannot begin our consideration better than by making acquaintance with the material of which this link is composed.

Nitrogen, itself, is a transparent gas, not to be distinguished in appearance from air. Indeed, four-fifths of the bulk of the air is nitrogen. This gas is distinguished for its lack of salient properties. It does not burn itself, and will not allow combustibles to burn in it. A burning body placed in pure nitrogen is extinguished as promptly as if placed in water, and an animal may be drowned in nitrogen as effectually and quickly as in water. The plant, too, can make no use of the free nitrogen of the air.

The other one-fifth of the air is composed of a gas called oxygen, which has practically the same appearance as nitrogen, but which is a very active body, sustaining the burning of combustibles and the respiration of plants and animals.

Now, if nitrogen and oxygen are united chemically, and if water is added, we get a compound of more immediate interest to us, viz., nitric acid, of which I have here a sample. It is the substance frequently called *aqua fortis*, and is a colorless, corrosive liquid with an intensely sour taste. Further, if this nitric acid acts upon a metal, or upon the oxide of a metal, we have a *nitrate*. For example, if we bring together nitric acid and potash we have nitrate of potash,

commonly known as saltpetre. Nitric acid and soda form nitrate of soda, or chili saltpetre; nitric acid and lime form nitrate of lime, etc. These nitrates have many interesting properties, but one to which I wish to call your attention particularly is that all nitrates dissolve readily in water. The bearing of this fact we shall see later.

Another important compound of nitrogen is that with the colorless gas, hydrogen, forming ammonia, or spirits of harts-horn. This is a colorless gas, having a very strong, pungent odor, and soluble in water. The solution is called ammonia water and here is a sample of it. Ammonia unites with acids very much as potash or lime or soda do, forming what are called salts of ammonia. Thus ammonia and nitric acid form nitrate of ammonia, just as potash and nitric acid form nitrate of potash; ammonia and sulphuric acid form sulphate of ammonia, a common fertilizer; ammonia and hydrochloric acid form chloride of ammonium, or sal-ammoniac, etc.

Finally, all organized beings, whether plants or animals, contain nitrogen in very complex compounds. This nitrogen we may call organic nitrogen; it is usually insoluble in water but is slowly converted into soluble forms during the decay of the matter containing it.

Now, all fertile soils contain nitrogen in one or the other, or all, of these forms which I have shown you; that is, either as nitrates, salts of ammonia, or inorganic matter. Of these three it is chiefly the nitrates which serve to nourish plants. The salts of ammonia may help, though they are present in very minute amounts in ordinary soils; but the nitrogen of organic matter, such as is added to the soil when grass or green crops are plowed under, or forms a large part of stable manure, or is left in the soil in the form of roots and stubble after crops have been taken off, is of practically no *immediate* use to the plant so far as supplying nitrogen is concerned. The nitrogen is there, plenty of it, but not in a form on which the plant can feed. It is as if your roast beef were brought to the table raw; there is plenty of nutriment there, but it needs preparation for your palate.

Such a process of preparation, by which the unavailable

nitrogen of the soil is converted into a fit form for plant food, actually goes on in the soil. Its existence has been known for a long time, but its exact nature has not been made out until quite recently. It is a process somewhat resembling the common vinous fermentation by which liquids containing sugar become changed into wine, cider and other fermented liquors. Just as the latter change is dependent on the presence and activity of an organism—the yeast plant—so the process which takes place in the soil is due to the action of an organism. The process is called nitrification, *i. e.*, nitrate making. Under its action both the ammonia and the organic nitrogen of the soil are changed into the form of nitrates, and thus rendered available to the plant. This is evidently a great gain, but it brings with it also a danger. You will remember that I stated that all nitrates dissolve readily in water. Consequently, when they are formed in the soil, they will dissolve in the water of the soil, and the next rain may wash them down into the lower layers of the soil, out of the reach of plants, or into the drainage water. As a matter of fact, analyses of drainage water from fertile fields frequently show the presence of considerable amounts of nitrates, which must have been formed in the soil in the way just described.

Some idea of the extent to which nitrogen leaches out of the soil, or is lost in other ways, may be obtained from some of the Rothamsted experiments of Lawes, Gilbert and Warington, and also from some recent experiments by Dehérain, in France.

The instigation to Lawes, Gilbert and Warington's experiments was given by the observation, that in the field-experiments carried on for a series of years at Rothamsted, scarcely a third of the nitrogen of the manure was found in the crop under the most favorable conditions, while, in those cases in which no mineral manures were applied, the deficit was much greater. The most obvious conclusion was, that there must be a great loss of nitrogen in the drainage; and experiments were instituted to test this idea. Their earlier experiments were with three lysimeters. Excavations were made under and around an area of a thousandth

of an acre. The mass of soil thus isolated was supported by perforated iron plates, and surrounded by masonry, thus leaving the soil with its natural structure. The quantity of water percolating through this soil has been determined since 1870; and since May, 1877, its content of nitrates has been also determined. The soil was uncultivated and free from vegetation. Numerous interesting facts are disclosed by these determinations, but that which now interests us chiefly is the quantity of nitrogen found in the drain-water. This amounted, in the average of four years, to 46, 36, and 44 pounds per acre, at depths respectively of 20, 40, and 60 inches.

Subsequently the same experimenters have determined the nitrates in the drainage waters from their experimental wheat-field, each plot of which is drained by a single lateral at a depth of 24 to 30 inches. Having no means of measuring the drainage, the authors take, as the basis of their calculation of the loss of nitrogen, the amount of drainage-water yielded by the 60-inch deep lysimeter at the same time. On this assumption, the annual loss of nitrogen varied from 15 and 16 pounds per acre, on unmanured plots, to as high as 74 pounds per acre.

Various unavoidable circumstances, into a discussion of which it is needless to enter here, united to lessen the accuracy of these experiments, and their results must be considered as approximations only to the truth.

Deherain's experiments were made on a different plan. Three series of plots, of four each, were laid out, each plot having an area of one *are* (equal to about four square rods). The first series bore fodder corn; the second, potatoes; the third, beets, fodder corn and esparcette successively. During the first three years, one plot in each series was unmanured; one received, per hectare, 80,000 kilogrammes of stable manure; one 1,200 kilograms of nitrate of soda; and one, 1,200 kilograms of sulphate of ammonia. During the following four years none of the plots received any manure. At the beginning of the experiments, and at the end of three and seven years respectively, the percentage of nitrogen in the soil was determined. With the aid of these

determinations, a balance was struck for each plot between the nitrogen originally present and that added in the manure, on the one hand, and that removed in the crops and remaining in the soil at the close of the experiments, on the other hand. In every case except that of the esparcette, a very great loss of nitrogen was found to have occurred. The following table contains the annual loss of nitrogen from a portion of the plots, reduced to pounds per acre to compare with Lawes, Gilbert and Warington's results:

MAIZE PLOTS.

Manuring.	First period.	Second period.
Stable-manure	—257	—118
Nitrate of soda.....	—358	—183
Sulphate of ammonia.....	—320	—132
Nothing.....	—338	— 93

ESPARCETTE PLOTS.

Manuring.	First period (roots and maize).	Second period (esparcette).
Stable-manure.....	—808	+327
Nitrate of soda.....	—663	+134
Sulphate of ammonia.....	—732	+135
Nothing.....	—567	+149

Compared with the losses observed in Rothamsted, some of these figures are enormous, being over nine times as great as the highest obtained there. When we consider that the soil was calculated to contain, to a depth of fourteen inches, only about 7,000 pounds of nitrogen per acre, they seem to show that but a comparatively short time would be required to reduce the supply of nitrogen to the point at which culture ceases to be profitable.

While the results of Dehérain's experiment are very interesting, it is unfortunately a fact that we cannot put full confidence in their accuracy. The methods employed were such

as involved possibilities of large errors, and the amounts of nitrogenous fertilizers used were much larger than would be used under any ordinary conditions. At the same time, the fact that the results all point in the same direction can hardly be accidental, and from the combined results of this and of Lawes, Gilbert and Warington's investigation it would appear that we may fairly conclude, that, under ordinary conditions of tillage, there is considerable loss of nitrogen from the soil. Lawes, Gilbert, and Warington's experiments show that much nitrogen may escape in the drainage; and, according to their calculations, more nitrogen was removed from six out of thirteen of their experimental plots in crop and drainage, during thirty years, than was supplied in the manure. From Dehérain's experiments we learn that a soil under constant tillage may grow poorer in nitrogen in spite of heavy manuring.

Here, then, we find another agency of soil exhaustion. We know that crops carry off fertility from our fields; but here is a hidden leak whose action is to drain the soil of its nitrogen, and thus reduce its crop-producing power, for, as we have seen, a deficiency of one element of plant food is as fatal as a deficiency of all seven.

The process of nitrification is a solvent process, *i. e.*, it converts the organic nitrogen of the soil, which does not dissolve readily in water, into nitrates which are easily soluble, and thus fit to be taken up by the roots of plants.

A similar solvent action also goes on with the other ingredients of plant food present in the soil. Comparatively large stores of them exist in nearly all soils in insoluble, and therefore unassimilable, forms, and certain natural processes are constantly, though slowly, changing these insoluble compounds into others which are soluble and available as plant food.

These solvent processes which go on in the soil are of the utmost importance in maintaining and increasing its fertility, for the store of immediately available plant food in any soil is relatively very small. We need not, at this time, enter into a consideration of the numerous chemical and physical processes involved, but it is important that we

should know what conditions favor these processes. They are, in brief, everything that exposes the soil more fully to the action of what we may comprehensively term the weather; that is to say, to the action of heat, moisture, frost and air. The most important agency in accomplishing this is tillage, which, by loosening the soil and giving atmospheric agencies fuller access to all parts of it, greatly hastens the conversion of insoluble into soluble plant food. This is one (though by no means the only) reason why we cultivate the soil. Instead of manuring richly with soluble plant food we let natural agencies prepare fertilizing material out of the inert matter of the soil itself. Fallowing and fall plowing have also this as one of their objects.

Now, to go back a little, I have already called your attention to the fact, that, while this process of "weathering" is of great advantage to the soil, it may also lead to losses through the leaching out of the dissolved matters, and thus act to impoverish the soil as well as to enrich it. How, now, can we stop this leaking out of fertility at the bottom of the soil?

If you find a hole in the bottom of your milk pail, you can prevent the milk leaking out in two ways: you can refuse to put any milk into the pail, or you can stop up the hole as well as possible. In the case of the soil, somewhat the same alternatives are open to us. We may use all means in our power to diminish the flux of plant food in the soil, or we may endeavor to stop the leak as best we can. We need not dwell long upon the first alternative. Even were it possible to prevent any solvent action in the soil we should not desire to, because we want the dissolved matters to feed our crops. The question then is, how can we prevent them from leaching out of the soil?

† This question is particularly important as regards nitrogen, and it is this aspect of soil exhaustion in particular which is the subject of this address. All the other elements of plant food the soil has more or less power to retain. Potash and phosphoric acid are practically never found in drainage-waters. The soil has what is called an absorptive power for them, by virtue of which they are retained in forms not

soluble in water, but yet available as plant food. Lime, magnesia and sulphuric acid are found in drain water, but most soils contain so much of these substances that some loss of them is not so serious a matter. With nitrogen, the case is different. I told you that this element existed in the soil in organic matters, ammonia salts and nitrates, and we have just seen that these are all converted more or less rapidly into nitrates. For nitrates, however, the soil has no absorptive power, and unless some other means are used to arrest them, they are leached out of the soil in the natural or artificial drainage. Thus nitrogen is the most slippery of all the important ingredients of the soil, and the one whose loss by leaching is most to be feared, particularly as its replacement by means of fertilizers is more costly than that of any other element.

One answer to the question "How shall we prevent the nitrogen from being washed out of our soils," is suggested by one of Dehérain's experiments. You will observe that the esparcette plots show no loss of nitrogen but actually a gain. Esparcette, as many of you doubtless know, is related to the clovers; it is a plant which covers the ground with a mantle of living vegetation throughout the growing season, and, what is more important, fills the soil with growing roots. In this latter fact, and not in any special properties of the clover family, lies the key of the situation. When the soil is thickly covered with vegetation, and the soil filled with its roots, the nitrates which are constantly forming in the soil are assimilated by the roots as rapidly as formed, while the compact state of the soil hinders access of oxygen to the deeper layers, and thus moderates nitrification. This action of plant-roots in arresting nitrates on their way to the lower strata of the soil is shown very plainly in Lawes, Gilbert and Warington's experiments already cited. While the land carried a crop of wheat, the drain-water contained little or no nitrates, except when an excess of nitrogen had been given in the manure; but as soon as the crop was removed nitrates made their appearance in the drain-water.

But an untilled soil is not only protected against losses of nitrogen; it is also in condition to retain the nitrogen brought

to it in rain, snow, etc. This comes partly in the form of ammonia, which is fixed by the soil, and partly in the form of nitric acid, which is fixed by the vegetation. In this way a soil carrying permanent vegetation may be continually gaining nitrogen, as is indicated by Dehérain's results on the esparcette plots.

Tillage alters this state of things very materially. By breaking up and mellowing the soil it facilitates the access of oxygen, and increases the rapidity of nitrification. At the same time, the natural vegetation is replaced by one occupying in many cases but a part of the ground, and occupying it for but a portion of the year. Add to this that by diminishing the amount of vegetation we diminish the evaporation of water, and thus leave the soil moister, and at the same time expose it more fully to the sun's rays, thus rendering it warmer, both of which conditions favor nitrification, and we see that cultivation both increases the flux of nitrogen in the soil, and decreases the means of utilizing it.

The clear recognition of this state of things brings with it the suggestion of at least a partial remedy, which is to keep the soil occupied as fully and as long as possible with growing vegetation. The roots of the living plant lend to the soil an absorptive power for nitrogen compounds, similar to that which it has of itself for other elements of plant-food, and enable it to store up these compounds against future needs. To prevent a loss of nitrogen, we must make use of this power as fully as possible, both in the system of cultivation adopted, and in other ways. After taking off a crop in the early fall, instead of leaving the land bare, let it be sown with some quick-growing crop, e. g., rye, which shall serve to store up the nitrogen which would otherwise be lost. In the spring this crop is ploughed under, and furnishes nourishment for the succeeding crop or, better yet, furnishes early pasturage or soiling for the stock, thus returning its nitrogen indirectly to the land. Such a plan has been adopted here and there with advantage. Its general use would turn largely, of course, on the question of expense. On a virgin soil, containing already large reserves of nitrogen, no appreciable benefit might result from it, though even there the *preserva-*

tion of the present fertility is worth striving for. But between this condition and the state of relative exhaustion to which the soil of our older states has been reduced, there must be a point where saving nitrogen in this way would be of immediate as well as prospective benefit. The exact methods of applying the principle involved to particular cases it is not the province of this address to discuss. The principle itself, however, is very simple. Keep growing roots present in the soil as long and as extensively as possible to seize upon the nitrogen (and other elements as well) which will otherwise be washed out of the soil, and to store it up in insoluble forms, ready for the needs of future crops.

It may seem to some of you that my subject is better suited to a New England audience than to one containing, I doubt not, men who settled upon virgin soil in Wisconsin, and yet I am told that the complaint of exhausted soils is not unknown even in this favored state. >

My subject, however, is not the cure of soil exhaustion, but the prevention of it, and that you will all be ready to acknowledge, I think, is both a practical and a timely one.

It is not the province of agricultural science to lay down detailed plans for the conduct of farm operations. Its aim is to discover and elucidate general principles, while the application of these principles to particular cases belongs to the art of agriculture.

In this address I have endeavored to put plainly before you the principles of governing the loss of nitrogen from the soil, and those in accordance with which we may rationally hope to prevent it, at least in part. We may condense the latter into a seeming paradox. To prevent soil exhaustion raise more crops; that is, keep your crops in the soil like sentinels, to arrest and hold the fertility which attempts to escape from the soil.

If, after you once get this fertility into your grasp in a tangible form, you let it go again; if you make haste to sell all that your extra care and labor enable you to raise, and to hoard up the proceeds; if you prefer to invest your money in lands or stocks rather than in the soil of your farm and have more faith in the capacity and honesty of trustees and

boards of directors than you have in your own ability to get a return from your fields for what you invest in them; if, in short, you attempt to use what there may be of value in my suggestions simply as a means of "skinning" your land more thoroughly, then those suggestions will have done little good.

But for the thinking farmer, who believes in himself and in his calling, I believe there is food for profitable thought in the subject which I have brought to your notice. If the fertility of our fields is worth preserving for our children and children's children, certainly an understanding of the how that fertility may be lost is the first step towards saving it.

DISCUSSION.

Mr. Hinton — I would ask the gentlemen one question, as I happen to be one of those unfortunate individuals who claim there is no such thing as agricultural science. Is it not a fact that the very largest crops of any part of the world are raised where ignorance prevails almost as largely as any other?

Prof. Armsby — I am not aware what part of the world the gentleman refers to.

Mr. Hinton — Does the gentleman know what part of the world raises the largest crop of wheat?

Prof. Armsby — I confess my ignorance.

Mr. Hinton — Belgium raises frequently 110 bushels to the acre. Is it not a fact that Belgian authorities assert positively that there is no such thing as agricultural science?

Prof. Armsby — I should prefer to see the quotation before I accept that. I very much doubt it.

Mr. Hinton — I would like to ask your opinion as to the benefits of small farms over large ones.

Prof. Armsby — That is not a question of agricultural science. That is a subject upon which I prefer not to express any opinion because I have no special acquaintance with questions of that nature.

Mr. Hinton — Is it not a fact that the farmers in the state of New York average less than fifty acres generally?

Mr. Babbitt — How do they compare with France?

Mr. Hinton — I am not comparing with anything. I am getting at facts. I will tell the gentleman how they compare with France. They are very much smaller, yet in Belgium, and Belgium is the most fruitful piece of ground known in the world, cultivated almost by peasants who rely absolutely upon their own observation, as ignorant of agricultural science as I am, and I certainly know nothing about it.

A member — They have a protective tariff over there, do they not?

Mr. Hinton — I will tell the gentleman the difference between a protective tariff and Belgium. In Belgium women who work in the salt and iron mines, healthy, vigorous, good girls, get a franc a day, doing as much work every day, digging, throwing up and wheeling off slag, as the men in this country are paid ten shillings a day for, and the average wages of the great iron and salt works at Leeds, close to Belgium, average right through eight thousand persons less than three and a half francs a day.

Mr. Ford — I would like to rise to a question of order. Are the remarks of the gentleman pertinent to the question before the house.

Mr. Hinton — They are in answer to a question asked me.

President Fratt — Perhaps they are, in response to a question asked.

Mr. Hinton — If you decide they are not I will sit down. I made no allusion to the tariff. Who ever heard me willing to talk about the tariff?

Mr. Ford — The question that has been discussed this evening by the Professor so ably, is the loss of certain elements of the soil. If Belgium and the tariff have anything to do with it I do not know what. What I wanted to get at was to show, and I say it with no disrespect whatever, how absolutely incorrect was the statement made first as to this agricultural science; next, to the positive assertion made by the distinguished Professor of the University, as against small

farms being profitable compared with large farms. The state of New York raises one-sixth of all the fruit raised in the United States, one-sixth or seventh of all the hops raised in it, and raises a good many millions worth of potatoes, and is probably, next to Belgium, one of the most profitable agricultural states in the world, except New Jersey, whose land is the most valuable of any state in the Union, and which is naturally the poorest. These are facts. I want to say that no one has been able to outline anything, I venture to say, to satisfy the mind of a single farmer here, that there is any such thing as agricultural science. You may take a stone; I will admit that analysis will tell you its component parts, but only He above can put them together. It is like that old legend, and all these professors and learned men ought to be familiar with it, of the celebrated German student, one who understood metaphysics, and you know that is what nobody understands and nobody can explain to anybody else, got up a man, with thews, sinews, bones and muscles, but he lacked that divine power which could put him together and make him a *man*. And so with this integration of soil; the trouble of it is, it lacks too often the protective element that ties it together.

Mr. Allen—I wish to state a fact in my own experience, and I wish the Professor would explain it. I am a clover raiser. I believe in clover with all my heart. The larger I can make my clover grow, even if it falls down and I cut it all off the ground, if I cut off two crops in a year, the very fact of that clover growing large enough to fall down and the crop being taken off, why is it that the fact of its being lodged down makes that land richer? My experience is that the very fact of its growing large enough to fall down and lodge, if it is all taken off, will leave the ground richer than it otherwise would be.

Prof. Armsby—I can not undertake to give an exact explanation. I can say this; it is a well ascertained fact that the shading of the ground by crops has a very important influence on its fertility in many ways. If the clover lodges, it will shade the ground more completely; it will make it moister. It will probably keep a more equable tem-

perature, shielding it from sudden cooling in the night and sudden warming in the day-time. All those conditions would be likely to favor the production of nitrates from the organic matter of the soil. It is a sort of mulch on the soil, and it is in some action of the lodged clover in shading the soil and keeping it moist and at a more even temperature that probably produces the effect.

Mr. Lewis Clark—It occurred to me after hearing the remark, covered with a crop was a preventative of exhaustion, that I would like to call attention to summer fallowing. Years ago I lived in the Genesee valley, New York, and it was the custom to raise a crop every other year by summer fallowing. Sometimes they plowed in clover and sometimes they did not plow in anything. They plowed the land two or three times in the course of the summer and kept it bare, and if any weeds or anything grew they put on sheep to keep them off. In California, where I have been, they are following the same process. I would like to know whether that exhausts the fertility of the soil, by plowing it through the season various times, more than it would to raise a crop of clover or anything else on it and then plowing it and putting it to wheat or any other crop.

Professor Armsby—The action of summer fallowing is essentially to help this dissolving of matters in the soil, both the nitrogenous matters and all the other elements of plant food. In the case of the other six, the matters that are weathered out during the summer fallowing are to a large extent held in the soil all ready for the next crop, while the nitrogen is much more likely to wash out. I should say that such a process as that would use up the reserve matters of the soil faster than the process of keeping the land covered with a crop. Whether that would be profitable or not would depend on the amount of expense connected with the cultivation of the soil, and in the second place on how much reserve matters there were to use. In a rich soil like that of the Genesee valley, you have a good deal to draw on, and if you use it up a little faster, it does not make so much difference, because in an ordinarily fertile soil, ten or twelve, or fourteen inches deep, there is enough matter, if it were

all available, to make millions of crops. It is merely a question of how fast the ordinary process of weathering will make it available. Summer fallowing helps along that process, and if you have a good store of nitrogenous material to draw on, it might be a very good process, while on the other hand, a soil that was likely to run short of nitrogen might, in the course of a series of years, be impaired in its crop-producing power.

Mr. Robbins — I understood the gentleman to say that soil would become more fertile the more crops you raised on it, that the more you raised the more fertile the ground would be under some circumstances. Now, take a clover field, and put down a plank, say two feet wide, and let that plank lay there during the summer, and let your clover grow on both sides of it, which will be the most fertile, where the plank was, or where the clover was ?

Professor Armsby — The gentleman did not quite understand me. I did not say the land would be more fertile because you raised more crops on it. What I spoke of was the method of cutting off this leak of nitrogen out of the soil, and by keeping crops in the soil you would keep it from running away, keep up the condition of the land, although you might not increase its fertility. I could not say in the case supposed which would be the richest land, because there are so many items to be considered. Where the plank was, you would have shade.

Mr. Robbins — Would there not be more nitrogen under the plank than anywhere else?

Mr. Allen — There would be, because it would be more thoroughly shaded.

Prof. Armsby — I do not think there would be any appreciable difference in the amount of nitrogen under the plank or outside of it, but there might be a difference in the fertility all the same.

Mr. Robbins — If the clover was so thick that it fell down on the ground flat, I think there would not be any difference.

Mr. Allen — There is another matter that the people of this state would like to be informed upon I think, and that is the question of salt sowing, which has become very ex-

tensive in this state. We know the fact that it helps materially the crops of grain. If the Professor is able to tell us the peculiar action of the salt upon the soil to produce those conditions, we would like to have him.

Mr. Arnold — I do not rise to ask for information, but I would like to have it decided before we separate, whether agriculture is a science.

Mr. Allen — We will accept that as a fact.

Mr. Robbins — I said so yesterday.

Mr. Arnold — One professor says that agriculture is not a science. Another professor in his able paper, and after his paper, says that it is a science. We flatter ourselves that it is a science. Now the Professor has illustrated to us this evening that chemistry is a science. At any rate, we concede it to be a science, like astronomy and a vast number of sciences. I conclude that science is the result of theory and experiment. When experiment has been made and things are found to operate in accordance with certain laws which are reasonably certain, then it becomes a science when it is thoroughly understood and agreed upon. In agriculture we have arrived at results on many things on which there is reasonable certainty. Is there any doubt but what agriculture is a science? I move that it is the sense of this convention that agriculture is a science.

Mr. Babbitt — As intelligent as we are at the present time, I want to ask whether three thousand years from now the intelligence of this age will be regarded as intelligence. I ask that question to make this point, can we tell whether agriculture is *a science or not*; we are yet in infancy.

Mr. Arnold — Then we cannot tell whether chemistry is a science.

Mr. Babbitt — We can study it to find out.

Mr. Arnold — I think it is a science in every sense of the word.

Mr. Hinton — The bible tells us it is not a science, for you may sow wheat and it may come up wheat, or it may come up something else.

Mr. Hibbard — I would like to know in what bible the gentleman finds that.

Mr. Hinton—I will explain that the gentleman lives in Canada, and they have no bibles there.

Mr. Hibbard—They have more there than they have here.

Mr. Hinton—They ought to read them, then.

A Member—Has the Professor ever made any experiments as to which of the cereals are the most exhaustive to the plant growing qualities of the soil?

Prof. Armsby—No, sir; and I do not know that any have been made.

Mr. Babbitt—We all raise corn, and about that there is a difference of opinion. I would like to ask if raising five crops of corn and manuring right along, say putting on twenty tons to the acre, whether it takes from the soil any particular quality which would not be apt to produce a sixth full crop, that is, the continual raising of corn on the same ground, treating it fairly, putting back perhaps twenty loads of manure on an acre, whether the continuous use of a piece of land for corn would be apt to run out the soil. I do not ask that to puzzle, but, if you are posted, to get a little information on it.

Prof. Armsby—One point is the effect of keeping the land in continual tillage upon this possible leaking out of matters. I can say this in answer to the question, that wheat has been raised continuously in England upon the same land, with various manure, and that for over forty years in succession, and barley I think over thirty.

Mr. Babbitt—How is it that tile draining improves ground if the leaking out of matter injures it?

Prof. Armsby—It ventilates it; lets the water out and the air in.

Mr. Babbitt—It leaches out the water, and does not the water take with it these properties that are always mixed with water?

Prof. Armsby—To a certain extent.

Mr. Babbitt—Then will tile draining be beneficial in the end?

Prof. Armsby—It will be beneficial because it will enable you to get larger interest on your investment in the soil. I

do not mean the money invested, but in drains in the fertilizing elements that you put in.

Mr. Allen—Please answer the question about the salt.

Prof. Armsby—There is one thing that can be said with certainty about the action of salt on the soil. If you put in salt you will get an exchange of the elements by which you will get chloride of potassium dissolved in the soil, while the sodium of the salt will enter into some insoluble compound. There will be an exchange which will make the potash of the soil and other ingredients more available to the plant. That is one way in which salt may be useful.

Mr. Babbitt—Would not salt have the effect to retain the moisture?

Prof. Armsby—Probably that effect would be infinitesimal. It has, however, another effect which amounts to the same thing. It has been shown that salt and saltpeter and various other substances added to the soil diminish the amount of water that evaporates through the plant. Plants are all the time evaporating water from their leaves. If we put salt on the soil so that the moisture around their roots is a little salty, they will not exhale so much water from their leaves. That, of course, is likely to be an advantage, if the supply of soil moisture is deficient.

Mr. Fox—There is a notion among many farmers that the application of chemical manures acts simply as a stimulant on plant life rather than as a nourishment, like alcohol on animal life.

Prof. Armsby—No sir. Honest, commercial fertilizers are food for plants, that is, not all of them, but the valuable ingredients for which they are bought and sold are actual food for the plant.

Mr. Lewis Clark—I felt interested in asking the question. I did, or I should not have asked it. I do not know that you understood it, and I will put it in a different shape. I raise winter wheat sometimes, and there are two ways to raise it. That summer following I spoke of, plow the land twice for instance and keep it clean, and I will get say, thirty bushels to the acre, but I can put on some clover, perhaps, and take

that off and plow it after that and put in a crop every fall, and get fifteen bushels to the acre. There is in one sense an advantage in putting it in only once and getting twice as much and save some plowing and save two seedings, but the question would be, which would exhaust the soil the most, summer fallowing through the summer and sow once, or plow and sow twice and take off the same number of bushels of wheat.

Prof. Armsby — I should say without doubt that the summer fallowing would exhaust the land most, unless you sold your crop off the farm. In case you sold the clover from the farm, there might be little choice between the two.

Mr. Allen — I have my theory in reference to use of salt, but it may not be correct. The fact of its operation is a fact in agricultural economy. My theory is that the salt dissolves the silica of the soil, dissolves the little lumps that are caused by being turned over when they are wet, and every little lump encases a portion of ammonia; that the salt dissolves it and allows the plant to take it up in plant food. Am I correct about that? I know that the continuous use of salt for several years will exhaust the soil. What course shall we pursue to keep up the fertility of the soil, if we do not use salt?

Prof. Armsby — Put on more matter for the salt to act on.

Mr. Fitch — It is claimed by people that are most in the habit of using salt on soil that it is more advantageous to one crop of wheat than another. Now, I want to ask if that is so, and, if so, why? They claim that it strengthens the straw of the wheat and also aids to mature the berry and make it more heavy and plump. If it is the case that it has more effect on that one crop of wheat, why is that so?

Prof. Armsby — I think it is one of the points on which more investigation would be in place. I am not able to answer satisfactorily, I think, why it has that effect. I have suggested some actions which it may have in the soil. They would all of course be apt to act pretty much alike on different crops, but why it should act more particularly on one crop than another is a thing which we cannot say now any more than we can say why the same soil and climate and

fertilizer will color the violet blue and the rose red. It has been shown that silica does not much strengthen the stalk. Stalks grown without any silica have been shown to be just as strong as those that have it.

Prof. Henry, of the Agricultural Department — When the paper was read yesterday, and the thought was thrown out **that** there were no books upon the science of agriculture, if there was such a thing, that you could not find the science recorded in any books, it seemed to me that the very statement of such a thing was a libel upon the intelligence of the audience, or at least a libel upon the intelligence which it should possess. The gentleman who wrote that, no doubt, when writing it, glanced around at his own massive library of law books, and then in his mind he ran over the books that are upon the farmers' shelves, and he thought, sure enough, there are no books upon agriculture. In one sense of the word perhaps he was right, but there are books, and I wish to call your earnest attention to them. In the first place, the gentleman who wrote that paper may be now sitting in his office poring over some case. You will see him get down book after book, and sometimes have an assistant to help him, to find the passages in those books which he desires. Books are his tools, as the plow and the reaper are yours. People are apt to think that the lawyer needs books all the time and the farmer needs nothing but his tools and the machinery at his farm; that it would not do for the farmer to use books as the lawyer or the minister or any of the other professions do. At the same time all trades should have whatever facts are known in a shape to attain them. In a book store in Madison, the other day, I picked up the "Charcoal Burner's Guide." It would seem that a man that had learned the trade of charcoal burning need not have a book to help him, yet you can find that book in Madison. I can find all sorts of books for the architect, carpenter, and for all the trades. Now what books have we that can be recommended? So many young men write to me for help in this direction, that I wish to make the answer as general as possible.

Every few days I get inquiries for books that they may

read. Of all the people on earth, our farmers have the most time for reading. The great danger is that they read carelessly. The lawyer has his legal newspapers, but he does not rely on that much for exact facts. He must go to books that are dry, if he gets much that is really going to benefit him. The legal newspaper simply gives him the legal news of the day. Should not the farmer, in addition to reading his local paper, which is right, have something which he can sit down and think over these long winter evenings? Is there not something that is within the grasp of his mind by proper study, and yet something that will help him to be a stronger man in his work? I wish to refer to one or two such books that I often recommend to young men. I urge young men here to purchase these books. I urge upon the fathers here that they may put these books in their boys' hands, as a birthday present, or some sort of a keepsake. Such little things may help the boys to love the farm. One of the books, and one that will keep you studying pretty hard, is "Armsby's Manual of Cattle Feeding," written by the gentleman who has addressed you this evening, published by Wiley & Co., of New York; price, \$2.50. Professor Armsby has spent years in the study of the feeding of cattle. In that book you will find a compendium of the results of twenty-five years of solid work in the German experiment stations. In Germany they have tried to find out what feed was, and every farmer here I know has thought of it. Here are some straws in the stalls. You put some straw in. As you see them eating it, possibly daintily, and almost refusing it, you throw in other feed. You notice that they prefer a certain other article, and yet sometimes they will take to the straw, supposing it is hay. As you see those animals crunching the corn or chewing the hay, and as you notice them chewing their cuds, have you ever, in your mind, tried to follow the chemical constituents in that in the animal's body, and think where the different parts went to in the animal's body; how strange it is that hay gets into fat, or corn into fat; how strange it is that a part of it becomes fat and a part lean meat? In these German experiment stations they have tried to find out that.

Suppose you take a dog and feed it nothing but lean meat, how long would it live? Such questions are not practical, yet they have a bearing on what becomes of the food. The Germans have subjected animals to all sorts of treatment. Animals have been put into boxes. The air that they breathe is all analyzed before it gets to them. Everything that passes from them is analyzed. All that they eat is analyzed. The animals are weighed. At last they are killed and their whole bodies are analyzed to find out what has become of the food given. For twenty-five years those patient German chemists have been at work on those things, and the number of experiments is very large. In this book you will find those questions treated. The book is a rather hard book to read, but if you want something to study over, take that. But if you say you have not time to find out about the chemistry of the food, and want something a little more practical, Prof. Stewart, formerly professor in Cornell University, has lately prepared a book called "Stewart's Cattle Feeding." You can buy this of any of our agricultural newspapers — price \$2.00. Prof. Stewart has compiled from Dr. Armsby's book and other sources in a practical form, the value and influences of these feeds. A farmer will say that he feeds bran and it does well. He likes it, and thinks it worth all he pays for it. Another will say he does not like bran; it is nothing but chaff. It may be possible that one of those farmers feeds bran incorrectly. You will notice that cattle in a field of rich clover will go to a straw stack and eat straw, or if you are feeding concentrated food in the barn, they will eat their very bedding at times. But you put the bedding in the manger, and take the concentrated food away, and they will sometimes almost refuse that same food. This book attempts to explain to you how the food may be properly used so that the animals may get out of them all their valuable elements. The book discusses the value of different kinds of feed, and what should be fed.

The question of chemistry is an interesting one. You will find Warrington's Chemistry of the Farm, a book costing a dollar, will help you upon some of the points you have been inquiring about to-night. Then, again, about stock. We

hear a great deal about pedigrees, in-breeding, thoroughbreds, and full-bloods, cross-breed animals and grades. Many people do not use these terms correctly. We hear of in-and-in-breeding. Many people cannot quite understand that term. Again, we have the work atavism, a return to certain ancestral traits in stock, a going back in the breed. You recollect you were told yesterday that the professors had done nothing to help the literature of agriculture. The former professor of agriculture in the Michigan Agricultural College, Dr. Miles, has prepared a work on stock breeding, called Miles' Stock Breeding, \$1.75, that can be obtained of any of our agricultural papers. In that book you will see the influence, for instance, of the male upon the progeny, the influence of the female upon the progeny, the effect of in-and-in-breeding, what a cross is, what is a thoroughbred, and all those terms that our farmers now begin to use freely, and if they are going to keep up with the ranks, they must know. The question of land drainage is an interesting one. The man who laid out the drain of Central Park, and who has a national reputation by the thoroughness of his work, George E. Waring, is a civil engineer of considerable note, and Waring's Land Drainage is a book that can be bought for about a dollar or a dollar and a quarter, and will help our farmers in this direction. Now, with your local papers, which every farmer, of course, should take, with your agricultural papers, by which you want to keep the agricultural news fresh before you, and with one or more of these books to study this winter, I think you would begin to realize that there is an agricultural literature. As you study these books, you will get interested in the thing, and no man can stand up here and make some assertions that have been made in this meeting, without your following them by rising and contradicting them by your experience. Let us get to reading more. The day when book farming was in the background has passed. We recognize now that men make money sometimes by reading agricultural books. The men sometimes confess it, and their farming shows it. Many men get along without

these things, but they would be better if they had this information.

Prof. Freeman told you he was graduating more than I am. I stand here to deny it. I have scholars all over the great state of Wisconsin. Their letters come to me, and I help them. Ten postal cards have come to me to-day in regard to matters on the farm, and letters are pouring in right along. When I first came here, the letters for four or five months came to my predecessor. I have had people to-night ask me who Prof. Armsby was. They did not know that he was professor of chemistry in the University. But this is growing. I go next week to hold four days of convention in Trempealeau county, and such a waking up as they are having there is not exceeded by the farmers in this convention. They write me that several hundred postal cards have been sent out in regard to that convention. I go now to many places to meet my classes. Now, I want you to help in this work that I have started. So far as I can, I am going to get this school of agriculture into the best possible shape. I may make mistakes. I may fail. Next year the insinuations and slurs upon my department in the convention then held may be more severe than they have been this time. I hope, however, by sticking right to business, and by working right with the farmers, that those things will gradually pass away till we stand as a unit upon this agricultural question. (Applause.) So far as the bread and butter question is concerned, you have supplied all my wants. My salary is adequate. I do not have to stand before you and beg for money to help me in my work. So far as my capacity for handling the money is concerned, I think the regents of the University have given me all that they should. You know it is not best to give a boy all the money he wants, and the professor of agriculture may ask for a good deal more than he can properly handle. I think I have enough to handle at present. Now, do not find fault with our experiment station. It was only organized the first day of last October. Mr. Gibbs told me, to-night, that when in Minnesota they established their fruit experiment station, in which they were to grow new varieties of apples

from the seed, the farm being established by the legislature of Minnesota on the banks of Lake Minnetonka, within two years from the time that it had been established, the farmers of that state were clamoring to know what those new varieties were.

Let us not be as foolish as our neighbors to the northward. Let us be patient. If we have not got a science of agriculture yet, let us work along with what we have and see if we can not develop it into a science. At least we can be a happy, intelligent set of farmers. We can hold our conventions annually here and elsewhere, and consider it a school of farmers where we can meet and talk about our farming interests. We can hold courses of lectures at the University, to which you can send your sons. We can study these books together and improve in that line, and in all ways we can grow as a unit. Within two weeks has come an invitation for me, asking if I would take a situation in another state, in one of those states that are pushing out pretty rapidly. I turned the letter over to my wife. Says I, "will you go?" says she, "no, let us stay in Wisconsin." I have written to my eastern friends that they do not know anything about brotherly love and good feeling down east. They could not get up such conventions in New York and New Jersey as Wisconsin farmers can. They have not the clannish feelings there that we have here, and it is growing. I want it to grow. Let us all stand together as a unit, and let us beware of outside interests. When we come together, above all things, let us talk about agriculture. When the lawyers meet together, they talk about law business; when the bankers meet, they talk about banking, and when we meet in agricultural conventions, let us beware of outside interests and keep right to the line. There are bigger questions to be considered on our own farms than some that have been agitated here and put forward as paramount. There are monopolies that are bothering us worse right on our own farms, than many of those outside monopolies that we are tried to be scared with. Let us fight to be better farmers; let us fight to have better stock.

It is said in Chicago that the Wisconsin scrubs were the

poorest that came into the market. I was proud when I heard one gentleman tell here of cattle that were an honor to the state. Let us keep on with such breeding until we have the best stock in the country, until the product of our land is superior to that of other states about us. It is a disgrace to us that we grow as few bushels to the acre as we do, compared to what we should do. I found in the northern part of the state that the farmers were burning their straw stacks and keeping no stock. Think of that condition in Wisconsin — without cattle and burning straw stacks and no fences. When I asked the value of hay, one said four dollars a ton, and another eight, and a third said they could not sell it. We have lots of work, and what I feel the most hopeful for is, we know we have work to do. A man is half converted when he knows he is a sinner. I think we all stand in that position. We know we have something to do, and we are all of us pretty well at it.

Mr. Robbins — This is the first evening, or day, that we we have had an agricultural meeting, and I have been here three days. I came from Grant county to come to an agricultural meeting, and this is the first time I could say that I have felt that it is good for me to be here.

Prof. Armsby — Will you permit me to add to the list a book that I am sure the Professor did not intend to omit, Johnson's "How Crops Grow," and "How Crops Feed," the first one as to how crops grow, and the second, taking up the chemistry of the air and soil. They are standard works, published in New York, and cost something like \$1.25 apiece.

Mr. Robbins — This afternoon, as I sat in the back part of the room, I thought if anybody should ask me wherein consists the greatness of Wisconsin, what should you say to them? Would you bring them here to the capitol? Would you take them to the state university? Would you point them to our railroad systems, or to our asylums? Where would you point him if he was a stranger and came to Wisconsin and asked you wherein consisted your greatness? I thought it all over, and I thought I would take him to the six thousand school houses in the state of Wisconsin. That is what I would show him. I would show him where those six

thousand schoolma'ams are that are educating the people of Wisconsin. Let me tell you that is where the voter is made that is where the tax-payers are educated, that is where our sons are taught the blessings of liberty, that is where our sons go and learn to achieve wonderful victories. Wisconsin is one of the greatest states in the Union. Why? Just on account of her educational system.

A Member—Except Illinois.

Mr. Robbins—I don't except Illinois. The northern part of it is just as good as Wisconsin, but when you get into Egypt, God save you!

CRANBERRIES IN THEIR WILD AND CULTIVATED CONDITION.

By L. G. KNIFFEN.

I have not written this article expecting to give any valued information to our extensive cranberry growers. Many of them have had large experience, and doubtless have their individual views as to the proper mode of managing their respective marshes. From such I hope to call out discussions, and so be myself instructed.

Any industry from which the masses are expected to be greatly benefited should be in no respect exclusive. The production of staple articles should be engaged in by the many, and the more numerous the producers confining their operations closely within the scope of their own personal supervision, or individual labor, the better for the commonwealth.

This article is written with the hope of stimulating the industry of cranberry culture among the smaller operatives. I am of the opinion if cranberries could be produced in sufficient quantities to be retailed at one half the price now sold at and so become a staple fruit instead of a luxury, it would be a benefit to producers and consumers as well.

THE NATURAL LOCATION OF THE PLANT.

Cranberries thrive only on moist soils abounding in silica, and deficient in lime, potash and of the phosphates. No

cranberries are found where hard water prevails, nor is their cultivation under such conditions possible. Clear sand and water, or a muckey swamp, resting on or surrounded by a silicious formation yielding soft water, is the natural home of the cranberry vine.

The silurian formation (notably the Potsdam sandstone) of central and northern Wisconsin, Minnesota and Michigan and the ocean beach formation of New Jersey, and the eastern states, contain about all the land adapted to the growth of this plant.

In Wisconsin the innumerable traces and remains of beaver dams indicate that these industrious little animals at one time played a conspicuous part in the formation of numerous lakes and ponds that once spread over the northern and central part of our state. The first vegetable growth that closed over and covered these shallow bodies of water was the Spagnum moss, a plant that has the peculiarity of always dying at the bottom and forming muck, while it is growing and increasing at the top. When the accumulated vegetable deposit had filled these lakes to a sufficient degree of compactness, the cranberry vine found a favorable condition for its vegetable life. Later on, as the marsh grew firmer, tamaracks and alders often succeeded the cranberry vine, or the more shallow marshes changed to wire grass or blue joint meadows.

The area of natural cranberry marshes appears rapidly to be diminishing, the introduction of railroads, destruction of forests, and frequency of running fires appear to be diminishing the native cranberry crop. The early settlers of our state found the marshes of Wisconsin covered with cranberry vines on every side and loaded with fruit in season.

Possibly the cheapest mode to raise cranberries (at first) is to improve a native marsh, partially set with vines. The treatment of such is quite simple. All that can be done is to aid nature in continuing the conditions favorable to the growth of the native vine.

A dam, or system of dams, are constructed so as to keep the plants submerged at the proper season, as will be seen under the head of flowage. All trees and brush should be

removed, and growth of grass, if any, be discouraged by early and frequent moving. Ditching should be done with caution, unless there is a never failing stream of soft water that can at all times be conducted on to the marsh.

Thousands of acres have been ruined in the attempt to improve them as cranberry meadows, by the owners digging numerous ditches that carried off all the water and left the ground dry in summer with no possible means of a supply when needed.

The owner of a marsh with no head of water above at command should dig only such marginal ditches around the outer edge of his marsh as would protect it from running fires, and avoid such a system of ditching as would reduce his marsh to the favorable condition for a hay meadow.

The crops from our improved natural marshes in Wisconsin, come strongly in competition with the cultivated berries of New Jersey and New England, fully equaling the older states in point of production.

THOROUGH CULTURE.

By this I mean preparing the ground thoroughly, and setting out all the vines anew, and cultivating with the same care as you would strawberries or other crops until the vines become matted and take complete possession of the land. In the immediate vicinity of cultivated farms, in many parts of our state, and convenient to labor, are numerous small hay meadows or tamarack swamps. Any marsh that can be flowed in winter with soft water will do, but a location where a reservoir of water can be held above for summer flowing, when desired or for the protection from frosts is far preferable.

Because some cranberry companies own hundreds of acres of land, a small holder need not fear to improve a few acres, remembering that two hundred bushels per acre on a small, well cultivated marsh is quite among the possibilities.

Having selected a location, the ground should be prepared to receive the plants. This can be done in three ways: first, scalping the ground; that is, taking away sufficient surface to remove all roots of grass and other plants. This is quite

an expensive operation. Another, plowing and subduing the soil when the character of the ground will admit. Still another, building a dam, and flooding the marsh one or two summers, drawing off repeatedly, to expose the ground to the scorching rays of the sun. This is a cheap and effectual method.

Having prepared the ground, the next thing is the selection of vines. When good, ordinary cranberries are worth eight dollars per barrel, the finest and largest varieties readily sell for eleven dollars, or twelve dollars. There are plenty of varieties of plants that always produce berries two or three times the size of common fruit, the enhanced price for which will pay all expense of harvesting and marketing. Breed will tell, whether in the vein or in the vine, and scrub varieties, like scrub stock of any kind, should always be cast aside. Cranberries from the seed produce new varieties at each planting, none being true to the parent fruit. It is therefore necessary to procure the vines known to produce desirable fruit. On a marsh near the ocean beach, at Essex, Massachusetts, where the cranberries were frequently covered by drifting sand and the conditions for natural propagation from seed favorable, I collected over twenty distinct varieties of the fruit.

Cranberry vines can be set either in the fall or spring, if ground can be made dry enough to open the drills, three feet apart, with a plow. The plants can be set in the furrow, and the soil pulled around them with a hoe. If too wet, the roots can be pressed in the ground with a spade, or the surface lifted with a spade. After planting, the ground should be made dry enough to hoe often, and be kept free from weeds. After the second year the runners will prevent the use of the hoe, when weeding by hand must be resorted to. There is another condition of soil quite abundant in some parts of our state, that I consider even superior to the best located marshes for cranberry culture. I refer to our poorest upland sand, indigenous to which are our scrub oaks and gray or jock pines. Wherever this kind of ground can be made level and irrigated with a never-failing stream of soft water, the best possible results in cranberry culture can be

procured. I have known in this state, one plot located some ten feet above the adjacent stream, the sand too poor to support vegetation, and blowing with the wind, to be covered in a few years with a perfect mat of cranberry vines, and producing at least one hundred and eighty bushels per acre of choice berries.

Among the advantages of cultivating on irrigated upland soil are these: the ground can be prepared at less expense, as it is more economical to work on dry land than on a marsh.

After the vines are planted, the ground can at any time be quickly dried by turning off the water to facilitate cultivation; or, if flowed at the time of the fruit picking, to prevent frost; the ground dries off quickly after the water is removed, and the operation of picking the fruit can be resumed. Of course absolute control of water is necessary in a marsh of this kind. We have hundreds of acres of worthless, sandy land in this state that could be utilized in this manner.

Irrigation of sandy land for cranberry culture opens up the subject of irrigating our poor dry soils for the growth of other crops.

To prepare sandy land for cranberries, secure a location along the margin of a never failing stream of pure soft water, with sufficient fall that a lateral ditch, starting some distance above, will conduct the water out upon the land you intend to improve. This ditch should first be dug and the water conducted to the place for cultivation. Now make a convenient plot perfectly level. Dig a ditch completely around the outer edge, throwing the dirt outward to form a dike. Let in the water to try the grading, and if it flows all portions of the ground alike, you are ready for planting.

PLANTING THE VINES.

The water should be turned off and the drills opened with a plow, turning the furrows all one way. Now set the vines with the roots in the bottom of the furrow, then close up the furrow after planting. Water should be let into the ditches and the ground always kept moist. Sufficient lateral ditches must be made, so the water will permeate every portion of the soil equally. Now if such a plot be flowed dur-

ing the winter months, and if the vines are hoed the first two years, and any weeds, rushes or small trees that spring up afterwards, are pulled out, the vines will in five or six years completely cover the ground. Such a tract will produce one hundred to two hundred bushels of berries per acre. Ten acres of this poor and apparently worthless sandy land can be made to yield a larger income than one hundred acres of the best grain or grazing land in this state. Some fruit will be obtained from the first, increasing in yield annually, and at the end of five to seven years, from one hundred to two hundred bushels per acre may be expected.

FLOODING.

Winter flooding has a most favorable effect on the cranberry vine. The water should be put on at the commencement of severe weather in the fall, and continue from the first until the middle of May, or until the danger of spring frost is nearly over. In the spring the water should be let off slowly and expose the vines gradually to their new conditions.

The leaves always come out green and fresh from under the water, having escaped all the rigor of winter. Trees and brush along the margin of the marshes will die where repeated flowing is practiced. Where only the growth of vines was desired and not the fruit, we have flowing a small marsh repeatedly during the summer and letting the water off suddenly in the middle of the hottest days. This series of scalding, while it did not retard the growth of the cranberry vines, nearly destroyed all other vegetation. This marsh is now completely matted with vines and yields annually a large crop of fruit. I am informed that many years ago one of the most celebrated marshes in our state, while it was yet public land, was flooded nearly all summer and reduced by a rise in the Fox river to the condition of a shallow pond, that this season's flooding killed all vegetation on its bottom except the cranberry vines that came forward, and in three or four years the Indians and early settlers gathered as large a crop as has ever been gathered since.

The advantages of a head of water above the marsh,

always at command, are so great I should hardly like to attempt to improve one not possessing these features.

RENEWING A MARSH.

When the vines have once taken complete possession of the ground, they are located for an indefinite length of time. No resetting is ever necessary.

In course of time they will become old and woody, making only a stunted growth each year, the accumulation of old runners forming such a mat of wood as to prevent the new growth reaching the soil or being able to take root.

A liberal top dressing of pure sand or fine muck applied in the winter on top of the ice will filter down gradually when the ice melts, covering some of the new runners and stimulating the growth of new roots and vines. In this manner an old marsh can be cheaply and effectually renewed and made to produce the best results.

PROTECTION FROM FROST.

Cranberries do not reach maturity until about the time of early frosts. Marshes that can be flowed even partially, whenever a frost is imminent, can be protected with absolute certainty. It is not necessary that all the fruit and vines be covered. The water spreading over the ground evaporates and produces a fog which hangs over the marsh like a blanket, and prevents that radiation of heat, that would otherwise reduce the temperature of the berries to the freezing point. Under such conditions picking can be delayed until the berries are fully mature, which will insure their keeping. Berries picked too early soon perish.

In the absence of a command of water much can be done by burning coal tar. The best mode is to have common-sized tin pans distributed over the marsh. The attendants are provided with pails ready to distribute the tar, filling the pans and setting fire whenever the thermometer indicates that the freezing point will be reached, which is usually about 4 A. M. A cloud of heavy black smoke from the burning tar will hover over the marsh and protect it from an ordinary frost. A barrel of tar costing five dollars will effectually protect twenty acres during one night. What we

have done in the way of protecting cranberries from frost could be effectually applied to the protection of corn, tobacco, and other crops.

The first two or three frosty nights in the fall are always followed with a season of mild weather.

The expense of protecting our crops by burning tar a few hours has no comparison to the occasional loss of perhaps a whole season's labor.

INSECTS.

Three prominent varieties of insects are enemies of the cranberry. The vine worm, that feeds on the mature leaves; the tip worm, that feeds on the sap from the tender shoots; and the fruit worm, that bores into and takes up his habitation inside the berries. Flooding a few hours at a time, before the blossoms appear, will destroy these insects before they are hatched from the cocoons which are deposited in the ground under the plants. On marshes under control of water and readily flowed, these insects are not often troublesome. Where water is not at command, a torch can be placed at night near the ground and surrounded with a frame, covered with mosquito bar or cheese cloth dipped in oil. The catch of moths on a marsh troubled with insects will, in point of number, be quite satisfactory to the owner. Whether the cultivation of cranberries is profitable, depends on the care and attention given to the business. The same causes that produce success in other avocations will produce success on the cranberry marsh.

The average price of cranberries one year with another, may probably be put down at \$8.00 per barrel. The cost of picking before frost has destroyed part of the crop, is from fifty to seventy cents per bushel. I estimate on small marshes, located where labor is accessible and where the proprietor is manager, and estimates his time at the value of common labor; after the marsh is developed up to the point of producing seventy-five to one hundred bushels per acre, the total expense for caring for the marsh for the year, picking and barreling the fruit, will not exceed three dollars per barrel.

It actually takes from six to seven years to produce the

best result on a newly cultivated marsh, although some fruit may be expected every season from the time of planting.

The owner should be the manager himself and bring that love and zeal to his labor that will always woo from nature her munificent and golden fruition.

Coupled with some other occupation to employ the time, and bridge over the long spell required to produce a paying crop, there is no reason why the cultivation of cranberries may not be extended with pleasure and profit to those engaged therein.

J. C. Freeman, Professor of English Literature in the State University, at Madison, was then introduced, and spoke *ex tempore*, as follows:

Mr. President and Gentlemen— I came here, not on my own motion, but at the invitation of Mr. Babbitt, who had heard me talk on other subjects, and for some strange reason thought I could talk so as to interest the farmers. I asked Professor Henry what I should talk about, and he said: "Tell them about the agriculture of France or Holland, or Germany, or Italy, or some of those countries in which you have spent some time," and, thinking his advice was good, I let that settle it. But I came into your convention yesterday afternoon, and heard a part of the paper of Mr. Sloan, and the very interesting discussion which followed it; I saw the practical spirit which animated you, and I said: "It will not do to talk to these gentlemen about the agriculture of those distant countries, for, just as sure as you do, you will get in so much about the natural scenery, or the architecture, or the social life and manners, that it will not be pertinent; it will not be complimentary to the practical spirit which animates the convention. You must talk about something else," and I chose another subject, a brief discussion of the resolutions passed by an agricultural body which met a few weeks ago in this building.

Perhaps you do not know who I am. I am a tramp, a pretentious tramp. I am a priest of humbug. I am a professor of aristocratical wisdom; that is, if the Patrons of Husbandry tell the truth, for they say in their resolution on

the subject of agricultural education: "Since aristocratical wisdom is used by the priests of humbug to befog and befool the industrial man and direct his energies to the support of a vast multitude of pretentious tramps, who are unwilling to earn an honest living as long as the industrial man will suffer them to sponge their luxurious existence from the industrial man's hard earnings," and a half column at that rate. It is rather difficult to tell what in the world the mover of those resolutions did mean. He rushes on in such breathless haste, and doubles on his own track, and jumps so many hedges and ditches, and crawls through so many hollow logs. But looking the resolutions over carefully from beginning to end, I conclude that by these terms, "Priests of humbug," and various other complimentary epithets, he means the professors of the College of Letters at the University.

Now, in the midst of that long list of complimentary expressions, there is one thing that I object to, that is, that the professors at the college of letters are unwilling to earn an honest living. That expression is based upon the theory that it is honest to get a living by farming, but not honorable to get a living by teaching; that it is honest and honorable to teach a calf to drink, or to teach a colt to trot in the harness, but it is not honest nor honorable to teach a human being. To state that theory is to disprove it. I have a sympathy for the hard working mechanic; I have a sympathy for the hard working farmer and for the hard working farmer's wife, but there is one class of persons in Wisconsin for whom I have more sympathy than for the farmer or the farmer's wife, and the representatives of that class you can find scattered here and there over the state, working in a little house by the road side or at the cross-roads, a house with about three windows on a side, in the interior a stove, some benches up and down the room on which are seated thirty or forty farmers' children. These children of ours that we love so much and that are such a comfort and solace to us, after all give us a great deal of trouble, and many of you confess that the care of one, two or three of those children for a day is enough to drive you to distraction. But a woman in that little building is there with thirty or forty of

those children, two or three of whom, you are willing to confess, would be too much for you, and that woman for six mortal hours controls and instructs them at a great wear of nerve power, so great that if she keeps at that work for ten or twelve years her energies are exhausted. That woman doing that work which you are willing to acknowledge, is too much for you to do, the Patrons of Husbandry come up here and say, is not earning an honest living. I deny it. (Applause.) It is just as honorable to teach a human being as to teach an animal of the lower orders.

Go along with those children a few years further. They have gone through the school and they have come up to the University hill, and now the Patrons of Husbandry, by their resolutions, wish us to believe that when a man on University hill teaches each hour fifty or sixty, or seventy students, or perhaps ten, he is not earning an honest living. Even if there were only one student, I should say what I am going to say — namely, he earns the money he gets just as honestly as does the woman who teaches thirty or forty in the little school-house. There was an astronomy class of one in the Michigan University once, and the young man was afterwards the celebrated and now lamented Professor Watson, the director of the Detroit Observatory, and the one who laid the foundations of our own valuable Washburn Observatory in this city. It was said of that class of one that Professor Brunnow had one of the best audiences that ever listened to an address in that University. But we do not allow a class of less than *six* here. Look at the man on University hill, who, in the presence of fifty or sixty, or seventy students, reads the books of the wise men of old and of modern times, and instructs those students in what is there written, directs their studies, controls them — and it is not every man that can do that — he earns his money honestly, the Patrons of Husbandry to the contrary notwithstanding. Every faithful teacher, whether in the University or in the high schools of this state, or in the common schools, earns his salary just as honestly as do the mechanics or farmers in the state of Wisconsin.

A remark was made here yesterday, and I find a remark of

the same tenor in the report, that there is an ill feeling in the college of letters toward the agricultural department. I heard the remark that there were last fall so many agricultural students, but they had been "got away" into other departments. The remark was made here yesterday that the agricultural student at the University was ostracized. Now I want to give that a most emphatic denial. I want to say, as far as the professors are concerned, and I know, I think, what the feelings of the professors are, that there is a most kindly and friendly feeling toward the agricultural department. The different professors are sometimes a little sarcastic towards each other, no matter what the department. But that is something merely temporary. There is no prejudice and there is no ill feeling on the part of the professors of the University toward the agricultural department. If I could put a hundred or two hundred students to-day into Professor Henry's department, I would do it. I would not, however, take them bodily from other departments, unless they wished to go.

Why are there not two hundred students in the agricultural department? It is because nowadays the custom is established of allowing a young man to have something to say about what studies he will pursue. He talks over the matter with his father and his mother and his uncle before he comes to the college and he makes his choice of studies. It seems to be true of most young men that if you give them a chance to study about Alexander or to study about Alexander's horse most of the young men would prefer to know what Alexander did; if you should give them the chance to study about what Washington did at Mount Vernon, what crops he planted and how he managed his farm, and give them on the other hand a chance to study about what Washington did at Dorchester Heights, or Trenton, or Princeton, or Valley Forge or Yorktown, they would give Mount Vernon the go-by; and if you give a boy a chance to study about soils or about Shakespeare he will choose to study about Shakespeare. He will select history or English literature, or some other literature, ancient or modern. He will even incline to study the wisdom of Plato or Socrates just as they expressed

it in the Greek, or he will wish to discern the skill, the art, the wisdom of Goethe in his own words, or of Montaigne in his own words. He has heard somewhere about the remark of the Emperor Charles V that a man is as many times a man as he knows languages, and he would like to prove whether that is so or not, by learning at least one language besides his mother tongue. He would like to know something of modern science. As a gentleman expressed it here the other day, the majority of students prefer to study "the best that has been thought and said in the world."

I do not decry agricultural education. I think I understand what the agricultural college aims at. It is not to teach the art of plowing, sowing, reaping, mowing. If one is going to learn those arts he will go where the plowers and reapers and the sowers and mowers are, but it is to teach the science of it, not the *how*, but the *why* we plow and why we hoe. I do not decry agricultural education. Certainly some must give themselves to that science or we shall not make that progress which we ought to make in subduing the part of the world which has fallen to us. But some persons, even if they are to become farmers, prefer not a technical education in agricultural science, followed by learning the art from the farmer who understands it, but they prefer to learn the art from the farmer who understands it, learn the art on the farm, and then, as far as education in school is concerned, they prefer a general education for themselves as men. They prefer to open the avenues of knowledge in different directions. They will understand the art of farming in order to get a living, to make money out of it, but for their education in school they prefer to have it more general. Now why are there no more in the agricultural course in the University?

The answer to this question has been often given to you. It is of course because, at the time when your sons and daughters are turning their faces toward the University and that family council is held, and father and mother and uncle and aunt are called in to advise, it is concluded by that council that it is not best for the boy or the girl to take a special agricultural course, but to have a general education, and

that is the reason there are no more students in the agricultural course. The reason does not lie in any disposition of the regents, for the regents are ready to appropriate such funds as the state puts into their hands for the benefit of the students in agriculture, if they are there to receive the benefits. It is not owing to any disposition of the president, for he is just as favorable to the agricultural school as the regents are; nor to any disposition in the professors towards the agricultural school, but the reason simply lies in the farmers of Wisconsin, that they do not direct the attention of their sons and advise their sons to take that course. We were told yesterday that using the fund in this way was not carrying out the intention of the grant. In the first place, we are certainly carrying out the intention of the grant, in the establishment of this agricultural experiment station. Nobody will deny that that carries out the intention of the grant, and we heard the remarkable and valuable results well presented yesterday by men from different states and different parts of the country. In the second place, what are we doing with the fund? We are giving to farmers' sons the education which they and their fathers and mothers ask to have given them, whether it is a general education or a special education, and that is certainly carrying out the spirit of the law. There is no press gang proviso in the grant that authorizes us to go out and seize a lot of farmers' sons and bring them in here and put them through a technical course in agriculture, whether they wish it or not, contrary to their wishes and the wishes of their parents. If they will not take it, we cannot give it to them. We give them what they ask for.

The conclusion of the Patrons' report, so short-winded as to style and so long-winded as to amount, is here. Here is the grand panacea that is going to solve all the difficulty connected with agricultural education in this state; it is, "Let the College of Letters and the College of Agriculture be separated; let them be in different parts of the state, so that one shall have no influence upon the other."

What will be the result? The result would be here what the result has been elsewhere. The first result would be

that there would be apparently more students in the agricultural course. If you put the agricultural department at Stevens Point, or Hudson, or La Crosse, there will be more students there. Why? Because there are certain young people in any vicinity you may name, waiting for a college to come along for them to enter, and if you will bring a college within sight they will go in, but if you do not, they will not. You would catch that class.

Again, the attraction of a college is something like the law of gravitation. It is directly as to the quantity and inversely as the square of the distance. It is directly as to the ability of the professors, as to educational appliances, the libraries, the museums, the cabinets, and the nearer it is to a student the more likely he is to enter it. To be sure, if you moved the agricultural department to La Crosse, or Hudson, you would lose at once many of the educational appliances of this city. You would lose the use of the famous Historical Library in this capitol building, a library which is of far more use to the students of the University than the University library, because it is a much larger library. The moment the key is turned in the morning of any day in the year, a number of University students go into it, and sometimes there are so many there that the attendants can hardly get about. They are calling for more rooms now so that they can have more reading room. That library is worth more to the University than the University library is. It is my duty, as secretary of the library committee, to know something of the use and condition of the University library. We ask the professors to call for just as few books as they can get along with. We have an appropriation of twelve hundred dollars a year, and if we were not careful, the professors would call for three thousand dollars' worth. What we have there is good. The books are bright and new. There is very little old stuff. We have a few copies of the *Congressional Globe* near the door (Laughter), so that if any of our friends wish to carry off a relic without our consent, we shall not feel the loss, but as a rule the library is bright, and fresh, and new, and up to modern times. If you remove the agricultural college from

Madison, you will remove it from the educational appliances of this city, such as the Historical library, the city library, and the other influences of this city. What will be the result? You have removed the college and you have some more students in the agricultural course. Will those students become farmers? If they will not, what is the use of moving it? What is the experience of other states in that matter?

I hold in my hand the report of the Massachusetts Agricultural College, and I notice that in giving his last report to the legislature, Gov. Butler stated that the agricultural college had this reputation throughout the state that only a technical agricultural education was given there, that the course of study consisted in the analysis of soils, in the examination of fertilizers and similar subjects. That is what the people of Massachusetts thought was going on there. He alluded to that fact, and Massachusetts, you know, contains very famous colleges given to history, literature and language, and you might expect that, if that was the reputation of the Massachusetts Agricultural College, no one but those who expected to be farmers would go there. That would be the natural inference from the Governor's remark. What is the result? That college has graduated 150 persons, and of that number how many have become farmers under those very favorable conditions? 100? 75? No. 41! About three, you see, have entered other vocations to every one who has become a farmer in this separate agricultural school. Is that what you are expecting to gain? Is that the pleasing result you are expecting by moving the college to some other town?

I have here the report of the Maine Agricultural College. I notice in the class of 1872, six persons; two have become farmers. That is a favorable proportion as agricultural schools run. In the class of 1873, seven graduates, no farmers. In 1874, six graduates, one farmer. In 1875, eighteen graduates, one farmer. In 1876, thirty-three graduates, two farmers. In the next classes one out of 17, none out of 11, three out of 20, one out of 15. You see the proportion is very small.

The Pennsylvania College started as the Farmers' High School. The name was changed to the College of Agriculture of the State of Pennsylvania. I have a list of the graduates with their occupations. The list is alphabetical. Beginning at the beginning of the list I read: "Book-keeper, chemist, coal dealer, physician, professor in the university, missionary of the gospel, civil engineer, car manufacturer, phonographer, banker, druggist, lumber dealer, law student, professor of ancient languages, farmer!" (Laughter.) We at last come to a farmer from this college! Where is that college? It is not near any great center, except the center of the state. It is twelve miles from Bellefonte, in Center county. It is far out in the country, far removed from any influences which may be supposed to draw students from farm life. The general result is not quite so bad as the part I have read would indicate. Out of 121 graduates 15 have become farmers — a little over twelve per cent.

Michigan has done better. There are reasons why it should. It presents the most favorable report of all the agricultural colleges in this respect. The most favorable conditions exist there. You heard yesterday that the agricultural college of Michigan has had more money to use than the University of Wisconsin has for all its different departments. Then again, there is in Michigan the State University, an institution whose influence reaches every school district in Michigan, and not that only, but it reaches every part of the United States. A few years ago there were more students from the state of Illinois in the University of Michigan than there were in any one college in the state of Illinois; and there were more students from the state of New York in the University of Michigan than there were in any New York college. If a young man in Michigan is going to college the alternative is presented to him of going to the Agricultural College or to the State University. You know what the University is noted for, the lines of study that it is famous for, and if he goes to the agricultural college you might think it a clear case that his mind is made up beforehand to become a farmer. Under these favorable conditions as to endowments and funds and

these favorable conditions as regards the students in making their choice between such lines of study as are taught at Ann Arbor, and such lines of study as are offered at Lansing, what is the result? I have here the report of 1882. Up to that time 244 persons had been graduated. How many have become farmers? 200? No. 100? No. Ninety-two are shown to have become farmers. But, I notice that out of 92 that are reported as "farmers" there are 22 that are reported as having some other occupation. Some of them are entered as "farmer and student," and "student at the State University." What does that mean? Is it possible that one who is in there as a farmer is pursuing studies at the State University? If so, it can hardly mean more than that he is a farmer in vacation and a student in term time. That is true of half the students in the University of Wisconsin. I do not know but more than half our students are farmers' sons. Some are entered as "farmer and student," some as "farmer and teacher," and "farmer and lawyer." I should like to know which of those trades gets the bigger half of a man's attention. Does that man practice law on Saturday afternoons or in some odd hour (laughter), or does he go into his office at nine o'clock in the morning and go out of it at sunset, or to attend court, while somebody is managing a farm for him out in the country? "Farmer and Real Estate Broker." "Farmer and Hardware Dealer." I have a curiosity to know which of those occupations gets the greater amount of a man's time. I am afraid that the man who is a farmer and lawyer gives more attention to the law than he does to the farm. If that is true, 22 ought to be subtracted from the 92, leaving 70 farmers, which would leave 70 farmers out of 244 graduates. But taking the report as it is, it is 92 farmers out of 244 graduates. That is the most favorable showing of any agricultural college whose statistics I have been able to find. Is that what you are expecting to gain? How can you expect to get any more favorable result than is obtained in Michigan. Perhaps you will not get one so favorable. Perhaps all that you would dare predict would be the average of the results of the agricultural colleges throughout the country.

I will say that the Wisconsin college of letters, which is so highly complimented in this report of the Patrons of Husbandry, can equal the average record of the agricultural colleges of the country. [Applause.] We have had from the college of letters two hundred and fifty-two graduates, and of those about thirty are in agricultural pursuits, about twelve per cent. I know a report was recently issued, prepared somewhat hastily and imperfectly, that did not give quite that number, but if desired, I think I could give you the names of many persons engaged in agricultural pursuits, omitted from that list, making about twelve per cent., as large a percentage as from the average of the agricultural colleges of the country, have from our institution entered the pursuit of agriculture. My excellent friend, Professor Henry, who is doing such valuable work with his agricultural experiment station, the importance of which we are all alive to, labors under the hallucination that he is running an agricultural school. [Laughter.] That is a pleasing delusion of his. He does not see that my department is the agricultural department of the University. Why is it? Because I produce farmers and he does not. I can show ten to his one. I hope he will beat me soon. He intends to. In fact, I am trying to have him. But as it stands, I can show ten farmers to his one, and hence I claim that I am running the agricultural department. I say the college of letters produces farmers; that is, it produces men and women of general education who become farmers. For the last two years I have been about the state somewhat, and wherever I go I meet some of them. A year ago I had an invitation which was unique. I was invited to go down into Waukesha county, and deliver a dedicatory address for a "Hall of Literature." Where was the hall? Was it in Waukesha? No. It was ten miles out in the country by the side of a stream. There was no town there, no village, no store, no hotel, but they had put their hands in their pockets and raised two or three thousand dollars, and had built a fine building, with an audience room on the second floor, and a banquet hall on the lower floor, and they wanted somebody to dedicate it to literature. I went down there and made an address, and

after the banquet was served, as one and another came up to speak to me, there was student after student who had graduated from the college of letters in the University. They would say: "Do you remember this lady? She is my wife." I recollected her countenance. She was a graduate of the same college. "What are you doing?" "We are farming." "How do you get along?" "First rate." "Money enough?" "Yes, sir; if we had none to spare, we should not have built this hall." In a little while he says: "My wife and myself in the last year have read through all of Shakespeare again, and talked it over together. We have read Macaulay's History." And I do not know what they had not read. "Does not this interfere with your agricultural business?" "Oh, not at all. In winter evenings, in odd hours, we have done it, and we are happy as larks."

I could mention the names of many in that vicinity. Of course the building of that hall was prompted by that kind of men. It strikes me that the building of such a hall is one of the signs of the times. They have used it not strictly for literary purposes. They propose to put in there a circulating library. They were going to use it one evening in the week for a dramatic club. The Women's Christian Temperance Union were to have it one evening in the week. It was to be used for such social and literary and scientific and moral purposes. I thought it to be one of the signs of the times. I thought, perhaps, it was the only thing of the kind in the United States that could be found in a farming community far from any large town, or perhaps in the world, but I am told that is a mistake, for shortly I heard of another one in the southeastern part of this state, west of Kenosha. *That* is the kind of farmers we are producing at the college of letters. Do you think that is a good kind or not? If you think it is, show it. We think it is a good kind, and we think that those people down there and those graduates who are farming in other parts of the state, with their general culture, their books and reading, their companionship through these with the good and the wise of all times, have a comfort in adversity, if adversity ever comes to them, have a solace against sorrow, for that will certainly

come, and are even fortified against old age, and in this general education, this general culture, they have something that even death itself can not take away.

Mr. President and gentlemen: If at your next annual meeting, or the next one, or the next one, my good friend, Prof. Henry, is able to take away from me my boast that I and not he run the agricultural department, and I care not how soon he takes it from me, I hope it will be next September, it will not be on account of any changed spirit in the regents of the University towards the agricultural department, not on account of any changed spirit in the president of the University towards that department; not on account of any change in the feelings of the professors towards that department; it will be simply because you, by sending your sons to him, have come to his support. (Great applause.)

President Fratt — An opportunity for discussion will now be given for a few minutes.

Mr. Broughton — What is expected in this case?

President Fratt — That is for the audience to determine.

Mr. Broughton — If we knew what they desired perhaps we would gratify their desires. How much time is allotted?

President Fratt — I suppose you understand the rule that has been adopted. It is the five minute rule, but if the audience is willing to give more time I have no objections.

Mr. Broughton — Five minutes is long enough to die in, but it is hardly long enough to live in.

Mr. Flint moved that the time be extended to twenty minutes, which motion was lost.

Prof. Henry moved that the time be extended to ten minutes. Carried.

Mr. Broughton — It will take ten minutes to read the preamble and resolutions. I was not here to know whether the Professor read them or not. Perhaps if he read them he read them with a peculiar tone that is well understood by elocutionists. It is this. They can tell a lie in a language that will look as if it was true (hisses), and a common kind of a granger is pretty apt, because he is not an adept at such matters, to tell the truth in such language as if it was a lie. We want to avoid deceitful impressions. Appearances are

often, very often very deceitful — particu'arly aristocratical appearances. Aristocratical influence is varnished over immensely, is polished to a tremendous extent. Instead of seeing into the thing we do not see the trick at all. That is the trouble. The time allotted is so very short, it is not time to read half the notes. Here are as many points as there were spears in a Grecian phalanx, and how am I to begin? I will have to depend on the promptings of the spirit. What is education? It is of two kinds. One is receiving knowledge, and the other imparting it to others. Now the capacity for receiving knowledge is various. The theory of the educational system is that they are all capable of receiving the same amount of instruction, wich is probably a grand mistake, and the theory is that all teachers by having an education are equally capable of imparting instruction to others, which is another mistake undoubtedly. I have to be very positive in these matters, for there is no time for argument. What kind of an education should be given under the auspices of the state? That which will make him a good and useful citizen, that which will be a benefit to the community, that will add to progressive civilization. Those are the kind of citizens we want, and what do we have? We have a few who have this aristocratical wisdom, this wisdom that is monopolized by a comparatively few, like the knowledge that the oracles had at the temple of Delphos. They pretended that by going there you would receive oracular wisdom. you would know the ways of the earth and the way of heaven, but the temple of Delphos is gone. It did not save the nations by any means. They had a certain kind at a certain temple at Babylon. Where is Babylon? It is gone. Does that kind of aristocratical wisdom save a nation? Not by any means.

It is useful knowledge that saves nations, not parasitical knowledge, not knowledge to live on the body of another without doing anything ourselves. That kind of knowledge did kill Assyria and did kill Rome. The only way that kings can live in palaces is by the industrial man living in hovels. There is no use in dodging around this question by any trick. It has always been taught practically that the industrial

man, in order to be elevated, must seek humility and then he will be exalted. That may do in spiritual affairs, but does Bascom teach that in the college? What does Adam Smith say? He says it is better to pretend to be more than you are than less. Why? Put on cheek immensely, claim everything and get all you can, and these students know it, every one of them, and every text-book that they study to learn political economy and social science teaches that very thing. Adam Smith says if you pretend to be more than you are you will get credit for what you are; if you pretend to be a fool, they will take you at your word, and they advise us industrial men to claim nothing, to be humble, consequently we claim to be fools and they take us at our word. This other class claims this aristocratical wisdom. They claim it just as if it belonged to them. That is the trick of it. How cheeky! How assuming! How pretentious! A prophet that knew he was certainly a holy prophet from God could not be any more pretentious. He says that each person educated under the auspices of the state should be educated so that he can make an honest living — and pay his taxes. He says there are no classes in some colleges that have not more than six in. I think if I remember right there was a class of one at one time, and they had a professor of the Sanscrit language with only one student. Look at another point. The six thousand school-houses in this state, as rated by the district clerks, do not exceed five hundred dollars in value, lot and all. What do the buildings cost for the University? A half a million, perhaps, and they will accommodate five hundred students. That is a thousand dollars apiece, while in the district schools that cost five hundred dollars and accommodate forty, that is twelve dollars and a half for each. Is not that a vast contrast? He says why do we choose to go to this college. Look at this picture and then look at that. Look at this hard stale bread and look at that. Look at this tender veal and that tough beast. Which will you have? Is it not all plain? Prof. Freeman understands that but he has a scientific way of covering up things. We would like to develop, by some process of evolution, the

truth out of what he says, "take the cover off;" I believe that is what *develop* means.

Speaking of Washburn observatory, what is that for? It is a kind of a temporal insight into heaven. (Great laughter.) It is just about as useful as Mahomet' telescope that he used to look into the seventh heaven with. In the third heaven he saw something about Abraham's bosom and Moses. What kind of a fellow was Moses? Moses killed an Egyptian and hid him in the sand and then went and joined the Hebrews. He was educated at Memphis? Where is Memphis? A vast pile of stone in a desert. He had this aristocratical wisdom, and you see the results in upper Egypt. Even the shepherd kings could not turn the Nile out of its natural boundary and irrigate the land continuously. They failed to obey nature's laws, but they did not fail to make a desert in many places where there might have been a fruitful region. It has been said by some of these teachers, and was said here at the teachers' convention, that a teacher needed education, not experience. Is not that astonishing? Do these students believe that? Of course they believe it. It is a part of this aristocratical religion. They say that agricultural students are ostracised. It is done so scientifically that you do not know the trick, usually. (Laughter and hisses.) But it is done nevertheless. (Hisses.)

I boarded with brother Clifford among the students two or three years ago, boarded there a week in the club room. The idea was to find out what kind of instruction was given to them in their first entry into that institution, during their honeymoon. Some said that the professors did not give them any special advice. Said one of them, and he belonged to the senior class: "There is no use in talking at all. They told me so and so." "Did you consult the professors as to what studies you should pursue?" "That depends on the *profession* that you calculate to follow." "Did you tell him that you wanted to be a farmer?" "No, I got enough of the farm when I was on it. I rather indicated that perhaps I would study law; in fact he insinuated to me that the legal profession was the highest profession in the land, hence I studied that." Some of them said they gave

them that kind of advice, and some another, but they did not any of them finally deny that they were forestalled into the courses of study that they might pursue, and I certainly know myself that that very advice George R. Perkins gave to me in 1837, and I presume he gave Judge Cole the same, for he was there at the same time.

The speaker's time having expired, a motion was offered that ten minutes more be allowed him, which motion was lost.

Mr. John W. Hinton, of Milwaukee — Mr. President (slight hissing) — Now, young gentlemen, some of you are greatly mistaken. You cannot anticipate what I am going to say, and I think you will be satisfied by the first sentence that you are greatly mistaken. There were two or three points made last night, by President Bascom, with which I most heartily and honestly agreed, and felt great delight in hearing him give them utterance. (Applause.) I never shape my words to suit anybody, or never shape my opinions to please other people. I hope I ever have and ever will treat every opponent with unqualified respect; so, my young friends, do not be too hasty. I have seen the time when you felt a great deal worse than I did, and I can assure you that I have twenty-one letters in my possession written by students very full of kind expressions towards me. When President Bascom said last night that in order to make a great man out of a boy, it must be somewhere in the boy, he enunciated as great a principle as ever left the lips of man. If it is not in me, no education, be it common, be it scholastic or ecclesiastical, or what it may be, will ever bring it out, and we have the indubitable proof of it in this country by the fact that every president of the United States that has ever obtained a very, very great hold upon the people at large, has sprung from the very lowest ranks of the people, and in almost every instance has had little or no education in his youth. While I know that to be the truth, I firmly believe that those men would have been still better if they had been educated. Now there are certain mischievous minds in all communities, and some of them have been very busy circulating the state-

ment that the University at Madison has an enemy in me. I have no more ill feeling towards that University than I have toward my American son, and never had. (Applause.) But no university, no common school, no mass of men or women can direct my sentiments by anything except persuasion. Then I am open to conviction and will honestly change my opinion. Now let us look at a few of these men. Go back to the mill-boy of the slashes, so poor that he could not pay his first week's board and had to borrow the money to do it, Henry Clay, as he tells it himself, and how marvelous that fifteen shillings that he received for the first case he ever had looked to him. He had rather be right than be president. Take Abraham Lincoln. The first money he ever earned was shoving off in a flatboat with a couple of trunks to a boat in the Mississippi, and he tells you that it looked bigger than the full moon to him. He was bound to get an education, and not having a slate, or paper, or blackboard, he smoothed off the ashes on his mother's hearthstone and there traced out the characters of the great charter of his country's freedom so that he could understand it, and tell me of any man in the world that ever better explained it. Look at him talking over his dead countrymen at Gettysburg and he tells you that this is a country of the people, by the people, and for the people, and prays God that it may never perish from the earth. Yet Abraham Lincoln regretted the want of an education. Do not confound these ideas. I have nothing to say about separating the agricultural college from the University. I know nothing about it.

Now, let us go down to Tennessee, and go into the village of Greenville, and on an old frame building now occupied by a colored family, you will see, "A. Johnson, Tailor." Go outside of the city and uncover your heads when you look at that massive marble monument and read, "Andrew Johnson, President of the United States." Then go back and see him sitting on his tailor's board, probably cabbaging a little cloth out of his customers, but he could not read the name of the maker of the shears with which he cribbed it till his good wife taught him to do it. What was Garfield? Garfield met a friend who aided him to get an education. Do

not confound this idea that because a man is very smart who has no education, that is, in the common acceptation of the term, but what it is a great risk to run, for any man to try to grow without it, so that, instead of your humble servant being an opponent of education, I make this positive challenge to any gentleman connected with any institution of learning in this city, that I will gather together simple extracts of what I have said during my thirty or forty years residence in this state, that shall make an eight or ten page pamphlet, and they can not find anything more favorable to education in what any one has said, though what they have said may be more eloquent, it may be more grammatical, it may have more quotations from Euripides and Cæsar, and all the other de's, but it will not be much more to the point. I believe, as I have said on many occasions, the ballot box is a great, grand, glorious institution, the heritage of the American. It is right. It was bought in his blood. But I tell you, as I said to more than three hundred students, fourteen or fifteen years ago, it is in these school houses that nestle in the valleys, that stud the hill sides all over the country where our strength lies. If gentlemen wish to send their sons to higher places of education, that is right. I honor them for it. He who will not do the best he can for his children, is not fit to live in this country. I believe, as some poet has said, speaking of them:

They lie in valleys buried deep,
They stud the barren hills,
They're mirrored where proud rivers sweep,
And by the humbler hills.
A blessing on each holy fane,
Wherever they may stand,
And never foe may lay them low,
These temples of our land.

I want to call attention to this one single fact. Every one of these presidents, and all the presidents of the United States, particularly those that have grown up from extreme poverty to that grand position, every one of them was an out and out protective tariff man, democrats as well as republicans. (Laughter and applause.)

C. L. Whitney presented a paper to the convention which he took away with him; failing to forward it to us for publication, it is omitted. Your attention is invited to the discussion which followed.

Mr. J. W. Wood of Baraboo — There will be some who would be disappointed if I did not take the floor for a few moments in reference to this question. I have listened with interest and profit to the paper which has just been read. A large amount of statistical knowledge has been gathered together, which it is proper for us to know and understand, and while I wish to commend the diligence and energy which has been used in collecting these facts and matters that have been presented to us, I wish to call attention to a few things. We listened last night to the address of our President, and in it there was a recognition of this broad, general principle, in which I heartily believe, that no nation can stand together without righteousness. The Bible has expressed it very tersely that "righteousness exalteth a nation, but sin is a reproach unto any people." When we look back upon the history of the past, there are certain lessons that we can learn. We have seen nations which have been prosperous and which have been the center of the world. We have seen them pass away, and we have seen it repeatedly. We have seen it repeated on the same ground. Nation after nation has passed away. And why? The whole lesson of history summed up is this: that God will not sustain or perpetuate a nation in which righteousness is not exalted. Take the history of Sodom and Gomorrah. Whatever we may think of the particular case, the principle is there truly enunciated. That when a nation becomes debased to that extent as to be hateful and hopelessly hateful in the sight of God, it perishes. So with Rome and so with Greece, and so it will be with us if we do not build wiser than they. The great mistake has been a lack of purity and righteousness in the people. So much for the past. Now let us look at the present. When we pick up the morning paper, what is the first thing that we expect to see in large head lines other than the result of some of these devices which are in progress for the purpose of overthrowing government. One of

the last items I read was that a large amount of money, gathered in this country for a certain fund and purpose, had been sent to England. So far as we have noticed that item we stand in a listening attitude. We expect to hear a report of some terrible thing that has happened there through the agency of that money that was sent there. This brings me right down to this point, the growth of irresponsible secret societies in this land.

We know that every class is organized. There is the trades union and the typographical union, and the Molly Maguires, and every interest is organized under a secret rule and under a secret dominion, and that they do exercise a tyrannical power which is shaping the history of our country to-day and the history of the world. We know that the czar of Russia trembles every day for his life. But a few days ago he passed out on a pleasure ride, and a ball was lodged in his shoulder. He is exposed to murder. From what source? It is from the different organizations of secretism. I believe this nation must frown upon these unions, that the strength of these organizations must be broken in our land.

The *New York Tribune* is to-day published under the protection of a police force. The last news I heard was, that the typographical union had ordered the workmen out of the *Tribune* office, and they had got together a force of men sufficient to run it, but not one of the present laborers dares to go home. They have made a kitchen of the basement of the office, and there they live and are guarded by police. And why? Simply because men have banded together, and the authorities of the secret societies have ordered that those men who have broken the rules, or who have disobeyed their orders, shall meet with punishment and harm. I know that I am speaking to the intelligence and the conscience of every man present, and I know that the very fundamental point, the central point of all these organizations which may prove so harmful, is found in the simple letter of secretism. Men pledge themselves to obey either the laws or to obey the behests of men, without knowing in advance what those things are. That is the whole thing in a nutshell. I know that these societies when they pledge their members, tell

them that there is nothing coming which will interfere with their duties to themselves, to their families, to their country, to their God, and all this: but mind you, this is the other man's view of the case, not the view of the man that is pledged. Take the case of those men who murdered Burke and Cavendish. We know that the world was thrilled by the news of the death of those men in Phoenix Park, and the whole thing has developed into this, that there existed a society, and that those murderers were pledged to that society, and that when they were ordered to do this deed, it was at the risk of their lives if they did not do it. They could do the deed and might escape. They could not fail to do the deed and escape with their lives. There was an informer, Carey, and through his information justice was meted out to those murderers. Carey, with the power of the British government behind him to help him, tried to get away from what was known to be the condign vengeance which would be visited upon him. He started for another land, and before he reached there he was slain, as it has been developed, by the authority of this secret society, many members of which are found in our own country, and most active members of it. Now those men had been told that nothing would be required of them which would interfere with their duty to their country. How is it with the man who pledged them? We have read within a day or two of the great funeral they have had where O'Donnell was born. They have buried him with tears and lamentations, as a man who lost his life in the service of his God, in the service of his country, in duty to himself. And yet he stands before the world a murderer. He had failed in his duty to God. God said: "Thou shalt not kill." The secret society said: "kill." He did kill, and he is looked upon as a martyr to-day.

It is strange what power this secretism does have over the consciences of men. It blinds them to the truth. Righteousness exalteth a nation or an individual, and nothing but righteousness does, and when a man is so blinded and so befooled that he thinks his duty to these pledges, secured from him without kowing what it will lead him to, requires

his allegiance to them rather than to God or to himself or anybody else, the consequences are fearful.

The grange has been introduced to our notice. I have seen these evils. They are growing in our land. They are growing every day. It is a coming question in our country in the near future, what shall be done in this case? Mormonism defies the United States through the same power of secretism, and everything that is wrong. It is an eternal principle that all combined action for evil requires secrecy, and no combination for good does require it. It is the law of our very being. I have hoped that the farmers of our country would be the great conservative power who should hold this nation to righteousness. If they do not hold this nation to righteousness so that God shall honor it, what will become of our nation? I have no hope for it. This brother who has called the grange to our attention says it is the only thing which meets the farmer's necessities. At the very door lies that pledge of secrecy. I know that there are good men in it, men that I shake by the hand cordially, men who are my friends, but just look at the ultimate power for evil contained in it. I submit this proposition to this convention, that there is no man living who can promise to obey and to keep secrets that are to be committed, without a sacrifice of the noblest and the highest points of manhood or womanhood. You tell me that you will communicate something to me which will be for my good, but you make me promise first, in the most solemn manner, that I will keep that forever a secret. Good does not require it. I am alarmed. I will not receive your information on those terms. And so the grange comes to us with its pledge of secrecy and pledge of obedience, and I know that it does not meet the wants of men. I know that it can never unite them. If the time should ever come that the grange power could unite the farming people of the United States, I say woe to that day. Think of the numbers and the wealth that would be at their disposal. It would be the most terrible despotism, simply because the most powerful. What could be done outside of it? I hope these facts which I have stated to-night, and which I know go home to the consciousness of many pres-

ent, whether they agree with me or not, or whether they were glad to hear me or not, will be recorded, and that men who go home from here will have to admit that they have heard these things announced in this convention.

Mr. Broughton — It is to be hoped that what has been said by Brother Wood will not pass wholly unnoticed. He says righteousness exalteth a nation. Does he mean self-righteousness? Does he mention the difference between bigotry and righteousness? Not at all. That will be left for you to decide. He says the growth of secret societies is terrible. Why does he so judge? Is it because of the bigotry of his education? What is the matter with him? He says Nihilism is a secret society and very dangerous. Dangerous to whom? To professional tyrants? Is that where the danger lies?

Mr. Wood — It makes murderers of men.

Mr. Broughton — There are various kinds of murder, you are aware. Because one spear of grass gets beside another and overshadows it and one is killed, is that murder? Is there any murder in killing tyrants?

Mr. Wood — It is murder if dynamite goes off under a man's table and blows him to pieces.

Mr. Broughton — If it blows him straight to heaven is it not a good thing? The fact is that the family is a secret society. God knows what the family is at. Is that what you mean by secret societies, those societies that are so secret that even God himself does not discern their inner workings? Is that what he means by it? Is it not a fact that God keeps many things secret? Is not God himself a secret society? Does Mr. Wood know enough to unfold the secrets that God keeps to himself? He gives us just as much knowledge as we are capable of enjoying, and not any more. God probably knows just what light to give us and what to withhold, and the secret society does the same. He speaks of Burke and Cavendish. That was a secret society. But how was it with Christ and his disciples? Did they not commune together? Did he not say when two or three were called together he would be in their midst? Nobody would know anything about their investigations but God himself. Was not that a secret society? In Solomon's temple was an inner

sanctuary. Did those, who were not duly prepared, enjoy any interests therein? There is an eternal fitness of things. Would you have a pig in the parlor? According to Mr. Wood's theory he would have everything in the parlor, fit or unfit, out of time and in time. Is that progressive civilization? It is crawfish civilization. Even the devil has martyrs, as well as holiness. The secret societies for good are all good, but because there are some bad secret societies does not condemn the good ones. He says Mormonism is a secret society. So is all ecclesiastical government. It is essentially secret. They hold their communions directly with God. They do not expose their affairs to the outside world. They are prudent, if they wish to succeed; and all families and all nations are prudent if they wish to succeed. There is prudence in secrecy many times, notwithstanding all these things may be used for bad purposes. It is nothing against fire that it may be used for burning a barn. Does Brother Wood see both sides of this question? We read about the secrets of nature. Here is Prof. Wiley. He does not pretend to have found out all about the secrets of nature. Why are these secrets given to us? Perhaps we are given to understand that to develop our energies we must seek to find out the secrets of nature, and when we find them out, we feel ourselves exalted with an honorable exaltation. Perhaps, if we found out the secrets of nature too fast, we would become indolent, and our natural energy would be made sluggish. In nature we have the secrets of God, which is but another name for nature. He says the farmers must lead this nation in righteousness. Are there not any righteous but farmers? We will hardly assume so high a position as that. That would be self-righteousness. If the farmers are to hold this nation together by self-righteousness, they are no better than others. They must not undertake to do that. The fact of the business is, fools have no secrets. Solomon says: "A fool uttereth all his mind; but a wise man keepeth it in till afterwards." Was Solomon right? I leave it to you, gentlemen, to judge.

Mr. Wood— The gentleman has asked me a good many questions and I will not try to answer them. I know the

time of this convention is precious. The argument which he brought in here, the secrets of the family, is a common stock argument, and I wish to speak just a moment to that. I have never had any secrets in my family, fortunately. I have had the privacies of family life, but not the secrets. Suppose something had happened in the family, and that I should call them together and make them swear on their bended knees under some awful penalty never to reveal it, then there would be something that I and the family would be ashamed of. No honest, straight family has secrets in it. They have the privacies of private life but not the secrets. Show me a family that has a secret in it that they have sworn to keep, and I will show you an unhappy family that have something that they would be glad to get rid of. But suppose the members of a family should tell me that they had a wonderful secret at their house which they had sworn to keep, but that if I would pay them five dollars they would let me into the secret. That would be making the secret a stock for jobbing on the community. Then that family would be similar to a secret society. These secrets are artificial secrets. It is not anything that is done in the grange that would disgrace them. They are merely stock secrets. If you have secrets do not sell them out. You see that the comparison between the family and the secret society utterly fails.

Mr. A. A. Arnold — I hope the discussion of this question will not proceed any further for the reason, if for no other, that we have men here that belong to the grange and men that do not, men who are opposed to secret societies and men who are in favor of them. In all ages of the world men have been constantly claiming that the country and the world was going to destruction and going to the devil, and still we live. It is useless to be alarmed. In Andrew Jackson's time, at the time of the overthrow of the National bank, he was decried by everybody, about, and still the public sentiment was all a mistake and he proved to be the great man of the nation. So it may be possible that the grange and other secret societies which are said to be doing so much harm may be the salvation of the nation yet.

Mr. Whitney, being called upon by several members to reply, said — I do not wish to take the time of the society. I do not see anything particular to answer, and I do not see why I was called on. The remarks made do not apply at all to the organization I represent. There are no oath-bound members to keep secrets there. They never have sold any secrets, and do not propose to, but like the church I belong to, our members claim that they have the right to say who shall be admitted to our social and moral union, and I ask if we have not that right. I would not belong to a church who would not say who its members should be, and discipline them when they have done any wrong, and do it within their walls, and by themselves, and not, as is oftentimes done when the world misconstrues it, made to tell against religion in its purest and best forms. I might quote many instances of the church, but enough has been said, and I will leave the matter for the consideration and investigation of honest, thinking men.

Hon. A. A. Arnold, of Galesville — I have a resolution I desire to offer.

WHEREAS, An exhibition of the products of the soil and mines of all nations is to be held in the city of New Orleans, under the name of the World's Cotton Centennial and Industrial Exposition, commencing December 4th, 1884, continuing until May, 1885; and

WHEREAS, By act of congress and by proclamation of the president, said exposition has been declared to be under the auspices of the United States, and

WHEREAS, All the states of the Union have been invited to participate in said exposition, and

WHEREAS, It is desirable that the state of Wisconsin should be represented therein with all her arts and industries, and

WHEREAS, In consequence of their being no session of the legislature in 1884, the state has no funds that can be used to pay the expenses of such representation; therefore be it

Resolved, That, in the event of a bill being presented to congress to appropriate money to each of the states to defray their expenses in such exposition, the governor of this state (if in his judgment the interests of the state will be subserved thereby), be and is hereby requested by this convention to recommend to our senators and representatives in congress that they favor such a bill and urge its passage, with such limits as to amounts to be set apart to each state and under such conditions as may appear to them to be just and reasonable.

I offer that resolution, but before any action is taken, the governor and Mr. Gibbs, who are present, may be able to give you some information.

Governor Rusk — *Mr. President and Gentlemen of the Convention*: Mr. Gibbs, of Minnesota, can give you a great deal more information than I can, for what I know about it I learned mostly from him. Congress passed an act recognizing this exposition, and the president has issued a proclamation. That act required a commissioner and an alternate to be nominated by the governor of each state, and the names sent to the president for his appointment as commissioner or alternate. I have sent in the names in accordance with the act, but I have not yet heard of their appointment. I presume they will be appointed before the act expires, which will be on the tenth day of this month. I should think it would be well, if it is to be a general thing, for our state to be represented there, but there being no appropriation, and no way whereby the money can be raised, there being no legislature, it will be necessary, if the state is to be represented there, to have it represented there through private enterprise or through congress. There has been a proposition introduced in congress, which I think in substance allows ten thousand dollars to each state, to be spent under the direction of the state, to make an exhibit of the products of the state at the exposition. If that should pass, I think our state should be represented. We could make a very good showing in a great many departments — horticulture, dairying and agriculture. In fact, all our arts should be exhibited that we can exhibit with the money given us, and if the money should be appropriated by congress, I should be glad to see this state fairly and honorably represented. Mr. Gibbs can give you the details more particularly than I can. He has had communications with the commissioner-general and all of the departments pertaining to it.

Mr. Gibbs, of Minnesota — *Mr. President*: It seems that the managers of this exposition have been a little late in calling the attention of the governors of the several states to the matter of the appointment of commissioners. The act of congress required the commissioners to be appointed

within one year from the passage of the act, which time, as said by the governor, will expire on the 10th of this month. It is less than thirty days ago that the attention of the governor of the state of Minnesota was called to the matter, and when he tendered to me the appointment as commissioner for Minnesota, he informed me that he had little knowledge of the status of the exposition, and he requested me to enter upon an investigation of it and report to him all the information I could obtain. It appears that the exposition was placed under the sanction of the United States by an act approved on the 10th of February last. It provided for the appointment of a board of thirteen general managers to be appointed by the president of the United States, six of them to be recommended by the National Cotton Planters' Association of America, under whose auspices the enterprise was first started, and seven of them to be appointed by the president on recommendation of the subscribers to the project and the sponsors for it in the city of New Orleans. The act further authorized the president, whenever satisfied that suitable provision had been made for the erection of buildings, to issue his proclamation declaring it duly open before the world as a world's exposition, under the auspices of the United States. That proclamation was issued by the president in September last. I felt bound in investigating the matter to take it for granted that the congress of the United States and the president of the United States would not indorse that project in that way unless fully satisfied that its status was all right; that it was in the hands of responsible managers and would be conducted as a *bona fide* world's fair. The next steps in the investigation were, of course, matters of detail, and at every step since, and I have examined the matter carefully at all avenues of information, every step has satisfied me that there is no reason why the states of the north should not be as solid in support of that exposition as it already appears the states of the south are. The reason why the south became solid for it first was because it was originated as a southern exposition, and after the states of the south had become united upon it, its scheme was enlarged to embrace

all of the states of the Union and all of the countries of the world.

The next question is, what ought the states to do, what are the probable expenses, and when is the proper time to begin? In determining that I looked up some of the facts in regard to the centennial exposition at Philadelphia. I found that twenty-seven states took part in that exhibition — appropriating money either through their legislatures or by private contributions. The average amount spent by the states in that exhibition was a little over \$18,000. Twenty-two of the states erected separate buildings. Sixteen of those states gave as a record of the cost of those buildings a little over \$8,000. Therefore it appears that if the states go into the New Orleans exposition as they did into the Philadelphia exposition, they must be prepared to spend from three to four thousand dollars, as some of them did then, up to as high as they choose to go.

Probably on an average it will not fall far below what the states spent then, and at that time they put up such buildings as they would be satisfied with, as the citizens of the several states would feel proud of when they went there, and feel at home in, and such as they would invite their friends to; and those buildings cost them on an average eight thousand dollars apiece.

The next question is when to begin, and I am satisfied from two weeks' study of that matter that we cannot begin any too soon. If we are going to put our agricultural and horticultural products into that exposition we want to give the cultivators of the soil immediate notice that they may select their seeds, prepare their ground and make their plans for culture to make the finest products within their power, and the announcement should be made so that all parties may know whether we are going to take part in it. The greatest annoyance in connection with the centennial exposition was their not getting their preparations made in time, and they were nearly all behind time when the exposition opened.

For one, speaking in behalf of Minnesota, and hoping that the states of the northwest will all go into this exposition

and work together, for in union there is strength, I say, if we are going in, let us make our arrangements and take hold of it and be sure when the 4th of December, 1884, rolls around, we will be ready to open the exposition in good shape. There has been a feeling of intense disgust in the state of Minnesota that we did not go into the centennial at all. Our legislature could not see that it was any use. The people of Kansas took a different view. They spent thirty thousand dollars on the exposition, and ten thousand more in printing and circulating the report of it all over the world. Minnesota did nothing. Minnesota had all the advantages over Kansas in respect to attractions for wealth and increase of population in 1876. At the end of four years after that time she came out with an increase of only 18 per cent. in her taxable property, while Kansas came out with an increase of 95 per cent. Kansas increased her population in those four years 68 per cent. In Minnesota we have to go back one year more to get a starting point. In five years Minnesota increased her population only 30 per cent. As far as I know in Minnesota the feeling is to learn a lesson from her staying out of the centennial, and if the New Orleans exposition offers us a fair chance, we will go there and see whether we have anything attractive to the sources of wealth and emigration from the old world and from the other states of America, or not.

Mr. Wheeler — I had the privilege of representing one of the Wisconsin firms at the Atlanta International Exposition held two years ago, and I suppose the experiences we had there will largely be repeated at the New Orleans exposition, and perhaps ought to be something of a guide to us in our attitude towards this matter. We did not have any state appropriation or any state exhibit at that place. In fact most of the northern states were represented through individual enterprises. The individual enterprises made some sort of common headquarters and endeavored by co-operation to make a common exhibit of what they had to show. The southern states, however, quite generally went on the principle of making appropriations so that they should be represented directly as states. I do not know that a single

northern state had a distinctively state exhibit there. It was not found necessary to do so as the states were fully represented by the co-operation of their individual firms. Now, I happen to know Mr. Moorhead, the leading spirit in this enterprise, and I am somewhat acquainted with the directors of the Cotton Planters' Association, whom we have met from time to time ever since that exhibit at Atlanta, and I think you will find that the history of this programme of roping in the northern states is about this: They first started to make the exposition a distinctively southern affair. Right after the Atlanta exposition, when they found that it was a success, and that the credit of that success belonged largely to northern capital and to northern philanthropy, and especially to the philanthropy of those New England abolitionists who had been so antagonistic to them and yet had put their hands down in their pockets and paid for the leading expenses of that whole exposition, they then said, "Let us get up something that will represent the south and its great magnificent enterprise." So the Cotton Planters' exposition was started. It had not gone a great ways, however, before it began to find that it could not secure the wherewithal to make the proper exhibit. The scheme was then started to try to get the co-operation of the northern states in such a way as to save that exhibit from being a failure. I do not think that manufacturing establishments, who know something of the drift of these things and who watch them from the standpoint of their own personal interests, have entertained the highest hopes of an exposition at that place, for in the first place, we have not a constituency there that can do us very much good. Now, I am sure that this gentleman (Mr. Gibbs) did not mean what he said, or what we should infer from his remarks, that Kansas has made this increase in the valuation of its taxable property from the mere fact of its having spent money at the centennial.

Mr. Gibbs — That is the opinion of the Kansas statisticians themselves.

Mr. Wheeler — I should very much doubt their conclusions. The fact is, Texas can show the same progress, and they did not have an appropriation of money at the centennial.

There has been a drift of immigration in that direction independently of that centennial appropriation, and there have been of late successive years of corn crops and other crops unprecedented in the history of that state, which are a sufficient explanation of its increase. My judgment would be, that the state of Wisconsin, representing a very different range of immigration, should not expect too much from an exhibit at New Orleans. I think you will find it to be the general impression of exhibitors at these southern exhibitions that the returns have been very slow and very meagre. Speaking for our own firm, I can say that the leading comfort we got from going down to Atlanta was the privilege of showing those good people that we did not believe in sectionalism, and that we were willing to lose money down there for their benefit, in order to help them in matters in which they were sadly deficient. From the stand-point of a national patriotism, I should be in favor of an appropriation, but from the stand-point of any interest that we are likely to get from it, I should not feel that we were called upon to do very much. I think that perhaps in the absence of appropriations by the legislature, the best plan would be to organize some co-operation among our leading enterprises, and we have some very worthy manufacturing interests in this state, and in that way we can make a joint exhibit that will not be very far behind those exhibits which come from appropriations by the states. The state of Wisconsin has been conspicuous through its private enterprises in the exhibits at these expositions.

The resolutions offered by Mr. Arnold were then voted upon and adopted by the convention.

DISCUSSION.

[Prof. Morrow's paper was read at the convention, but it is being added to by the writer and will appear in miscellaneous papers.—SECRETARY.]

Prof. Henry — I feel that this paper is worthy of thoughtful attention for several reasons. You will recollect that the author of it resided in this state for many years, and con-

ducted an agricultural paper in this state for some time. To that man, I believe, in connection with some others, is due the fact of the organization of farmers' meetings in this state. He, I believe, organized and held the first farmers' meeting in Madison, or, at least, assisted in it and suggested it. I believe he held one of the first, if not the first, in Baraboo, and started these farmers' meetings in the state. He is also the man who suggested the Fat Stock Show of Chicago. When he was too poor to remain longer in the state of Wisconsin, having met with financial reverses, other states employed him, Iowa, and lastly Illinois, where he is now Professor of Agriculture in the state university. So you see Professors of Agriculture, in some places at least, do something. Now, he has written up to you Wisconsin men and urge that you take a greater interest in that Fat Stock Show. Some that are present I know have been to the show. I make an annual pilgrimage to Chicago to visit that show. I believe I have been there now four years in succession. I want to say to the farmers, if you are at all interested in fattening cattle, do not fail to attend one or two of those meetings. So far they have been held in the Exposition building, centrally located. The farmers bring in fat cattle from Canada, Iowa, Nebraska, Kansas, and some have been brought almost directly from Europe. Of course a large number come from Illinois, Ohio, Indiana and Kentucky. The largest number come from Illinois; next, usually, from Indiana, Ohio, and Canada. Virginia has sent some, and Missouri, but I believe Wisconsin has never had a horned animal in that show. That seems singular, as we are so near Chicago and Chicago is the outlet for our fat cattle.

Mr. Babbitt — I believe Mr. Ludlow will show there. We have been after him pretty strong.

Prof. Henry — I have been asked when I was there, "Where are your cattle?" I said, "We haven't any; we are a dairy state. But I knew at the stock yards we had some scrub cattle. The cattle at the stock yards are usually scalawags, bought up by a farmer and fed a little while, and sold usually at low prices, and then all our old cows get down there, and all that kind of stuff. Whether it is best for our

farmers to go into feeding or not I do not know, but it seems to me we ought, as soon as possible, to have some representative animals at that show, and I want to say to the farmers, remember that this show is often far more of an educator than a fair. I believe it would pay many of our farmers, after you have visited your own state fair, as you always do, instead of going to the Illinois fair, if you can go to Chicago but once a year, visit the Fat Stock Show, and cut these outside fairs. The number of cattle there this year amounted to hundreds. There were beeves that looked as though they had been carved out of a block of some soft, pliable material, and you could hardly tell there was a bone in their body, they were so plump and round. It seemed as though the men who had fattened these animals had carved them out, or, at least, they had been able to order the fat to the different parts of the body. Mr. Jewett is a very large farmer in Illinois. He said one day, "These farmers think I put all my corn into steers." He said, "I sold twenty thousand bushels this year." He had at the time a thousand head of cattle. I asked him one day how he fattened. Says he, "I always fat in the summer; I can not afford to fat a steer in the winter, so when my steers are running in blue grass pasture, I carry the corn out by the wagon load and scatter it in the troughs and feed very heavy in the summer. In the winter time it is so cold, it takes a large part of the feed to keep the animals warm, so I keep the animals in good condition in the winter, but in summer I make them eat."

Mr. Jewett never sells his cattle in America. He ships them to England. His herds of cattle are so large, that one year when there was a prize offered for the best car-load of steers, he went out to his herd and picked out a car-load of pure white steers. These were all Short-horns. You know there are not many Short-horns that are white, and yet he had enough cattle so that he could pick out a car-load of white steers, and he did so, and took the premium. There is not a better school to send your sons to than to send them there for three or four days. This year the professor in Cornell University came to Chicago with his class of students, and took them around the Fat Stock Show, and gave

them lessons. Professor Morrow took the class in charge part of the time. There was one steer twenty-one months old, sixteen hundred and forty pounds in weight, and the class were given a lesson on that animal. There was one Polled Angus steer there that had been brought from Scotland. He had just been exhibited at the Fat Stock Show at Kansas City. The owners were so anxious to get that steer to the Kansas Fat Stock Show in time, that, when they found they had got him landed at Quebec so late, they paid the express company four hundred dollars to get him to Kansas City in time for that show. That animal was brought to Chicago and was on exhibition. The steer cost something like five hundred dollars in Scotland. It was expected that if kept in Scotland, he had a fair chance of winning the hundred guinea prize at the Smithfield show; so when American breeders bought him to bring over here to exhibit, they had to pay an unusually high price. You will meet there the best breeders and feeders of the country. They are men that are willing to tell you how they do their work. One other point, and this is more important than anything else:

As a rule, the animals that take the prizes in this Fat Stock Show are grade animals. The farmers get the idea that we are talking about pure bloods. We do not mean that. You must have a pure source to start from, so the pure male is very important. If you begin to breed from a-half blood, the progeny is a quarter blood at most, but the chances are it will not be equal to a quarter blood, because the native animal may overpower the blood of the male; but when the blood is intensely concentrated, as, for instance, in the Short-horns, which have been kept pure for a hundred years, you can easily see that a male bred in that line, when united with a female bred hit and miss, will often carry far more than half of his qualities into the progeny. These grade animals are the ones that when brought to the Fat Stock Show will often take the prize away from the full bloods, and any farmer can obtain grade animals by the use of full blood males. Recollect that unless you want them for breeding purposes, a grade animal is what you always want. No

farmer who is running a dairy for butter can afford to have pure blood Jerseys. He wants Jersey grades. They are better than full bloods for dairy purposes, because they are cheaper, and because, as a rule, they will produce just as much milk and butter. I urge that our farmers grow more clannish. Introduce these full bloods by joining with your neighbors. In Pierce and St. Croix counties, two or three farmers join together and get an animal, and it pays immensely; and when your neighbors bring in a pure blood animal, stand by them. A great many come to me and say it does not pay them because their neighbors will not help them. They had rather breed to scrubs than full bloods, considering the price. This is a place where it will pay to be clannish, and by breeding such cattle as this we will remove from our state the stain of scrub cattle, and we certainly ought, before long, to have some cattle on exhibition at the Fat Stock Show.

Mr. Lewis Clark— Would it do to fatten steers in the summer that are not to be shipped?

Prof. Henry— I think it would pay to get them in high condition and carry them until a little later, because a steer that is fat may be very easily kept fat, while a steer that is poor is hard to fatten in the winter.

Mr. F. A. Seymour, of Sauk county— I understood the Professor to say that dairymen could obtain good cows for milk and butter qualities by grading the Jerseys instead of having the full blood Jerseys. Which is the best method for dairy purposes— to grade from a Jersey bull, or from the female with Shorthorn or some other breed of male?

Prof. Henry— From the males, by all means. A man could not afford to buy Jersey females and grade. With the male you could obtain fifty calves, while with the female you could obtain only one, and her progeny would be degraded by breeding from her.

Mr. Allen— I think I can speak somewhat understandingly upon that question. Some eight years ago I thought I would experiment in that way. I felt that the Jersey cattle, though they had a great reputation for butter qualities, were not the cattle that we wanted to raise. They are small,

and must necessarily have about an equal number of male calves. Those steers, if you keep them for steers and fatten them, must at the very best, be third class beef when you take them to market. I thought that by taking a male Jersey and crossing with a Durham I might secure important advantage in size. I did that. I had a very good Durham cow. She was a good milker, and very near full blood. I think as high as fifteen-sixteenths. I crossed that cow with a Jersey bull. The result of it was a heifer calf that is now my cow, from which I am going to give some statistics, determined by actual weights, and that I know. The potency of the old grandmother cow, the Durham cow, gave large size to the cow that I now have. She shows to be almost a Durham cow. That cow had a calf when she was two years old. When that cow was four years old, we made in seven days from the grass only, fourteen pounds and two ounces of butter. The cow was seven years old last year. We tried her, commencing the twenty-ninth day of May, and she had no feed but the grass. We milked her, however, three times a day. We milked from that cow $419\frac{1}{2}$ pounds of milk in seven days. That was not skim milk, either, by any means. We took it to the cheese factory. I believe she will make twenty pounds of butter in seven days with a good, honest, fair trial. That shows what may be done in breeding from the Jersey up to a higher grade of body and strength. I have bred that cow both ways (she was a Short-horn), both to a Jersey bull and to a Durham bull; but I believe that the breeding down is not as good as breeding upward. I believe I have got the strength and milking quality in that Durham cow that is important. I am going to strive to breed a breed of cows. I have one of the heifers that was bred up milking now that proves to be a very good cow. She is three years old, and I have milked her one year. She is a good milker, but the heifer that was bred down from the Durham cow to the Jersey again, making three-quarters Jersey I do not believe is going to be as good a cow as the one that is bred up from a half blood towards the Durham.

Mr. Seymour — There is a very material difference in the

milking qualities of the Durham and the Durham grades. I want to ask the gentleman whether the mother cow, the Durham, was not an exceedingly good milker.

Mr. Allen — She was a remarkably good milking cow.

Mr. Seymour — I understand by grading down you mean grading from the Durham.

Mr. Allen — Yes, sir.

Mr. Seymour — Not grading down in size?

Mr. Allen — No, sir. I will say, however, that as I graded towards the Jersey I diminished very materially the size.

Mr. Seymour — How much does this grade cow weigh?

Mr. Allen — I don't know. I think she would weigh 1,300 pounds.

Mr. J. C. Ford — I am interested in this question, practically. I am trying to make beef on my farm. I do not claim to have very great experience — only about three years — but from what little I have seen and what little experience I have, I do not think you can make any beef even on Short-horn foundation from Jersey bulls. You run your size down so rapidly that you can not afford to raise them. You might as well knock them in the head when they are calves. The remarks that have been made here have been looking in the direction of the dairy interest, I take it, and that is all legitimate, so far, with that point in view. But what I want to know is how to get cows that I can use with my Short-horn bulls that will give size to the calves, and at the same time give abundance of milk. I have excellent bulls. I think they are the best investment that I can make, or anybody else. I think that when anybody pays a hundred and fifty or two hundred or five hundred dollars for a bull he has paid less than when he has paid fifty dollars for a cow; but taking the ordinary cow or the Jersey cow you have not the size to give the size to the calf that you want. The bull can not impart it all. Take our ordinary cows, or the Jersey cow, or the other families, unless it is the Holstein, and you do not get size. I would like to know if any one has the experience to know whether grading on a Holstein cow by a Short-horn bull would give you the milk and the size of the calf which you want.

Prof. Henry—The Heath Brothers, living within four miles of Madison, for a long time used full blood Short-horn bulls, registered animals, and obtained a fine herd of high grade Short-horns by the use of full blood males upon common cows. A couple of years ago they bought from the experimental farm a descendant of that piebald animal which has been so belabored during a part of this convention. He paid us a good price for that thoroughbred Holstein bull calf. He has now on his farm the descendants of that Holstein calf as produced by those high grade Short-horn cows for two generations. Mr. Heath is making a great deal of money by these operations. If any of you farmers want to go out and see his herd I will have a team here and take you out.

Mr. Ford—Is it not a fact that as a rule the Short-horn bulls are not as prepotent as the Holstein bulls in the mixing of the families? Do we not lose the Short-horn characteristics sooner than the characteristics of other families?

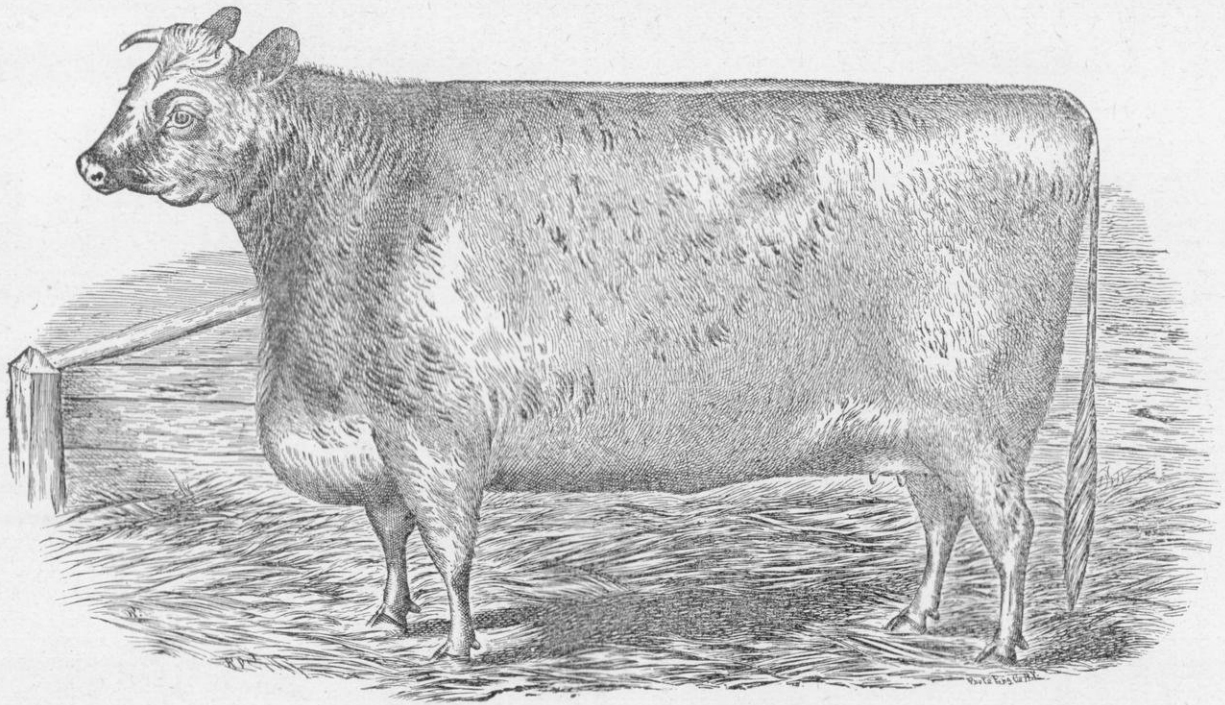
Mr. Babbitt—This question that has been propounded by Mr. Ford has already been answered by the experience in Illinois. We know what has been the result in Illinois. Previous to the introduction of Holstein stock into the community, we know that the highest representative in beef has been that that has come through the use of Short-horn bulls on the high grades of Illinois, and Mr. Gillett's farm answers the question as regards beef.

Mr. Ford—Not exactly. What I want to know is, could we get extra size without the raw bones and the great consuming qualities of the Holstein by grafting the Holstein on to the Short-horn stock?

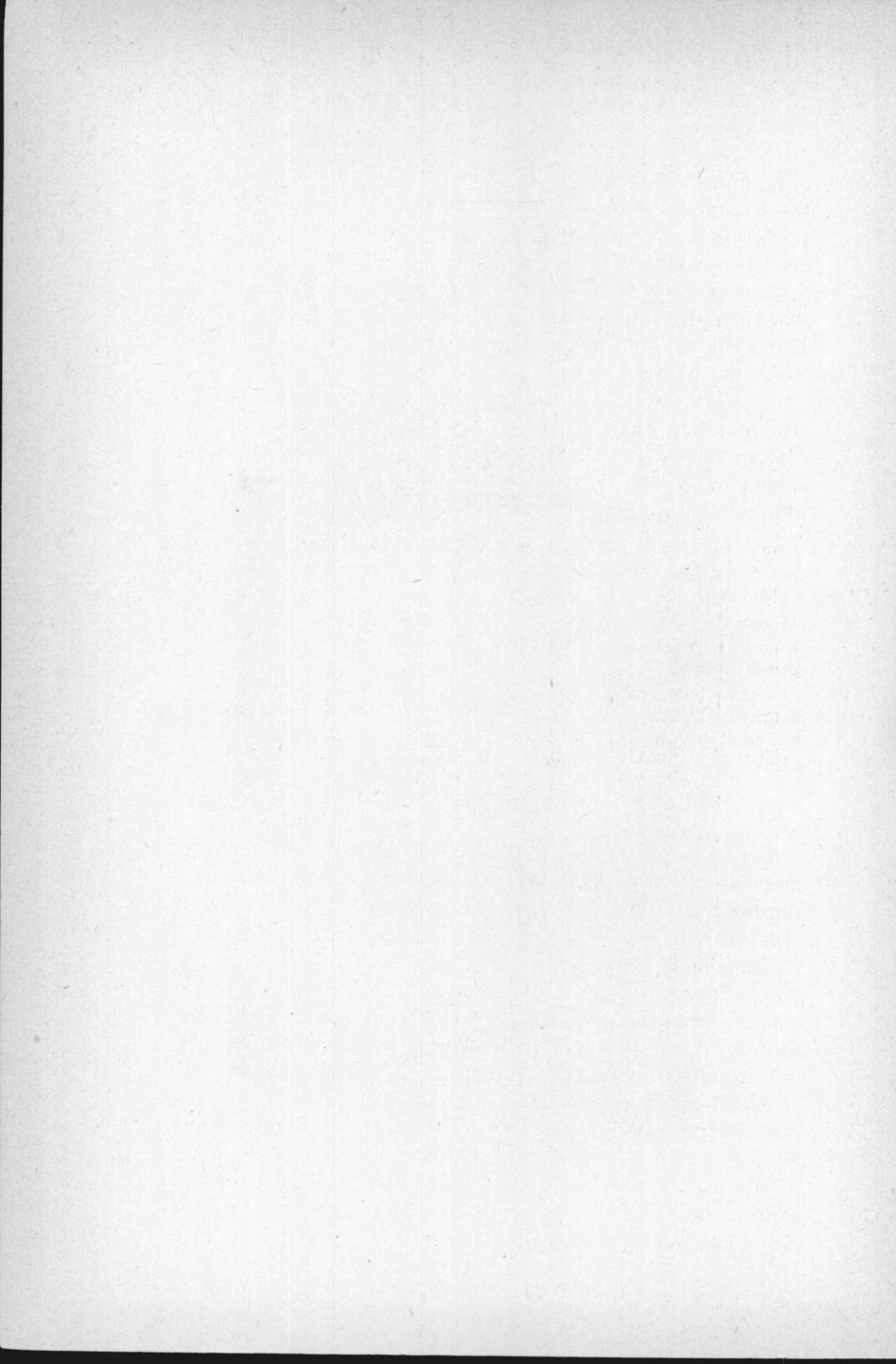
Mr. Babbitt—I think I could answer that question by reading from the Herd Book, as to what was the original status of Short-horns, and what it is to-day, when they have been fortunate enough to be owned by poor men, men who have not been able to buy what is called a fancy bred Short-horn bull, or had too much sense to let go of a certainty for an uncertainty. I allude to that class of bulls that has been written up by editors and secured by parties interested and made popular among the people to that extent that it has

become a mania with the farmers all over the country to look at *pedigree* instead of merit. That mania has resulted in deteriorating the high standard which the Short-horns of this country did occupy and *now occupy* when owned by the poor man or legitimate breeder, those men who have confined themselves to breeding in-and-in, even without going outside of their own Short-horn family. There are a number of instances of this kind. I have in my mind now a man by the name of Richard Ray, who lived a near neighbor to the present Japanese agent, and who purchased from Hon. Horace Capron, formerly ex-commissioner of agriculture at Washington, an animal called *Cora*.

When his boy was ready to start out with the farm and commence life, he gave him the old cow, *Cora*, and for years and years he went on breeding the animals of old *Cora* to itself, until he produced 117 females from her and her daughters. He finally made up his mind he would make one out-cross. He kept a record of his milk as he sold it to the city. That record would make some of these fancy breeders look pale. The cows were immense milkers. (Here let me digress by saying, I sold a pedigree heifer to C. C. Park and W. B. Dodge, of Waukegan, for \$1,000, and her calf for \$300. They sold the calf for \$1,200, and the pedigree heifer for \$2,000, to Col. McGibbon, of Kentucky. I told the purchasers, Messrs. Park & Dodge, that I had to put the calf on an Arabella cow, to keep it alive, as the dam was no milker. It made no difference to them; pedigree was what would sell. The Arabella was better bred and of vastly more value, but the mystic hand of the pen and auction reports had not done its work for her.) The gentleman above alluded to got so he was making considerable money. He thought he would go to Hon. John Wentworth and buy an animal for the cross. He made a purchase, and as good luck would have it, Long John Wentworth's animals traced their pedigree to precisely the same line of blood that Ray's original stock did, Wentworth having purchased of the veteran breeder, Dennis Kelly, of Philadelphia. Consequently, he never bred outside of that family, and that family has not been bred outside of its own great strain since 1822, but



SEE PAGES 406 TO 430, INCLUSIVE.



once, and there was established the family now known as the Champion Rose, and the milking strain of the Short-horn is preserved in these families where conditions have been favorable.

Quite a number of years ago I visited Mr. Ray's farm; saw the cows milked, and contracted for the entire lot of heifer calves; and as they descended from Imported White Rose, by Warrior, purchased of Mr. Champion, England, I originated and claimed the name of Champion Rose. And other breeders adopted it.

Hon. Horace Capron, July 5, 1849, makes the following certificate in relation to one of the ancestors of the Champion Rose family:

"She took the first premium at Philadelphia Agricultural Society, held at the Lamb Tavern, 1843, being one year old. Also first premium, same place, in 1845, being then three years old, and subsequently at Agricultural Fair, Maryland. Her milking properties were remarkable, both in quality and richness. Her record shows twenty-eight quarts per day for two months, in 1849.

I certify the above to be correct, as taken from my records. I am gratified beyond measure to know that you have used so much care in breeding of your stock, and have no doubt that in addition to great service rendered your state, you will have your reward pecuniarily.

Very truly,
 HORACE CAPRON.
Ex-United States Commissioner of Agriculture.

As I offer none of my stock for sale, the liberty of giving facts is warranted by the great interest I represent in maintaining the superiority of the Short-horn aristocracy. To all other good breeds I say success, to the full measure of their merits, but to the Short-horns of the past I say *veni, vidi, vici*.

It has been the same with the Arabella family by North Star, also Arabellas by Victory and Pansy, by Blaze, tracing up through Imported Washington (1566). Where no out-crosses have been made, they are large and superior for milk. Here allow me to read a letter just received from Hon. Lewis F. Allen, of Buffalo, the editor and proprietor of the American Herd Book, a man who for nearly half a century has been identified with the cattle interests of America, and who struggled so hard to publish the first

volume of the Herd Book. There were giants in those days. I see by the frontispiece in Vol. 5 that New York's proud governor, Grover Cleveland, assisted Mr. Allen in his work. Mr. Allen, at the ripe old age of eighty-five, has transferred his valuable works to the American Short-horn Breeders' Association. At the time of that sale he transferred his entire herd of milking Short-horns to me, and I will be pardoned for confining myself to what I know without being censured as bragging up my own stock, as I have never shown an article at our annual state exhibition but once and that as long ago as 1864, twenty years ago, when I took the first and second premiums on Arabella cows at the state fair. Richard Richards, of Racine, has for years and years, with the same blood, carried off our highest premiums.

This morning's mail brings the following, bearing upon the subject:

BUFFALO, New York, Feb. 7, 1884.

Your two letters were duly received. I would have written you sooner about the milking qualities of the Short-horn cows which I let you have, but have been unable to ascertain the particular yield of milk from each of their particular ancestors. But investigation at the time of the purchase, induced me to purchase them. I was assured by John R. Page, the cattle artist, who lives at Sennett, Cayuga Co., N. Y., and who personally knew them, that they were superior milkers, and were all descended from good milkers of the early importations, to which their pedigrees trace and so they proved in my hands, as I bought them with particular regard to their dairy qualities.

Pretty much all of the Short-horns in our eastern states, and many in Kentucky and Ohio, imported many years ago, were noted as large milkers, equal in quarts to the much boasted Holsteins of later days, and it has been only by neglect of the western breeders who cared little about milk and breed, chiefly for flesh, that the Short-horns have diminished in their dairy qualities. The good milking cows, when done at the pail, are equally good for the shambles as those which have been bred mainly for beef production.

Signed,

LEWIS F. ALLEN.

Mr. Ford asked what kind of a family he could use his Short-horn bulls to to produce the greatest quantity of milk. It depends entirely upon what strain of the Short-horn family he has got. If he has got a strain of family which has been

improperly bred, that is, bred by a man who has run to one extreme, to that of making beef, if his bulls are from that family, he is beginning to deteriorate, although it is very hard, indeed, to work out from the female line the prepotency to produce a like quality in the offspring. I stopped at Lake Mills with Mr. Griswold, who had a beautiful cow in his barn which I went to see. I recognized what she was at once. Says I, "You have got there the produce of a Jersey on a pure bred Short-horn cow." He said she was. I saw it because she had the size and general characteristics of that royal breed. It is very wrong, indeed, if you want to cross, to cross small females to large animals. Brother Anderson yesterday made a terrible mistake in his horse paper which applies to this matter under discussion, and we all know it. Let Mr. Ford use a Short-horn bull, whose dams and sires for generations back were milkers. But I want to show you what the early importations of Short-horns were. I refer to the first volume of the American Short-horn Herd Book, published in 1846. Here was one two-year old cow sold for sixteen hundred guineas and one for three hundred, that is \$1,500. The early importations of the cattle were brought into this country by men who had money, like our friend Ford here, high spirited men, men who made these importations to benefit the country, and at the same time to show that they had got the best milking cows on the face of the earth. Here we read: Yellow Rose, 36 quarts a day, a three-year old. Here is another, 38 quarts a day, four years old. Here is another, Red Daisy, 32; Magdalena, upwards of 32; and so on. I read: After recording these facts in his pamphlet, Mr. Berry remarks: "These cows were all steady milkers, possessing great inclination to fatten;" and Mr. Whittaker (one of the finest breeders in the world, rivalling Bates), "can not be too highly complimented on his successful exertions to combine the two qualities, milk and flesh." These Jersey fellows will tell us right along that that thing never can be done. My challenge stands out here. I mean what I say.

The Champion Rose and Arabellas Families stand to-day pre-eminent as milkers in this country. The Short-horn

originally brought here in accordance with the ideas governing early importations were immense milkers. They were purchased by very wealthy men for that very reason. There are no pure breeds that can begin to compare with them in both milking and beef qualities, and I want to back that statement up, here and now; I have forty head of Short-horn cows and heifers on my place, and if there is any man in this audience who sees fit to pick from his herd a different class of pure bred animals, of any of the much lauded, so-called dairy families I will take five from my families of registered Short-horns, and he may take five of his; and we will put them into the hands of a disinterested man and let the result prove which is best for profit to our western farmers, and the man who wins shall have the proceeds of the year's business, after paying the man for conducting it. This challenge to close now or hold open for the next three months. I believe in intensified breeding. I believe in the doctrine of thoroughbreds. You will see its results in the human family. There is one family that is distinct and stands out so that you can recognize them all over the face of the earth. It makes no difference where you go, you know just exactly what race they belong to. They are representative. And to-day the exquisite forms of Judea's daughters are as full of grace as were those of Martha and Mary and their compeers who stood in the gray of the morning at the sepulchre and who extended to the meek and lowly the true national characteristics of the race—genuine hospitality. They have been bred in-and-in. They never bred out their brains nor their ability to get a good living. And I wish for them as a class and people, no more bitter lot than the fulfillment of an ideal hope cherished by the faithful, that the sacred city, beautiful for situation, whose name is equally dear to the Christian, may sometime be under their entire control.

I read it again: "Without entering into further particulars, this subject may be properly dismissed with a remark by Mr. C. Collings, that the Duchess and Daisy tribes, with whose merit, as graziers' stock, the public are well acquainted, were all good milkers, possessing that valuable

union of qualities, of which it is thus obvious every breeder of Short-horns may avail himself, who chooses to make it the object of his care." This swapping off from one animal to another produces just a mongrel. Nothing more and nothing less. I want to direct your attention to an article from Mr. Goodale, published in transactions of 1883, on Physiology of Breeding.

It will be handed to you within the next two or three weeks as the generous bequest of a noble state to her generous and intelligent people. But remember this, that the prepotency or power to transmit is stronger in the Short-horn than in any other line of cattle, because they have been bred longer in the line, and if you can get the milking quality, and the beef quality, and then don't run outside, you are on the right way to success, and you get a uniform, beautiful class of cattle. I have three cows that are pure white. One of them was shown at the Centennial exhibition. A good share of them are roans, some of them of good size. I would like the privilege, if anyone accepts my challenge, of going to a neighbor and taking some cattle of my own breeding there, if I see fit. They weigh on an average of 1,865 pounds, and my opinion is that there isn't anybody who can get away with them. I used to milk those cows in the morning before I came here to act as your secretary. I turned them into a clover lot opposite my home, and never had one die or get sick from over-feeding. There was one cow I wanted to give a little particular attention to, so I watched her a little. I would take a sixteen quart pail, the very biggest milk pail there is made, and another pail, and I never went down a night to milk that cow but what I had more than I could carry in one pail, and I would delight in meeting some of these fellows from the city, and nearly broke my arms off in carrying milk from these cows to do it. I weighed one milking, and it weighed just twenty-four pounds, from nothing but grass as feed.

Perhaps as much as any other cause which has been potent in the deterioration of the milking qualities of our cattle is the senseless, idiotic fancy to breed to certain shades and color. If a Short-horn breeder of the average order could get a solid *red* he was satisfied to sacrifice a few

quarts each day at the pail, or it never occurred to him but that usefulness was more a point to maintain than that of fancy. Much damage has been done to this breed by men attempting to change from the original characteristics, and to sacrifice all other points for the present desire for a "solid red coat," even if the demand came from a purchaser who was just to engage in the business and did not know a Short-horn from a Devon. My observation has already convinced me that great injury is now being done to the beautiful Jersey by this same senseless demand for a solid color. Those old lords across the water, who hold the people at arms lengths and who have deer in their parks, concluded deer and cow should be alike in shade, and purchased their Jerseys to that purpose from the north side of the island where it is well understood the poor milkers come from. Nearly every herd in the United States had to follow suit, for the English nobility had set the example and the exquisite fawn and natural beauty painted by the *Great Artist* himself is rapidly giving away to the demand of trade. Happy will it be for the Holstein breeder of this and other countries if they profit by the experience these failures have so conclusively taught, and confine their fancy within the bounds prescribed by that old fashioned proverb: "As ye sow so shall ye reap."

Fellow farmers, if in the heat of this debate which has been taken down by our lightning short-hand reporter, Mr. Davison, and which will be produced and appear in our next volume, to which you may take exceptions, please extend to me the charity due a friend who speaks from the heart and just what he feels; and allow me, in closing, as Secretary of the Wisconsin State Agricultural Society, to thank you now as we are so near the close of this convention, *one and all*, for your presence here, your generous efforts in the cause of general agriculture and for your bold and manly utterances so frankly and fearlessly expressed.

Mr. Ford—The gentleman has made a noble speech on Short-horns, and the best speech that has been made here, and I am glad to hear it; and I am glad to hear from a gentleman who is practically engaged in breeding and knows

something about it. I believe in the Short-horns thoroughly. They are the royal family of cattle, I think, without doubt, when you compare them up and down, back and forth, with others. Take them throughout the world where they are, they hold their own and carry the palm in the long run. You may get a temporary victory for the Herefords, the Polled Angus may take the palm from the butchers once or twice; the Polled Angus is a Short-horn grafted on to the Scotch Rose cow, but I believe that the Short-horn cattle stand in comparison with other cattle as the English aristocracy do in comparison with other class of men — the finest class in the world. In breeding, I unite heartily with the Secretary in his condemnation of this mongrel breeding. I detest it myself, and it is the great fault of Americans to ignore all the experience of the past.

Mr. Broughton — How were the English aristocracy bred in England? Wasn't it by cross breeding?

Mr. Ford — Yes, sir.

Mr. Broughton — And look at the blood of the royal families in Europe. How were they produced?

Mr. Babbitt — In breeding from the proper type produces brains, as well as voluptuous form.

Mr. Ford — The English aristocracy as a class are the finest class of men in the world, the most intelligent, the best self-controlled, the most influential, and the Short-horn cattle stand among the families of cattle as the English aristocracy do amongst the families of men. I believe as the Secretary does, in pure breeding. I believe the great curse of our American farmers is ignoring all past experience and all book learning and thinking that they know more than anybody, and Greece and Rome are nowhere, they are dead because they did not adopt the system of protection. I believe we can learn something by experience, and I believe that men who have been working for hundreds of years at certain points know something, and I think we had better take lessons from them. As a beef-producing animal, there is no animal in the world like the Short-horn. That it is the best milk-producing animal in the world I do not believe. That there are good milking families of Short-

horns I believe; but that is not the point. The point, as has been said by the Professor here, is, the cost of pure blood cows is very considerable, whatever breed you may go into. The contest at Chicago for the past three years has shown this indubitably, that the grade steers have taken the premiums in weight and character; that the pure Short-horn bulls grafted on to common cows have produced the heaviest weight in a given time. That is a great argument for the practical farmer who is not breeding to special points, but wants to make beef, because it is cheaper to have common cows, if you have the right kind of cow, and you get a better steer. He is after immediate results. He is not after blood, except as it conduces to beef. My question is, what kind of cows are you going to get to produce the best grades? If you can do it by your Short-horn cows, very well. If you can do it better by a Holstein cow, take her. Keep out of sight entirely your Jerseys and your smaller breeds.

Mr. Babbitt — We must remember that the most intensified mongrel breeding is the native. Now you come to make a cross to a pure bred bull, and the product is a half breed. I have heard that my friend over there thinks that perhaps by crossing with this half breed you can get some improvement there, but you can see what faith you have to have to build on, because the minute the next cross is made there is a three-quarter interest against you. While I am on my feet I want to say that I have in the next volume that is coming out a paper by Randolph Huntington on the horse question, where all the principles of breeding enter into the question the same as with cattle, and if everyone of the farmers of Wisconsin will read that article, together with that of Mr. Goodale, it will be worth to you collectively millions of dollars.

Mr. Gill — I believe this is considered to be a sort of a farmers' meeting. I think, as farmers, we are at least entitled to half the time. As far as these farmer-lawyers or lawyer-farmers are concerned, and the time they occupy, I have sometimes been under great obligations to them because they express my ideas a great deal better than I could myself. But after all, I think it better that some of us farmers take a chance once in a while and say something. If

we do not get it off in quite as good shape, it will probably be just as valuable, and I know I shall think as much of it. We have nearly all of us a hobby of some kind. Everybody knows that Mr. Boyce's hobby is draft horses, and Brother Babbitt's Short-horns, and his challenge is really what brought me up. Mr. Allen's hobby I rather guess is chinch-bugs and clover, and Brother Broughton, I don't know but he is big on lice. (Laughter.) As far as I am concerned, I will admit that I am a cow-crank. I have made the dairy business the leading business of my farm for nine or ten years, and I might be able to give you a few ideas that are worth something, but I don't know as I could either, because probably most of you have been experimenting in the same direction. I would like to have the Secretary tell me what is a native.

Mr. Babbitt—An animal without any record, sprung from poverty, for centuries starved, that came into this country and has been bred hap-hazard without any re-infusion of blood from any of the improved strains of cattle.

Mr. Broughton—Where did they come from?

Mr. Babbitt—I can tell you where they came from. I can not tell you how they all came. They brought their instinct with them, and perhaps some of them have instinct to milk. Horses came from the north side of the Himalaya mountains, whose peaks are covered with snow, and they will paw for the grass covered by the snow, as did their ancestors before them, true to their inheritance; they will not starve, even if their feed is covered by nature's white blanket. The sheep came from the same side of the mountains. They have an instinct to paw, the same as horses. Cattle came from the south side, where there is no snow, and they will starve to death with feed within one inch of them, because they have not the instinct to paw it out. Instinct and prepotency come down the ages, and the characteristics of an ancestry descend along the line through men as they do through cattle.

Mr. Gill—When you talk about natives, you talk about something that does not exist, but when you talk about the common stock of the country, we generally understand they are more or less mixed.

Mr. Babbitt — My point was, that cattle which were poor and of inferior order, bred to itself, without the admixture of good blood, and constantly exposed to hardship, starvation and rigor of climate, are native.

Mr. Gill — I have on my farm descendants of the original cows that I bought with the farm twenty-nine years ago. I never kept much of a record until I went into the dairy business about nine years ago. Then I went out and bought cows. Think I bought seven one spring. I never left a cow on account of the price, if the cow suited me. When I came to compare the cows that I bought with the natives, I found I had only one in seven which was equal to the natives. The family of the cows I bought twenty-nine years ago have very similar traits to the Ayrshire stock in appearance, quality and marks. Do you think there was any Ayrshire blood in Wisconsin twenty-nine years ago?

Mr. Babbitt — Yes; I owned an Ayrshire in 1864.

Mr. Gill — They are what you call natives, or common stock. I found out that a heifer from a good milking cow invariably makes a good milker. Now I presume if Brother Boyce was to say what my hobby is, he would say I was a mixer, I was everlastingly crossing the breed. Now, these thoroughbred men, some of them, are already admitting that the cross is an improvement for beef purposes; that you can take a good common cow and a thoroughbred Short-horn, and it will make more profitable beef for the farmer than the thoroughbred. I believe it, and I know it.

Mr. Babbitt — I would not use the best bred bull, even a \$10,000 one, if it did not come from a cow that had a family trait intensified, and whose dam and whose sire was a good milker. I could not be induced to use the highest bred bull in the world on my herd if the family did not possess characteristics I so much desired to have them transmitted to the offspring. Milk and flesh should go shoulder to shoulder.

Mr. Robbins — I fed a steer the last year that was born of what I call native, born on my own farm. I will admit that she was a large cow and a powerful one. This cow had to raise two calves, and he being rather the strongest calf I presume got a little more than his share. I had full bloods

at the same time. They told me they were full bloods, but I do not care anything about blood. They both had my crops to go to. I compared this native calf with a full blood; he was all the time ahead of the full blood. I weighed that steer last spring in May, and he weighed fifteen hundred, a three year old. I was offered \$5.60 a hundred. Mat. Anderson and other men that know all things, told me to sell, because I would never get my money out if I did not. I told them that he was not fit for market and I would not sell him. I put him onto grass the twentieth of May; did not feed a mouthful of corn. I took him up the twenty-fifth of October and weighed him; he weighed seventeen hundred and thirty pounds. Then I commenced feeding him on soft corn. I call this calf a native because he was from a native cow. Of course he had some blood in him; was not a scrub at all. I fed him just fifty days, and at the end of that time he weighed eighteen hundred and ten pounds. I sold him the 11th day of last December for \$6.00 a hundred, with the balance of my steers. The rest of them were higher grade than this one. He did not improve as fast as the others when fed with corn, but he improved faster on the grass.

Now, what is the nature of the discussion that we have had here? Until last evening you would not have known that this was an agricultural convention. We had Prof. Bascom's paper, which, if I am to judge from the paper, was for the purpose of bolstering up the State University, which in my opinion is the duty of the board of regents, and not the employees of the institution. Then we had Prof. Freeman. He gave us a long lecture to show us that he had beaten Prof. Henry, and that his was the agricultural department. He had read somewhere that Rome was saved by the hissing of geese, and he fetched his whole class down here. I sat amongst them. I could not speak, because if they had seen me get up they would have imitated the goose or the snake. I presume there was a hundred of them, and it was Bedlam twice over. I admit that my friend here (Mr. Broughton) may say some very ridiculous things, but not more than Mr. Sloan said, and he is a lawyer. Mr. Sloan said

in his paper that they had found that agriculture was not a science, and that it had been a failure wherever they had undertaken to apply science to agriculture. That came out of the law school. They had not found in studying law that agriculture is a science, and in studying political economy Prof. Bascom had not found out that the producer was more interested in tariff than the man who was on a fixed salary. He came here and told us one thing he knew the farmer needed, that was free trade.

I know something about wool. I sold my wool last spring for eighteen cents, lower than I ever sold it before, and three cents lower than I would have had to if they had not taken the tariff off. I sold my wool and my sheep too, and I have not a sheep in the world now. Certain questions have got to be met by the people of Wisconsin. We have six thousand school houses over the state of Wisconsin where the boys that will make the men that will do the voting and pay the taxes of the state of Wisconsin are educated, and you men here have come from that institution and dictate to us the manner in which we shall spend our money and the manner in which taxes shall be gathered, the day is coming when you will be weighed in the balance and found wanting. "God hasten the day." I do not look upon the lawyers of the state of Wisconsin to help out the men who have got to pay the taxes, but I do not believe in class legislation. Let us have a fair race for live, and not put any weights upon anybody in the state of Wisconsin. I am proud of the institutions of the state of Wisconsin, and I believe in an American system. I believe that America will roll on until all the nations on the earth will say "she has tried self-government, and has not proved a failure."

Prof. Henry—My position in regard to breeds of stock is often misunderstood, and I wish what I say now to be borne in mind. In the first place, I believe that there is room in the state of Wisconsin for several breeds of cattle, not all that may be named, but for several. I believe that the farmers in one locality may differ in their wants from those of another. When I am asked which breed I would advise, I attempt to learn the wishes of the man asking the question

and to shape my answer to suit his individual wants, or the wants of that locality. Now, in this I sometimes appear two-faced. Again, when I hear a man praising a breed of cattle, I sometimes disparage that breed, because I think that there are two sides to every question. The man who carries a certain breed of cattle always seems to doubt my position. If he is a Short-horn breeder, and I say a word favorable to Holstein, he says: "Oh, yes, he is an advocate of the Holstein and don't believe in Short-horns." In Pierce and St. Croix counties, I have this winter, strongly urged the introduction of Short-horns. I talked Short-horns all the time, and when asked about Herefords or polled cattle, I told them they could not afford them, because at present prices they cost three or four times as much as equally good Short-horns. I did not advocate the Jersey for that extra cold climate and with their ideas of farming. They wanted a strong animal, and more particularly a beef animal. In Kenosha county, and some parts of Richland county, I have strongly advocated the Jersey. A man came to me some time ago and I asked him what he wished. He said: "Fancy, high priced butter." "Do you care for the steer calves?" "Not at all." "Do you care for the cows after you have milked them seven or eight years?" Says he: "All I want is something that will give me the finest quality of butter I can get in order to satisfy my customers who are willing to pay for it." I told him he wanted the Jersey. I think that was fair advice. And so I wish to be put on record that I believe there is room for all, and when you have a certain breed of cattle on your farm, whether Holsteins or Short-horns or Jerseys or Devons, I say you will undoubtedly make more money by sticking to what you already know something about than you will by swapping for something that is now in the air and called fashionable. You can buy a good Short-horn bull for half or a quarter of what you can buy a Hereford for, simply because there is a call for Herefords and Polled Angus. Now is the time to buy Short-horns. They have stood high for hundreds of years and do not be scared because people are talking about other breeds. The same with the Jerseys. They have been in the country since 1850. If

you want to make fancy butter, the Jersey cow may be just what you want; while if you want milk for the cheese factory, the Holstein may be just what you want.

Mr. Babbitt — I am happy to say to all breeders here that the State Agricultural Society in its next premium list does not legislate in favor of any particular herd. All stand on a level. It is for you now to clash horns and see who comes to the front. I have never but once shown an animal at a state fair. In 1864 I took first and second premium on Short-horns and have the same cattle to-day; and I have had the best horses that were ever in this state, and sold them at high prices, and I am very glad to say I have got out of horses, and I propose now to be one of the boys that clash horns with you, without taking any exceptions to anything you do. We want to have it understood now that you all stand equal. It has been quite a fight to secure equal representation at our fairs. The Short-horn men felt that they ought to be legislated for a little; that we should give them a little extra advantage on account of money invested but we told those gentlemen that they could not have any advantage over the Jerseys or any other breeds.

Mr. Ames — I would like to ask why you do not in your premium list have a premium for those high grades? Prof. Henry finds fault because they are not introduced at Chicago. You do not give any encouragement to have them introduced at home, and that is the result of breeding with thoroughbreds.

Mr. Babbitt — You give a premium to a male animal, that is, a cross or grade, and he goes out with the indorsement of the State Agricultural Society that he has received the first premium at the state fair. They stint that animal to the native stock of the country, and the prepotency of the natives takes from that animal any beneficial results it shows in a degenerate offspring. It is one of the most dangerous and one of the worst things you could possibly do. You have got to use pure blood, or you breed down instead of up.

Mr. Ames — I would have a premium upon his merits as a grade.

Mr. Babbitt— We offer \$60 for grade steers.

Mr. Ames—I could give my experience in feeding one steer until he was twenty-four months old, and I find that the Chicago Fat Stock Show indorsed that method of feeding. I fed a steer until he was twenty-four months old, and he weighed 1250 pounds, and if such cattle as that could be presented at the fair in Wisconsin, and have some sort of premium to encourage them, it would show the results of these breeders' efforts.

President Fratt— We offer a premium for fat steers. That premium has been there for several years past.

Mr. Hinton—I would like to correct one thing which I think my venerable friend did not state quite as clearly as it ought to have been stated. For the past thirty-five or thirty-eight years of my life I have had a great deal to do with reporting conventions, and a great many farmers' conventions, and let me tell you one thing, that the ability of a speaker or a writer is not in what he says: it is in that singular gift of being able to anticipate what his opponent may say, and prevent him from being able to say anything to refute it. There have been things brought out here on all sides. There has been a variety of discussions on a great many subjects. When I heard my old friend from Platteville talk, I thought he must have been one of the farmers that John Adams speaks of. He says that he was at a tavern at Shrewsbury, Massachusetts, in 1774, and there were five farmers there. He had the opinion, that a great many people had in those days of farmers, that they did not know anything and did not think at all. He sat one side and listened to the conversation. Three of them talked a great deal. The other two had not said anything. At last one of them says: "That is so; if they can take John Hancock's wharf and Peter Parker's wharf, they can take your barn and my farm." "Yes," said the other, "we have got to rebel, and the sooner we rebel the better. We must have rebellion; it is the only thing that will save us."

John Adams says that the word "rebels" grated on his mind so that he could not bear to think of it, but he thought it over and the lesson he received there from those five farmers

made him the great American patriot he was. A great many thoughts have been uttered here by plain, homespun-looking men, and when you come to read them over you will see a great deal more force in them than you think there is now. One thing more I want to say. Everything that has been said in this convention has pointed to the glorious effects of good homes for your boys. I would not exchange the recollection of having been, I think, the first mover for that Industrial School for Boys at Waukesha, for all the wealth in the world. It will live long after I am gone. When you go home do not forget the boys. Make them happy. Make them contented. Give them amusement. Teach them to love their homes, and, if it is necessary, do as the grand old farmer did here five or six years ago—he took his boy to Chicago, showed him all the slums, all the hells, the drunken saloons, and everything else. He said to him, “there is the effect, and it seems to be the inevitable effect, of a large part of city life.” The moral was implanted in him so deeply, that he says he does not believe there was ever a breaking team hitched up that could draw that boy off the farm. It is in you, and particularly in your wives, to make good farmers in your homes. I have nothing to say against aristocracy or colleges, or anything of the kind, but I tell you, you may gather together all the eulogies ever pronounced upon military men, upon noblemen, upon ecclesiastics and all others, and I will give you one line that overtops them all, “she,” whether it be in the farmers’ home or elsewhere “she who rocks the cradle rules the world.”

MISCELLANEOUS.

REMARKS ON THE PHYSIOLOGY OF BREEDING.

By S. L. GOODALE.*

[Continued from page 479, Vol. XXI.]

RELATIVE INFLUENCE OF THE PARENTS.

The relative influence of the male and female parents upon the characteristics of progeny has long been a fertile subject of discussion among breeders. It is found in experience that progeny sometimes resembles one parent more than the other; sometimes there is an apparent blending of the characteristics of both; sometimes a noticeable dissimilarity to either, though always more or less resemblance somewhere; and sometimes the impress of one may be seen upon a portion of the organization of the offspring, and that of the other parent upon another portion; yet we are not authorized from such discrepancies to conclude that it is a matter of chance, for all of nature's operations are conducted by fixed laws, whether we be able fully to discover them or not. The same causes always produce the same results. In this case not less than in others there are, beyond all doubt, fixed laws, and the varying results which we see are easily and sufficiently accounted for by the existence of conditions or modifying influences not fully patent to our observation.

In the year 1825 the Highland Society of Scotland proposed, as the subject of prize essays, the solution of the question, "Whether the breed of live stock connected with agriculture be susceptible of the greatest improvement from the quali-

*Author of "The Principles of Breeding, or Glimpses at the Physiological Laws Involved in the Reproduction and Improvement of Domestic Animals."

ties conspicuous in the male or from those conspicuous in the female parent?" Four essays received premiums. Mr. Boswell, one of the prize writers, maintained that it is not only the male parent which is capable of most speedily improving the breed of live stock, but that the male is the parent which we can alone look to for improvement. His paper is of considerable length and ably written, abounding in argument and illustrations not easily condensed so as to be given here, and it is but justice to add that he also holds that "before the breed of a country can be improved, much more must be looked to than the answer to the question put by the Highland Society, such as crossing, selection of both parents, attention to pedigree, and to the food and care of offspring." Mr. Christian, in his essay, supports the view that the offspring bears the greatest resemblance to the parent, whether male or female, which has exerted the greatest sway of generative influence in the formation of the fœtus; "that any hypothesis which would assign a superiority, or set limits to the influence of either sex in the product of generation, is unsound and inadmissible," and he thus concludes: "As therefore it is unsafe to trust to the qualities of any individual animal, male or female, in improving stock, the best bred and most perfect animals of both sexes should be selected and employed of propagation, there being, in short, no other certain or equally efficacious means of establishing or preserving an eligible breed." Mr. Dallas, in his essay, starts with the idea that the seminal fluid of the male invests the ovum, the formation of which he ascribes to the female; and he supports the opinion that where external appearance is concerned, the influence of the male will be discovered, but in what relates to internal qualities, the offspring will take most from the female. He concludes thus: "When color, quality of fleece, or outward form is wanted, the male may be most depended on for these; but when milk is the object, when disposition, hardiness, and freedom from diseases of the viscera, and, in short, all internal qualities that may be desired, then the female may be most relied on." One of the most valuable of these papers was written by the Rev. Henry Berry, of Worcestershire, in which, after stating that

the question proposed is one full of difficulty, and that the discovery of an independent quality such as that alluded to, in either sex, would be attended with beneficial results, he proceeds to show that it is not to sex, but to high blood, or, in other words, to animals long add successfully selected and bred with a view to particular qualifications, whether in the male or female parent, that the quality is to be ascribed, which the Highland Society has been desirous to assign correctly.

The origin of the prevalent opinion which assigns this power principally to the male he explains by giving the probable history of the first efforts in improving stock. The greatest attention would naturally be paid to the male, both on account of his more extended services and the more numerous produce of which he could become the parent, in consequence of which sires would be well-bred before dams:

“The ideas entertained respecting the useful qualities of an animal would be very similar and lead to the adoption of a general standard of excellence towards which it would be required that each male should approximate, and thus there would exist among what may be termed fashionable sires a corresponding form and character differing from and superior to those of the general stock of the country. This form and character would, in most instances, have been acquired by *perseverance in breeding from animals which possessed the important or fancied requisites*, and might, therefore, be said to be almost *confirmed* in such individuals. Under these circumstances, striking results would doubtless follow the introduction of these sires to a common stock—results which would lead superficial observers to remark that individual sires possessed properties as *males*, which in fact were only assignable to them as *improved* animals.”

The opinion entertained by some that the female possesses the power generally ascribed to the male, he explains, also, by a reference to the history of breeding:

“It is well known to persons conversant with the subject of improved breeding that of late years numerous sales have taken place of the entire stocks of celebrated breeders of sires, and thus the females, valuable for such a purpose, have passed into a great number of hands. Such persons have sometimes introduced a cow so acquired to a bull inferior in point of descent and general good qualities, and the offspring is known, in many instances, to have proved superior to the sire by virtue of the dam's excellence, and to have caused a suspicion in the minds of persons not habituated to compare causes with effects that certain females also possess the property in question.”

The writer gives various instances illustrative of his views, in some of which the male only, and in others the female only, was the high-bred animal, in all of which the progeny bore a remarkable resemblance to the well-bred parent. He says that where both parents are equally well-bred, and of nearly equal individual excellence, it is not probable that their progeny will give general proof of a preponderating power in either parent to impress peculiar characteristics upon the offspring; yet in view of all the information we have upon the subject, he recommends a resort to the best males as the most simple and efficacious mode of improving such stocks as require improvement, and the only proceeding by which stock, already good, can be preserved in excellence.

Mon. Giron expresses the opinion that the relative age and vigor of the parents exercise very considerable influence, and states, as the result of his observation, that the offspring of an old male and a young female resembles the father less than the mother, in proportion as the mother is more vigorous and the father more decrepid, and that the reverse occurs with the offspring of an old female and a young male.

Among the more recent theories or hypotheses which have been started regarding the relative influence of the male and female parents, those of Mr. Orton, presented in a paper read before the Farmers' Club at New-Castle-upon-Tyne, on the Physiology of Breeding, and of Mr. Walker, in his work on Intermarriage, as they both arrived, to a certain extent, at substantially the same conclusions by independent observations of their own, and, as these seem to agree most nearly with the majority of observed facts, are deemed worthy of favorable mention.

The conclusions of Mr. Orton, briefly stated,* are, that in the progeny there is no casual or haphazard blending of the parts or qualities of the two parents, but rather that organization is transmitted by halves, or that each parent contributes to the formation of certain structures and to the development of certain qualities. Advancing a step further, he maintains that the male parent chiefly determines

* Quoted, in part, from a paper by Alexander Harvey, M. D., read before the Medical Society of Southampton, June 6, 1854.

the external characters, the general appearance, in fact, the outward structure and the locomotive powers of the offspring, as the framework, or bones and muscles, more particularly those of the limbs, the organs of sense and skin, while the female parent chiefly determines the internal structures and the general quality, mainly furnishing the vital organs, *i. e.*, the heart, lungs, glands and digestive organs, and giving tone and character to the vital functions of secretions, nutrition, and growth, "not, however, that the male is without influence on the internal organs and vital functions, or the female without influence on the external organs and locomotive powers of their offspring. The law holds only within certain restrictions, and these form, as it were, a secondary law, one of limitations, and scarcely less important to be understood than the fundamental law itself." Mr. Orton relies chiefly on the evidence presented by *hybrids*, the progeny of distinct species, or by crosses between the most distinct varieties embraced within a single species, to establish this law.

The examples adduced are chiefly from the former. The *mule* is the progeny of the male ass and the mare; the *hinny* that of the horse and the she ass. Both hybrids are the produce of the same set of animals. They differ widely, however, in their respective characters — the mule, in all that relates to its external character, having the distinctive features of the ass; the hinny, in the same respects, having all the distinctive features of the horse, while in all that relates to the internal organs and vital qualities, the mule partakes of the character of the horse, and the hinny of those of the ass. Mr. Orton says:

"The mule, the produce of the male ass and mare, is essentially a *modified* ass — the ears are those of an ass somewhat shortened; the mane is that of the ass, erect; the tail is that of an ass; the skin and color are those of an ass somewhat modified; the legs are slender and the hoofs high, narrow, and contracted, like those of an ass. In fact, in all these respects it is an ass somewhat modified. The body and barrel, however, of the mule are round and full, in which it differs from the ass and resembles the mare. The hinny, on the other hand, the produce of the stallion and she ass, is essentially a *modified* horse. The ears are those of a horse somewhat lengthened; the mane flowing; the tail bushy, like that of the horse; the

skin is finer, like that of the horse, and the color varies also like the horse; the legs are stronger and the hoofs broad and expanded like those of the horse. In fact, in all these respects it is horse somewhat modified. The body and barrel, however, of the hinny are flat and narrow, in which it differs from the horse and resembles the she ass. A very curious circumstance pertains to the voice of the mule and the hinny. The mule *brays*, the hinny *neighs*. The why and wherefore of this is a perfect mystery, until we come to apply the knowledge afforded us by the law before given. The male gives the locomotive organs, and the muscles are amongst these; the muscles are the organs which modulate the voice of the animal; the mule has the muscular structure of its sire, and brays; the hinny has the muscular structure of its sire, and neighs."

The views of Mr. Walker, in his work on intermarriage, before alluded to, agree substantially with those of Mr. Orton, *so far as regards crossing between different breeds*; but they cover a broader field of observation, and in some respects differ. Mr. Walker maintains that when both parents are of the *same breed*, that *either parent may transmit either half* of the organization; that when they are of *different varieties* or breeds (and, by parity of reasoning, the same should hold strongly when hybrids are produced by crossing different *species*), and supposing, also, that both parents are of equal age and vigor, the *male* gives the *back, head, and locomotive organs*, and the *female* the *face and nutritive organs*. I quote his language:

"When both parents are of the same variety, *one parent communicates the anterior part of the head, the bony part of the face, forms of the organs of sense* (the external ear, under lip, lower part of the nose, and eyebrows being often modified), *and the whole of the internal nutritive system* (the contents of the trunk of the thoracic and abdominal viscera, and, consequently, the form of the trunk itself, in so far as that depends on its contents). The resemblance to that parent is, consequently, found in the forehead and bony parts of the face, as the orbits, the cheek bones, jaws, chin and teeth, as well as the shape of the organs of sense and the tone of the voice.

"*The other parent communicates the posterior part of the head, the cerebral situated within the skull immediately above its junction with the back of the neck, and the whole of the locomotive system* (the bones, ligaments and muscles, or fleshy parts). The resemblance to that parent is, consequently, found in the back head, the few more movable parts of the face, as the external ear, under lip, lower part of the nose, eyebrows, and the external forms of the body, in so far as they depend on the muscles, as well as the forms of the limbs, even to the fingers, toes and nails." * * "It

is a fact established by my observations that in animals of the *same variety*, either the male or the female parent may give either series of organs as above arranged; that is, either forehead and organs of sense, together with the vital and nutritive organs, or back head, together with the locomotive organs."

To show that among domesticated animals organization is transmitted by halves in the way indicated, and that either parent may give either series of organs, he cites, among other instances, the account of the Ancon sheep:

"When both parents are of the Ancon or Otter breed, their descendants inherit their peculiar appearance and proportions of form. When an Ancon ewe is impregnated by a common ram, the progeny resembles wholly either the ewe or the ram. The progeny of a common ewe, impregnated by an Ancon ram follows entirely in shape the one or the other, without blending any of the distinguishing and essential peculiarities of both. 'Frequent instances have occurred where common ewes have had twins by Ancon rams, when one exhibited the complete marks and features of the ewe, and the other of the ram. The contrast has been rendered singularly striking when one short-legged and one long-legged lamb, produced at a birth, have been sucking the dam at the same time.' As the short and crooked legs, or those of opposite form, here indicate the parent giving the locomotive system, it is evident that one of the twins derived it from one parent, and the other twin from the other parent, the parent not giving it doubtless communicating in each case the vital or nutritive system."

W. C. Spooner, V. S., says:

"The most probable supposition is that propagation is done by halves, each parent giving to the offspring the shape of one-half of the body. Thus the back, loins, hind-quarters, general shape, skin, and size follow one parent; and the fore-quarters, head, vital and nervous system, the other; and we may go so far as to add that the former, in the great majority of cases, go with the male parent, and the latter with the female."

On the whole, it may be said that the evidence, both from observation and the testimony of the best practical breeders, goes to show that each parent usually contributes certain portions of the organizations to the offspring, and that each has a modifying influence upon the other. Facts also show that the same parent does not always contribute the same portions, but that the order is sometimes reversed. Now, as no operation of nature is by accident, but by virtue of *law*, there must be fixed laws here, and there must also be, at times, certain influences at work to modify the action of

these laws. Where animals are of distinct species, or of distinct breeds, transmission is usually found to be in accordance with the rule above indicated, *i. e.*, the male gives mostly the outward form and locomotive system, and the female chiefly the interior system, constitution, etc. Where the parents are of the same breed, it appears that the portions contributed by each are governed in large measure by the condition of each in regard to age and vigor, or by virtue of individual potency or superiority of physical endowment. This potency or power of transmission seems to be legitimately connected with high breeding, or the concentration of fixed qualities obtained by continued descent for many generations from such only as possess in the highest degree the qualities desired. On the other hand, it must be admitted that there are exceptional cases not easily accounted for upon any theory, and it seems not improbable that in these the modifying influences may be such as to effect what may approximate a reconstruction or new combination of the elements in a manner analogous to the chemical changes which we know take place in the constituents of vegetables; as, for instance, we find that sugar, gum, and starch (substances quite unlike in their appearance and uses), are yet formed from the same elements, and in nearly or precisely the same proportions by a chemistry which we have not yet fathomed. Whether this supposition be correct or not, there is little doubt that if we understood fully all the influences at work, and could estimate fairly all the data to judge from, we might predict with confidence what would be the characteristics of the progeny from any given union. It may not be out of place here to say that much of the talk about blood in animals, especially horses, is sheer nonsense. When a "blood horse" is spoken of, it means, so far as it means anything, that his pedigree can be traced to Arabian or Barbary origin, and so is possessed of the peculiar type of structure and great nervous energy which usually attaches to thorough-bred horses. When a bull, or cow, or sheep, is said to be of "pure blood," it means simply that the animal is of some distinct variety; that it has been bred from an ancestry all of which

were marked by the same peculiarities and characteristics. So long as the term "blood" is used to convey the idea of *definite hereditary qualities*, it may not be objectionable. We frequently use expressions which are not strictly accurate, as when we speak of the sun's rising and setting, and, so long as everybody knows that we refer to apparent position, and not to any motion of the sun, no false ideas are conveyed. But to suppose that the hereditary qualities of an animal attach to the blood more than to any other fluid, or to any of the tissues of the body, or that the blood of a high-bred horse is essentially different from that of another, is erroneous. The qualities of an animal depend upon its organization and endowments, and the blood is only the vehicle by which these are nourished and sustained. Moreover, the blood varies in quality, composition, and amount, according to the food eaten, the air breathed, and the exercise taken. If one horse is better than another, it is not because the fluid in his veins is of superior quality, but rather because his structure is more perfect mechanically, and because nervous energy is present in fitting amount and intensity.

For illustration, take two horses, one so built and endowed that he can draw two tons or more three miles in an hour; the other so that he can trot a mile in three minutes or less. Let us suppose the blood coursing in the veins of each to be transferred to the other; would the draught horse acquire speed thereby, or the trotter acquire power? Just as much, and no more, as if you fed each for a month with the hay, oats, and water intended for the other. It is well to attend to pedigree, for thus only can we know what are the hereditary qualities; but it is not well to lay too much stress upon "blood." What matters it that my horse was sired by such a one or such a one, if he be himself defective. In breeding horses, *structure* is first, and endowment with nervous energy is next to be seen to, and then pedigree; afterwards that these be fittingly united, by proper selection for coupling, in order to secure the highest degree of probability which the nature of the case admits, that the offspring may prove a perfect machine, and be suitably endowed with motive power. "The body of an animal is a piece of mechanism

the moving power of which is the vital principle which, like fire to the steam-engine, sets the whole in motion; but, whatever quantity of fire or vital energy may be applied, neither the animal, machine, nor the engine, will work with regularity and effect unless the individual parts of which the machine is composed are properly adjusted and fitted for the purposes for which they are intended; or, if it is found that the machine does move by the increase of moving power, still the motion is irregular and imperfect; the bolts and joints are continually giving way; there is a continued straining of the various parts, and the machine becomes worn out and useless in half the time it might have lasted if the proportions had been just and accurate. Such is the case with the animal machine. It is not enough that it is put in motion by the noblest spirit, or that it is nourished by the highest blood; every bone must have its just proportion; every muscle or tendon its proper pulley; every lever its proper length and fulcrum; every joint its most accurate adjustment and proper lubrication; all must have their relative proportions and strength before the motions of the machine can be accurate, vigorous, and durable. In every machine modifications are required according as the purposes vary to which it is applied. The heavy dray-horse is far from having the arrangement necessary for the purposes of the turf, while the thoroughbred is as ill-adapted for the dray. Animals are therefore to be selected for the individual purposes for which they are intended, with the modifications of form proper for the different uses to which they are to be applied; but, for whatever purpose they may be intended, there are some points which are common to all in the adjustment of the individual parts. If the bones want their due proportions, or are imperfectly placed; if the muscles or tendons want their proper levers; if the flexions of the joints be interrupted by the defectiveness of their mechanism, the animal must either be defective in motion or strength; the bones have irregular pressure, and, if they do not break, become diseased; if the muscles or tendons do not become sprained or ruptured, they are defective in their action; if friction or inflammation does not take

place in the joints, the motions are awkward and grotesque. As in every other machine, the beauty of the animate, whether in motion or at rest, depends upon the arrangement of the individual parts."

Such knowledge as has been gained by observation and experience, regarding the relative influence of the parents, teaches emphatically that every stock-grower should, in the first place, use his utmost endeavor to obtain the services of the best sires; that is, *the best for the end and purposes in view*; that he depend chiefly on the sire for outward form and symmetry; and next, that he select dams best calculated to develop the good qualities of the male, depending chiefly upon these for freedom from internal disease, for hardihood, constitution, and generally for all qualities dependent upon the vital or nutritive system. The neglect which is too common, and especially in breeding horses, to the qualities of the dam, miserably old and inferior females being often employed, cannot be too strongly censured. In rearing valuable horses the dams are not of less consequence than the sires, although their influence upon the progeny be not the same. This is well understood and practiced upon by the Arab, who cultivates endurance and bottom. If his mare be of the true Kocklani breed he will part with her for no consideration whatever, while you can buy his stallion at a comparatively moderate price. The prevalent practice in England and America of cultivating speed in preference to other qualities has led us to attach greater importance to the male, and the too common neglect of health, vigor, endurance, and constitution in the mares has, in thousands of cases, entailed the loss of qualities not less valuable, and without which speed alone is of comparatively little worth.

Our allotted space is filled, perhaps overrun. So far from having exhausted the Physiology of Breeding, we have merely passed its threshold, treating, briefly enough, several of its interesting points. Some others, of great importance, both theoretically and practically, such as the influence of maturity, the law of sex, "in-and-in" breeding, crossing, etc., are necessarily excluded.

In conclusion, let us earnestly invite those who cultivate

domestic animals to observe critically all interesting and instructive facts bearing on our subject, and to record them faithfully, as well for public benefit as for private reference. It is by increase of knowledge that progress must be made, if at all; by generalizations and deductions carefully drawn from numerous and well-authenticated facts. Breeding, as an art, in this country is in its infancy. A glimpse of the stature it may attain unto is afforded us by the success attending the exhibition of the horses of Mr. Ten Broeck and the cattle of Mr. Thorne upon Britain's own soil and in competition with the best of her own growth. We have the best material to begin with or to go on with which ever existed on the earth. We have a country for its development, which in soil, in climate, in food, in freedom from diseases, and in other facilities, has no superior, and probably no equal in the world.

Let scientific knowledge and practical skill take the place of prevalent ignorance and carelessness, and improvement must go rapidly forward, and accomplish almost incalculable results.

LEAVES, BEAUTIFUL LEAVES.

Read at Ripon before the Wisconsin State Horticultural Society, June 29th, 1883. BY MRS. H. M. LEWIS.

"Nature made Ferns for pure leaves, just to see what she could do in that line."

Nature has made some plants for leaves, and some plants for fruit and flowers. On her ugly, thorny Cactus she has put no beautiful green leaves, but she has crowned them with the most beautiful flowers known to her vegetable kingdom, as if to compensate them for the loss of leaves—for nature equalizes every thing.

On the ferns she has put no flowers—nothing but leaves, some of them tiny things—others so tall that one leaf covers a half dozen persons.

The fern leaf differs from other leaves in several particulars; one is, that it is conjoined. The seed in most cases is

borne on the under side of the leaf. The under part of the leaf, or frond is richly veined, and connected with these veins are little brown dots, or sori, which burst as they ripen and scatter a dust which resembles pollen. These are not true seeds as they have no embryo, but from this dust young plants are produced.

The number of known species of ferns is about three thousand, and of the eight well-marked sub-orders into which the family of ferns is divided, four are represented in the northern United States.

Ferns are found in nearly all parts of the world, but nowhere do they grow in such perfection as in the tropical islands, and forests, amidst never changing verdure, for they are heat-loving plants.

Wisconsin claims forty-five or fifty varieties. Dr. Hoy, of Racine, has forty growing. The smallest one I have discovered is a little maiden hair that grows over the rocks in the dells of the Wisconsin. It plants its roots into the rock crevices, and then it creeps over them as if to hide them from view.

The largest fern is the Royal *Osmunda*. It frequently grows ten feet high. To see this beautiful, light green fern as it grows over hillsides, overshadowed with dark, green, heavy foliage, is an inspiring sight indeed. It is often seen on dry hillsides. When we see it growing thus, we can be assured that living springs or rills are near. It sends its long rootlets hither and thither in search of them, until it finds them.

This fern is called flowering, from the fact that it bears its fruit on a large flower-like stalk. It is named *Osmunda* from the Celtic god of thunder, Thor.

In the early spring, when the light, green, feathery, coiled up frond of the fern appears, it is covered with a downy, hairy substance that is as soft as velvet. As frond after frond expands, the plant takes the form of a circle. No plant in the world is so graceful and beautiful as the fern. We saw one single specimen of exotic fern in a New Orleans green-house that was large enough to fill a room twenty feet square; the single leaf was eight or ten feet long by three feet wide. The

opening, rust colored frond was as large as a young calf's head, and it did not look unlike it.

The ancient Greek name for fern signifies a wing. The study of the names of our native varieties is interesting, for the scholars of by-gone days have noted their peculiarities and named them accordingly. The pretty maiden hair name in the Greek signifies unwetted, for the smooth foliage repels rain. Pliny says, "In vain you plunge the *Adiatum* in water, it always remains dry." Another variety is called many footed, alluding to the branching roots — another the closed vessel from the singularly closed fructification, another an ostrich from the plume-like frond.

The ancients used the common fern Brake, or Bracken (which is the dear old Scotch name for it), for making diet, drinks and medicines. "Many disorders have at many times been cured in the cuntry from the fern," an old writer tells us. He also says, "For being burned, the smoke thereof driveth away serpents, gnats and other noisome creatures, wherein finny creatures do in the nigh-time trouble and molest people in their beds."

Many years ago the Bracken fern was much used for packing fruit, and it was in those days thought to be the best material known for that purpose, as it kept the fruit fresh and imparted no bad color or flavor to it.

We are led by our forefathers to believe that years ago people were honest and gave full measure, and we sigh for the good old times of yore, but it is recorded that one Henry Machyn, merchant tailor, of London, in 1552, was placed in prison for selling pots of strawberries, "which the pots were not alff fulle, but fylled with forne."

The fronds of a few varieties of ferns are delightfully fragrant, especially so after a rain, or when bruised or half withered.

The fern is unquestionably the most ancient plant on the globe, as it appeared as the earth was arising out of the sea. It came when rain was constant, when the air was hardly stirred by winds, when the heat was intense from pole to pole, and the earth was enveloped in an impenetrable veil of mist. In this way it lived ages and ages. Animal life was

at this time largely confined to the water with the exception of a few winged insects. We can hardly imagine such a scene. The great, silent wilderness was of tender, living green. No bright colored birds or flowers enlivened the scene.

During this time, in the carboniferous period, the fern family with its cousins, the *Lycopodiums*, and *Equisetums*, probably covered the entire globe and from the partial decomposition of these plants and trees, the coal that supplies the commerce of the world was produced.

The coal itself and the stone laying over and under it, tells the great, great story of the ages gone before, for imbedded in this coal and slate, is now to be seen the perfect fern; so perfect has this preservation been that it can be known, named and described, notwithstanding the fact that it lived perhaps a million years ago. The story of the rise and fall of the great fern forests is an inspiring one, and one on which the imagination loves to dwell.

Humbolt describes some of the arborescent ferns of South America as having at the present day "a metallic lustre owing to the carbonaceous powder with which they are covered," and he adds, "that no other plant exhibits this phenomena."

Ferns never stood in such high estimation with plant-lovers as at the present day. People are reaching out to all parts of the world for new varieties, for Europe as well as America has the great mania for ferns. Many people are inquiring how best to grow them. Unquestionably the best place is the fern, or Wardian case. But all of the native varieties, and most of the tropical ones, can be successfully grown in any spot where shade, heat, and water is abundant, out of doors or in the house.

The Wardian case is of inestimable value to the scientific world, for the plant-lover and botanist can now grow and transport over sea and land the most delicate plants with safety.

We would not confine ferns to the Wardian case, but grow them everywhere; in the parlor window, on the dining-room table, in the dark corner, against a forbidding wall, and in

the window seats. Grow them in moss baskets, in soup plates, wooden bowls and rockeries, with pretty wild vines and leaves.

Oh, that all plant-lovers could visit a home in central Wisconsin, for in this true rural spot nature comes to the front and is crowned green. Here are gathered together all the varieties of Wisconsin ferns and wild flowers within reach. These treasures are lovingly cared for, and the wants of each carefully studied and supplied.

In this charming spot the first plant and flower of spring arises from the earth under the dry leaves, and as summer comes with her silent march of progress, on and on forever, a new arrival appears each day, and it is greeted as a dear friend; here the prairie flowers, deep wild wood flowers, and flowers that love both sun and shade hold sweet converse, and "enjoy the very air they breathe," and as the artist-poet moves among them, he communes with them and they with him. Would that we had more such homes and poet men and women in our beautiful western land.

"Oh, the green things growing, the green things growing,
The faint, sweet smell of the green things growing;
I should like to live, whether I smile or grieve,
Just to watch the happy life of my green things growing.

I love them, I love them so — my green things growing!
And I think that they love me, without false showing;
For by many a tender touch, they comfort me so much,
With the soft, mute comfort of green things growing."

INSECTIVOROUS PLANTS.

By MRS. F. P. WILLARD.

If at times we are amazed at the mystery of life, as its power is made manifest in the animal kingdom, we are no less astonished as we discover and become familiar with the wondrous complexity, and peculiar habits of some species of plant life.

That plants absorb from the atmosphere a large part of their subsistence is well known, and that some subsist ex-

clusively on air, as some of the orchids, is also a well known fact. It has also been discovered that plants, or some at least, are consumers of animal food, absorbing and assimilating this food much in the same way as animals of the lower orders. Over one hundred years ago, Mr. Ellis, an English naturalist, discovered that the *Dionea*, Venus Fly Trap, of North Carolina, catches insects by a peculiar construction of the tips of its leaves like a steel trap, and since then botanists have satisfied themselves by numerous experiments that the plant not only catches the insects but digests them and the materials are absorbed into the tissues of the plant.

About the year 1868, a Mr. Canby, who was then in North Carolina, in the *Dionea* district, discovered that small pieces of beef that were fed to the plant were completely absorbed, the leaf opening again with a dry surface and ready for another meal. He found, also, that they could not only be surfeited but suffered from indigestion, and also that a meal of cheese, disagreed with the leaves so seriously as to kill them.

The *Dionea* seems only to be found in a limited section of the country, while the *Drosera*, or Sun Dew, is found in nearly all the states, as well as in Europe, and is a common little plant of the marshes. One variety has a round leaf, about the size of a cent, the whole upper surface being covered with glands bearing filaments, or tentacles, as Mr. Darwin calls them, from their manner of acting. A tentacle consists of a thin, straight, hair-like pedicel, carrying a gland on the summit. Each gland is surrounded by a large drop of extremely viscid secretion. They average about two hundred on each leaf, and as they glitter in the morning sun, have given to the plant its poetical name, Sun Dew. The tentacles on the central part of the leaf are short and stand upright, and their pedicels are green. Toward the margin they become longer and longer, and more inclined outward, with their pedicels of a purple color. Those on the extreme margin project in the same plane with the leaf, or more commonly are considerably reflexed. If a small insect be placed in the center of the leaf, a motor impulse is

transmitted to the marginal tentacles; the nearer ones are first affected and then those further off, until at last all are slowly but surely inflected and close over the object until it is absorbed.

The sensitiveness of the leaves is located in the glands together with the immediately underlying cells of the tentacles. A bit of hair, 1-40th of an inch in length and weighing only 1-78000th part of a grain will induce motion and cause a marginal tentacle to sweep through and angle of 180 degrees or more.]

But, by a curious provision of nature, drops of water falling from any height do not affect the glands in the least. It is proved that the leaves are capable of true digestion, and that the glands absorb the digested matter. As is well known the gastric juice contains an acid and ferment (pepsin), both of which are requisite for digestions; so it is with the secretion of *Drosera*, like gastric juice it also has antiseptic properties. Meat is dissolved by each in the same manner and by the same stages. It promptly dissolves cartilage, a substance so little affected by water. It dissolves bone, and even the enamel of teeth. In short, there is no doubt that the ferment in both cases is closely similar if not identically the same, a fact in physiology which may well be called wonderful.

When it is considered where the plant grows, generally on extremely poor, peaty soil, it is evident that the supply of nitrogen would be quite deficient unless the plant had the power of obtaining this important element from captured insects, and this explains why the roots are so poorly developed. These usually consist of two or three slightly divided branches from half to one inch in length, furnished with absorbent hairs. It appears that they serve only to imbibe water, though of course they will absorb nitrogenous matter when supplied. Mr. Tait says that it is certain that the *Drosera* not only absorbs nutriment by its leaves, but it can actually live and thrive by their aid alone, that is without the aid of roots, that nitrogenous matter is more readily absorbed by the leaves than by the roots, for over-feeding kills the plant sooner by the leaves alone than by the roots alone.

Francis Darwin made some very interesting experiments with these plants. He took six plates full of thriving plants of Sun Dew, and divided off each by a transverse bar. Then choosing the least flourishing side of each, he placed on June 12th, roast meat, in morsels of about one-fiftieth of a grain on the leaves, and renewed the dose occasionally. The plants on the fed sides were soon clearly greener than those on the starved sides, and their leaves contained more chlorophyll and starch. In less than two months the number of flower stalks was half as numerous again on the fed as on the unfed sides, while the number and diameter of the leaves and the color of the flower stalks all showed a great superiority. The flower stalks were all cut at the end of August, when their numbers were as 165 to 100, their total weight as 230 to 100, and their average weight per stem as 140 to 100 for the fed and unfed sides respectively. The total numbers of seed capsules were as 194 to 100, or nearly double, and the average number of seeds in each capsule as 12 to 10 respectively.

The superiority of the fed plants over the unfed was even more clearly shown by comparing their seeds, the average weights per seed being as 157 to 100, their total calculated number as 240 to 100, and their total weight as 380 to 100. The fed plants, though at the commencement of the experiment in a slight minority, at the end of the season exceeded the unfed by more than twenty per cent., while the following spring the young plants which sprang up on the fed side exceeded those on the other by 18 per cent. in number and by 150 per cent. in total weight, so that in spite of the relatively enormous quantity of flower stalk produced by the fed plants during the previous summer, they had still been able to lay up a far greater store of reserve material.

You will pardon me if I call attention to a very important matter suggested by these experiments made by Mr. Darwin of feeding the *Drosera*. It relates to the fact whether or no we may not greatly improve our methods of cultivation by learning from these insectivorous plants more than we know now of nutriment adapted to increase the yield and growth of fruit-bearing plants. If it shall prove that these

plants reveal to us a process of cultivation that will largely increase the yield of fruits and vegetation, it will appear then that these little insect-destroyers that absorb their nitrogen in this way, will have rendered an important service to man.

Since writing this paper, the importance of this suggestion of a better knowledge being acquired in respect to feeding plants has received additional confirmation in the experiments made by Prof. W. H. Jordan, in which he finds that phosphoric acid from bone—black superphosphate—will increase the yield of wheat more than any other plant food. The addition of potassa and nitrogen gave an increase of grain and still more of straw.

There are also a number of other varieties of insectivorous plants, each one having a method of its own to capture its prey. The Butterwort secures them by incurving the margin of its leaves. It is not provided with any irritable filaments, the sensitiveness residing in the surface of the leaf, which is set with two kinds of glandular hairs, secreting an extremely viscid fluid, which seems to be the only agent for entrapping the insects. When once caught, they are detained by the slowly inflecting leaf. Here, too, contact with nitrogenous bodies changes the nature of the secretion, so that it becomes capable of dissolving and digesting insects and other nutritious substances, when the secretion and the digested matter is re-absorbed by the glands. When the objects are too large to be inclosed by the inflected leaf, they are by its incurving pushed along over the surface, constantly coming in contact with fresh and hungry glands. I found in one leaf of Butterwort eight or ten small flies, two ants and as many spiders.

The Bladderwort is found floating in shallow or stagnant water, and their threads, like leaves, have numerous little bladders upon them that many supposed were for the purpose of floating the plant, but Mrs. Treat, of New Jersey, has demonstrated that they entrap numerous insects, larvæ and fresh water worms. There seems to be no power for digesting the insects, but of absorbing the products of decay.

Mr. Darwin considers the *Nepenthis* a genus of pitcher

plants, insectivorous. Their digestive powers were so strong that they dissolve cartilage. It was also found that fibrine was dissolved even more rapidly by the secretion of the excited pitchers than in a test experiment with pepsin from a pig's stomach. "Tait finds two substances, both possessing great anti-septic powers and both being apparently together with acid, essential to digestion; one a greyish-white precipitate with alkalies, which he terms droserin, and which seems the analogue of pepsin; the other, azerin, a transparent straw-colored substance precipitated by alcohol, he compares to ptyalin the ferment of saliva. Droserin seems to be present in the secretion of all those insectivorous plants which possess the power of digestion, azerin perhaps, in all without exception. The latter substance, like glycerine, quickly wets anybody with which it comes in contact. A fly thrown into water never gets completely wetted, while one which falls into the secretion of any insectivorous plant is rapidly soaked and drowned by the fluid entering its trachea."

There is also a plant that in a state of nature catches such numbers of flies that the Portuguese call it the fly-catcher, and hang up branches of it in their houses for this purpose.

The *martynia* seems to be quite a good fly-trap. Prof. Beal says that he counted 76 small diptera and some other insects on the upper side of a young leaf of about four inches average diameter, and 200 on the inner side.

The insects are caught on all parts of the plant which are exposed. Among a lot of others, was one plant about three feet high, spreading three feet in diameter, which, according to estimate, had 7,200 small flies upon it at one time. These insects are caught by the small hairs with which the plant is covered, and live only a short time, if only touched by two to four hairs.

In the summer of 1881, a Miss Sallie Andrew examined the leaves of one common garden petunia, and found that they were quite freely powdered with the dead or apparently dying bodies of small insects, which seemed to be held fast either by the hairs with which every part of the plant is covered, or by the gummy, sweetish exudations therefrom.

She says that she had found the freshly captured insects most plentiful about night time, at which time the petunia blossoms emit a powerful odor, and the clamminess of the leaves and stems is most noticeable, and that she had seen insects as large as the common red ant struggle and die, but most frequently she had found small spiders and gnats.

There are intimations from those who are at present investigating the habits of insectivorous plants that there is a very much larger number of these varieties than has been supposed to exist, and the thought now is that we may add largely to our stock of knowledge by studying the peculiar habits of this carnivorous plant life.

SUGAR FROM THE SORGHUM PLANT.

By A. J. DECKER, Fond du Lac, President Wisconsin Cane Growers' Association.

Gentlemen—In reviewing the work of the past few years in the effort to produce sugar from the sorghum plant, we find many sources of honest criticism.

The general tendency of the American people is hurry, driving from one point to another without giving sufficient time to finish one thing until another is taken up. We are so eager to make fortunes that we neglect the little things, when in fact it is a fixed principle that business is made successful only by utilizing everything, be it ever so small. And this business of producing sugar from sorghum, I think, thus far has been conducted on the most wasteful system of any business attempted in this wasteful country.

Out of two hundred and twenty-five mills that are in Wisconsin, I think that there has not been more than one in ten that has made any effort to save more seed than would be sufficient for the planting of the same ground the next season, when in fact there was seed on every acre averaging twenty bushels, and in many cases as many as forty bushels to the acre; and this seed is equal to corn for feeding purposes. At the Rio Grande Works in New Jersey, where they had one thousand acres of cane, they have maintained

five hundred hogs in the best and most thriving condition with nothing but cane seed. Making pork at the present price worth \$12,000, or \$12.00 per acre, and the bagasse and refuse from the mill by being placed in the pig pens, make sufficient manure to more than replenish the land from which the cane was grown. By this means their land has improved to the extent, that where the first year's planting they secured from three to five tons of poor cane to the acre, they now procure from twelve to fifteen tons of rich cane per acre.

The skimmings are also utilized by emptying them into a large basin in the ground plastered with cement to prevent leakage and the water is evaporated by the atmosphere, leaving a dry powder equal to guano or the strongest and most costly fertilizers. With these by-products utilized, they have shown a profit in the business. Without their being utilized their business would have shown no profit. This is also true of the beet sugar industry of Europe; their profits are in the by-products. Another wasteful feature is the manner of extracting the juice, more than one half being left in the bagasse after it has been raised and delivered to the mill. This is also becoming well understood and new methods are being devised by which double the amount will be obtained from each ton of cane, and when the profits of raising sorghum have been so uncertain with these drawbacks, when they are removed there is no question but the business will pay handsome dividends. The next question is whether there will be a market when we raise sugar successfully in this country. We answer that there is a demand for an amount of \$114,000,000 worth now that we have to send abroad for to help to support the sugar kings of slave holding Cuba. Let us first produce this amount and keep out the slave made sugar by tariff and pay the amount of that tariff to the thrift and energy that it will foster in the hands of our free working people and by that time the demand will have grown as far ahead of us as when we started.

The time in which there has seemed any considerable ground of hope that sugar could be procured from sorghum,

has been within the last five years. Within that time in four different states, separated thousands of miles apart, continued success has been attained and in the future the production of sugar is as certain as the flour from wheat in the hands of the miller, and we may feel proud to know that one of those successful experiments, and the one that attained the highest result yet attained, viz., 997 pounds of dry sugar per acre, was in Wisconsin, by skill taught in our Wisconsin University. It is not unreasonable to expect that these points lacking in our mode of cultivating and manufacture may be overcome, and that the varieties may be improved one-half; when that time comes, there can be no question as to the source of sugar supply of the United States.

The beet sugar industry commencing from a necessity, by her ports being blockaded and pushed by the great Napoleon, with all the strength of the government, took, fifty years before it could be made at a profit. In that time the beet root had increased from three to four per cent. of sugar to ten to twelve per cent.

It was thirty-five years before the ribbon cane was made successful in producing sugar in paying quantities, and its original planters were all swamped in their efforts at success. Yet these two plants supplied the entire sugar of the world until this new claimant comes along with its modest claim and is advancing to success much faster than either of its predecessors.

And I have this to say to the people interested in sorghum: It is better to plant one acre and produce the largest crop that care will do, and when it is grown utilize every part of it, and you will find profits greater than twenty acres handled in the usual shiftless way.

EPIZOOTIC ABORTION.

By N. P. VALERIUS, Student of American Veterinary College, N. Y. Scholarship granted by recommendation of Wisconsin State Agricultural Society.

CAUSES AND TREATMENT.

Mr. President and Gentlemen: By invitation of Secretary Babbitt, I will speak to you of the causes and treatment of epizootic abortion. It is a peculiar disease, which prevails in some countries at times as an epizootic, while in certain localities it is seen more or less every year appearing epizootic, and it is also classed under this head. It is likewise called infectious abortion — probably from the fact of it attacking all, or nearly all, the pregnant animals, spreading rapidly, covering a large surface of country. The extreme infectious power of the disease, epizootic or infectious abortion, is seen to a greater or less extent every year, and inflicts greater loss than ordinarily suspected; and if we could estimate the real loss it produces yearly, its investigations would be more numerous than have been up to the present day. If the disease prevails in any country or locality, we do not suffer from the loss of the foetus alone, but as a general rule the locality is liable to become contaminated, and abortion follows consecutively for years, often leaving the animal barren after the disappearance of the disease.

Our cow-population alone is represented in the United States as 13,000,000, or about one cow to every four people, only comprising milch cows, and their value is estimated at about \$326,000,000, or about \$27 per head, based upon their prices in the different states. Now if that disease prevails to any great extent as it has been seen in France in 1869, and south Germany in 1851 and 1852, the loss would be very serious; the bovine race and the above amount of capital represented in the United States, would dwindle down greatly. While the phenomenon of and concomitant with epizootic abortion have only recently from their natural historical stand-point of fact invited, and from their intense natural importance attracted the attention of great natural-

ists, and profound empirics and experimentalists, the real or fundamental causes giving rise to epizootic abortion are as yet shrouded in mystery. While some attribute it to such causes as produce sporadic abortion, others would trace it to a bacteria. The hypothesis of some who claim it to be a miasmatic disease, would lose a great deal of weight by the argument of it being reproduced. Yet as it is very suggestive of occult forces operating in the fields of inorganic and organic chemistry, I feel too humiliated by our feeble power to fathom them, than to allow merely superstition or pride to turn my back from it altogether, and in my humble turn, wish to offer some original remarks and hints on it while discussing the causes.

There are many general causes said to produce the disease, which are such as ergotised food or damaged by moisture, anamia and unhealthy localities, such as low, marshy places, where the soil is damp and these localities, in wet seasons particularly favor the growth of microphytis, micrococci, etc. It is also said that it is possible that among the fungus or parasitic elements which infect forage in wet seasons, there may be some, which act like the ergot of rye, directly on the uterus.

That the disease is contagious and infectious is unquestionable; also that it is produced more readily in better bred animals, although why it is so cannot very well be explained. I have observed an epizootic abortion, where a breeder had five valuable blooded mares, and out of whom he succeeded in raising colts for a few years, until epizootic abortion made its appearance in that vicinity. As these animals were of the heavy breed, he was making use of them on a threshing machine, and through the kindness of the owner, receiving a list of the parties threshed for, I called on them, and could plainly trace abortion more particularly where parties had well bred mares, which will show its contagion and infection. The disease is often introduced by a cow coming from an infected locality into a herd where the disease does not exist. Abortion follows in the herd before uninfected and continues for years. So it may take place by introducing a pregnant cow into an infected stable or herd, where the newcomer will

abort after being a certain length of time in the infected place; but if this cow is advanced in or about the end of gestation, normal pasturation will take place. Might not these facts point to some sympathetic action as producing the disease?

Quoting from Fleming's *Obstetrics*, it has been observed and established by microscopical investigations, that on the lining membrane of the vagina, or that of the vulva, there is constantly found, as on the buccal mucus membrane, a minute fungus mixed with the mucus, in every respect similar to the *leptothrix buccalis*, which, according to a certain Hallier, is only an atropotropic condition of the ordinary mould, being in fact a kind of a bacterium; and towards the period of parturition those bodies become extraordinary abundant, and they appear to occur in the decomposition of the foetal membranes and their expulsions; when the membranes are retained and putrify in the uterus, they are extremely numerous, as are the micrococci, and Frank has shown that by smearing the vaginal membrane of a pregnant animal to a certain depth with this matter, abortion can be produced, so that, says Lundel, it is sufficient to introduce into the vagina micrococci or bacteria, which multiply there, penetrate the uterus and commence their work of decomposition, of which abortion is the consequence. At the present day bacteria is believed to operate in the production of this disease. These little simplest and lowest of all living forms, it is said, form the boundary line of life, and that beyond them life does not exist, so far at least as our present microscopic expedients reach, and these are not small; yet with all their aid a review of all these facts leaves us still in utter darkness as to the entology, nature or modus operandi of bacteria in epizootic abortion, to say nothing about genera, whether they are the rod like, straight fiber like, wavy or cural like, short or screw, flux or spiral shape, or whether they are ball or egg shaped. That is yet to be subjected to a series of investigations and experiments. The general supposition now runs, that epizootic abortion is due to a parasite of this order; but as we are not so positive what produces the disease, so in the treatment of epizootic abortion

we must guard against and take into consideration everything possible that is apt or capable of producing the disease.

But before retiring from the review of past and present, at all events as yet hypothetical causes of this disease, I feel instinctively impelled by a contemplation of the analogy and kinship of the anthrop-pathological and organic chemical phenomena to those of the lower vertebrated mammalian species, to give vent to some humble suggestions I had proposed to offer:

That sporadic and epidemic contagious diseases affect the human race, from the simplest acute to the chronic catarrh of every form and bronchial affections, to the sweeping and awful choleras, typhoids, pox, dysenteries, and even epidemic abortions, we know too well. As it had been uncontroverted fact that they are communicated from one person to another, both by direct contact as well as by mere approximation, and had been noticed by famous Frankle, that a bridegroom, who had never had a cold in his head, was seized with one for the first time, during fine weather and without any other perceptible cause than vicinity of his bride, who was subject to coryza. So likewise it has often been observed how one member of a family after another is attacked, and most simultaneously, without any perceptible etiological reason. The causes of epidemics attacking in quite different parts of the street or city, unquestionably are not direct contact with ponderable matter, but with something of an imponderable nature, acting and spreading on principles, laws and routes different from those belonging to ponderable matter. Microscopic examination of the mucous secretions always show white blood-corpuscles besides the so-called mucous corpuscles; and though a large number of those little structures, recently so much spoken of and called micrococci, may generally be seen also covering the cells, in addition to them, the secretions often contain accidental formed ingredients which floated on the inspired air, and were thus mingled with the fluids. And does not often the *lusus naturæ* form causes more mysterious yet, not even floating nor classified among imponderables, as a well-established fact, often caused by mere sight, thought, sentiment,

recollection, presentment, or mental passion, give rise to most hideous miscarriages?

Now the fact is well known, that not always the pregnant cows next to the one that has aborted, are first seized, but rather animals at some distance from it; likewise, that beside the influence of seasons, there is an influence of locality, the disease fixing itself in particular places and sparing others; likewise that cows nearer the end of gestation normally do calve, when introduced into an infected place, while if remaining a longer time there before this period is reached, they abort. The force of all that allow me to express my instinctive groping amidst all the darkness that envelopes our investigations as yet on the subject *must* point out to more imponderable, and more gaseous, more abstract, more indirectly communicative, and more indirectly transmitting and sympathetic agencies than a sort of bacteria or parasite! The dynamic force of imponderables is expansive and tending to action at a distance rather than immediacy — the parasite would find the nearest victim — expansive or gaseous substances would strive to expand to furthest distance and attack there.

A woman in sorrowful surroundings and witnessing sad occurrences, deaths or abortions, though by dint of the human mind possessed of stronger will power to subdue and control her feelings, will more readily abort. Why not the inferior animal, who has witnessed by sight or by some instinct or perception (yet as quite imperceptible to us) the sad catastrophe, speechless, without control or means to direct or divert its thought, left to muse and ruminate over the sad picture impressed in its constant intention? But all these occult matters, though deserving serious attention and due reference to, are for the depth of research and height of genius of future generations.

All I mean to say is: to confine ourselves always to a hunt or chase after bacteria or parasite, would be narrowing our fields of investigation, widening the distance from approach to the hidden shrine of nature's occult forces and limiting our sphere in the cause of prevention, diagnosis, treatment and well-doing.

There is certainly one cause which may be the origin of epizootic abortion, and which I think in many instances can be avoided, but is neglected even in some of our best herds, and that is the care of pregnant animals in certain wet, rainy and cold, moist and damp weather, which has undoubtedly a different effect in different localities, being more severe in low, marshy land; and as such weather favors the production of bacteria or the micrococci and microphytis, it is of the most essential importance that pregnant animals should be kept separate, and they as well as all other stock not pregnant should be separately removed and carefully guarded, as I think the pregnant animals as well as unimpregnated animals in being exposed are liable to become infected with this bacteria and transmit it to the pregnant animals, and produce this fatal disease. In my opinion it has also an effect to a certain extent on the unimpregnated animals, even if it cannot be observed by any marked symptoms. Hence in such cases I should advise the utmost care and prevention of the disease, with favorable circumstances, namely, place all the animals in a good, warm stable, with the best hygienic surroundings, such as good food, pure water and ventilations. Such animals which are in an atenic state treat with tonics and preparations of iron.

If abortion takes place and is suspected to be of the contagious order, the animal aborted should at once be isolated; the patient with all surroundings should receive prompt attention, such as removing foetus and contents, and at once burn everything that was in contact with it. The infected stable should be thoroughly cleansed, including the washing of the genitive organs or parts exposed to the foetus, or some of the contents expelled and then thoroughly disinfected and a special attendant placed to wait on the animal, avoiding coming in contact with any of the rest of the stock. If the membranes are not expelled they should at once be removed and not allowed to putrify. A weak solution of some disinfectant may be injected. The animal should be kept isolated until she has properly recovered and all traces of the affection disappeared, which may possibly last from ten days

to one month. It is also well to remove any animal from the herd showing symptoms of abortion.

If epizootic abortion is suspected, as it is by some, to be due to ergotised food or other damaged fodder, such food should be discontinued and a change resorted to.

For destroying such parasites as the disease is supposed to be due to, the actual treatment would be best by sulphuric acid gas, the evolution of which by burning of sulphur in the open air, is fatal to all parasitic germs, and as it has been proven by experiments, that man and animals can safely respire an atmosphere admixed with it to such a degree as can forbid the co-existence of any such dangerous influences, we can thus easily render the object of our interests inaccessible to them by a very simple mode of procedure.

BEE-KEEPING FOR PROFIT—ITS ADVANTAGE TO THE FARMER.

By E. A. MORGAN. Read before the Farmers' Convention at Arcadia.

Mr. President, Ladies and Gentlemen: As I have been called upon to speak upon the subject of Bee-keeping for Profit, I shall endeavor to point out as clearly as possible the way in which it should be conducted according to my ideas, gained from what I have learned from experience in this pursuit. There are very likely older beemen here than myself, but perhaps no one present has taken more pains, or given the subject more study, than I have done.

There are very many works treating upon this subject, which are more or less a help to the beginner; but what I have learned is by experience, and in many instances it has been dearly bought. To succeed in this business, a person must first understand the natural laws governing the honey bee. He can then tell at a glance what should be done to promote their best interests. For as Josh Billings says, "A bee is sudden in his impressions and hasty in his conclusions." It is therefore very necessary to do what you do, just at the right time, to secure the best results.

Many farmers in this vicinity have tried bee-keeping from time to time, and are satisfied that it is very profitable, and while all was favorable they made it pay well, but sooner or later something turned up which they did not understand and all was lost.

In bee-keeping, as in all other pursuits, it is all important to make a good beginning; and to do this, it is as important to get good stock as it is with your cattle, horses or hogs. Having obtained this, next in importance is a thoroughly practical hive. And in bee-keeping for profit, it is necessary that the main feature of the hive should be simplicity, which would at once exclude doors, drawers and traps of all kinds. The combs should be movable, so that the operator can, in a moment's time, remove any or all of them to another hive if necessary, which is often the case in spring when clogged up with dead bees or dirt. All hives and frames should be alike, and the frames interchangeable, which is very necessary in feeding, in strengthening weak stocks from strong ones, in extracting, in queen rearing and many other things. For this climate I would recommend the Langstroth hive, holding ten frames or brood combs, which, being shallow and open at the top, admits of the bees going directly into the surplus boxes from the main hive, and being directly above their brood, they receive the heat of the cluster, which is very essential, especially in cool weather, to aid them in manipulating wax. This hive can be made to accommodate any sized colony by the use of a close fitting movable division board. This hive is not too large nor too small, and will receive surplus receptacles for fifty pounds of honey, and can be tiered up to any height desired. It is not, however, the best out-door wintering hive, on account of its shallowness. Bees in this hive require some sort of winter protection; but when we figure its advantage as a summer hive, above the cumbersome and costly out-door wintering hive, we can well afford to pay the difference of winter preparation required for this hive.

Just a word about boxing for surplus honey. Many beginners and inexperienced bee-keepers constantly encounter difficulties in first getting their bees to go up into

the boxes; and after the first set of crates have been filled, much valuable time is often lost in finishing and capping the sections and getting the bees to begin anew in other boxes; and not unfrequently a strong colony will send out a new swarm in preference to making a beginning in new boxes, which of course is very ruinous to their owner. In short the profit of the apiary, where it is run for surplus, is governed largely or wholly by the amount of box or section honey stored, and this depends entirely upon the readiness with which bees can be made to work in boxes. Since the time in which bees store surplus honey is divided into short seasons during the summer, known as honey flows, it is all important that the bee-keeper has his stocks in condition to "improve every shining hour" to the best advantage, as these honey flows are sometimes "few and far between." My plan of boxing is to use foundation starters in all sections, and put on but one crate at a time, as it is not difficult to induce bees to work in one crate, where it would be impossible to start them in three or four. When one crate is about half filled, put on another, and so on until the frames are covered, making it a rule to take off the first crate of honey before the last empty box is put on, so that but one filled crate is taken off and one empty crate put on at any one time, thus avoiding the necessity of much sudden change, and removing the difficulty of starting bees in a full new set of boxes. This process of rotation, if carefully adhered to, will sometimes save hundreds of pounds of honey to an ordinary bee-keeper, in one season. One more suggestion on this point. Arrange your crates so that the sections will run parallel with the brood frames, thus giving the bees a free passage into the boxes, and not merely a small square hole as is the case when they are placed at right angles, which is often the cause of much delay and tardiness in getting bees to work in boxes.

Very few are aware of the profits to be derived from this branch of industry, or the advantages bees are to the farmer. From time immemorial the honey bee has been talked of as giving to mankind a delicious and wholesome sweet, which has received merited praise, as food fit for the gods. The

first mention I find of the honey bee is by Aristotle, four hundred years before Christ, but in all history they are spoken of as keeping pace with civilization in its march westward, and they were no doubt intended by the Creator for our benefit. All through these hundreds of years very little was known of their habits, and very little profit derived from them, except in some countries from their wax. Many of the old time bee-keepers remember how the bees were brimstoned to obtain their honey, and their snowy white combs of delicious honey mashed up with the old tarry brood combs and bee-bread, and the whole strained through cloth; and they can well remember the bee-bread flavor which never left it. There was very little if any profit in this mode of bee culture.

In the year 1851, Rev. L. L. Langstroth invented the movable comb hive which has been little changed up to the present time. This had the effect to revolutionize the industry of bee-keeping, and is the hive in general use among advanced bee-keepers of America to-day. Very little honey was put upon the market previous to the advent of this hive, except in a liquid state. That delicate flavor which is always preserved in the comb, was lost in straining it. And the proportions which have been reached in modern bee-keeping are due to this invention alone. It has enabled us not only to manipulate our bees to the best advantage, but also to get our honey in shape for market without sacrificing the life of the colony. This was a great saving. It enabled us to get a larger surplus; the beautiful white combs built in neat sections were attractive; a comb-honey market was established in all our cities, and a demand for honey sprang up, which has increased from year to year ever since, causing hundreds of specialists to embark in the business, until to-day buyers stand ready in every city of importance in this country and Europe, to quote your prices on honey as well as upon other produce. With this style of taking our surplus, we are enabled to pack our honey in crates and ship it safely to any market, as we do our butter, cheese or eggs.

Besides being the best and purest sweet known, I will give you a few figures to show how much the honey crop adds to

our national wealth. Prof. Cook, of the Michigan Bee-keepers' College, at Adrian, shows that in 1881 there were 3,000,000 colonies of bees in the United States. The comb honey production for that year was not up to the average, and yet the cash value of the year's crop of honey exceeded \$30,000,000. We may safely add as much more for the value of the increase of colonies, and we have the grand total of \$60,000,000—nearly enough to pay the interest on the national debt. And yet all this is but gathered nectar from the flowers, which would go to waste on the summer air, were it not for the bees. They save to the country that which would otherwise be lost. Is not bee-keeping then, which adds so immensely to the productive capital of the country, worthy to receive the encouragement and fostering care of the state? The years 1882 and 1883 were far ahead of the year 1881 in honey productions and increase of colonies; so that we may safely count on double the above named amount at the present time. I said that very little profit was gotten out of this branch of business until the advent of this new movable comb hive and section; but since that time the art of bee-keeping for profit has taken wonderful strides. Improvements in the business have been going on all the time. It was only eight or nine years ago that the honey extractor was invented. The principle which makes this machine effective, is that of centrifugal force. The brood chamber is often so filled with honey that the bees have no room to work, and if left in this condition for a few days, they swarm out, even late in the season, thus cutting off the profits of their owner. But with the honey extractor, the combs can be removed, relieved of their honey, and returned to the hive to be refilled.

Many extensive bee-keepers add to their hives an upper story with large frames, and extract them regularly every month during the season. The advantages of this *modus operandi* are that a much larger amount of honey can be obtained, swarming is prevented, and the honey can be run directly into kegs and barrels for shipping, thus saving cost of boxes, crates, etc., and the time spent by the bees in making combs. The disadvantage of this method, however,

which usually counteracts its advantages, is the great difference in price. Extracted honey is one of the purest sweets known, and is certainly not unworthy of mention as a valuable acquisition to our diet. Health, yea our very lives demand that we should eat sweets. It is true that our sugars and our commercial syrups are so adulterated as to be often poisonous and unfit for use. This extracted honey naturally takes the place of syrups, and the common expression that honey is a luxury, having nothing to do with the life-giving principle, is an error. Honey is a food in one of its most concentrated forms. It gives warmth to the system, arouses energy, furnishes strength to the laborer, and gives to children good health and a sweet disposition. Here, again, the farmer can save much by raising honey and extracting it for his own use. Cases of poisoning by the use of adulterated syrups have become very frequent, and many children are suffering with weakened or deranged stomachs on this account, where a free use of extracted honey would cure them.

Another valuable improvement in bee-keeping, which was briefly alluded to in the beginning of this paper, is comb foundation. It consists of thin sheets of wax, pressed or indented like the base of the honeycomb, which are placed in the hives and are drawn out by the bees, thus saving them not only the honey consumed in making the wax, but the time required in making it, which is very considerable. This, like the extractor, helps us to secure a greater yield of honey.

There is no farmer but has some nook or corner in his orchard or yard where he could set a few hives of bees, out of the way of everything. They would take but little time and care, and would pay him 300 per cent. on the investment. They are the only things on a farm that work for nothing and board themselves, and furnish a profit to their owner. Mr. G. M. Doolittle, of Berdino, N. Y., furnished a statement in the *American Bee Journal* not long since, showing the net proceeds of his bees for ten years past. It shows his average number of swarms kept to be 60; average number of pounds of honey obtained per colony each year, 100; average price per pound, 17 cents, or \$1,000 per year profit, above expenses, for a period of ten successive years, from 60 colo-

nies. His honey is always built in beautiful sections, which never fail to attract buyers, and brings the highest price. The style of package, and size and neatness of the section, have much to do in creating a market at home as well as abroad. I believe we should do all in our power to create a home market for extracted honey, as we can sell it at our homes readily and in large quantities, it being so much cheaper, and by this means many will learn to use honey who never have before. There is a constantly increasing demand for honey in either shape, not only in all cities of our country, but in those of England as well. Only yesterday, I saw an advertisement headed "Five tons of honey wanted. Cash on delivery. Five cents advance over New York prices, by W. M. Hodge & Co., London, England." So that no matter how much we produce, we are sure for a ready market. I might say right here that my own experience in the apiary has been a source of interest, enjoyment and profit, far exceeding my expectations.

A few words in regard to the bee or race of bees to be kept and I will pass on to the subject of their advantage to the farmer. Had my paper been on the Honey Bee, I could doubtless have made it more interesting than on keeping bees for profit; but will say this much for the bee or race of bees to be kept for profit, that after having tried several races, I am decidedly in favor of the Italians, for the following reasons: 1st, they possess longer tongues, and can consequently gather from flowers which are useless to the black bee; 2d, they are more active, and with the same opportunities, will gather much more honey; 3d, they work earlier and later, not only of the day, but of the season; 4th, they are far better to protect their hives against robber bees. Bees which attempt to rob Italians of their stores, soon find that they have "dared to beard the lion in his den." 5th, they are proof against moth millers; 6th, the queens are far more prolific and breed up faster in the spring; 7th, the Italian bee is more hardy, longer lived, and stronger of wing than other breeds; 8th, and lastly, they are more amiable. A stock of pure Italians may be handled without the least danger of stings.

And now I will close by speaking of their advantage to the farmer, other than by supplying his table with honey, and filling his pocket with money. All bees feed exclusively upon saccharine juices or nectar of flowers, called honey, and the food of their young in the larvæ state, is the pollen of flowers called bee-bread. The honey bee was not only created to gather the nectar from each opening flower and store it in shape for food and medicine for mankind, but at the same time there was a double purpose intended. They were made to perform a very important part in the economy of nature—that of the fertilization of flowers, which depends upon the contact of the pollen with the stigma; and as if to secure this object more perfectly, in their search for honey and pollen, they pass from flower to flower of the same kind, and are never known to visit two varieties of flowers on the same trip, as many have supposed. It is indeed wonderful how so small an insect can be made to do so great a work and governed by natural laws, they become most populous at the season of the year when most needed in this work. It is estimated that not more than one-half of the blossoms on our fruit trees would bear fruit, were it not for this agency. The bee, eager for the nectar secreted in the flower, plunges into the blossom, covering himself with its pollen dust, and thence to the next, scattering it there, and so on. When we realize that in a strong working colony there are 50,000 of these workers, and that each one makes hundreds of trips each day, we can readily see how much may be accomplished in one day's time. And it is indeed possible that nectar there secreted was for the sole object of attracting the insects thither, that they might accomplish this work.

Farmers are becoming more acquainted with these facts, and it is very noticeable that in sections where many bees are kept, the fruit crop is more abundant and the clover yields far more seed. Only a short time since I saw an article on the transportation of bees to Australia, where the clover has never been known to bear seed. Some one suggested that bees might be made to distribute the pollen. The experiment was tried, and it is reported that in the

vicinity where the bees were stationed, the clover the present season, has borne seed, thus proving conclusively their work alone wrought the change. There are many points I should like to touch upon concerning the hive and its manipulation, and the bees and their being handled, among which are queen rearing, swarming, transferring, wintering, Italianizing, etc., but limited time will not permit, as any one of these subjects would be enough for an article. Hoping that I have opened up the subject sufficiently at least to provoke discussion, I will close.

NUTRITIOUS QUALITIES OF VARIOUS FOODS VARIOUSLY COOKED.

The world little imagines how largely it is indebted to the laborious researches of scientific medical men for many of the most important truths relative to human health, happiness and life. As population increases and the value of food is enhanced, the knowledge which chemistry has elicited is becoming more and more valuable in a practicable point of view.

Some kinds of food are more nutritious than others, and if it should be found that articles which are cheapest have the most nutriment and give the highest ability to labor, then knowledge becomes money to the poor. Tables vary, but some of the general results are as follows: One pound of rice, prepared for the table, gives 88 per cent. of nutriment, and consequently, a relatively proportional ability to labor, compared with other articles of food. A pound of beef, costing fifteen cents, gives only 25 per cent. of nutriment. Yet countless numbers of the poor in New York strain a point daily to purchase beef at fifteen cents a pound, when they could get a pound of rice for one-third of the amount, the rice, too, having three times as much nutriment as beef, making a practical difference of 800 per cent., aside from the fact that boiled rice is three times easier of digestion than roast beef, the rice being digested in about one hour,

roast beef requiring three hours and a half. There is meaning, then, in the reputed fact that two-fifths of the human family live on rice.

We compile the following tables for preservation, as being practically and permanently useful. All the economist requires is to compare the price of a pound of food with the amount of nutriment which it affords:

Kind of food.	Mode of preparation.	Percentage of nutriment.
Oils	Raw	95
Peas	Boiled	93
Barley	Boiled	92
Corn bread	Baked	91
Wheat bread	Baked	90
Rice	Boiled	88
Beans	Boiled	87
Rye bread	Baked	79
Oat-meal	Porridge	74
Mutton	Broiled	30
Plums	Raw	29
Grapes	Raw	27
Beef	Raw	26
Poultry	Roast	26
Pork	Roast	24
Veal	Fried	24
Venison	Broiled	22
Codfish	Boiled	21
Eggs	Whipped	13
Apples	Raw	10
Milk	Raw	7
Turnips	Boiled	4
Melons	Raw	3
Cucumbers	Raw	2

RUSSIAN FRUIT.

By A. G. TUTTLE, Sauk County, Wis., delivered before the Farmers' State Convention, February 8, 1884.

Mr. President and Gentlemen:—More than thirty years ago I commenced work as an orchardist in Wisconsin. From that time to the present I have been testing, in my own grounds, a large variety of the different fruits, especially of the apple.

When I set my first orchard but little had been learned of what was required in this climate, and it was composed largely of old favorites from eastern nurseries. The winter of '56, and '57 soon following, made it evident that most of them were worthless for Wisconsin. That winter was probably one of the very coldest that we had experienced during the last thirty years. It was thought then that trees which came through that winter uninjured, were such as might be relied upon as able to withstand the extremes of our climate, and that the business of fruit growing might be engaged in with a certainty of success. But a very large proportion of such as survived that winter have since died or become unprofitable as orchard trees, so that we are now reduced to but a few of the old sorts which are desirable to plant. Yet with all this record of disaster, the future of fruits in the northwest was never more promising than now.

Varieties of the apple have been introduced and tested for a number of years from a region much colder than this, where the largest commercial orchards on the globe have existed for centuries, and the principal business of its inhabitants is fruit growing. Nearly twenty years ago I read an account of those extensive orchards in the heart of Russia, in latitude 52 degrees to 55 degrees, in an open prairie country; an account similar to that given in the report of Prof. Budd, of Iowa, and Chas. Gibb, Esq., of Province of Quebec, from their examination of those orchards during the last two years. Any one reading their reports must be convinced that the fruits of that region, when introduced, will give us varieties of the apple equal in hardiness to the Duchess of Oldenburg, covering the whole season from early to late, many of them of excellent quality as dessert apples.

In 1866 my son corresponded with Cassius M. Clay, then American minister at St. Petersburg, asking for a few cions, which were promptly forwarded, at the same time urged upon him the importance of our government, while collecting seeds in Europe for distribution, to make a collection of Russian fruits for the benefit of the prairie region of the northwest. In his replies he expressed a lively interest in the

matter. Still later we received cions of several varieties from the U. S. consul at Moscow, and still later a large number from the department at Washington, so that we now have in bearing orchard over one hundred varieties.

Prof. Budd, of Ames, Iowa, and Chas. Gibb, of Abbotsford, Province of Quebec, spent most of the summer and autumn of 1882 in Russia, for the purpose of examining the fruits. Their reports show that by the introduction of the fruits they saw growing there — all of which, with two or three exceptions, we have in our experimental orchard — we will be able to grow fruits with as much certainty, and of as good quality, as can be grown anywhere. A large proportion of the apples we have hitherto tried, have either died from overbearing or with age become unproductive. A few years of bearing does not compensate for cost of trees and the labor of cultivation. What we need are those like the Duchess, that with age increase in profitableness. We have in our orchard five old Duchess trees, planted more than thirty years ago, pictures of health and vigor, and as likely to become centenarians as any trees in any part of the world. They produced the past season from six to eight barrels per tree.

We had the best show, at blossoming time last season, for a larger crop of apples than we have had for ten years. Trees, such as the Talman Sweet, Seek-no-Further and others that had borne but a few scattering apples the past ten years, were full of bloom and promised an immense crop. Most of them failed to set a single specimen. And why? I think from the same reason that the pears and cherries failed to produce after blossoming profusely: *the severe winter injured the fruit buds*. I think most of the failures of fruits in this latitude are from the same cause. The Duchess and all other *extra hardy* sorts that blossomed last season produced full crops. Never knew the Duchess to fail to produce a crop after blossoming, nor did any of the Russian varieties of apple that blossomed on these grounds last season fail to set their fruit. What we want is a class of apples covering the whole season from earliest to latest, that will prove as productive and enduring as the Duchess of Oldenburg. We

hope and *expect* such a result from these *New Russians* now on trial. We have fruited some already that we *know* will fill the bill as to productiveness and quality.

When I planted my first orchard I set five Duchesses, thinking that enough in an orchard of one thousand trees, as they were so hardy, and a fall apple, that every one would grow that people set, and the market would be overstocked with the fruit. Have since set three hundred in orchard, and last fall found a profitable market in Chicago for their fruit. No doubt many of them were sent back to Wisconsin — as were some sent by a neighbor, who put his name on the barrels, a number of which came back to Madison, and one barrel to Baraboo, undoubtedly much improved by their trip to the the metropolis.

Hitherto we have lacked good, hardy, productive and late keeping varieties of apples, that would take the place of the Greening, Spitzenburg, Baldwin and Swaar. Until we can find hardy and productive varieties to fill their places, we must expect the demand will be for eastern apples. The Fameuse has been — in its season — our most valuable apple, larger and fairer than when grown east, but should it continue to scab, as it has the last two years, will be of little value as a market apple. Should it fail to retrieve its old reputation, we have the Wealthy — fruit larger, fairer, and tree equally productive. This tree has earned its reputation for hardiness, standing equally well with the Duchess throughout Minnesota, so that, should we be obliged to abandon the Fameuse and substitute the Wealthy, we take no step backward, but we consider it decidedly progressive, as for an early winter apple it has no equal as a market apple. Whoever plants largely of the Wealthy for the market and gives them proper care and cultivation, will have in a few years something equal to a gold mine or better than growing ordinary farm products.

Where are we to look mainly for the late-keeping varieties of apples to make orcharding certain and profitable in the prairie regions of the northwest? I answer: from the cold, interior prairie regions of Russia. After ten to fifteen years' trial of nearly one hundred varieties from that region, and

after reading the accounts given by Mr. Gibb and Budd, we firmly believe that we shall obtain from that country apples more valuable than the Duchess, covering the entire season. In support of this opinion we quote from the report of Messrs. Gibb and Budd: "Kazan is situated on the Volga river, above latitude fifty-five degrees, and four hundred and thirty miles east from Moscow." Professor Budd says of this place: "The climate of Kazan I fail to comprehend. That its winters should be cold we could readily guess. In extreme winters the mercury congeals, and the mildest winters have periods when the temperature reaches thirty to forty degrees below, with a very dry air and great uncertainty as to the time when the first snows cover the ground. Yet all the villages we visited are literally *great orchards*, with fine looking and really very good apples. To find such extensive orchards in the far interior and as far north as Kazan, surprised us as much as to have found them in Siberia. Even at Moscow we were told that but few apples were grown so far north as Kazan. I wish I could have a delegation of about one hundred intelligent farmers of northwestern Iowa here for one week to go with me over the ground I have traversed in this district. Have seen hundreds of orchards literally loaded with finer, smccther fruit than I ever saw in central Iowa, growing on an *even lot of healthy, hardy trees*. The inspection of such a delegation would do more to convince the people that we must *quit fooling with the south of Europe fruits*, than my pen will do in forty years. But I find the facts to far exceed my expectations."

The Professor says, while at Simbrisk, also on the Volga, in latitude 54 degrees: "We have spent three days in examining the fruits in the many orchards in and near to the famous fruit city of Simbrisk. It may be more properly called 'The Orchard City,' than any town in Europe or America. Literally every available spot in and around the city is planted to apple, pear, cherry and plumb trees, all of which this year have produced great crops of really choice fruit. But not a single variety can be found that belongs to the races of fruit found even in North Germany. The climate is very trying, both summer and winter. The city

is located in the dry steppe region, five hundred miles east and a few south of Moscow. Thousands of acres of orchard here are planted to a very, very few commercial varieties of apple, which do not differ materially from those grown in the province of Kazan. Our Duchess we do not find, but the Borowiki and a dozen other sorts are so like the Duchess in leaf, tree and fruit, that they are hard to distinguish except by tasting. All of the varieties of Duchess type are finer in texture and milder in flavor than our Ironclad."

At Knavlinsk, on the west bank of the Volga, latitude 53 degrees, the Professor says: "The shipments of fruit from this place already reached this season about 1,000,000 packages of thirty-six pounds each. Thirty-six million pounds from one shipping point, with many others above and below, will give some idea of the extensive orcharding of this region."

Of Volsk, he says: "We have been tiring ourselves out in the old work of rambling through parks, gardens and orchards, near this ancient city of Central Russia. We are on the border of the dry steppes, reaching into Central Asia. It has not rained here for weeks, and such comminuted dust we never know in Iowa. Yet, hot and dry and sun-burnt as the far-reaching plains now are, the winter temperature reaches 50 degrees Fahrenheit in extreme winters, often without a particle of snow. As a rule there is more snow here than in Iowa, but the time of the first snow fall of winter is very uncertain. Sometimes the lowest temperature is reached before the mantle of snow is spread. Hence only such fruits, trees or shrubs can be grown as will endure the heat and drought of a semi-arctic summer and a semi-arctic winter."

Then of Saratoff, in latitude 52 degrees, he says: "This beautiful city on the border of the elevated prairie or bluff on the right bank of the Volga, may also be called the 'Garden City.' It is literally surrounded with great orchards. Within two miles of our hotel in this city of 100,000 inhabitants, we visited to-day an apple orchard of 12,000 trees, which this dry year did not produce as great a crop as in more favorable seasons. Two years ago the crop sold was

153 car loads of 20,000 pounds each. The proprietor, Mr. Patiskieff, has also a large pear orchard adjoining, which also proves very profitable. These very large orchards grow but very few varieties, all of which we are assured, have been popular on the Volga for at least the past century."

It has been claimed by some that the Russian fruits are of poor quality. Let us hear what the Professor says: "With the quality of the apple here called good, we have been much surprised. On our table at this time are apples approaching very nearly the quality of the Dyer and Rhode Island Greening. Mr. Gibb is very fastidious in his notions as to quality of fruits, and he continually expresses his surprise at finding so many really good varieties far north of the point where he had hoped to find them. Nor are these varieties short-lived, even on the black soil west of Simbrisk. We have been in many orchards planted thirty years ago where few trees are missing from the rows. That these varieties of the apple, pear, cherry and plum will thrive on the blackest prairies of northwest Iowa we have not the slightest doubt," When at Volsk he says: "On our table we have such an exhibit of large, highly colored and really good fruits as we cannot gather at Des Moines." At Saratoff he writes: "The more we see of Russian orcharding the more complete is our surprise. Not only are the varieties larger, finer looking and better in quality than we expected, but the systematical management of the great commercial orchards exceeds our expectations." Speaking of fruits at Orel, he says: "One of these varieties bears the name of Borsdorf Zwebel; yet it has a historic fame in the valley of the Volga as a fruit fit for the table of a prince. I wish to repeat that we are perpetually surprised at finding fruits of great excellence and value which have not spread far beyond the borders where they have been grown for generations."

Mr. Gibb, in speaking of the Red Anis, says: "It is really a dessert apple of fine quality, and, under Russian care, it keeps till late winter and spring." I have fruited nearly fifty varieties of the new Russian apples, and find most of

them of better quality than Duchess, and many of them compare favorably with the best American apples.

It is claimed there are no late-keeping apples among the new Russians; that they are either summer or fall fruit. Prof. Budd, in speaking of those large orchards, says: "Ninety per cent. of the apples are of winter varieties, but they are usually all shipped and sold early in autumn. This year the picking was earlier than usual, on account of the excessive heat and drought of the season. But a few varieties are still on the trees of very late maturing sorts. Those who have believed that no late keeping varieties were grown so far north should examine the trees laden with Streklianka, Antonovka or Tchougounka. While ordinary winter sorts are finely colored and tender enough for eating, these very late keepers are as hard and immature as is our American Pippin in October. Some winter varieties are well known in many parts of Central Russia. But we also found choice varieties which have long been here and not been distributed in other provinces. For instance, here we found three hundred trees of a variety bearing the name of an estate, Bogdanoffa, or, in English, God-given. It has been in the family two hundred years, and is much prized on account of its extreme hardiness of tree and the size, beauty, quality and keeping capacity of the fruit. It closely resembles our Dominic, but has a richer coloring and is much larger. I at once called it a Glorified Dominic. It is now very firm and will keep till May. The tree is as upright in growth as our Gros Ponier, and it has proven as hardy in this trying climate as the Antonovka, which, in turn, is hardier than the type of apples grown here, resembling, in tree and fruit, our Duchess.

"Another local apple grown here largely, is known as the Kursk Steklianka. It is shaped like a medium sized Alexander. It is also a late keeper and of good quality. Still another very late keeper, of large size, but only of second quality, is known as Tchougounka, or, in English, cast iron apple. A hasty examination would convince the most skeptical, that Central Russia can produce apples of large size and firm appearance, that will keep until the next

harvest time, with the most common care. I have no doubt that as large a proportion of Russian apples are late keepers as of our own American sorts." Prof. Budd speaks of the "cross apple" as keeping till the early apples ripen, and Mr. Gibb says of the "Cast Iron" apple, the fruit is said to keep two years. This last I fruited last year.

I have quoted but a small part of the reports of Prof. Budd and Chas. Gibb, Esq. Would like those reports to be in the hands of every fruit grower in the northwest. No more interesting matter on the subject of fruit could be placed in their hands. The evidence in these reports of the value of Russian fruits to us will satisfy the most prejudiced.

I have been growing cherries for nearly thirty years, and have fine, large, healthy trees of the Early Richmond and Kentish, but have not grown as much fruit in the last twenty-five years as should have been on the trees in one year. What is the cause of failure? We say, winter killing of fruit buds. They are now destroyed in the Early Richmond. We are glad the prospect is now good for obtaining varieties of the cherry, of good quality, from the cold prairie regions of interior Russia, and of such a hardy nature as to allow of overstocking the market of the United States with the fruit.

Of Vladimir, north and east of Moscow, Prof. Budd says: "The whole province is given to growing the cherry. Hundreds of proprietors have orchards of 10,000 trees each, and the products are shipped to every part of the empire. In the cherry season Vladimir cherries are plenty and cheap in every Russian city reached by railway or water. We are told that whole trains are loaded with them for Siberia and the far northeastern cities of the plains." Mr. Gibb says: "In color the Ostheim cherry is like the Vladimir, a dark red, when very ripe, a dark purplish red. When we tasted it at Warsaw we found it but mildly sub-acid and rather rich." Dr. Hogg says: "Very dark, tender, with a pleasant, sweet and sub-acid flavor." Mr. Gibb says again: "There seems no doubt as to its hardiness, productiveness or quality, and like the Vladimir, is worthy of extensive trial."

Prof. Budd says of plums: "South of Vladimir, but still

near to the fiftieth parallel, where the mercury reaches fifty degrees below zero, the plum is raised in quantities absolutely immense. These plums vary in season and color, but they are all of one race, which seems indigenous to Northern Asia. Many of the varieties we met at Nishny are equal to the best German prunes, which they resemble in shape and texture of flesh. The color is red and the suture at one side is peculiar to the race." Mr. Gibb says: "In all our most northern rambles in central Russia, we find the plum grown in fair quantity, and supplying a certain amount of the local markets. In the severe climates of Moscow, Vladimir and Kazan, we find plums, and some of them of really fine quality, and we are told that in the village of Gorbatovka, forty miles from Nipni Novogorod, they are grown in large quantity for the Nipni and Moscow markets. These plums belong to a family, more or less nearly related to the *Questche* or prune plums of Germany and Hungary. Like the Vladimir cherry, these northern forms of the plum are dwarf in habit of tree, often bushes, and this seems to be a provision of nature, for in these cold climates, if a plum bush is killed to the ground, new shoots soon grow and bear. Of these plums there are a great variety; some are red, others yellow, but mostly blue; they differ widely in flavor, some, I would say, equal to the Lombard; some are early, some are late; they are usually without any astringency, and generally freestone. I was not prepared to find such plums in the cold climates of Russia. The improved varieties of the wild plum of the north-western states I had expected to be the future plums of the province of Quebec. I have some of them, heavy and reliable bearers, but of medium quality only. There are much better varieties than I have, for instance, the De Soto and others, but these non-astringent, fleshy, freestone Russians have a combination of good qualities, which entitles them to extensive trial in our cold country."

Pears are grown to some extent in the cold portions of Russia. Mr. Gibb says: "In the public square at Simbirsk, in latitude 54° , on the Volga, a climate as severe as the city of Quebec, the wild pear is a fine ornamental tree, and seems

the tree which suffers least from dryness of air and diminished rainfall. I must add also, that the one tree of largest diameter of trunk which I happened to see during a journey of nearly 1,000 miles on the Volga was this wild form of pear; a tree at Saratoff nearly three and a half feet in diameter of trunk, measured near the ground. At Simbirsk it was, that we first met with extensive pear culture in extreme climates. Here there must be in orchard, I should think, 10,000 trees, and these mainly of two wild forms. At Saratoff we find trees seven or eight inches in diameter of trunk, which appeared quite hardy, and said to bear good crops. We find an orchard here of 500 large pear trees, all but one variety in good healthy condition, and this in a climate as cold as the city of Quebec and so dry that irrigation is necessary for profitable orcharding. Here the Bessemianka pear was considered their best. The fruit is green with some russetty brown, tender, rather juicy, gritty at the core with few or no seeds, quite free from astringency, mild and pleasant though not to say buttery. Season, I should say, early October." Prof. Budd says of this pear: "Three year old trees on the college grounds came out of this spring with wood as perfect as the Duchess apple, where pears of the grade of hardiness of Flemish Beauty were killed to the snow line. That it will grow anywhere in Iowa, unless the stock kills under it, I have not the least doubt and we do not think it will be more subject to blight than the Oldenburg apple." Trees of such extreme hardiness will be valuable to use as stock for the fine pears.

My object in this article is that now — while our orchards are going to decay or becoming unprofitable — to turn the attention of those who would grow fruit in Wisconsin to where we may obtain fruits of good quality, sufficiently hardy to withstand any extremes of our climate and render fruit growing in the northwest pleasant, certain and profitable. Many think to supply the want of hardy and productive fruits from seedlings raised upon our own soil. It may be done, but it is the work of a life-time. Peter M. Gideon, for eleven years planted every year quantities of apple seed, and during that time did not produce a single seedling tree

adapted to the climate of Minnesota. He finally succeeded in originating the *Wealthy*, which I consider the only variety originated in the United States or Canada that will compare with the Russian varieties in hardiness. It takes years to test a new seedling. Even the *Northern Spy* for fifteen years was considered perfectly hardy in Wisconsin, and not until it came to bear did it show any sign of tenderness. The *Ben Davis* was said to be as hardy as the *Duchess*, and planters were induced to plant it largely before any proper test of its hardiness had been made. Every new seedling should have years of trial, not only upon the ground where it originated, but upon a variety of soils and locations throughout the northwest, before it is safe to recommend it for general planting. I would not wish to discourage the planting of seed to originate new and valuable varieties, even should it take a life-time to produce another apple equal to the *Wealthy* in hardiness, productiveness and quality. It appears to me, however, that more immediate if not more satisfactory results can be obtained from the introduction of new fruits from the great plains of interior Russia, where they have stood unhurt for ages in a climate of far greater extremes than our own.

THE DANGEROUS CLASSES.

BY DR. HOWARD CROSBY. By permission of the Author and North American Review.

It has been our habit to look for national disaster from the lower strata of society. We fear the ignorance and vice of the masses. We see the appalling instances of recklessness and brutal violence in the haunts of infamy, as they are recorded in the daily press, and naturally conclude that this element of evil only needs growth -- such growth as the rum-shop and a bribed police will promote -- in order to overthrow the existing order and carry desolation through the land. The reasoning is just. We have seen in our own country what a power for evil these debased classes are, in the riots of 1877.

New York City saw these wild forces at work in 1863. History will ever point, as to one of her most conspicuous pages, to the Reign of Terror in bleeding France, where the fierce passions of men who were nearest the brute made havoc with all that was beautiful, or orderly or good. But he whose mind rests upon these lower classes as the cause of these horrors is no philosopher. He is content with a superficial view. A philosophical analysis of the explosions of the populace which have so often desolated neighborhoods and nations would reveal a series of causes leading far away from the populace itself. In ancient Greece, the revolutions which established the democracies were movements of the lowest classes of the people; but, before these risings, we find in many instances the tyrannical oppressions of a despot and his court, which to-day would be styled a "ring." It was the long period of fearful oppression in France represented by the selfish and voluptuous courts of Louis the Fourteenth and Louis the Fifteenth, during which the peasant was but a beast of burden or a tool of greed, which produced the reaction of the revolution. Gunpowder is innocent until you ignite it.

The coarse vice which prevails in the lowest classes can be perilous to the state at large only as it is turned into insurrectionary channels by the gross injustice of the higher classes. This coarse vice may indeed do local harm. It may generate thieves, burglars and murderers, and it certainly will do this, but the ordinary machinery of government is sufficient to keep these developments in check. The motives which lead to the local crimes are not those which produce revolutions. They are simply personal greed or enmity. These local crimes can seldom move a multitude, or, if they do, the movement takes the shape of a temporary riot. The lowest classes are in themselves the dangerous classes only so far as this.

The greater danger — the danger compared with which all this local disorder is as nothing, the danger which threatens the uprooting of society, the demolition of civil institutions, the destruction of liberty and the desolation of all — is that which comes from the rich and powerful classes

in the community. What we have to fear is the encroachments of these influential elements upon the rights of the people, until, under a sense of oppression, the people, who are naturally timid and slow to act in organization, are forced into united resistance, which necessarily (from the constitution of the masses) becomes destructive to civilization and social well-being. Mere demagogues, even with socialistic or nihilistic ravings, are of no avail with the masses, unless a real grievance of a formidable sort supports them.

Herr Most is only ludicrous in America, but in Russia he would be a fire brand to a magazine. It should be our aim, amid our liberties, to prevent our country from becoming a Russia.

The form in which danger threatens us is that of units of vast money power. Power-units are the cause of oppression everywhere, and in this country the power that is recognized is money. Dynastic power and military power are not present dangers, and probably never will be, except as outcomes of revolution caused by the abuse of the money power. But everything with us fosters the accumulation of money in the hands of a few individuals or of allied corporations (allied for their common success). The endless resources of material wealth in our mines and our means of communication enable the quick and unscrupulous to become oligarchs of this money power, ordinary ability and honesty being run over and trampled under foot in the competition. The men who wield this power can control legislatures, courts and executive officers, and so cover their tyrannical acts with the semblance of legality. Their most oppressive conduct will be shown in obedience to some law, or, at least, in opposition to no law. Where favorable legislation for them is not obtained, unfavorable legislation is prevented. But is not this bribery? Of course it is. But it is bribery prosecuted with all the refinement of art and all the dignity of statesmanship. It is bribery so sinuously practiced, and on so colossal a scale that the public eye is dazed and the public mind deceived or bewildered. Under its effects, transactions which, in the narrow sphere of a petty

thief, would send him to prison, are wrought on every side in the millions of railway stocks, and the perpetrators remain as members of the most reputable political and commercial society of the land. Men of this stamp are even elevated to the highest offices of the state—men whose daily life has violated every principle of justice.

It is by the growing power of this class of tyrants that our country's safety is now threatened. And the danger will come in two forms: the demoralization of society and the sanguinary vengeance of the oppressed. The morals of a community work downward from the higher classes. Like priest, like people. Corrupt the prætorium and you corrupt the empire. A licentious court will be imitated in every provincial neighborhood. If the educated and wealthy classes of America treat fraud as a virtue, we shall have dishonesty the characteristic of the whole nation. Trickery will be counted for wisdom, and lying for prudence. We shall reach the happy condition of Turkey and Persia, where every man has to guard against his neighbor as a thief, and find security for himself and his property only in cunning, falsehood and secrecy. That this demoralization is fast affecting our society is evident in the light way in which our newspapers speak of flagrant outrages upon justice, and the readiness with which the manipulators of nominations (and the electors themselves) forget the baseness of men whom they set up as candidates and seek to place in responsible office. Men who have been sentenced to punishment by our criminal courts are nominated and elected. Both nominations and elections are promoted and sustained by what are known in the community as honest and honorable men. Furthermore, these men whose lives have been marked by fraud and other immoralities, are admitted into social circles which are called pure. Their wealth, or their serviceableness in behalf of wealth, being a sure passport. In this way the poison permeates all society. The source, as we have seen, is in the units of vast money power, a power which effectually crushes everything that opposes.

Beside the moral desolation caused by this aggregation of wealth in a few hands, the political safety of the country

is especially in danger. The making and maintaining this concentrated wealth demands a system of plunder and oppression of the poorer classes and of the public generally. Prices are made, not through the natural laws of demand and supply, but by "corners" and conspiracies. Fair competition, which is the life of trade, is utterly crushed by the giant foot of this money-swollen monster. A few monopolize the entire trade of any given article by reason of their money-power, remorselessly destroying any one who dares even to glean in the field they have made their own by robbery. The word "robbery" is not a misnomer, for the money has been forced from unwilling hands by immoral, though sometimes legal, means. A widow, having the care of a family of small children, puts her money in railway stock. She is advised to do so by a director in the railway. It is the widow's all. Soon afterward this director, and a few with him, seeing the importance of their road and its capabilities, determine to secure a controlling interest in the stock for themselves, thus both increasing their investment in a profitable concern, and at the same time obtaining a power to do what they pleased with the road thereafter, as occasion may demand. Accordingly, their first step is to run the stock down. This they accomplish by paying agents to go to places where the stock is owned, and, by brief articles in the local newspapers, to insinuate that the road is shaky. Every fact against the road is exaggerated. If a dividend has been passed in order to make an important improvement, this omission of a dividend is ascribed to the road's approaching bankruptcy. By these means the public are soon led to believe that the road is financially a failure. Our poor widow holds on to her stock, until from par it drops to twenty-five. She is then thoroughly frightened. She hears many now say, "sell out your stock, or you'll lose all." So she sells her stock and loses three-quarters of her property, which even before was only enough to keep her and hers in the ordinary comforts of life. Meanwhile, our high-minded director and his partners, having brought the stock down to a low enough figure, buy it all in through their agents. Soon the stock mounts to its original value, and our director

has made a million dollars by the transaction. The widow is financially ruined. How? By the rascality of the director, who has been to her as truly a merciless tyrant as ever was Nero or Caligula to the Romans. He has by fraud wrested from her her living to increase his enormous wealth. This is but an instance of what is done daily by these money-magnates.

The fraud takes different shapes according to the circumstances, but the system of amassing lordly fortunes now in practice is essentially a fraudulent system. And cruelty is the natural companion of fraud. A rich concern makes twenty-five per cent. on its capital for ten years and has then more than trebled its property. It employs three hundred workmen at wages that just support them and their families. A year comes in which the managers perceive that they can only make seven per cent. instead of twenty-five. At once they discharge two hundred workmen into poverty and despair. The men have worked faithfully in trebling their employers' fortunes, and now, to save a trifle of these trebled fortunes, these faithful men are cast out without mercy. This is a common form of the cruelty of the wealthy units among us. The power exercised in fraud and cruelty knows no limit for either, except in its own interests. Individuals are directly and indirectly cheated. Not only are laws framed for the benefit of the moneyed oppressor, but his power enables him to refuse obedience to wholesome laws. If any laws should be most carefully and equitably administered, they are those which relate to the taxes of the community. Every citizen should bear his equal proportion of the public burdens. Yet the wealthy units have no difficulty in throwing the weight of taxation upon the poorer classes, by evading the payment of their legitimate taxes. A college professor by my side, getting a meagre salary of \$2,000 a year, and having as his only property a mortgage of \$10,000, conscientiously pays his $2\frac{1}{2}$ per cent. (\$250) a year of personal tax on this mortgage, receiving as interest only $3\frac{1}{2}$ per cent. (\$350), while a neighbor, worth three millions, pays not one cent of personal tax, although he is the owner of fifty mortgages, beside a large

amount of railroad stock. By a friction of debt he escapes his tax. The wealthy units practice this trick almost universally, and the authorities are perfectly aware of it. Their wealth is the power that protects them.

If suits should be commenced against any of these wrongdoers, their money enables them to tire out the complainant by the use of technical delays, by spiriting away witnesses and by corrupting courts. This is so well understood that no one who has any worldly wisdom dares to enter the lists of law against any one of these gigantic reservoirs of capital, and they on their side understand this impunity and immunity, and improve it diligently. These power-units of wealth gather about them a *clientile* of faithful, because well paid, dependents, who speak, write and act for them as occasion demands, and who by their wit and effrontery manage to guide much of public opinion in behalf of their masters. Some of these dependents are editors of influential journals, who skillfully make the worse the better reason, and call evil good, so that honest-minded readers are found to be sympathizing with the unfortunate capitalist, against whom the wicked proletariat says such hard things.

But this state of things cannot always continue. The sense of oppression on the part of the people at large becomes deeper and stronger. They begin to learn that their reform leaders are brought up by the money power, and that the so-called reforms are but tubs thrown to the whale. They see that only violent measures can relieve them, and a common feeling of revenge unites them. Now comes the catastrophe. At the first stroke they find themselves a power, and when men first discover their power they are reckless how they use it. They carry destruction on every side. They revel in slaughter. They waste property. They burn dwellings. They overturn all institutions. They paralyze trade. They annihilate society. The tyranny of the moneyed units has accomplished what nothing but tyranny can accomplish — the united action of a heterogeneous and naturally unorganized populace. It has raised a spirit of evil which it cannot allay. It has unchained the tiger and whetted his appetite for blood. These must not be considered as exaggerated

prophecies. History shows that we are sober in our statements. The community cannot be plundered forever; combinations of capitalists and legislators to rob the poor for the benefit of the rich will eventually meet with counter-combinations which will not confine themselves to robbery. This is human nature as well as history.

The present peril of our country is exactly here. The dangerous classes among us are those who are engaged in amassing colossal fortunes—the giants who tread ordinary men under their heel, and care not how much the people suffer. They are absorbed with their own greatness, lifted by their wealth out of all sympathy with the mass of mankind, and live as if the world belonged to them. The cries of want and sorrow are unheeded by them, the appeals of charity and benevolence are spurned, the demand for cooperation in works for the public weal is slighted, while all their millions are poured into the channels of their own selfishness. In monarchial countries, so long as the people can find a living, they will endure the oppression; but in a republic like ours the time of account will come sooner. Here the people will not wait until they are ruined. They have some notions of rights, and some forethought of impending evil, and they will anticipate their own crisis by making a crisis for others. How is this catastrophe to be avoided? The answer is simple. The dangerous classes must be rendered harmless. But how can this be done? Only by righteous laws, righteously administered. These laws will neither be administered nor made until we put men in office who will spurn bribes, direct or indirect.

The first thing, then, for the safety of our country is the election of honest and upright men to office. We see now in our legislative halls, gamblers, drunkards, libertines, *et id genus omne*, who must take bribes in order to keep up their licentious lives. A low set of liquor-sellers make the ordinances of the city of New York. Politics are run by rowdies and criminals, with whom decent men can not associate, except to be defiled. Questions are decided not on their merit, but on the money in them. Until this system is entirely changed, and honest men are elected to office, we can

have no check to the dangerous classes and their schemes. And the system will not be changed until rum-shop nominations are ignored, and honest men vote for character and not for party.

The second thing for our safety is the enactment of laws to defend the poor man against the rich oppressor. No man should be allowed to lord it over the industries of the land; no man should be allowed to hold sway over the highways of the nation is an irresponsible absolutism. There must be a limit to individual wealth if we are to be preserved as a republic. Then, corporate wealth should be under strict supervision and its management subject to just governmental control. Furthermore, the wages of the laborer should be secured to him for a year at a time, as in the case of a salaried officer, to be forfeited only for such misconduct as the courts would recognize. Severest penalties should be adjudged for the avoidance of tax-paying, and bribery should be punished by permanent loss of citizenship and ten years' imprisonment.

The third thing for our safety is an executive force, from governor to policeman, who will watch for the public and see the laws enforced.

Now we have to support a special private society to enforce any special group of laws, as for example, the excise, gambling and treatment of animals laws. Without these societies there is no effort to stop the infraction of law. Men of integrity and of just pride in their office and its true functions should be the guardians of the law.

Again, we insist that these are sober words of ours, to which it were well a lethargic community should give heed. Cease, ye men of pleasure and of business, cease from thinking only of yourselves. Give thought to the community in which you dwell. Do your public duties. Discharge the solemn trusts imposed upon you by your country, your conscience and your God.

DISCUSSION RELATIVE TO REOPENING THE TARIFF DEBATE AT
FEBRUARY CONVENTION.

Mr. Phillips — Mr. Hinton is here. He intended to be here the afternoon the tariff question was up and had a paper to

read that is interesting I understand, and as we have two papers at our meeting this evening which will probably take up all the evening in their discussion, and as I would like very much to hear Mr. Hinton's paper, I would like to know how many there are here who, instead of adjourning to half past seven o'clock, are willing to come here at seven o'clock and give Mr. Hinton half an hour or three-quarters for his paper or discussion. I would like to hear it, and we can hurry around and get here if we want to hear it. (Some informal discussion was here had among the members of the convention.)

The chairman — Is it your wish that the convention should come together at seven o'clock and give Mr. Hinton the floor? All in favor of so doing will say aye.

Motion carried.

The convention then adjourned to seven o'clock.

At the opening of the meeting of the convention in the evening, the president said:

Since we adjourned, I have learned that there is a good deal of objection to going outside of our programme, as there are a number of papers that have been omitted, and it is said that if we go into this, as we had a long discussion, occupying nearly all the afternoon yesterday upon this same subject, there will be a great deal of dissatisfaction. If there is to be a paper or a speech on one side, it is also stated the other party are going to insist upon the privilege of replying and thus occupy the entire evening, and the officers of the association that have the rooms in charge are utterly opposed to beginning anything particularly outside of our programme until the advertised time of the meeting, and under the circumstances it is thought best if we do anything before half past seven to take up some paper upon the programme, as there are a number of papers that have been omitted entirely, and more upon the programme than we shall probably get through with during the convention. Mr. Babbitt will make a statement.

Mr. Babbitt — I dislike exceedingly to take any position here against the wishes of those I would like to serve faithfully and honestly. You understand that it is a task of con-

siderable difficulty to get together in a short space of time a programme for a convention such as we are now engaged in. To the best of my ability I have discharged that duty since the first or second day of January, the time that my official duties commenced. I have advertised that on this occasion certain gentlemen shall be heard, and I think it is doing great injustice to those who have come from a great distance, and come without money and without price for no other object than the love that they have for their state and their brothers and for the welfare of agriculture, for the progress of the state, for its development, for its usefulness, to bring into a wider field men who are retired now — I think it is a great injustice to them to interfere with the regular programme of the evening. We have certainly given a wide space to the discussion of the question which will be sprung upon the convention, as I have been informed by the speaker, who is announced here that he would spring this thing upon the convention; he told me that it would be sprung upon the convention.

Mr. Hinton — I beg pardon; I said this, and this only, that in the event of any opportunity being given to again refer to that question, having no reference whatever to my own speech, I said it would be undoubtedly sprung upon the convention, and that, so far as I was concerned, except some outside gentlemen made the request to me that I should give my address, I should not do it; that is precisely what I said.

Mr. Babbitt — As I was going to say, we have a gentleman here to whom we are paying quite a large sum to take down the thoughts and the experiences of the farmers for other farmers to read, who have the privilege but not the opportunity of coming and are detained at home. We publish these proceedings, and probably some ten thousand copies will be distributed this next season. Now, shall it be full of something political and which will take volumes to understand, or shall it be full of facts which we all need? That is the question. I certainly am in favor of free speech, the liberty of the press and free conscience and its expression, but it does seem to me that time that we have set for certain specific purposes should be devoted to those purposes, and it is certainly apparent that if we get this thing going it is going to boil; it will boil all night, and it will boil for the next four or five years. It is bound to boil. The thing is up. Now, we did not come here to talk politics or religion, but we came here to feel all right, and thank the Lord for what he has done for us and ask for more. This is exactly where we stand.

Mr. Kellogg — The matter was a matter of courtesy this afternoon. We thought we could come at seven o'clock

sharp, and we only promised the gentleman half an hour, and last night we got together and fooled away an hour's time before we had anything done. Now, if we commence now, fourteen or fifteen minutes before time, if it is the wish of the convention—I believe your secretary has done all that a secretary needs to do to get up the programme of the convention. Now, if the convention wishes to follow the programme or to change it, why not? I never attended a convention but what there was a committee on programme appointed from time to time, if anything came up that made it necessary; but if we do not want it we do not. I propose to commence with the programme that was set down for half past seven now, and when the convention gets through with those two papers if they want to take up any other subject they can do so. We have already passed six papers on the programme.

Mr. Babbitt—That we may not be misunderstood in regard to this matter of courtesy, I went to Senator Hudd, who was kind enough to say to me that if we wanted the senate chamber for the use of this convention this afternoon we could have it. He asked the senators of Wisconsin in behalf of the Agricultural and Horticultural Societies, the privilege of using the senate chamber this afternoon. The time expired when we adjourned that the senate gave us the privilege of using the senate chamber. Now, I would like to ask you as gentlemen of good, sound, practical common sense whether we have any right to offer the senate chamber of Wisconsin to a stranger, or to furnish it to a citizen of Wisconsin, or to any other man, when we have not possession of it. This resolution was passed, you understand, by the Horticultural convention upstairs, and it was that they extended the courtesy of the senate chamber from 7 o'clock till 7:30.

Mr. Kellogg—We understood it was to be here this evening.

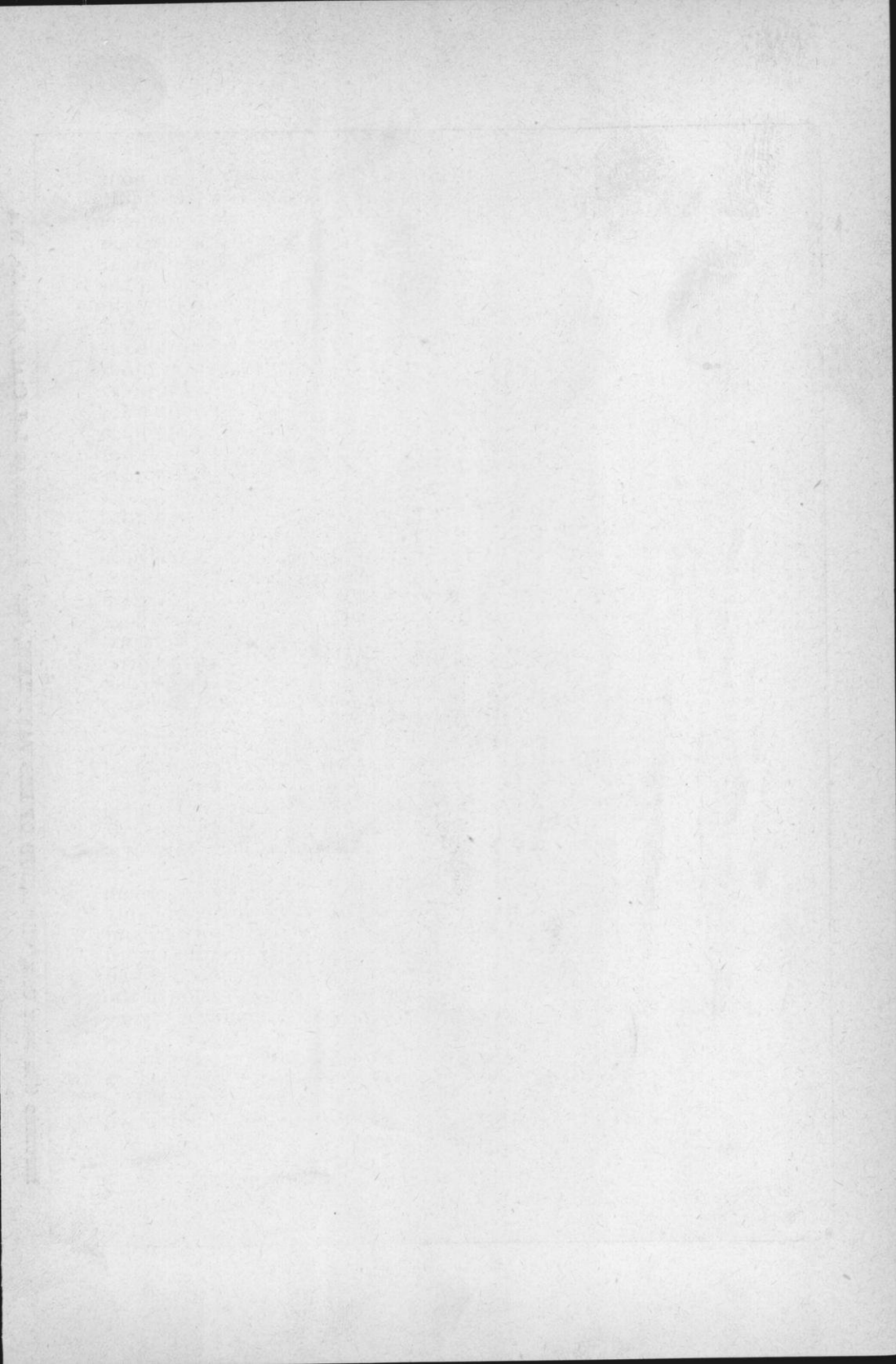
Mr. James M. Smith—We understood there was not room enough here, and in view of the number that would probably be here, I asked some one to go to the proper authorities and ask if we might have the senate chamber this evening; word came to me that we might have it, that the resolution had been or would be so construed as to give us possession of the senate chamber during the evening, and I announced it very innocently.

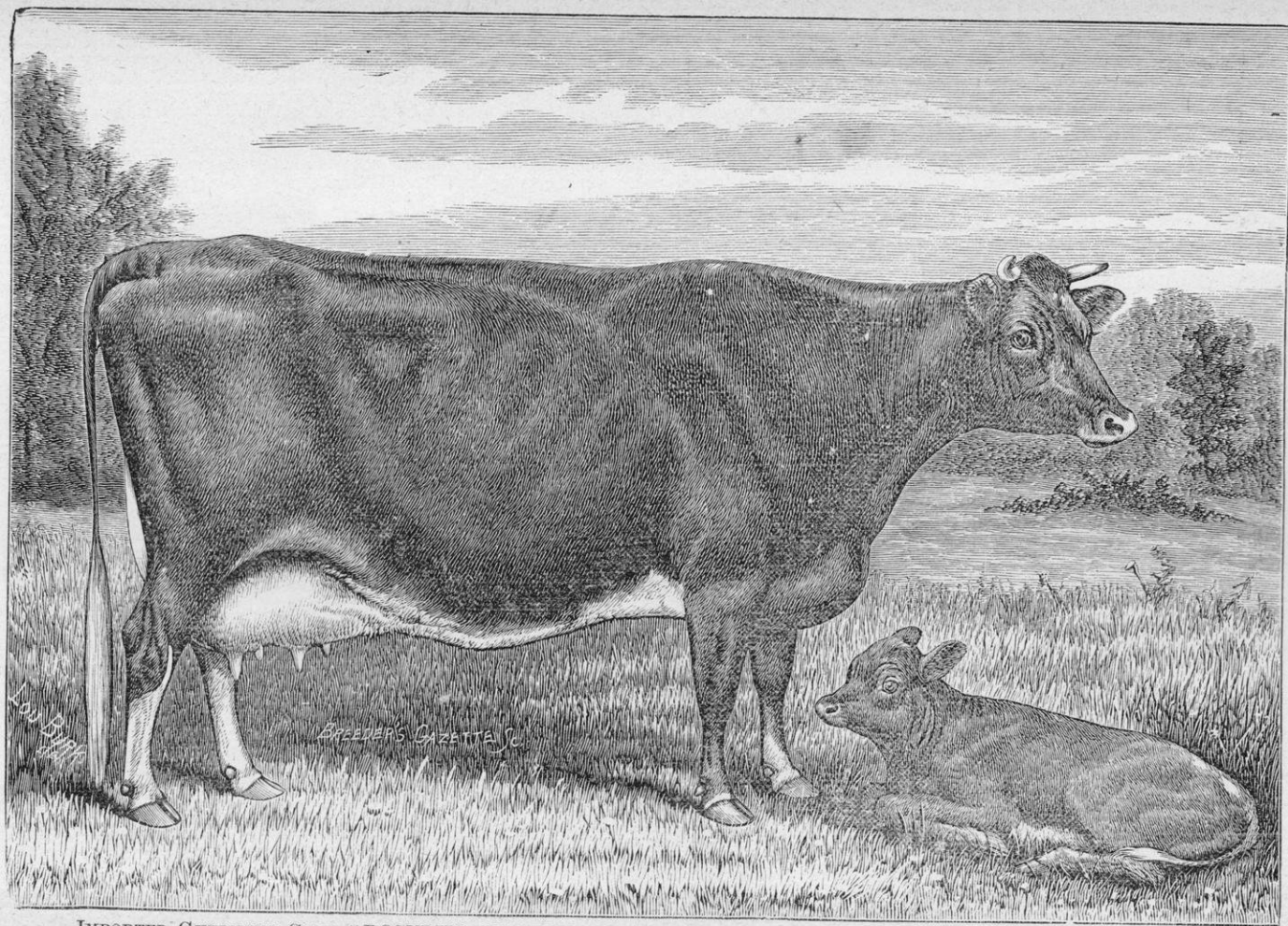
Mr. Babbitt—It was given to us by resolution or vote in one case, but in the other case you were misled by the fact that some senator said there would be no objection. It is a little discourteous for us to take possession of a building we have no right to.

Mr. Smith—I supposed we had a right.

Mr. Babbitt—I want to hear from this gentleman a long speech, but let us have it after we get through with our business. I will stay here until midnight.

Mr. Fratt—The regular programme will now be taken up.





IMPORTED GUERNSEY COW, "ROSEBUD OF LES VANBELETS, 4TH." PROPERTY OF I. J. CLAPP, Kenosha, Wis.

LIST OF OFFICERS OF AGRICULTURAL SOCIETIES FOR 1884, WITH THEIR P. O. ADDRESS AND PLACE AND DATE OF HOLDING FAIRS IN 1883.

Counties.	Name of society and place and date of holding fairs in 1883.	Name and P. O. Address of President.	Name and P. O. Address of Secretary.	Name and P. O. Address of Treasurer.
Adams	Adams County Agricultural Society, Friendship, September 25, 26, 27.	H. A. Merriman, Westfield.	J. B. Keyes, Friendship.	A. T. Hill, Friendship.
Barron	Barron County Agricultural Society, Chetek, September 17, 18, 19.	W. W. Flinn, Chetek.	N. C. Carver, Chetek.	D. C. Strong, Chetek.
Brown	Brown County Hort. and Agricultural Society, De Pere, September 25, 26, 27 and 28.	John M. Smith, Green Bay.	Werden Reynolds, Green Bay.	Wilhelm Pamperin, Fort Howard.
Buffalo	Buffalo County Agricultural Society, Alma, September 12, 13 and 14.	Joseph Thany, Alma.	J. W. DeGroof, Alma.	Erick Alme, Alma.
Burnett	Burnett County Agricultural Society, Grantsburg, September 26, 27 and 28.	T. O. Olson, Grantsburg.	John O. Newgard, Grantsburg.	S. Thoreson, Grantsburg.
Calumet	Calumet County Agricultural Society, Chilton, September 26, 27 and 28.	John B. Nugent, Sherwood.	Henry Rollmann, Chilton.	Wm. Paulsen, Chilton.
Chippewa	Chippewa County Agricultural Society, Chippewa Falls, September 11, 12, 13 and 14.	J. W. Thomas, Chippewa Falls.	J. H. Murphy, Chippewa Falls.	Wm. B. Bartlett, Chippewa Falls.
Clark	Clark County Agricultural Society, Neillsville, September 19, 20, 21 and 22.	Geo. A. Austin, Neillsville.	Stanley F. Chubb, Neillsville.	Jas. O'Neill, Neillsville.
Columbia	Columbia County Agricultural Society, Portage City, September 18, 19, 20.	L. A. Squire, Poynette.	Kennedy Scott, Rio.	John Foster, Columbus.
Columbia	Lodi Union Agricultural Society, Lodi, September 26, 27, 28.	A. A. Boyce, Lodi.	E. W. Gardner, Lodi.	Addison Eaton, Lodi.
Crawford	Crawford County Agricultural Society, Seneca, September 25, 26, 27.	James Smetherst, Seneca.	A. B. Whithee, Seneca.	Jas. Smith, Seneca.
Dodge	Dodge County Agricultural Society, Juneau, September 26, 27 and 28.	S. R. Jones, Hustisford.	W. T. Rambusch, Juneau.	J. H. Dunham, Juneau.
Fond du Lac	Fond du Lac County Agricultural and Mech. Ass., Fond du Lac, September 25, 26, 27, 28.	H. D. Hitt, Oakfield.	H. C. Moore, Fond du Lac.	Geo. Keyes, Empire.
Fond du Lac	Ripon Agricultural Society, Ripon, September 11, 12, 13 and 14.	G. Dobbs, Ripon.	T. D. Stone, Ripon.	P. K. Pickard, Ripon.

LIST OF OFFICERS OF AGRICULTURAL SOCIETIES FOR 1884 WITH THEIR P. O. ADDRESS AND PLACE AND DATE OF HOLDING FAIRS IN 1883—Continued.

Counties.	Name of society and place and date of holding fairs in 1883.	Name and P. O. Address of President.	Name and P. O. Address of Secretary.	Name and P. O. Address of Treasurer.
Grant.....	Grant County Agricultural Society, Lancaster, Grant, September 26, 27, 28.	J. J. McKenzie, Lancaster.	J. H. Barber, Lancaster.	W. J. McCoy, Lancaster.
Grant... ..	Boscobel Agricultural and Driving Park Assoc'n, Boscobel, October 2, 3, 4 and 5.	G. F. Hildebrand, Boscobel.	T. J. Brooks, Boscobel.	C. M. Williams, Boscobel.
Green.....	Green County Agric'l Society and Mech. Institute, Monroe, September 26, 27, 28, 29.	Henry Thorp, Monroe.	Theo. W. Goldin, Monroe.	J. Luchsinger, Monroe.
Iowa.....	Iowa County Agricultural Society, Dodgeville, September, 18, 19, 20.	Joel Whitman, Dodgeville.	Benj. Thomas, Jr., Dodgeville.	J. P. Smelker, Dodgeville.
Iowa.....	Southwestern Wisconsin Industrial Association, Mineral Point, September 4, 5, 6 and 7.	Geo. G. Cox, Mineral Point.	Sam. J. Wright, Mineral Point.	Thos. Priestly, Mineral Point.
Jackson.....	Jackson County Agric'l and Horticultu'l Society, Black River Falls, September, 27, 28, 29.	M. Douglas, Melrose.	C. M. Olson, Black River Falls.	W. R. O'Hearn, Black River Falls.
Jefferson....	Jefferson County Agricultural Society, Jefferson, October, 2, 3, 4 and 5.	Geo. C. Mansfield, Jefferson's Creek.	F. E. Illing, Jefferson.	Geo. Copeland, Jefferson.
Jefferson.....	Central Wisconsin Agri. and Mech. Association, Watertown, September, 17, 18, 19, 20 and 21.	S. G. Rosser, Watertown.	C. A. Sprague, Watertown.	Jas. Salick, Watertown.
Juneau.....	Juneau County Agricultural Society, Mauston, October, 3, 4 and 5.	C. W. Potter, Mauston.	J. C. Wetherby, Mauston.	F. Winsor, Mauston.
Kenosha.....	Kenosha County Agricultural Society, Kenosha, September 18, 19, 20, 21 and 22.	C. A. Dewey, Kenosha.	D. A. Mahoney, Kenosha.	G. H. Marr, Kenosha.
La Crosse.....	La Crosse County Agricultural Society, Salem, September, 25, 26, 27.	F. B. Smith, Salem.	A. J. Philips, West Salem.	Wm. Smith, Bangor.
La Fayette.....	La Fayette County Agricultural Society, Darlington, September 12, 13, 14.	H. Campbell, Darlington.	O. F. Blakely, Darlington.	D. Schreiter, Darlington.
Manitowoc.....	Manitowoc County Agricultural Society, Clark's Mills, September 24, 25, 26.	I. Clark, Clark's Mills.	Thomas Gleeson, Clark's Mills.	T. Osulson, Oslo.
Marathon.....	Marathon County Agricultural Society, Wausau, October 3 and 4.	August Kickbusch, Wausau.	Wm. Wilson, Wausau.	Henry Miller, Wausau.

Marquette..... Marquette County Agricultural Society,
Westfield, Sept. 27, 28.

Monroe Monroe County Agricultural Society,
Sparta, Sept. 18, 19, 20.

Monroe Eastern Monroe County Agricultural Society,
Tomah, Sept. 26, 27, 28.

Outagamie..... Outagamie County Agricultural Society,
Hortonville, Sept. 26, 27, 28.

Ozaukee..... Ozaukee County Agricultural Society,
Saukville, Oct. 2, 3.

Pepin Pepin County Agricultural Society,
Durand, 5, 6, 7.

Pierce..... Pierce County Agricultural Society,
Prescott, Sept. 20, 21.

Portage Portage County Agricultural Society,
Amherst, Sept. 25, 26, 27.

Racine Racine County Agricultural Society,
Burlington, Sept. 18, 19, 20, 21.

Richland Richland County Agricultural Society,
Richland Center, Sept. 26, 27, 28.

Rock..... Rock County Agricultural Society,
Janesville, Oct. 2, 3, 4, 5.

St. Croix..... St. Croix County Agricultural Society,
Hudson, Sept. 12, 13, 14.

Sauk..... Sauk County Agricultural Society,
Baraboo, Oct. 2, 3, 4.

Sauk..... Baraboo Valley Agricultural Society,
Reedsburg, Oct. 9, 10, 11.

Shawano Shawano County Agricultural Society,
Shawano, Oct. 2, 3, 4, 5.

Sheboygan Sheboygan County Agricultural Society,
Sheboygan Falls, Sept. 25, 26, 27.

Taylor Taylor County Agricultural Society,
Medford, Oct. 3, 4.

Trempealeau ... Trempealeau County Agricultural Society,
Galesville, Sept. 19, 20, 21.

S. Tanner,
Westfield.

A. H. Isham,
Sparta.

Wm. J. Baker,
Oakdale.

John Day,
Greenville.

A. M. Alling,
Saukville.

S. L. Plummer,
Arkansaw.

G. W. McMurphey,
Prescott.

Edwin Turner,
Amherst.

A. J. Hannas,
Burlington.

J. L. R. McCollum,
Twin Bluffs.

R. T. Pember,
Johnson Center.

M. H. McDirnuid,
Hudson.

John M. True,
Baraboo.

James Lake,
Reedsburg.

A. Kappen,
Shawano.

H. K. Loomis,
Sheboygan Falls.

Vincent Hirsh,
Medford.

F. H. Krebs,
Trempealeau.

W. W. Page,
Douglas Center.

Wm. H. Blyton,
Sparta.

F. M. Tracy,
Tomah.

F. W. Harriman,
Appleton.

L. C. Larsen,
Port Washington.

M. Knight,
Durand.

H. A. Jay,
Prescott.

A. J. Smith,
Amherst.

C. A. Jones,
Burlington.

Wm. M. Fogo,
Richland Center.

W. T. Van Kirk,
Janesville.

S. J. Bradford,
Hudson.

A. D. McGilvra,
Baraboo.

A. T. Lawton,
Reedsburg.

D. A. McDonald,
Shawano.

W. C. Thomas,
Sheboygan Falls.

A. J. Perkins,
Medford.

L. L. Odell,
Galesville.

John Ellis,
Moundsville.

Ira A. Hill,
Sparta.

W. Randall,
Lincoln.

M. M. Corub,
Hortonville.

Lorents Seiberlich,
Saukville.

Geo. Tarrant,
Durand.

T. J. Atwater,
Prescott.

A. M. Nelson,
Amherst.

Lorenz Hess,
Burlington.

W. H. Pier,
Richland Center.

E. B. Heimstreet,
Janesville.

J. A. Bunker,
Hudson.

G. C. Geisim,
Prairie du Sac.

A. P. Ellinwood,
Reedsburg.

John Klickman,
Belle Plain.

J. C. Fairweather,
Sheboygan Falls.

J. H. Wheelock,
Medford.

E. F. Clark,
Galesville.

LIST OF OFFICERS OF AGRICULTURAL SOCIETIES FOR 1884, WITH THEIR P. O. ADDRESS AND PLACE AND DATE OF HOLDING FAIRS IN 1883 — Continued.

Counties.	Name of society, and place and date of holding fair of 1883.	Name and P. O. Address of President.	Name and P. O. Address of Secretary.	Name and P. O. Address of Treasurer.
Vernon	Vernon County Agricultural Society, Viroqua, Sept. 19, 20, 21.	F. K. VanWagoner, Viroqua.	A. B. Wyman, Viroqua.	E. Powell, Viroqua.
Walworth.....	Walworth County Agricultural Society, Elkhorn, Sept. 25, 26, 27, 28.	Wm. Blakely, Darlen.	W. H. Morrison, Elkhorn.	W. D. Lyon, Elkhorn.
Washington....	Washington County Agricultural Society, West Bend, Oct. 3, 4 and 5.	W. P. Rix, West Bend.	Jos. Ott, West Bend.	Geo. W. Jones, West Bend.
Waukesha	Waukesha County Agricultural Society, Waukesha, October 2, 3, 4, 5.	R. L. Gove, Waukesha.	Geo. B. Blair, Waukesha.	S. A. Fox, Waukesha.
Waupaca	Waupaca County Agricultural Society, Weyauwega, Sept. 25, 26, 27.	John Mack, Evanswood.	J. D. Potter, Weyauwega.	Wm. Wood, Weyauwega.
Waushara.....	Waushara County Agricultural Society, Wautoma, Sept. 26, 27, 28.	J. N. P. Bird, Wautoma.	J. N. P. Bird, Wautoma.	S. M. Olds, Wautoma.
Wood	Wood County Agricult'l and Mech. Association, Grand Rapids, Sept. 18, 19, 20, 21.	Philip Ward, Grand Rapids.	F. L. Tibbits, Grand Rapids.	W. T. Jones, Centralia.

Wisconsin State Ag Society
Transactions

22
1883-84

RBW7
AG 75

22

89044384725



b89044384725a