Transactions of the Wisconsin State Agricultural Society, including a full report of the state agricultural convention, held in January, 1875, and numerous practical papers and communications. Vol. XI...

Wisconsin State Agricultural Society
Madison, Wisconsin: E. B. Bolens, State Printer, 1874/1875

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TRANSACTIONS

OF THE

WISCONSIN

State Agricultural Society,

INCLUDING A FULL REPORT OF THE

State Agricultural Convention,

Held in January, 1875,

AND NUMEROUS

PRACTICAL PAPERS AND COMMUNICATIONS.

VOL. XIII, 1874-'75.

PREPARED BY
W. W. FIELD, SECRETARY.

MADISON, WIS.:
E. B. BOLENS, STATE PRINTER.

1875.

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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 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 the 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 socicty 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 three o'clock P. 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 meeting.

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 for the election of officers.

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 committees, 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 specifically 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 delivered 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 conutry or 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 agriculturnl 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, indigenous 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, condition, 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 agent 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 office 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 matter 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 whatever 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 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 the 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 endorse or disprove 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 the 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 to 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 the 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. Report from Special Committees.
6. Communications from the Secretary.
7. Communications from Members of the Committee.
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 officers of the 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.	Bostwick, J. M	Janesville.
Adams, Isaac	Cottage Grove.	Bostwick, R. M.....	Janesville.
Adams, L. L.....	Stoners Prairie.	Bonnell, James	Milwaukee.
Alexander, O.....	Milwaukee.	Bonnell, Lansing....	Milwaukee.
Allen, J. W.....	Janesville.	Boorse, Henry	Granville.
Allen, W. C.....	Delavan.	Boyce, A. A.....	Lodi.
Allen, H. M.....	Evansville.	Boyd, R. B.....	Milwaukee.
Allis, Edward P	Milwaukee.	Bowen, J. B.....	Madison.
Angel, R. R.....	Janesville.	Bowman, J M.....	Madison.
Angel, W. H.....	Sun Prairie.	Bradley, C. T.....	Milwaukee.
Atkins, Albert R.....	Milwaukee.	Braley, A. B	Madison.
Atwood, Charles D...	Madison.	Brazea, Benj	Wauwatosa.
Atwood, David.....	Madison.	Briggs, F	Buffalo, N. Y.
Atwood, Wm. T	San Francisco	Brockway, E. P	Ripon.
Atwood, R. J.....	Madison.	Brodhead, E. H.....	Milwaukee.
Armour, P. D	Milwaukee.	Brown, Jas. J	Madison.
Armstrong, L. G.....	Boscobel.	Brown, B. F.....	Fitchburg.
Arnold, I. M	Milwaukee.	Brown, T.....	Madison.
Aspinwall, D. M.....	Farmington.	Bruce, A. T	Milwaukee.
Ayres, J. W.....	Kenosha.	Bryan, John.....	Cross Plains.
		Bryant, D. D.....	Madison.
Babbitt, Clinton.....	Beloit.	Bryant, G. E.....	Madison.
Babbitt, D. H	Janesville.	Bull, Stephen.....	Racine.
Bacon, J. P	Westport.	Bullard, Jas.....	Evansville.
Bacon, W. D.....	Waukesha.	Bump, N. P.....	Janesville.
Bailey, A. P.....	Sun Prairie.	Bunker, Geo.....	Madison.
Bailey, M. T.....	Madison.	Burgess, J. M	Janesville.
Baker, Rob't H.....	Racine.	Bush, Samuel.....	Milwaukee.
Barlass, Andrew	Emerald Grove.	Button, Henry H	Milwaukee.
Barlass, David.....	Emerald Grove.	Burnham, Miles	Danville.
Barnes, George	Janesville.	Burnham, A., Jr....	Milwaukee.
Barrows, E. S.....	Chicago.	Burnham, J. L	Milwaukee.
Barry, James.....	Fitchburg.	Byrne, John A.....	Madison.
Bates, A. C.....	Janesville.		
Beecroft, W. G	Madison.	Casar, Wm.....	Janesville.
Bement, E	Oregon.	Camp, H. H	Milwaukee.
Bemis, Jervis.....	Footville.	Capron, Geo.....	Madison.
Benedict, J. D.....	Bristol.	Carleton, W. D.....	Sun Prairie.
Benedict, S. G.....	Providence, R. I.	Carpenter, J. A.....	Waukesha.
Benedict, W. G.....	Milwaukee.	Carpenter, J. E	Windsor.
Benson, S. W.....	Bloomfield.	Carpenter, J. H.....	Madison.
Billings, Earl.....	Madison.	Carpenter, S. D.....	Madison.
Bird, I. W.....	Jefferson.	Carr, N. B	Madison.
Bird, T. E	Madison.	Carr, Joseph S.....	Eau Claire.
Bishop, John C	Fond du Lac.	Carter, A. M	Johnstown.
Black, John	Milwaukee.	Carter, Guy	Janesville.
Blair, Franklin J	Milwaukee.	Carver, P. S.....	Delavan.
Blanchard, Willard...	Windsor.	Cary, J	Milwaukee.
Bliss, C. M	Iowa.	Case, J. I	Racine.

Names.	Residence.	Names.	Residence.
Chandler, Sam'l	Milwaukee.	De La Matyr, W. A.	Elkhorn.
Chapman, T. A	Milwaukee.	Delaplaine, G. P	Madison.
Chase, Enoch	Milwaukee.	DeMor, A. B	Milwaukee.
Chase, H	Milwaukee.	Dewey, Nelson	Cassville.
Cheney, Rufus	Whitewater.	Dewolf, E	Chicago.
Children, E	Lancaster.	Devoe, A. B	McFarland.
Chipman, A	Sun Prairie.	Dexter, W. W	Janesville.
Chipman, C. R	Waunakee.	Dickerman, I. A	Verona.
Church, Wm. A	Milwaukee.	Dickson, J. P	Janesville.
Clapp, G. W	Fitchburg.	Dodge, J. E	Lancaster.
Clark, C. M	Whitewater.	Dodge, H. S	Milwaukee.
Clark, Lewis	Beloit.	Doolittle, W. J	Janesville.
Clark, Satterlee	Horicon.	Doris, John	Milwaukee.
Cochrane, John	Waupun.	Dorn, M. M	Madison.
Cogswell, A. W	Brookfield	Dousman, T. C	Waterville.
Colby, Charles	Janesville.	Dow, O. P	Palmyra.
Coleman, W. W	Milwaukee.	Drakely, S	Madison.
Colladay, Wm. M	Stoughton.	Drury, E. W	Fond du Lac.
Colton, S. B	Middleton.	Dunlap, S	Burke.
Cooper, E. J	Mineral Point.	Dunn, Andrew	Portage City.
Cornell, James	Beloit.	Dunn, Wm	Madison.
Cornwell, H. H	Verona.	Dunning, Abel	Madison.
Corrigan, Jno	Cedarburg.	Durkee, H	Kenosha.
Cottrill, J. P. C	Milwaukee.	Dutcher, J. A	Milwaukee.
Cottrill, W. H	Milwaukee.	Dwinnell, J. B	Lodi.
Cottrill, C. M	Milwaukee.		
Cory, J	Footville.		
Crampton, N. B	Madison.	Eaton, J. O	Lodi.
Crawford, E. B	Omaha, Neb.	Echlin, J. O	Janesville.
Crawford, J. B	Baraboo.	Edgerton, E. W	Summit.
Crawl, John	Center.	Edmunds, F. W	Madison.
Crocker, Hans	Milwaukee.	Elderkin, Ed	Elkhorn.
Crosby, J. B	Janesville.	Elliott, E	Lone Rock.
Cross, J. B	Milwaukee.	Elliott, Jos. T	Racine.
Crossett, B. F	Janesville.	Elmore, A. E	Green Bay.
Culver, Caleb E	Shopiere.	Ellis, J. A	Chicago Ill.
Cummings, Wm	Fitchburg.	Ellsworth, O	Milwaukee.
Curtis, L. S	Wauwatosa.	Ellsworth, W. J	Madison.
Curtis, F. C	Rocky Run.	Elmore, R. P	Milwaukee.
Curtis, Seymour	Fitchburg.	Eldred, John E	Milwaukee.
Cutting, J. W	Harmony.	Elson, Chas	Milwaukee.
		Emmons, N. J	Milwaukee.
Daggett, M. L	Madison.	Enos, Elihu	Waukesha.
Dahlman, Anthony	Milwaukee.	Esterly, Geo. W	Whitewater.
Dahlman, John	Milwaukee.		
Dann, Obed	Janesville.		
Danks, E. P	Stoughton.	Fairbanks, E	St. Johnsb'ry, Vt.
Daniells, W. W	Madison.	Farwell, L. J	Chicago.
Darling, K. A	Fon du Lac.	Fenn, G. W	Janesville.
Darwin, A. G	Brooklyn, N. Y.	Ferguson, D	Milwaukee.
Davidson, Adam	Verona.	Ferguson, Benj	Fox Lake.
Davis, G. L	Milwaukee.	Fernly, Jno	La Grange.
Davis, Jno	Milwaukee.	Field, Martin	Mukwanago.
Davis, N. P	Pierceville.	Field, W. W	Boscobel.
Davis, S. B	Milwaukee.	Fifield, L	Chicago.
Davis, W	Center.	Fifield, D. E	Janesville.
Dean, E. B	Madison.	Fifield, E. G	Janesville.
Dean, N. W	Madison.	Finch, Lorin	Bradford.
Dean, John S	Madison.	Firmin, F. H	Madison.

Names.	Residence.
Fisher, C. C.....	Center.
Fisher, Elijah.....	Newark.
Fisher, S. W.....	Center.
Fisher, Seth.....	Center.
Fitch, D.....	Madison.
Fitch, W. F.....	Madison.
Fitch, W. G.....	Milwaukee.
Fitzgerald, R. P.....	Milwaukee.
Fletcher, John.....	Springfield.
Flint, J. G., Jr.....	Milwaukee.
Fold, Geo. H.....	Madison.
Foot, E. A.....	Kansas.
Foote, Sydney.....	Madison.
Foote, A. E.....	Milwaukee.
Fowler, Jacob.....	Oshkosh.
Fowler, James S.....	Milwaukee.
Fox, W. H.....	Fitchburg.
Fratt, N. D.....	Racine.
Frank, A. S.....	Madison.
Frank, George R.....	Boscobel.
Frankfurth, Wm. ...	Milwaukee.
Freeman, C. F.....	Milwaukee.
Friedman, Ignatius...	Milwaukee.
French, Johnathan...	Madison.
Fuller, M. E	Madison.
Fuller, F. D.....	Madison.
Furlong, Thomas T..	Chicago.
Furlong, John.....	Milwaukee.
Gammons, Warren...	Middleton.
Gates, D. W. C.....	Madison.
Gaylord, Aug.....	New York City.
Gernon, George.....	Madison.
Gibbs, Chas. R.....	Whitewater.
Gilbert, Thomas.....	Oregon.
Giles, H H.....	Madison.
Gilman, Henry.....	Stoughton.
Gillett, R. E	Tomah.
Goodenow, H. D	Madison.
Goodrich, Ezra.....	Milton.
Goodrich, G.....	Whitesville.
Gould, L. D.....	Madison.
Grady, F. M.....	Fitchburg.
Graham, Alexander..	Janesville.
Grant, S. B.....	Milwaukee.
Grant, Albert.....	Milwaukee.
Graves, R. A.....	Ripon.
Graves, S. W.....	Rutland.
Green, Anthony.....	Milwaukee.
Green, Geo. G.....	Milwaukee.
Greene, N. S.....	Milford.
Green, Samuel	Fitchburg.
Greenleaf, E. B.....	Milwaukee.
Greenman, C. H.....	Milton.
Greenman, H. D.....	Milwaukee.
Gregory, J. C.....	Madison.
Grinnell, J. G.....	Adams.
Groom, John.....	Madison.
Grover, E.....	Madison.
Grubb, W. S	Baraboo.
Guernsey, Orrin	Janesville.
Gurnee, J. D.....	Madison.
Haight, J. M.....	Sacramento, Cal.
Haight, Nicholas...	Madison.
Hall, Augustus.....	Janesville.
Hallock, Youngs....	Middleton.
Hall, H. P.	Madison.
Hanchett, A. M.....	Hanchetville.
Hancock, Brad.....	Marshall.
Hanks, A. S.....	Milwaukee.
Hammond, L. M....	Janesville.
Hammond, E. S	Fond du Lac.
Harrington, N. H...	Delevan.
Harris, Jas.....	Janesville.
Harvey, J. W. H...	Madison.
Hasbrouk, W.....	Eau Claire.
Hastings, S. D.....	Madison.
Hausman, Jos	Madison.
Hawes, J. F.....	Madison.
Hawes, W. N	Verona.
Hayes, A. J.....	Milwaukee.
Hazelton, Geo. C....	Boscobel.
Hazen, Chester.....	Ladoga.
Helfenstein, J. A....	Milwaukee.
Hempstead, H. W..	Milwaukee.
Hicks, J. H.....	Oshkosh.
Hibbard, W. D.....	Milwaukee.
Hibbard, Wm. B....	Milwaukee.
Higbee, A. T... ...	Stoughton.
Hill, H. J.....	Madison.
Hill, James H.....	Madison.
Hill, J. W. P	Windsor.
Hill, P. B.....	Milwaukee.
Hill, Robt.....	Milwaukee.
Helmer, A. M.....	Milwaukee.
Hiner, W. H.....	Fond du Lac.
Hinkley, B. R	Summit.
Hobart, L. J.....	Milwaukee.
Hodge, Robt.	Janesville.
Hodson, C. W.....	Janesville.
Hœflinger, Carl.....	Wausau.
Hogan, Gilbert.....	Janesville.
Hollister, R. M.....	Janesville.
Holmes, A. M.....	Milwaukee.
Holt, David.....	Madison.
Holton, Edward D..	Milwaukee.
Hopkins, Bedford B.	Milwaukee.
Hopkins, James....	Madison.
Hopkins, J. C.....	Madison.
Hoskins, J. W.....	Milwaukee.
Hoskins, Alfred.....	Janesville.
Houston, Peter.....	Cambria.
Hoyt, J. W.	Madison.
Hurlbert, E.....	Oconomowoc.
Hume, Wm.....	Oshkosh.
Hyde, Edwin.....	Milwaukee.

Names.	Residence.	Names.	Residence.
Ilsley, Chas. F.....	Milwaukee.	Lloyd, Lewis.....	Cambria.
Imbusch, J. H.	Milwaukee.	Lockwook, John....	Milwaukee.
Ingham, A. C.....	New York.	Ludington, H.....	Milwaukee.
		Ludington, James...	Milwaukee.
Jackman, Hiram .. .	Chicago.	Ludlow, A.....	Monroe.
Jenks, S. R.....	Madison.	Lucy, O. K	Columbus.
Jenkins, J. C.....	Janesville.	Lyman, H.....	Dakota.
Jerdee, L. P.....	Madison.	Lynch, T. M.....	Janesville.
Jerdee, M. P.....	Madison.	Lynde, W. P.....	Milwaukee.
Johnston, Jno., Jr....	Madison.		
Johnson, M. B.....	Janesville.	Main, Alex. H.....	Madison.
Johnson, John.....	Milwaukee.	Mann, I. L.....	Fitchburg.
Johnston, Hugh L....	Milwaukee.	Mann, J. E.....	Sun Prairie.
Johnston, John	Milwaukee.	Mann, Henry.....	Milwaukee.
Jones, C. H.....	Sun Prairie.	Mann, Curtis.....	Oconomowoc.
Jones, John N.....	Madison.	Macy, J. B.....	Fond du Lac.
Juneau, Paul.....	Juneau.	Manwaring, Wm....	Black Earth.
Janssen, E. H.....	Mequon.	Marshall, Samuel...	Milwaukee.
		Martin, A. C.....	Ashton.
Kellogg, L. F.....	Madison.	Martin, C. L.....	Janesville.
Keiwert, Emil.	Milwaukee.	Martin, Nathaniel...	Monroe.
Kent, A. C.....	Janesville.	Martin, S. W.....	Madison.
Kershaw, C. J.....	Milwaukee.	Mason, George A...	Madison.
Keyes, E. W.....	Madison.	Masters, E. D.....	Jefferson.
Kimball, M. G.....	Sheboygan.	Mathews, A. K.....	Milwaukee.
Kimball, John.....	Janesville.	Matteson, Clinton...	Rosendale.
Kingsley, S. P.....	Springfield.	Matts, I. H. B.....	Verona.
Kingston, J. T.....	Necedah.	Maxson, O. F.....	Waukegan.
Kiser, Wm. C.....	Madison.	May, A. C.....	Milwaukee.
Kiser, J. C.....	Oregon.	Mayhew, T. J.....	Milwaukee.
Klauber, Samuel.....	Madison.	Mayhew, J. L.....	Milwaukee.
Knight, E.....	Sun Prairie.	McCarty, F. D.....	Fond du Lac.
Kneeland, Moses.....	Milwaukee.	McConnell, T. J....	Madison.
Kneeland, James.....	Milwaukee.	McCormick, J. G...	Madison.
Knowles, Geo.....	Milwaukee.	McCollough, And...	Emerald Grove.
Knapp, J. G.....	Madison.	McDill, A. S.....	Plover.
Koss, Rudolph.....	Milwaukee.	McDonald, A.....	Alloa.
		McDougal, Geo. W..	Madison.
Ladd, M. L.....	Sugar Creek.	McGoech, P.....	Milwaukee.
Lamb, F. J.....	Madison.	McKenna, Martin...	Madison.
Landauer, Max.....	Milwaukee.	McKenna, David ...	Madison.
Lapham, I. A.....	Milwaukee.	McLaren, Wm. P...	Milwaukee.
Lapham, Henry.....	Summit.	McNiel, David	Stoughton.
Larkin, B. F.....	Madison.	McGregor, Alex....	Nepeuskum.
Larkin, C. H.....	Milwaukee.	McPherson, J. P....	Springdale.
Larkin, Daniel.....	Madison.	Merrill, Alf.....	Madison.
Larkin, William.....	Madison.	Merrill, S. S.....	Milwaukee.
Lawrence, W, A.....	Janesville.	Miller, John.....	Madison.
Lawton, J. G.....	Green Bay.	Mills, Simeon	Madison.
Learned, J. M.....	California.	Miltimore, Ira.....	Chicago.
Leidersdorf, B.....	Milwaukee.	Miner, Cyrus.....	Janesville.
Leitch, W. T.....	Madison.	Miner, John B.....	Milwaukee.
Leitch, W. T., Jr....	Vienna.	Mitchell, Alex.....	Milwaukee.
Leslie, John.....	Madison.	Mitchell, J. L	Milwaukee.
Lester, Waterman....	Janesville.	Morehouse, L. H...	Milwaukee.
Lewis, Herbert A....	Madison.	Morse, Samuel.....	Milwaukee.
Lewis, John L.....	Madison.	Moseley, J. E.....	Madison.
Lindsay, E. J.....	Milwaukee.	Mosher, J. C.....	Lodi.
Little, Thos. H.....	Janesville.	Moxley, A. R.....	Madison.

Names.	Residence.	Names.	Residence.
Mullen, James.....	Milwaukee.	Pritchard, P. M....	Fitchburg.
Murray, Geo.....	Racine.	Proudfit, Andrew...	Madison.
Nash, C. D.....	Milwaukee.	Rawson, C. A.....	Madison.
Nazro, John.....	Milwaukee.	Rry, Charles.....	Milwaueke.
Needham, J. P.....	Wauwatosa.	Raymond, S. O.....	Geneva.
Newcomb, S. B.....	Cold Spring.	Riordon, Charles....	Oshkosh.
Newton, Ephraim....	Oregon.	Reed, Herbert.....	Arena.
Newton, I. S.....	Middleton.	Reed, Harrison.....	Jacksonville, Fl.
Nicholas, L. T.....	Janesville.	Ressigue, A. C.....	Janesville.
Norris, C. W.....	Milwaukee.	Reynolds, M.....	Madison.
Norton, J. B.....	Madison.	Reynolds, John.....	Madison.
Nott, F. B.....	Oregon.	Reynolds, Thomas...	Madison.
		Reynolds, John.....	Kenosha.
Ober, R. P.....	Milwaukee.	Rexford, J. D.....	Janesville.
Olney, C. W.....	La Cygan, Kan.	Rice, E. M.....	Whitewater.
Orr, G. H.....	Verona.	Richards, Richard..	Racine.
Ott, Geo. V.....	Madison.	Richardson, D.....	Middleton.
		Richardson, James..	Buffalo, N. Y.
Page, H. M.....	Madison.	Richardson, R. J....	Janesville.
Palmer, H. L.....	Milwaukee.	Richardson, H.....	Janesville.
Palmer, J. Y.....		Richmond, Amaz'h.	Whitewater.
Palmer, O. M.....	Oregon.	Riebsam, C. R.....	Madison.
Palmer, Henry.....	Oregon.	Robins, J.....	Vienna.
Park, John W.....	Vernon.	Robins, J. V.....	New York.
Park, Wm. J.....	Madison.	Roddis, R.....	Milwaukee.
Parker, C. H.....	Beloit.	Rodermund, John...	Madison.
Parmley, Ira.....	Center.	Rodgers, Lawrence..	Westport.
Parsons, P. B.....	Madison.	Roe, J. P.....	Franklin.
Partridge, J. S.....	Whitewater.	Rogers, C. H.....	Milwaukee.
Patten, L. F.....	Janesville.	Rogers, D. J.....	Milwaukee.
Patton, Jas. E.....	Milwaukee.	Rogers, J. S.....	Burlington.
Paul, Geo. H.....	Milwaukee.	Rogers, Anson.....	Janesville.
Payne, Wm.....	Janesville.	Rogers, H. S.....	Milwaukee.
Peffer, G. P.....	Pewaukee.	Ross, James.....	Madison.
Pember, R. T.....	Janesville.	Rowe, Richard W...	Madison.
Perkins, P. M.....	Burlington.	Rowe, W. E.....	Mazomanie.
Perrine, L. W.....	Janesville.	Ruble, Simon.....	Beloit.
Perry, B. F.....	Madison.	Roggles, J. D.....	San Francisco.
Pfister, Guido.....	Milwaukee.	Russell, Harvey....	Milwaukee.
Phelps, A. Warren...	Milwaukee.		
Pierce, C. L.....	Milwaukee.	Sage, E. C.....	New Lisbon.
Pilgrim, D. T.....	West Granville.	Sailsbury, R. W....	Fitchburg.
Pinney, U. S.....	Madison.	Sailsbury, D. F.....	Fitchburg.
Pinckney, B.....	Fond du Lac.	Sanderson, Edw.....	Milwaukee.
Plankinton, John.....	Milwaukee.	Sanderson, R. B....	Madison.
Plumb, J. C.....	Milton.	Sarles, John H.....	Boscobel.
Plumb, T. D.....	Madison.	Schute, Charles.....	Milwaukee.
Plummer, B. C.....	Wausau.	Schutt, U.....	Janesville.
Pond, Samuel A.....	Albany.	Scollan, Frank.....	Madison.
Porter, Wm. F.....	Maine.	Scott, S. B.....	Milwaukee.
Porter, Wm. H.....	Marshall.	Seville, James.....	Merrimac.
Post, David T.....	Milwaukee.	Sexton, Kellogg.....	Milwaukee.
Power, D. G.....	Milwaukee.	Sexton, W. F.....	Milwaukee.
Powers, D. J.....	Chicago.	Simmons, C. J.....	Monroe.
Powers, W. J.....	Black Earth.	Sinclair, Jeff.....	Milwaukee.
Pratt, E. E.....	Chicago.	Sharp, J. W.....	Iowa.
Pres't St. Peter's Val.		Shaw, J. B.....	Milwaukee.
Farmers' Club.....	Springfield.	Sheldon, A. H.....	Janesville.

Name.	Residence.
Sheldon, D. G.....	Madison.
Sheldon, S. L.....	Madison.
Shepherd, C.....	Milwaukee.
Sherman, Amaziah...	La Prairie
Sherman, Geo.....	La Prairie.
Sherman, J. M.....	Burnett.
Sherwood, J. C.....	Dartford.
Shipman, S. V.....	Chicago.
Shipman, A. C.....	Sun Prairie.
Skelley, Chas.....	Janesville.
Skinner, Geo. J.....	Sioux City, Ia.
Skinner, E. W.....	Turner, D. T.
Slaughter, G. H	Middleton.
Slaughter, W. B	Middleton.
Sloan, I. C.....	Janesville.
Slocum, G. A.....	Chicago.
Smith, Winfield.....	Milwaukee.
Smith, Angus.....	Milwaukee.
Smith, Adam.....	Burke.
Smith, Geo. B.....	Madison.
Smith, J. B.....	Milwaukee.
Smith, S. W	Janesville.
Smith, H. L.....	Janesville.
Smith, M. C.....	Janesville.
Smith, S. B	Vernon.
Smith, J. Maurice....	Chicago.
Snell, H	Madison.
Spaulding, William...	Janesville.
Spaulding, Jos.....	Janesville.
Spencer, Jas. C.....	Milwaukee.
Spencer, R. C	Milwaukee.
Squire, Thos. H	Waterloo.
Stannard, A. C.....	Milton.
Stark, Chas. A	Milwaukee.
Steele, Chester.....	Milwaukee.
Stephenson, Isaac....	Marinette.
Stevens, Geo. C.....	Milwaukee.
Stevens, J. T.....	Madison.
Steensland, H	Madison.
Stewart, C. K.....	Danville.
Stewart, G. H	Beaver Dam.
Stilson, Eli.....	Oshkosh.
St. John, J. W	Janesville.
Stockman, John.....	Milton.
Stone, G.....	Beloit.
Storm, Wm.....	Madison.
Stowe, La Fayette....	Sun Prairie.
Sullivan, Jas.....	Burke.
Sutherland, C.....	Syene.
Swain, Wm. W.....	Verona.
Tallman, W. H.....	Janesville.
Taylor, E	Mukwonago.
Taylor, W. R.....	Cottage Grove.
Tenney, H. A	Madison.
Tenney, D. K.....	Chicago, Ill.
Tenney, Samuel.....	Durham Hill.
Terry, A. H	Milwaukee.
Terwilliger, Jas.....	Syene.
Thorson, John.....	Milwaukee.
Tibbits, Geo. M.	Milwaukee.
Tierney, K.....	California.
Thompson, W. H...	Chicago, Ill.
Thompson, Dr. W...	Madison.
Thorp, J. G.....	Eau Claire.
Todd, J. G.....	Janesville.
Tolford, J. W	Neillsville.
Torgerson, Lars.....	Madison.
Torrey, R. D.....	Oshkosh.
Townley, John.....	Moundville.
Treat, R. B	Chicago.
Treat, Geo. E	Milwaukee.
True, W. H.....	Fitchburg.
Twining, M. S.....	Magnolia.
Utter, Jas.....	Oregon.
Van Cott, Albert B .	Chicago, Ill.
Van Etta, Jacob....	Madison.
Van Kirk, N.....	Milwaukee.
Van Norstrand, A. H	Green Bay.
Van Slyke, N. B....	Madison.
Vaughan, O. A.....	Lodi.
Viall, Andrus	Madison.
Vilas, Chas. H	Madison.
Vilas, L. B.....	Madison.
Vilas, L M	Eau Claire.
Vilas, Wm. F	Madison.
Wackerhagen, E....	Racine.
Wait, J. B	Waitsville.
Warren, J. H.....	Albany.
Warren, W. R.....	Madison.
Webster, James	Danville.
Webster, Martin	Fox Lake.
Webb, James A	Janesville.
Welch, W	Madison.
Wells, Daniel L.....	Milwaukee.
Werner, John	Sauk.
West, Henry	Madison.
West, S. C.....	Milwaukee.
West, Henry M	Milwaukee.
Whaling, J. M	Milwaukee.
Wheeler, Geo. F....	Waupun.
Wheeler, Guy.....	La Prairie.
Wheeler, W. A.....	Middleton.
Wheeler, L. A	Milwaukee.
Wheelock, W. G ...	Janesville.
Wheelwright, J.....	Middleton.
White, A.....	Verona.
Whiting, W. F	Milwaukee.
Whitney, W. F.....	Milwaukee.
Wight, O. W.....	Milwaukee.
Wightman, H	Black Earth.
Wilcox, C. T.....	Janesville.
Wilkins, A. W	Milwaukee.
Willey, O. S	Benton Harbor, Mich.
Williams, C. L	Madison.
Williams, C. H.....	Baraboo.
Williams, D.....	Darien.
Williams, Daniel....	Madison.

Name.	Residence.	Name.	Residence.
Williams, Daniel	Summit.	Worthington, B. M..	Madison.
Williams, G. G.....	Whitewater.	Worthington, D.....	Madison.
Williams, J. P	Janesville.	Worthington, Geo...	Milwaukee.
Williams, Randall....	Janesville.	Wright, D. H.....	Madison.
Williams, S. B	Madison.	Wright, Geo.....	Mt. Horeb.
Williams, S. G.....	Janesville.	Wright, J. S.....	Emerald Grove.
Wilson, Wm.....	Westport.	Wright, Josiah S,...	Janesville.
Wilson, Zebina.....	Palmyra.	Wylie, Geo. W.....	Elkhorn.
Wolcott, E. B.....	Milwaukee.		
Wooley, J. T.....	Milwaukee.	Young, J. E.....	Harmony.
Wootton, Robert.....	Madison.		
Worden, Ed.	Madison.	Zwietush, Otto.....	Milwaukee.

OFFICERS OF THE SOCIETY.

1874.

PRESIDENT.

ELI STILSON, - - - - - - - - - OSHKOSH.

VICE-PRESIDENTS.

1st Cong. Dist.,	- -	RUFUS CHENEY,	- - WHITEWATER.
2d "	- -	GEO. E. BRYANT,	- - MADISON.
3d "	- -	J. H. WARREN,	- - - ALBANY.
4th "	- -	JNO. L. MITCHELL,	- MILWAUKEE.
5th "	- -	SATTERLEE CLARK,	- HORICON.
6th "	- -	———————,	- - ———
7th "	- -	J. G. THORP,	- - - - EAU CLAIRE.
8th "	- -	JNO. T. KINGSTON,	- NECEDAH.

SECRETARY.

W. W. FIELD, - - - - BOSCOBEL.

(Office at Madison.)

TREASURER.

F. J. BLAIR, - - - - MILWAUKEE.

ADDITIONAL MEMBERS OF THE EXECUTIVE BOARD.

C. L. MARTIN, - - - - - - JANESVILLE.
N. S. GREENE, - - - - - - MILFORD.
J. O. EATON, - - - - - - LODI.
N. D. FRATT, - - - - - - - RACINE.
NELSON DEWEY, - - - - - CASSVILLE.
T. C. DOUSEMAN, - - - - - - WATERVILLE.
LEVI B. VILAS, - - - - - - MADISON.

TRANSACTIONS.

ANNUAL REPORT.

To His Excellency WILLIAM R. TAYLOR,
Governor of Wisconsin:

SIR:—Compared with the the last five years, there has been, the past season, general prosperity among those engaged in the varied branches of agriculture, except the growers of wheat. The season was unfavorable for the production of this cereal throughout the state, and in many localities the chinch-bug entirely destroyed the crop. If this total destruction shall drive the farmers in these unfavorable districts to other branches of agriculture, and other and better systems of culture, then their temporary loss may in the end prove a blessing. Much depression exists in business in the large wheat-growing districts, and must continue throughout the year. All other products of the state except wheat, have been a full average yield, and commanded remunerative prices.

The organization of societies for the promotion of the dairy interests, and the inauguration of dairy boards of trade has developed a system of marketing cheese and butter products which has been a great improvement, and has stimulated this branch of farming in a high degree. Market days have been instituted which have practically brought the purchaser to the door of the producer. Systems of business are constantly advancing; trade is intellectualized, and prices in the Eastern markets in dairy products are now largely governed by the trade in the interior towns. This fact should cause other leading branches of farming to co-operate for the sale of their

surplus annual products, particularly growers of cattle, hogs, sheep, and the staple cereals. Members of clubs, granges and other societies would find it to their advantage to agree to take certain products to their market town on certain fixed days of each week or month, and associate together for their sale. A purchaser of live stock can afford to pay more for a car-load purchased on the same day, than for the same number bought in small lots on different days. The markets are continually fluctuating, and the purchaser can make his contracts with more certainty of a reasonable margin of profits. Concert of action among producers is what is wanted; larger sales and smaller profits on each animal or article sold. This may decrease the number of buyers or middle-men, and if so. all the better; their energy and talent can be directed to other channels of industry.

In this connection I desire to call attention to an editorial in the *Repnblican and Leader*, by Charles Seymour, esq., touching the dairy interest of the state, and giving a brief synopsis of a discussion of the prominent dairymen of Vermont, which appears in this volume.

Organization among farmers, and methods to the attainment of this end, have been much discussed the last year, looking to bettering the condition of the industrial classes. Societies, including state, county, and so on to the town club and grange, have accomplished great good; and especially can I speak of the beneficial agencies of the state fair and state agricultural convention, now annually held under the auspices of the Wisconsin State Agricultural Society. They are all great public educators of the industrial masses. The annual reports of this society are more and more sought after each year by the thinking farmers, as they contain more practical papers than heretofore, and discussions at the convention of greater general interest. A mutual interchange of ideas, an intelligent, co-operative action on the part of those whose interests are identical, is much needed. Farmers must move with the age; keep up with the other professions—not years behind. Individual effort can accomplish but little. Organization is what now moves the world. Combinations of capitalists go before legislatures and get all they ask, or prevent what they do not desire. Were farmers ever known to organize and ask the legislature for special privileges,

or to prevent the enactment of class laws against their interests? Farmers should not be legal food for other organizations to feed upon, without preparing to devour in return for self protection. They can at least be just to others, and at the same time generous to themselves, if they will but combine and work together for their interests as other classes do. The more intelligence, the more successful and better will the organization be. Agricultural papers are doing much to stimulate and build up the industrial interests of the state, and they should be encouraged and sustained; but a "face-to-face talk" will do more good in an hour to educate and impress upon the mind facts and principles, than all the articles read in a paper during the year. Hence, farmers should organize, give their experience to each other, read, talk, counsel, advise, become more intelligent, and be better prepared to govern and direct the affairs of state and nation.

Fine culture, a thorough pulverization of the soil, allowing all the air, sun, light and rain to freely penetrate it, and the fine rootlets of plants to obtain their proper food, is of the highest importance.

Farmers as a rule, do not devote labor and time necessary to put their soil in such fine condition of culture as will insure the best profits. A few days more time given with man and team to a pnlverization of the surface soil would pay oftentimes an hundred fold. When the rich soils of Wisconsin are placed in the best possible condition of tillage, and the crop placed properly therein, and in season, there is but one enemy standing between the grower and an abundant harvest, with an occasional chinch-bug or other pest exception. That enemy is weeds, and is an uncompromising and formidable foe, ruining the crop and impoverishing the soil, if not exterminated when young. But few farmers seem to comprehend the vital importance of eradicating these pests, and particularly of doing it at the right time. One man with a team and cultivator will do more towards their extermination when they have but just shown themselves above the surface of the ground, than three times the labor employed a few days later, especially in the highth of the growing season. One often hears a farmer say, "my corn will be large enough to cultivate next week, or a certain time in the future." My theory is, and I have always tried to carry it into

practice, to commence to cultivate corn as soon as planted if the land is in proper condition. Harrow thoroughly once at least twice is better, before the blade appears above the surface, and again as soon as it is up. Then start the cultivator and go through it once a week if possible, and oftener if nccessary to keep the weeds in check. Frequent attention not only destroys the weeds, but it leaves the soil light and friable, susceptable of drinking in the dews and rains, rich in ammonia and other plant food. Crops cannot grow without heat, light and air, and to admit these the soil must be porous and fitted to receive them. After heavy rains, cultivate to break up the crust, and the use of a roller or other machine to break the surface hardness of the ground in cereal crops, when small, would pay largely on the investment.

Educated labor upon the farm is becoming more and more appreciated each year, and yet the educational agencies for the advancement of our youth in the practical branches are not what I would like to see. Schools for the education of farmers, mechanics and those of other working industries, should teach those branches having a direct bearing upon the particular branch of life work intended to be pursued, and the principlee taught should be daily applied. "It should not only teach the principles which underlie agriculture and mechanical arts, but it should teach the things themselves. What we want is not mere culture, but culture applied, culture realized, culture put at work and demonstrating day by day its use." The mass of those engaged in the numerous avenues of labor and industry in this and all other counteries, have little time to pursue branches of study not intimately connected with their particular calling or avocation. Life is too short to learn everything, and aside from the common school education which all should receive, and the general information upon town, county, state and national affairs, fitting them to be useful and valuable citizens, persons who obtain their living by labor in any of the world's industries, have little time which they can spend profitably upon subjects which do not bear immediately upon their work. These they can afford to study with care. Division of labor is becoming more marked and distinct, hence, the importance of special knowledge for those engaged in any particular branch of work, that they may be skilled and proficient. Many of the studies which take up much of the time of the student in our

higher seminaries of learning to-day, are of no particular benefit, for the knowledge obtained will be never applied in the practical business of life. The system should be changed, and the learner allowed to devote his entire time, under the best physical and mental culture, to those branches peculiarly adapted to his needs in the field of labor he has chosen, or is best calculated to fill, and not be compelled to waste valuable time and vital forces in obtaining knowledge he can never apply to his individual advantage or to better the condition of the human race.

The finances of the country are eliciting much discussion, and numerous are the remedies offered by the writers upon this all important subject for the evils complained of. The prime cause has been little discussed, and hence is little understood. It is the unjust accumulative power of money. Money has become such a power in dictating all values, and the amount now drawn from the surplus labor and products of the people to pay interest upon public and private debts has become so burdensome, that thinking men are investigating this subject, believing that a mystery surrounds this monetary question which ought to be solved and the people be enabled to see the real cause of stagnation in business throughout the country. The history of the past does not furnish us with a single example of a want of prosperity in business where money was plenty and at low rates of interest. The amount of money supplied by a government for the use and benefit of the people should at all times be governed by the wants of business and the security which property can give, and which such money was created to represent, measure the valne of, and exchange with ease and facility.

The amount of interest which money shall bear annually should be regulated by the power creating it. In no other way can it be a just, honest, and unvarying measnre of value for land or other property. No greater fallacy can be taught the rising generation than that money is a commodity and subject to like conditions of "supply and demand," as the products of the industries. The material of which money is coined or manufactured is a commodity; but when converted into money and used exclusively as such, looses its power to be bought and sold under "supply-and-demand" conditions; because, in this new relation, it is a measure of value of all other

things, hence must have a fixed value in itself. Fix the value of money by limiting the rate of annual interest it shall accumulate, and that rate to be as low as the average increased wealth arising annually from all the industries, and a just standard or measure of value will be established, producing stability in the price of all products, and allowing the law of "supply and demand" to legitimately obtain. Until this is done, fluctuation and uncertainty in prices will prevail, the same as would exist in weights and measures if the standard fixed by the Government was changed at the will or cupidity of the owner.

What is the office of a yard-stick? To measure length. Does it or its owner determine its length? Not at all. This has been determined by the government. What is the office of money? To measure the value of land, labor, and all kinds of property. Does it, or its possessor, determine its value? The latter does, by demanding for its use all he can obtain. He should not be allowed to change a fixed value or measure in the one case more than in the other.

The supply of money and its just regulation is one of the most important foundation principles in the science of government. There has been, and still is, a mystery surrounding it which the people do not understand. They know that the property of the country is rapidly accumulating in the hands of the few, but the cause is not so fully comprehended, or so easy of solution. They know that while money is commanding 10 to 15 per cent. the gains for labor are not to exceed 3. They are told in explanation, that this is all right, a sort of Providential arrangement, that the many should be born to labor for the few and support them in idleness and luxury, when in fact, the true cause is an unjust distribution of the wealth which labor creates, by unwise enactments of law in favor of money, giving it an accumulative power it ought not to possess. The sooner the government adopts a strictly mercantile currency, a dollar in paper for one of gold or silver in her vaults, or cuts loose from a gold basis entirely, issuing paper money exclusively, based upon the faith and credit of the country, at low, fixed rates of interest, the better for industry, trade and business generally. Paper money, based upon gold, under existing laws of this, and nearly all other countries, is dishonest, a deceit, a fraud, and a lie. No honest and just reason can be given why a person or corporation owning a million dollars in gold, should have the right to issue

five to ten times that amount of paper, thereby increasing his wealth five to ten times by the transaction, than that persons should be allowed to organize and issue a like amount of currency based upon real estate, owned by them, of like value. The former is more easily convertible, otherwise the cases are parallel. Neither are just or honest toward other property owners. This currency question is to be one of the coming subjects in the near future, and none will be of more importance. It is of vital interest to every man and woman who labors in any department of human effort, and should receive at their hands careful, earnest thought, study and consideration.

If congress should fix the rate of interest as low as the increase annual gains from the productive industries, and adopt stringent laws for taking higher rates, the currency of the country would now be ample, and the experience of centuries would be realized—low rates of interest and general prosperity in all departments of industry.

Before the publication of the volume for 1875–6 the grand exhibition, the centennial celebration of the nation's birthday will be upon us. Congress has made it an international exhibition and many of the foreign states have accepted the invitation and will doubtless be fully represented. The various states of the Union are taking the necessary steps to be fully represented in all which contributes to their general prosperity and advancement, and I am rejoiced that Wisconsin fully appreciates the importance of having her growth, resources and progress fittingly shown and demonstrated at this World's Fair.

The Governor is authorized under an act of the Legislature of 1875, to appoint five state managers, who will act in concert with the commissioners of the state, and a part of whose duties shall be as specified in the act as follows:

Section 2. The duties of the said State Centennial Managers shall be: To disseminate information regarding the exhibition; to secure the co-operation of industrial, scientific, agricultural and other associations in the state; to appoint co-operative and local committees, representing the different industries of the state; to stimulate local action on all measures intended to render the exhibition successful, and a worthy representation of the industries of the country; to encourage the production of articles suitable for the exhibition; to distribute documents issued by the Centennial Commission among the manufacturers and others in the state; to render assistance in furthering the financial and other interests of the exhibition; to furnish

information to the commission on subjects that may be referred to the board; to care for the interests of the state and of its citizens in matters relating to the exhibition; to receive and pronounce upon applications for space; to apportion the space placed at its disposal among the exhibitors from the state, and to supervise such other details relating to the representation of citizens of Wisconsin in the exhibition as may from time to time be delegated to it by the United States Centennial Commission.

I am much pleased to also state that the Legislature has judiciously and as I believe wisely, appropriated to the "Women's Executive Committee," of this state, one thousand dollars, to defray expenses incident to the part the women of the United States propose to take in this World's Fair. Space has been allotted in this great exhibition, to be called the "women's department," and I doubt not it will be *one* of, if not *the* most instructive, attractive and profitable branches of the exhibition.

No effort should be spared to place our noble state, rich in resources and possibilities, in a favorable light before the people of the world at this centennial gathering.

The first annual report of the Commissioners of Fisheries of this state, will be found in this volume, and contains suggestions and recommendations of much interest, as it is intimately connected with the great food producing capacity of the state. The legislature of 1875, made an appropriation of $2,000 to encourage and foster this branch of industry. I regret that the sum had not been larger, believing that with the proper effort, our numerous lakes and streams may be made to afford food resources of more value than double the area of the best cultivated farms in the state. The commissioners state "that no state in the Union, disconnected from the seaboard, is better suited for fish culture than Wisconsin."

Fish culture is no longer an experiment. The state should give it an active and generous support. Private parties will also find it a pleasant and profitable branch of farming, if their water supply is plentiful, and the conditions and surroundings are favorable.

PROCEEDINGS.

EXECUTIVE BOARD MEETINGS.

OFFICE OF THE SOCIETY, PLANKINTON HOUSE,
MILWAUKEE, *September 7, 1874.*

In accordance with the by-laws of the society, the Executive Board met in the elegant and commodious parlor of the Plankinton House, at 8 o'clock P. M., the room having been kindly and generously furnished them by W. H. Cottrill, Esq., the proprietor, for their exclusive use, a week prior to, and during the continuance of the fair.

President Eli Stilson, in the chair.

Present :—Vice-Presidents Clark, Cheney. Warren, Mitchell and Bryant, and additional members of the board, Messrs. Martin, Green, Fratt, Eaton, Mann, Treasurer Blair and Secretary Field.

President Stilson called the board to order and briefly stated the committee were convened under the by-laws to take such action as might be deemed necessary and for the interest of the association in view of the fair to be opened on the following day. Milwaukee he said had responded nobly and even magnanimously in again donating to the society the use of the spacious fair grounds, in putting them in first-class condition, ready for occupancy by exhibitors in the various departments, and by the erection of a new and convenient poultry house, and many additional stalls for cattle, all without cost to the society. The president said that he desired on behalf of this board and of the society, to extend to the Common Council of Milwaukee and to all of the public spirited citizens of

that commercial metropolis, our sincere thanks for the liberality and generosity shown. The society he believed fully appreciated the courtesy and kindness bestowed.

A general interchange of views of the officers was freely discussed relative to the various departmenes, each superintendent feeling confident that his particular department or division was to be a great success from the exhibits then in place.

Superintendent Fratt was requested to close the gates at 8 A. M. on the following morning.

Adjourned until 8 P. M. Tuesday.

TUESDAY, *September 8, 8 P. M.*

Board met.

President Stilson in the chair.

Quorum present.

The board continued in session for a brief time on this and the two evenings following, adjusting any differences or misunderstandings in the various departments brought before them by the superintendents. An award of twenty-five dollars was made to Hon. John Jeffers, of Darien, for his very creditable showing of Suffolk and Essex swine, no premium having been offered by the society for these breeds.

Secretary Field introduced to the board Hon. R. M. Lockhart, member of the State Board of Agriculture of Indiana, who had been spending a couple of days at the State Fair. An interesting social interview was had with Mr. L., and upon retiring he cordially extended to the Executive Board an invitation to visit the Indiana State Fair of 1874, and on motion of Mr. Martin the kind invitation was accepted.

Mr. Mann moved that an auditing committee be appointed consisting of Messrs. Mitchell, Fratt and Clark, which was unanimously agreed to.

Adjourned on Thursday to Friday evening at 8 P. M.

FRIDAY, *September 11.*

Board met at 8 P. M.

President Stilson in the chair.

Quorum present.

Secretary Field stated that his books were ready for the payment of premiums, and asked that those living in the city and vicinity should defer the presentation of their claims until those living more remote had been favored with the stamps, which as a rule was gladly and generously complied with. The auditing committee, treasurer and secretary were kept busy until a late hour in the adjustment and payment of premiums and audited accounts.

Adjourned to 8 A. M., Saturday.

SATURDAY, *September 12, 8 A. M.*

President Stilson, Auditing Committee Mitchell and Fratt, and Treasurer Blair and Secretary Field present.

Payment of premiums and accounts continued until 12 M., when the board adjourned to meet at the same place on Friday the 18th of September, 1874, at 9 A. M.

September 18, 9 A. M.

Board met pursuant to adjournment.

President Stilson and Messrs. Mitchell, Clark, Mann, Blair and Field, present.

At a previous executive meeting, several members of the board had expressed a desire that a committee should be appointed to visit some of the state fairs of the northwest, with a view of studying the general management and learning something of benefit to this society. Secretary Field said that he should feel authorized under the by-laws of the society, to visit as many of the fairs of the country as his time would admit of had it been customary heretofore; but as it had not been, he did not feel like incurring the necessary expense without action of the board. If the board appointed a committee, he would attend some of the fairs with said committee, if approved by the board. Thought the idea of visiting other fairs a good one and might be promotive of beneficial results.

Vice-President Clark moved that a committee of two be appointed to visit the Chicago and St. Louis fairs. Mr. Mann fully endorsed

the appointment of a representative to visit these exhibitions, but thought in view of the probable expense, and with a treasnry not overflowing, that one delegate would do, and moved to amend the motion of Vice-President Clark, so that Secretary Field should be delegated to visit the fairs mentioned, and report to the next meeting of the board. Amendment accepted and motion adopted.

On motion, the sum of fifty dollars was unanamously voted to Chief of Police Wm. Beck, esq., for very efficient services rendered the society during the state fair of 1874.

Premiums and audited accounts were paid on this and the following day until 12 o'clock M., when no further business coming before them, the board adjourned *sine die*.

DECEMBER MEETING.

STATE AGRICULTURAL ROOMS,
MADISON, *December 1, 1874.*

The Executive Board met in their rooms, in the Capitol, in accordance with the by-laws, at 8 o'clock P. M.

President Stilson in the chair.

Present—President Stilson, Vice-Presidents Clark and Bryant, and Messrs. Warren, Eaton, Mann, Blair and Field.

Treasurer Blair submitted his report, showing the financial condition of the society for the year closing December 1, 1874, which is published in full in the proceedings of the society, under the head of "society meetings," in this volume. The treasurer presented vouchers for all money paid out for the year, which were compared by the board with the stub-book and vouchers of the secretary, and finding them to correspond and correct, were unanimously approved.

Secretary Field made a report of his visit to the Chicago and St. Louis expositions, under the appointment of the executive committee, as follows:

REPORT OF SECRETARY FIELD.

STATE AGRICULTURAL ROOMS,
MADISON, *December 1, 1874.*

Mr. President and Gentlemen of the Executive Committee:

Having been appointed by you to visit the Chicago and St. Louis expositions of 1874, I deem it my duty to present a report of attendance at those exhibitions, and to place before you such facts relative thereto as may seem to merit notice. I visited the Chicago Exposition on Saturday and Monday, the third and fourth days of October.

The attendance on Saturday was equal to, if not greater than any day during the entire exhibition. The estimated number during the day being 60,000. The machinery and manufacturers' departments were particularly interesting and instructive, nearly all the leading manufacturers of the northwest, and many from the eastern states being represented. Many of the articles exhibited in these departments were of a high order of merit, and can but tend to materially cheapen the products and lighten the burdens of labor in the various agricultural, household and other useful industries of the world.

The exhibits in the floral department were of a high character, were tastefully arranged, and amateurs and professionals vied with each other in their contribution to this interesting department.

The fine-art department was peculiarly interesting, partaking from its magnitude and extent something of the nature of a national exhibition. It was said, by those better qualified to judge than myself, that it contained the largest and finest collection of paintings ever exhibited in this country. Some of the choicest pictures were contributed from eastern cities.

The most noticeable and to me striking feature of this great exhibition was the zeal and energy displayed by exhibitors in placing the result of their labor, skill and genius before the people without any incentive in the way of premiums, none being offered by the association. Time and money was spent to exhibit their wares, not for competition, not for the few dollars, diploma or medal which they might receive, but to advertise the merit of their particular article before an appreciative public. I deem this a matter worthy of consideration by our board, whether the list of non-competitive exhibits may not be extended in some of our departments with equal satisfaction and greater justice to all concerned.

I visited the St. Louis fair from the 6th to 9th, inclusive, of October. This is probably the largest annual exhibition in the United States, if not in the world. What I have said of the Chicago

exposition is equally true of this fair, except that this St. Louis fair was much more extended and elaborate in all departments, fine-art hall excepted. While all the forms of industry were fully represented here, agriculture in all its varied branches was a leading feature.

Thorough-bred horses, Short-Horn, Ayrshire, Jersey, and Herford cattle were exhibited in large numbers and of a superior character aud excellence. Numerous specimens of the most approved breeds of sheep, swine, and poultry were shown in their respective departments, and attracted much attention, especially among those desirous to purchase and improve their stock.

Berkshire and Poland China hogs, 4 to 6 months of age, were sold for breeders from $50 to $100 each. I observed one each of the above breeds, which were about three years old and weighed, the Berkshire 800 and the Poland China 900 pounds.

Farm and dairy products were not as numerous as in most other departments, but were a good display, and of a high order of excellence.

Fruit was exhibited in great abundance, and of choice quality, but the late date of the fair caused less varieties of the earlier kinds to be shown.

The useful minerals of Missouri were shown prominently, and were an interesting feature of the exhibition. The mineral resources of the state were thus conspicuously placed before the people in an open book which every one could read.

The thought struck me that if samples of iron, lead, zinc, copper, kaolin, and other useful minerals of Wisconsin, were gathered up from the Agricultural and Academy of Science Rooms, and from other sources, and placed in a prominent position at our annual gatherings, that it would be not only interesting, but tend to stimulate capitalists to an investigation of the profits to be obtained by investments in these great mineral industries of the state.

Horses and cattle were shown in the arena, which from the outer circle is one-fourth of a mile in circumference, and surrounded by an amphitheatre capable of seating and protecting from the inclemency of the weather 20,000 people. The display of saddle-horses, carriage-horses and four-in-hand teams in this arena was noticeable and interesting. The former were trained most perfectly to all the various gaits, so much admired by the lovers of horse-back riding,

such as trotting, pacing, galloping, running, etc. The four-in-hand teams, two entries only, were four beautiful bays from Kentucky, and a team of stylish chestnuts from St. Louis, each handled by a "fifteenth amendment," in livery, with great dexterity and skill. They attracted much attention, but seemed to me to be more ornamental than useful, being a great waste of power for services rendered. The office of entry connected with the St. Louis fair is somewhat diffierently conducted from ours, and I think it an improvement in many respects. Instead of taking the entries upon slips and copying into division and then into class-books, as has been our custom, they take the entry down at once into the department-book, one book only being required for each department, which has been previously numbered, each book numbering from one to as high as desired. The clerk taking the entry then calls the number, with the name of the animal or article entered, and another clerk makes out the entry-card accordingly. Another clerk, or at most two others, may copy these entries upon large sheets, for the use of the different committees, giving the number and article only.

The advantages are:

1st. Less clerks, and hence, less expense.

2d. Less danger of errors, as the entries are certain to all be in the department-books.

3d. The committees are not influenced for or against awarding a premium, as the owner is unknown except to the superintendent of the department who has the books in his possession.

At this St. Louis Fair were brought together on the great day—Thursday—a hundred thousand people, to witness the improved stock, products of the farm and dairy, fruits and flowers, manufactured products, mechanical arts, the beautiful and useful in art and nature, and I was impressed as never before, as I viewed that vast concourse of people, of the educational and social advantages to be derived from these annual gatherings of the people. The various departments of this great exhibition showed in miniature to this assemblage, the leading industries and work of the world, and I could but think that the person who fails to put on exhibition a meritorious animal or article at these annual gatherings, fails to secure the best advertising agency of the times.

Expositions in many of our large cities are becoming popular, and deservedly so, and it has occurred to me that possibly our

leading commercial city, Milwaukee, would find it to her advantage to move in an enterprise of this kind, or possibly connect something of the kind with the state fair, should such exhibition be continued in that city. They are wonderful advertising agencies for the city where held, and if the leading industry of the country —agriculture—can be fully connected therewith, in all its numerous branches, they may be made great educational agencies for the advancement of all our varied industries, and bettering the condition of all our people.

In conclusion, I desire to express my cordial and grateful thanks to the officers of both the associations mentioned, for the courtesy and kindness extended to me during my stay with them, and especially do I hereby extend my personal regards to Hon. John P. Reynolds, secretary of the Chicago Exposition Association, and to G. O. Kalb, esq., secretary of the St. Louis fair, for the facilities furnished me to obtain information, and to make my visit agreeable and profitable.

Adjourned to 9 o'clock A. M., Wednesday.

WEDNESDAY, 9 O'CLOCK A. M.

December 2, 1874.

Board met.

President Stilson in the chair.

Quorum present.

Secretary Field moved that Daniel S. Durrie, esq., librarian of the State Historical Society, who was present, be heard relative to mineral specimens and other museum collections of the society, which was agreed to. Mr. Durrie stated that there had been a desire expressed by some members of their society and other prominent citizens of Madison, that certain books now in the State Library be transferred to the historical rooms if the Legislature thought best. He said that their room was now very limited, and that it would be impossible to take the library mentioned unless room could be made by the transfer of their numerous mineral and other interesting collections to other rooms, and he had thought possibly the State Agricultural Society would afford space in their rooms for them.

Brief informal discussions were had upon this subject, but as

there would be a larger attendance of the board in February, on motion, it was thought best that further action be deferred until that time, which was unanimously agreed to.

Secretary Field stated that at the agricultural convention to be held in January, he should be glad to have a short-hand reporter, that full and complete minutes might be kept of the interesting and valuable discussions.

On motion of Mr. Eaton, the employment of a reporter for said convention was referred to President Stilson andSecretary Field.

A communication was received from Major Rufus Cheney, regretting that he could not be present as he had hoped, as it was the last meeting of the board of which he had been so long a member. The closing paragraph of this interesting letter is as follows:

"Please extend to all the members of your board my kind regards, assuring them of my continued interest in the success of our society, and although no longer a member, I shall feel it my duty and esteem it a pleasure to contribute all I can to its future growth and prosperity, believing as I do, that the Wisconsin State Agricultural Society is the possessor of great possibilities for growth to the state, of which we are proud to be called citizens."

The members present, one and all, expressed themselves in the warmest terms of their cordial good will towards the Major, and of his energy and efficiency for the many years he was a member of this board. They believed that he had shown a peculiar business talent in the position he had so long and so well filled, as superintendent of machinery-department. Power Hall, by his perseverance and excellent judgment, had been one of the most attractive and profitable branches of our annual exhibition, and, as was expressed by one member, "it was doubtful whether that position could be as well filled by any member of the new board."

No further business coming before the board, on motion, adjourned *sine die*.

FEBRUARY MEETING.

State Agricultural Rooms,
Madison, February 2, 1875.

In accordance with the requirements of the by-laws, the executive board of the Wisconsin State Agricultural Society met in their rooms in the Capitol, at 7½ P. M., to revise the premium-list, locate

the annual state fair for 1875, and the transaction of such other business as should come before them.

Present—President Eli Stilson, Vice-Presidents T. C. Douseman, George E. Bryant, John L. Mitchell, Satterlee Clark, R. D. Torrey, and additional members of the executive board, Messrs. Dr. C. L. Martin, N. S. Greene, A. A. Boyce, N. D. Pratt, E. J. Cooper, N. W. Dean, Treasurer F. J. Blair, and Secretary W. W. Field.

President Stilson in the chair.

On motion, the board proceeded to revise the "general regulations," "rules of entry," "rules of inspection," &c.

Subdivision 8, under "rules of entry," was amended so that horses entered for premiums in the general exhibition may also compete in all trials of speed.

Subdivision 3, under "general rules," was amended so as read as follows:

"3. Judges will report the animals and articles entitled to premiums, and are also directed to make special mention of each animal and article entered, not on the premium list, as in their judgment are meritorious, and recommend such premium as they deem proper."

Subdivision 9 stricken out, and the following inserted: "No exhibitor can be a judge in any class in which he exhibits, nor can two exhibitors be judges on each others animals or articles."

OFFICIAL LIST OF PREMIUMS.

Classes 8 and 9 were stricken out and the following inserted:

Class 9.—Horses for speed.

WEDNESDAY, *September 8.*

Premium $500.

For horses that never trotted better than three minutes. $300 to first, $125 to second, and $75 to third. Also premium of $200 for all runners, mile and repeat, $150 to first and $50 to second.

THURSDAY, *September 9.*

Premium $700.

Free for all trotters. $400 to first, $200 to second, and $100 to third. Also premium $300 for all runners, mile heat, best three in five, $200 to first and $100 to second.

Friday, *September 10.*

Premium $600.

For all horses that have never trotted better than 2:35. $300 to first, $200 to second and $100 to third.

Also premium of $500 for all horses that have never trotted better than 2:50. $300 to first, $125 to second, and $75 to third.

Entrance, ten per cent. of all purses.

Entries to be made under seal to the secretary, and to close at 9 P. M. Monday, the 6th of September. All races to be mile heats, best three in five, unless otherwise stated, four to enter and three to start.

Trotting will be conducted under the rules of the National Trotting Association, and running under those of the American Jockey Club. Races will commence promptly at 2½ o'clock each afternoon. All betting and pool-selling strictly prohibited.

On the substitution of this class, several members of the board being opposed to offering such large premiums for races, N. W. Dean moved to strike out the premium of $200 for the running race of Wednesday, the 8th of September. Those voting in the affirmative were Messrs. Stilson, Fratt, Cooper, Dean and Field. Those voting in the negative were Messrs. Douseman, Bryant, Mitchell, Clark, Torrey, Martin, Greene and Boyce. The motion was lost. Secretary Field moved that the premium of $300 for the running race on Thursday, the 9th, be stricken out. Those voting in the affirmative were Messrs. Stilson, Fratt, Cooper, Dean and Field. Those voting in the negative were Messrs. Douseman, Bryant, Mitchell, Clark, Torrey, Martin, Greene and Boyce. The motion was lost. N. W. Dean moved that the $500 premium for trotting on Friday, the 10th, be stricken out, which was lost by the following vote: Those voting in the affirmative were Messrs. Stilson, Dean and Field. Those voting in the negative were Messrs. Douseman, Bryant, Mitchell, Clark, Torrey, Martin, Greene, Boyce, Fratt and Cooper.

Adjourned to 9 A. M. Wednesday.

Wednesday, 9 o'clock A. M.

February 3, 1875.

Board met.

Quorum present.

President Stilson in the chair.

Revision of premium list continued.

Class 16.—Grade cattle and working oxen. Amended by adding additional premiums to the list.

Class 19.—Second herd premiums, open to all breeds except short horns, was amended by substituting Devons, Ayreshires and Jerseys in place of "all breeds except short horns."

Class 20.—American merinos, was revised by adding the following premiums:

Best exhibition sheep	Diploma.
Best buck's fleece, to be cleansed under direction of the superintendent of sheep-department	$15 00
Second Best	10 00

Class 23.—Fat sheep. Stricken out.

Class 24.—Swine. Was classed as large breeds, including Poland Chinas, Chester-whites and others.

Middle breeds, including Berkshire. Small breeds, including Essex, Suffolks and others.

Adjourned to 2 P. M.

AFTERNOON SESSION.

Mr. C. H. Greenman, member of the State Horticultural Society, appeared before the board, and on behalf of said society asked the usual appropriation of $800 to pay premiums in the horticultural department of the state fair, and $100 to defray expenses in sending samples of fruit to the meeting of the National Pomological Society, which meets in Chicago in September, 1875. These propositions were discussed at some length, and pending final action thereon, President Stickney, of the Horticultural Society, desired to make a brief statement of the financial condition of their society, which was unanimously granted. He said the financial condition of the society was not hopeful. That their only source of income was from life-membership fees, and that this was small; that their necessary expenses had decreased the amount of funds in their treasury each year for some three years; that the society was desirous of making a creditable show of fruit at the exhibition of the National Pomological Society at Chicago in 1875, and that it could not do so without incurring an expenditure beyond their means to defray, and meet at the same time other incidental expenses, and he hoped that the agricultural board would appropriate to them the amount asked.

On motion of Secretary Field, the sum of $800 was appropriated to the State Horticultural Society, the same to be offered as premiums by the society in the horticultural department, and any amount of said $800 not awarded in premiums to be paid to said society in money.

Bill of Filer, Stowell & Co., of Milwaukee, was presented by Secretary Field, amounting to $130.67, for pulleys, &c. Said bill was disallowed and the secretary requested to state to the firm that the pulleys could be removed by them at any time, as they had never claimed them or considered that they were the property of the society.

Adjourned to 9 A. M., Thursday.

THURSDAY, *February 4, 9* A. M.

Board met.

President Stilson in the chair.

Telegram was received from ex-President B. R. Hinkley, stating that the Wisconsin State Dairymen's Association was in session at Fort Atkinson, and desired to send a committee to confer with our board relative to holding a "Dairy Fair" in connection with the State Fair, and desiring us to withhold a revision of the dairy products until such conference could be had. That they were snow-bound and could not be present that day.

On motion, a dispatch was sent the association that the board would grant them a conference with pleasure if they could arrive before the adjournment of the board, and otherwise the matter would be considered as placed in the hands of the president and secretary for future conference, and for such arrangments with the dairy association named, as should seem to be for the best interest of all concerned. The application of Frank McVean, of Waukesha county, for a premium of $200, offered by the society for the best 5 acres of wheat raised on the same ground for the successive years 1872, 1873 and 1874, yield not less than 30 bushels per acre each year, was taken up and considered. Two of the statements made were found not to comply with the conditions imposed, therefore the premium was not awarded.

Class 25—"Poultry," was divided into several subdivisions, as

follows: Asiatic, Game, Dorking, Spanish, Hamburg, Polish, Bantam and Water-Fowl classes, and the list of premiums largely increased.

Class 27—"Garden and Vegetable Produce," was largely increased in the number of products for which premiums are offered.

Adjourned to 2 P. M.

AFTERNOON SESSION.

Vice-President Clark offered the following resolution:

Resolved, That the state fair of 1875 be held at the city of Milwaukee, conditioned that the grounds be furnished to the society in as good condition as in 1874." Adopted unanimously.

On motion, the time of the next annual fair was fixed for September 6th to 10th, inclusive.

Secretary Field laid before the board a communication relative to the purchase of a three-cornered piece or lot of land belonging to the society and detached from the fair-ground by the railroad.

Referred to Messrs, Field, Bryant and Dean.

On motion of Vice-President Bryant, it was ordered that helpers and dinner-tickets should be distributed only to members of the board and superintendents of departments, and an account kept with each by the president's clerk, who dispenses them.

On motion of Secretary Field, an auditing committee, consisting of Messrs. Mitchell, Clark, and Fratt was elected.

Superintendants of the several departments were appointed as follows:

Department A.—Horses, etc.—Messrs. Mitchell and Greene.
Department B.—Cattle—Geo. E. Bryant,
Departments C and D.—Sheep and swine—T. C. Douseman.
Department E.—Poultry—A. A. Boyce.
Department F.—Agriculture—Dr. C. L. Martin.
Department H.—Machinery—E. J. Cooper.
Department I.—Manufacturers—Messrs. Clarke and Dean.
Department J.—Fine Arts—J. H. Warren.
Department K.—Natural History—I. A. Lapham.
Marshal—Ex-President B. R. Hinkley.
Superintendent of Forage—T. C. Douseman.
Gate-keeper—N. D. Fratt.
Ticket Accountant—R. D. Torrey.

Bills for the attendance of members were presented, audited, and ordered drawn therefor.

No further business coming before the board, on motion, adjourned *sine die.*

SOCIETY MEETINGS.

MEETING FOR THE ELECTION OF OFFICERS.

City Hall, Milwaukee,

September 11, 1874.

As required by the constitution, and in conformity to legal notice given by the secretary, the life members constituting the Wisconsin State Agricultural Society, met in the City Hall, by courtesy of the city officials, at 8 o'clock P. M., for the election of officers for the year 1875, President Stilson in the chair. After calling to order, the president said that the society was again convened by constitutional requirement to elect officers for the ensuing year. He hoped the deliberations of members would be harmonious, and that the result of their action would be the election of officers who felt a deep interest not, only in the success of the society financially, but who would use every reasonable effort to advance the great industrial interests which was was the prime work of the organization.

Mr. J. B. Shaw, of Milwaukee, moved that a committee of one from the state at large, and one from each Congressional district be appointed to recommend the names of persons to be elected to the various offices. Vice President Clark moved an amendment, that the one at large be appointed by the chair, and the one from each Congressional district be selected by the life members present from such district, which amendment was accepted, and the motion was then unanimously agreed to, and the chair appointed H. L. Palmer, of Milwaukee, for the state at large, and the following named gentleman were elected by each district, as follows:

1*st*	*Congressional*	*District*—	G. W. Wiley, Elkhorn.
2*d*	"	"	W. T. Leitch, Madison.
3*d*	"	"	J. H. Warren, Albany.
4*th*	"	"	John Johnson, Milwaukee.
5*th*	"	"	R. T. Graves, Ripon.

6th Congrsssional District—R. D. Torrey, Oshkosh.
7th " " J. G. Thorpe, Eau Claire.
8th " " A. S. McDill, Plover.

Upon the retirement of the committee for consultation, Secretary Field stated that two amendments to the constitution of the society had been presented by Vice-President Stilson—now president—at the last annual meeting, and that the constitution required that they should be read at this meeting, and that if there was no objection he would proceed to read them. No objection being raised, the amendments were read, no further action of the society being required. Said amendments were recorded in the minutes of the last annual meeting as required by Article six of the constitution.

The committee returned, and by their chairman, Hon. H. L. Palmer, submitted the following report:

President—Eli Stilson, Winnebago County.

Vice Presidents:

1st Congressional District—T. C. Douseman, Waukesha County.
2d " " Geo. E. Bryant, Dane County.
3d " " J. H. Warren, Green County.
4th " " J. L. Mitchell, Milwaukee County.
5th " " Satterlee Clark, Dodge County.
6th " " R. D. Torrey, Winnebago County.
7th " " J. G. Thorpe, Eau Claire County.
8th " " J. T. Kingston, Juneau County.

Secretary—W. W. Field, Grant County.

Treasurer—F. J. Blair, Milwaukee County.

Additional Members of the Executive Committee:

C. L. Martin, Rock county. N. S. Green, Jefferson county.
J. O. Eaton, Columbia county. N. D. Fratt, Racine county.
E. J. Cooper, Iowa county. Isaac Stevenson, Oconto county.
N. W. Dean, Dane county.

Mr. Eaton thanked the committee for again nominating him for a member of the executive board. Said that his associations with members of the committee had been pleasant and agreeable, and he hoped he had contributed something towards the success of the society since he had been connected with it, but that circumstances now rendered it necessary that he should sever his connection with the board, although he should ever take a lively interest in the future growth and prosperity of the society. He would ask the

society to substitute the name of Hon. A. A. Boyce, of Lodi, which was agreed to, and the report as so amended was unanimously adopted.

Regrets were expressed by several members of the board that Mr. Eaton felt it his duty to retire from the active work of the society, as his labors for many years had been highly appreciated by his brother members. His energy and perseverance in advocating what he thought to be right, and for the present and future interest of the society, were unremitting; and he was ever a willing worker in all the arduous labor of the board, and especially were his best efforts appreciated in the positions of superintendent of gates, and superintendent of the fine-arts department, over one of which he discharged the duties acceptable to both officers and society, during his connection with the board.

On motion, the society adjourned *sine die.*

ANNUAL MEETING.

State Agricultural Rooms,

Madison, December 2, 1874.

The society met in their rooms in the Capitol, at 3 o'clock P. M. pursuant to constitutional requirement.

Quorum present.

President Stilson in the chair.

The president, after calling to order, stated that the society was convened in accordance with constitutional provision, for the transaction of general business, and desired to know their pleasure.

F. J. Blair, treasurer of the socieiy, presented his report for the year ending December 1, 1874, which had been approved by the executive board, at its meeting December 1, 1874, showing a clear exhibit of the financial condiiton of the society.

REPORT OF TREASURER.

To the Executive Board of the Wisconsin State Agricultural Society:

GENTLEMEN:—The receipts and disbursements of the society for the year ending December 10, 1874, have been as follows:

RECEIPTS.		
Cash on hand, December 4, 1873	$2,375 86	.....
Received from State Treasurer, April 10, 1874	2,000 00	.....
Gate-fees State Fair, 1874	14,696 97	.....
Ground rent, collected at fair	2,489 80	.....
Entry fees of exhibitors	879 75	.....
Hay, grain and manure sold at close of fair	103 05	.....
Six life membership	120 00	.....
Advertising in premium-list of 1874	680 00	.....
Cash from secretary for postage on transactions	1 45	.....
Messrs. Plankinton & Armour and Layton & Co., pork packers of Milwaukee, special premiums on swine	100 00	.....
Messrs. W. H. Cottrill, proprietor Plankinton House, and J. F. Antisdell, proprietor Newhall House, Milwaukee, special premium on butter, each $50	100 00	.....
Messrs. Pierce & Whaling, iron merchants, Milwaukee, special premium on wagons and plows	110 00	.....
Chamber of Commerce, Milwaukee, special premium on wheat	50 00	.....
James Vick, florist, Rochester, N. Y., special premium on cut flowers	50 00	.....
		$23,756 88
EXPENDITURES.		
For premiums	$7,224 00	.....
Office expenses, including postage, express and freight	356 04	.....
Expenses of members attending meetings of the executive board	224 00	.....
Printing and advertising	680 14	.....
Superintendents and assistants	1,797 65	.....
Clerk Service	635 00	.....
Police, laborers and watchmen	623 00	.....
Livery and omnibus hire	135 00	.....
Hay, straw and grain	801 88	.....
Music	125 00	.....
Expenses for power hall	274 67	.....
Interest on hand	409 50	.....
Salary of secretary	2,000 00	.....
Dinner tickets	754 50	.....
Medals	97 85	.....
Miscellaneous, including orders No. 2, 3, 33, 46, 47, 55, 65, 126, 169, 211, 251, 261, 262, 278, 304, 305, 313, 315, 316, 354, 369, 385, 392, 409, 411, 412, 414, 425, 435, 436, 445, 448 and 449	872 92	.....
		17,012 15
Balance on hand	.....	6,744 73

Very respectfully submitted,

F. J. BLAIR, *Treasurer.*

On motion of J. O. Eaton, a committee of three life-members, excluding members of the executive committee, was appointed by the chair to examine the Treasurer's report and compare it with the books, vouchers, &c., in the office of the Secretary. The chair appointed as such committee, S. D. Carpenter, John S. Dean, and H. A. Tenney, who, after a careful examination, submitted the following report:

Mr. President, and Gentlemen of the Wisconsin State Agricultural Society:

The undersigned committee, appointed to examine and compare the vouchers of the Secretary and Treasurer, having performed that duty, herewith report that we find the same correct, and that the receipts during the year from all sources amounted to $23,756.88; total disbursements, $17,012.36; amount on hand, $6,744.52.

All of which is respectfully submitted.

S. D. CARPENTER,
J. S. DEAN,
H. A. TENNEY.

Amendments to article 5, of the constitution, submitted by President Stilson at the annual meeting in December, 1873, and which were recorded in the minutes of said meeting, were, on motion, indefinitely postponed, the object having been partially accomplished by action of the society at its last meeting for the election of officers.

J. O. Eaton presented an amendment to the constitution of the society as follows: Amend article 3, entitled, "of the officers," so that it shall read as follows: The officers of the society shall consist of a president, two vice-presidents, secretary, treasurer, and one additional member from each congressional district of the state, who shall hold their respective offices for the 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, shall constitute the executive board.

Simeon Mills offered an amendment to the constitution of the society as follows: Amend article 6, of the constitution, entitled, "of amendments," by adding the following to said article:

All amendments proposed shall be subject to amendment by a majority vote at the meeting when presented, but not thereafter.

Vice-President Bryant moved that it is the sense of this meeting that the mortgage on the Fair-Ground property be paid, if the executive board deem the funds in the treasury sufficient to pay the same, and meet other liabilities likely to ensue within the year.

Motion seconded and adopted.

On motion, the Society adjourned *sine die*.

WARRANT-ACCOUNT OF THE SECRETARY.

Number of orders issued for the year ending December 1, 1874, the amount and object of each, and the name of the person to whom issued.

No.	To whom and for what issued.	Amount.
1	J. P. McPherson, general work	$9 00
2	J. S. Farrington & Son, use of furniture	20 50
3	W. W. Field, expenses of speakers at state fair	19 50
4	Am. Exp. Co., expressage	80
5	G. H. Lamberton, premium	2 00
6	Rufus Cheney, expenses executive meeting	16 00
7	Sat. Clark, expenses executive meeting	10 00
8	Geo. A. Bruen, interest on mortgage	136 50
9	Martin Robinson, premium	12 00
10	E. W. Keyes, paper wrappers and postal-cards	15 00
11	U. S. Exp. Co., expressage	1 00
12	David Hollinger, premium	5 00
13	S. A. Tenney, premium	6 00
14	T. W. Rice, premium	2 00
15	D. P. Webster, premium	5 00
16	Park, Smitt & Co., premium	15 00
17	Am. Exp. Co., expressage	8 00
18	Wm. J. Park & Co., stationery	15 72
19	D. M. Aspinwall, premium	5 00
20	E. W. Keyes, postage-stamps	15 00
21	H. W. Goodrich, premium	3 00
21½	J. N. Smitt, premium	30 00
22	Mark Dresser, premium	4 00
23	Dane County Agricultural Society, advertising	10 00
24	Am. Exp. Co., expressage	40
25	E. W. Keyes, postage	2 58
26	Curtis Mann, expenses executive meeting	12 00
27	Sat. Clark, expenses executive meeting	14 80
28	Rufus Cheeney, expenses executive meeting	18 50
29	J. O. Eaton, expenses executive meeting	5 35
30	Eli Stilson, expenses executive meeting	14 85
31	B. R. Hinkley, expenses executive meeting	15 00
32	N. D. Fratt, expenses executive meeting	18 30
33	W. E. Flagg, expenses to attend agricultural convention	35 00
34	F. S. Lawrence, premium	10 50
34	C. L. Martin, expenses executive meeting	10 00
36	Geo. E. Bryant, expenses executive meeting	4 50
37	James H. Walker, premium	5 00
38	Joseph T. Henry, freight on books to American Institute	9 80
39	E. W. Keyes, stamped envelopes	17 10
40	Am. Exp. Co., expressage	20 00
41	W. W. Field, salary	500 00
42	W. W. Field, clerk-hire	75 00
43	E. W. Keyes, wrappers and postal-cards	17 28
44	W. W. Field, salary	500 00
45	E. W. Keyes' box-rent	3 83
46	Edward Searing, Webster's Dictionary	8 00
47	Hamilton S. Wicks, reporting at agricultural convention	10 00
48	E. W. Keyes, wrappers and postage-stamps	20 00
49	W. W. Field, clerk-hire	75 00
50	Am. Exp. Co. expressage	2 20

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
51	Democrat Co., printing	$15 50
52	Geo. A. Bruen, interest on mortgage	136 50
53	Am. Exp. Co., expressage	3 00
54	Milwaukee News Co., printing	304 44
55	W. W. Field, expense account	96 54
56	M. J. Cantwell, printing	17 50
57	Am. Exp. Co., expressage	2 95
58	U. S. Exp. Co., expressage	1 00
59	W. W. Field, salary	500 00
60	E. W. Keyes, postage-stamps	35 11
61	E. W. Keyes, postage-stamps	20 00
62	Am. Exp. Co., expressage	45 05
63	Morrow & Bro., advertising	30 00
64	B. W. Suckow, class-books	12 70
65	W. J. Sullivan, rosettes and ribbons	19 91
66	E. W. Keyes, postage-stamps	15 00
67	H. F. Jennings, premium	60 00
68	T. S. Capron, premium	28 00
69	G. S. Haskell & Co., premium	45 00
70	C. H. Greenman, premium	35 50
71	G. V. D. Brand, premium	10 00
72	Allen Porter, premium	10 00
73	David Smith, general work	6 00
74	D. H. Cheney, clerk-service	32 00
75	Rufus Cheney, superintendent	97 35
76	Wm. Lyon, general work	10 50
77	Order destroyed.	
78	Order destroyed.	
79	O. S. Willey, superintendent	32 00
80	Wm. H. Bell, assistant superintendent	30 00
81	J. O. Eaton, superintendent	50 00
82	Geo. W. Wylie, assistant marshal	36 00
83	E. Dakeley, watchman	6 00
84	J. E. Cooper, superintendent	30 00
85	A. E. Foote, lettering, painting, etc	27 00
86	Sat Clark, superintendent	65 00
87	A. C. Peasley, assistant superintendent	24 00
88	G. H. Daubner, premium	55 00
89	James Baker, assistant superintendent	24 00
90	H. R. Clark, assistant superintendent	30 00
91	Thomas Higgins, assistant superintendent	24 00
92	H. Lake, assistant superintendent	24 00
93	M. Garvin, assistant superintendent	24 00
94	A. E. Chase, assistant superintendent	24 00
95	B. R. Hinkley, assisting president	25 00
96	H. Phillips, premium	10 00
97	E. P. Richardson, assistant superintendent	26 00
98	C. L. Martin, superintendent	30 00
99	J. W. Baker, assistant superintendent	26 00
100	D. S. Harkness, printing	10 00
101	D. Huntley, premium	49 00
102	Grand Chute F. Club, premium	10 00
103	H. M. Jones, premium	5 00
104	A. H. Hart, premium	20 00
105	D. H. McArthur, ticket-accountant	40 00
106	P. Brooks, premium	30 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
107	Wm. Welch, watchman	$18 00
108	Louis Breesee, assistant superintendent	12 00
109	L. Barrett, assistant superintendent	20 00
110	R. R. Fallows, assistant superintendent	20 00
111	W. H. Seaver, assistant superintendent	20 00
112	James Stryker, assistant superintendent	20 00
113	James Cooper, assistant superintendent	20 00
114	Fred. Perkins, assistant superintendent	20 00
115	Wm. Dodge, assistant superintendent	16 00
116	C. D. Ellarson, assistant superintendent	20 00
117	Peter Onnell, assistant superintendent	20 00
118	A. J. Robertson, assistant superintendent	20 00
119	Jennie Field, clerk-service	40 00
120	Nettie Jones, clerk-service	40 00
121	H. A. Gere, assistant superintendent	20 00
122	Isaac Charnley, assistant superintendent	20 00
123	N. D. Fratt, superintendent	30 00
124	Robert Anderson, clerk-serviee	30 00
125	S. D. Carpenter, service in superintendent's department	25 00
126	E. Herzer, shavings	7 50
127	J. L. Mitchell, superintendent	30 00
128	H. C. Crandall, service in superintendent's department	9 00
129	S. Levitt, watchman	12 00
130	Frank Warren, general work	15 00
131	J. G. Calkins and son, general work	21 00
132	Wm Rhodes, premium	115 00
133	Wm. Reed, premium	80 00
134	Geo. Wall, premium	20 00
135	E. W. Palmer, police	15 00
136	Therese Karzke, premium	19 00
137	Mrs. J. T. Kavanaugh, premium	20 00
138	E. Newcomb, premium	6 00
139	W. H. Davis, premium	23 00
140	S. Squires, premium	2 00
141	J. S. Rowell, premium	300 00
142	E. J. Grover, premium	3 00
143	L. Wheeler, premium	5 00
144	F. C. Curtis, premium	67 00
145	Mrs. A. A. Bull, premium	4 00
146	J. C. Corrigan, premium	235 00
147	John Gillett, watchman	15 00
148	John Gillett, watchman	9 00
149	L. Rawson, premium	296 00
150	M. Loomis, premium	30 00
151	J. Campbell, premium	20 00
152	H. N. Warren, watchman	18 00
153	H. Ludington, watchman	6 00
154	H. Ludington, watchman	12 00
155	H. Nathan, watchman	3 00
156	H. Nathan, watchman	15 00
157	W. Friel, watchman	15 00
158	A. Wood, police	18 00
159	A. Wood, watchman	9 00
160	R. J. Day, watchman	12 00
161	W. R. Day, watchman	12 00
162	T. Laind, watchman	6 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
163	T. Laind, watchman	$15 00
164	C. Robinson, watchman	9 00
165	C. Robinson, watchman	15 00
166	J. A. Parker, assistant superintendent	4 50
167	F. Zentner, watchman	31 00
168	E. W. Palmer, watchman	6 00
169	N. B. Caswell, hardware	8 25
170	J. A. Byrne, clerk-service	25 00
171	N. J. Swan, hay and straw	735 96
172	Sentinel Co., printing and advertising	150 00
173	N. S. Greene, assistant superintendent	30 00
174	Curtis Mann, services during fair	30 00
175	Daniel Williams, clerk hire	20 00
176	R. T. Graves, superintendent	25 00
177	W. B. Leaf, assistant superintendent	18 00
178	A. J. High, police	6 00
179	B. Alcott, police	21 00
180	J. H. La Point, premium	40 00
181	G. J. Kellogg, asst. superintendent	30 00
182	O. W. Russell, leveling track	20 00
183	J. H. Warren, marshal	62 00
184	A. H. Swan, premium	30 00
185	W. D. Edgerton, premium	54 00
186	O. Secor, premium	15 00
187	H. B. Roberts, premium	30 00
188	B. Phelps, premium	15 00
189	Howard & Towers, premium	69 00
190	Miss Kate Peffer, premium	50 00
191	R. Seaver, premium	108 00
192	Mrs. R Davis, premium	8 00
193	Frank McVean, premium	14 00
194	T. B. Rowland, premium	10 00
195	S. A. Fox, premium	70 00
196	J. W. Wood, premium	32 00
197	H. N. Maxham, premium	3 00
198	G. J. Kellogg, premium	58 00
199	F. S. Lawrence, premium	20 00
200	Mrs. M. A. Lewis, premium	25 00
201	Mrs. J. W. Park, premium	23 00
202	Park, Smith & Co., premium	10 00
203	E. B. Thomas, premium	24 50
204	S. B. Smith, premium	4 00
205	P. Putnam, premium	13 00
206	Mrs. P. Putnam, premium	10 00
207	C. H. Hall, chief clerk secretary's office	75 00
208	H. H. Greenman, premium	15 00
209	Greenman, McGraw & Day, premium	5 00
210	Harrison Ludington, premium	155 00
211	Harrison Ludington, wood	15 00
212	J. Stoddard, premium	109 00
213	O. L. Packard, premium	50 00
214	O. L. Packard, engine, &c., for power hall	121 45
215	Gould's Nursery, premium	63 00
216	A. Tiebratz, premium	20 00
217	E. P. Richardson, premium	3 00
218	A. Aldrich, premium	50 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
219	J. M. Alcott, premium	$15 00
220	Miss Mary Stransky, premium	5 00
221	Hawkins & Krueger, premium	10 00
222	Mrs. L. Newbour, premium	3 00
223	W. K. Wilson, premium	10 00
224	H. Frodsham, premium	50 00
225	W. Zimmerman, premium	5 00
226	Geo. Murray, premium	505 00
227	O. B. Fowler, premium	20 00
228	C. Kingsley, premium	2 00
229	D. H. Doran, premium	15 00
230	Miss Bertha Lewald, premium	2 00
231	Wm. Hartert, sundries for power hall	136 72
232	Miss Mary Mahoney, premium	8 00
233	Sargent & Strong, stationery	1 85
234	Geo. Jeffrey, premium	28 00
235	E. Agness, premium	6 00
236	Jas. Eager, premium	6 00
237	Miss Jennie Heth, premium	7 00
238	J. A. Bryden, oats	65 92
239	F. Bell, premium	20 00
240	Harrison & Green, sprinkling track, &c	62 00
241	Miss J. Lynde, premium	4 00
242	E. Chatfield, assistant superintendent	13 50
243	J. Becker, premium	15 00
244	Mrs. Jas. McAlpine, premium	19 00
245	L. Ziemer, premium	4 00
246	Mrs. M. L. Hendee, premium	2 00
247	Coe & Elliott, premium	3 00
248	Geo. W. Ringrose, premium	8 00
249	D. T. Pilgrim, premium	63 00
250	Farrington & Sons, premium	12 00
251	Wm. Kershner, drayage	6 00
252	Cramer, Aikens & Cramer, advertising	3 50
253	C. G. Bradley, premium	40 00
254	Mr. and Mrs. S. H. Seaman, premium	94 00
255	W. M. Ormand, premium	30 00
256	W. M. Ormand, assistant superintendent	30 00
257	Mrs. Henry Hickman, premium	4 00
258	O. M. Brown, premium	150 00
259	W. O. Stillman, livery	135 00
260	H. F. Jennings, premium	15 00
261	Blair & Persons, crockery and cartage	32 69
262	C. A. Buttles, sundries	33 96
263	Theo. Heiss, premium	20 00
264	C. Hall, premium	45 00
265	Mrs. Fanny Wilson, premium	4 00
266	B. B. Olds, premium	30 50
267	Mrs. Alexander Mitchell, premium	45 00
268	J. B. Cross, premium	5 00
269	Aug. Wolff, premium	5 00
270	H. W. Roby, premium	15 00
271	John Dearsley, premium	5 00
272	H. Boorse, premium	43 00
273	J. F. Burchard, premium	10 00
274	Chas. Elson, expense-account, as per bill	99 50

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
275	Milwaukee News Company, printing	$24 50
276	M. Carpenter, premium	85 00
277	H. McCoffney, premium	3 00
278	S. H. Seaman, chicken-coops broken	9 35
279	Chas. Metos, general work	7 50
280	S. A. Lemon, general work	24 00
281	W. A. Henwood, police	5 00
282	Monroe Cornet Band, music	125 00
283	Will Bates, clerk-service	35 00
284	J. H. Balch, clerk-service	45 00
285	R. R. Cheeney, clerk-service	35 00
286	Mrs. F. M. Vilas, clerk-service	30 00
287	J. H. Ray, police	15 00
288	J. C. Otis, general work	18 00
289	Aug. Belten, general work	3 50
290	Percy Stone, clerk-service	25 00
291	A. H. Main, chief clerk, treasurer's office	60 00
292	H. F. Atwood, clerk-service	20 00
293	Allie A. Bird, clerk-service	15 00
294	F. F. Adams, premium	10 00
295	S. P. White, clerk-service	25 00
296	V. A. Henwood, clerk-service	20 00
297	W. E. Main, clerk-service	30 00
298	E. S. Bean, clerk-service	30 00
299	Jas. Parker, clerk-service	15 00
300	J. J. Norton, clerk-service	25 00
301	H. F. Dixon, clerk-service	25 00
302	H. Sylvester, clerk-service	15 00
303	J. L. Mitchell, premium	30 00
304	Eli Stilson, expense account as president	96 55
305	Eli Stilson, per diem services as president	145 00
306	S. M. Hammond, clerk-service	30 00
307	Eli Stilson, premium	150 00
308	Wm. Storey, premium	20 00
309	Mrs. H. M. Jones, premium	7 00
310	E. M. DePuy, premium	3 00
311	Emily T. Smith, premium	28 00
312	T. O. Wisner, superintendent	54 65
313	W. W. Field, expense account	42 70
314	Mrs. E. Foreman, premium	4 00
315	W. H. Cottrill, board by order of society	44 50
316	Parks & McLaughlin, posting bills	2 00
317	H. W. Roby, assistant superintendent	42 50
318	Berthelet & Co., premium	3 00
319	Not issued	
320	Wm. Beck, chief of police, service	50 00
321	Wm. Kitzrow, premium	80 00
322	Geo. D. Doubleday, premium	60 00
323	Peter Dany, premiun	60 00
324	Jas. Barr, premium	10 00
325	H. Newnman, assistant superintendent	20 00
326	Miss M. Newnham, premium	5 00
327	Jas. Magson, premium	60 00
328	M. Realey, police	21 00
329	W. Jeffers, police	12 00
330	W. A. Jeffers, police	12 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
331	H. Poal, police	$15 00
332	Wm. Ream, police	15 00
333	W. F. Smith, premium	16 00
334	John H. Paul, premium	100 00
335	E. and J. Smith, premium	196 00
336	George P. Peffer, premium	73 00
337	Jacob DeGraff, premium	7 00
338	J. Johnson, premium	56 00
339	C. M. Warren, general work	12 00
340	Wm. R. Warren, police	15 00
341	Geo. E. Bryant, premium	80 00
342	Geo. E. Bryant, superintendent	50 00
343	M. J. Cantwell, tickets and printing	27 50
344	Mrs. P. Yale, premium	6 00
345	Wm. Kitzrow, premium	5 00
346	Samuel H. Watson, assistant superintendent	20 00
347	Filer, Stowell & Co., premium	25 00
348	Chester Hazen, premium	95 00
349	E. W. Keyes, stamped envelopes	17 10
350	Peter Keysinick, general work	24 00
351	A. F. Pratt, premium	30 00
352	R. Richards, premium	145 00
353	Kirby & Jones, premium	3 00
354	M. Cosgrove, hardware	3 00
355	Chas. Halborn, premium	30 00
356	Wm. Lysaght, premium	99 00
357	R. Ogilvie, premium	43 00
358	John M. Roberts, premium	5 00
359	Wm. Warden, premium	50 00
360	Leon Howard, premium	6 00
361	Sentinel Printing Co., advertising	10 00
362	Geo. Harding, premium	25 00
363	A. Middlemas, premium	10 00
364	Myers & Son, premium	2 00
365	H. M. Thompson, premium	7 00
366	John Jeffreys, premium	35 00
367	C. C. Hatchard, premium	7 00
368	J. C. Plumb, premium	5 00
369	S. S. Hills, use of hay-scales	25 00
370	S. S. Hills, assistant superintendent	44 00
371	Am. Exp. Co., expressage	16 00
372	S. A. Philbrook, premium	7 00
373	Geo. Lawrence, jr., premium	60 00
374	A. G. Tuttle, premium	69 50
375	S. B. Smith, premium	2 00
376	Jos. Ray, police	12 00
377	E. J. Lindsay, premium	25 00
378	H. B. Sherman, premium	99 00
379	Mrs. S. Bell, premium	8 00
380	Mrs. Thos. Irving, premium	5 00
381	Miss Kate Peffer, premium	4 00
382	E. Elliot, premium	5 00
383	T. Heiss, premium	10 00
384	U. S. Exp. Co., expressage	4 30
385	Robert Monteith, filling diplomas	2 50
386	Mrs. A. H. Cutting, premium	10 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
387	Johnson & Jones, premium	$2 00
388	F. Jones, premium	10 00
389	Geo. W. Cann, premium	10 00
390	G. Simmons, premium	10 00
391	Peter Davy, premium	20 00
392	Roberts & Davis, drayage	12 00
393	Samuel A. Randles, premium	10 00
394	Mrs. M. A. Lewis, premium	1 00
395	J. S. McGowen, services for superintendent	12 00
396	M. L. Butterfield, premium	35 00
397	Thomas Irving, premium	30 00
398	W. W. Ellsworth, premium	189 00
399	Perry Craig, premium	25 00
400	Mrs. H. Russell, premium	1 00
401	W. W. Field, salary	500 00
402	James McNee, premium	10 00
403	J. Ozanne, premium	25 00
404	J. G. Putman, premium	10 00
405	H. O. Bayley, premium	4 00
406	J. C. Mitchem, premium	5 00
407	Foster & Fowler, premium	5 00
408	R. S. Houston, premium	40 00
409	Julius Vogel, rollers	6 00
410	Miss L. Tenny, premium	2 00
411	Morrow & Bro., 11 copies Western Farmer	22 00
412	Mayhew Bros., lumber	20 91
413	E. B. Thomas, premium	3 00
414	W. W. Field, expense account	83 80
415	Wm. J. Park & Co., stationery	25 24
416	Miss Lillie Webster, premium	2 00
417	I. P. Chapin, premium	13 00
418	Jacob Hill, premium	5 00
419	Miss B. Day, premium	3 00
420	Henry Lamb, premium	5 00
421	E. W. Keyes, postage and box-rent	3 75
422	Allen Stetson, premium	25 00
423	W. F. Whitney, premium	10 00
424	Griffith Richards, premium	4 00
425	Fleck & Schwab, use of tables and chairs	9 00
426	Mrs. H. G. Roberts, premium	2 00
427	Blœdel & Mueller, medals	97 85
428	Mrs. Fannie M. Vilas, premium	3 00
429	Am. Exp. Co., expressage	3 35
430	Democrat Co., printing	11 50
431	E. W. Keyes, postal-cards	10 00
432	R. S. Houston, premium	10 00
433	A. & P. Humbert, premium	58 00
434	Medbury, Stevens & Co., premium	10 00
435	Matthews Bros. & Co., sundries	9 75
436	W. W. Daniells, expenses at State Fair	5 00
437	Stickney, Baumbach & Gilbert, premium	15 00
438	A. Rorick, premium	5 00
439	C. A. Buttles, premium	3 00
440	Geo. P. Peffer, premium	2 00
441	Atwood & Culver, printing	53 00
442	R. Huges, premium	20 00

Warrant-account of the secretary—Continued.

No.	To whom and for what issued.	Amount.
443	U. Exp. Co., expressage	$3 65
444	Geo. A. Bruen, interest on mortgage	136 50
445	Peterman & Stredy, ladder	6 00
446	Dinner-tickets	754 50
447	F. J. Blair, expenses at December and February meetings	26 00
448	F. J. Blair, coal	1 01
449	F. J. Blair, counterfeit money taken during fair	15 00
450	F. J. Blair, service during state fair	35 00
	Total amount of orders issued by secretary	16,994 30
	Amount of orders Nos. 314, 319, 351, 381, 390, 392 and 393, of 1873, paid by the treasurer	87 50
		17,081 80
	Amount of orders Nos. 164, 165, 400, 426, 428, 432, 442, 443 and 445, of 1874, not received by the treasurer at the close of the year, December 1, 1874	69 65
	Total amount of orders paid by the treasurer	17,012 15

STATE
AGRICULTURAL CONVENTION.

Held at Madison, January, 27 to 30, 1874.

WEDNESDAY, 9 A. M.

Meeting was called to order by President Eli Stilson, who proceeded to read his opening address, as follows:

FARMERS OF WISCONSIN: In my opening remarks this morning I will endeavor to be brief, but at the same time present for your consideration the importance and magnitude of the subject we are called together to discuss and examine.

HOW SHALL WE IMPROVE THE AGRICULTURE OF WISCONSIN?

I hope the facts and experience that will be presented by those who shall take part in this convention will be profitable and instructive.

The subject of Agricultural Conventions was long discussed by the officers of the State Agricultural Society before it was finally adopted as one of the means by which this society could benefit all classes of farmers in the state. No farmer is so advanced but what he can find here some new facts and experience gathered from the book of nature by a tiller of the soil; neither are any so inexperienced and unsuccessful, but that they can find new thoughts and new ideas, and gather a little vital energy and perseverance, which shall make them more successful in the future. The several agricultural conventions that have been held in this state have refuted the idea that farmers as a class are incapable of discussing agriculture with profit to themselves and the state. This uprising of the agricultural classes in their manhood and dignity, and their fixed determination to acquaint themselves with all the knowledge that is required by their occupation and citizenship, is one of the greatest movements of the age.

May the farmer, by the cultivation of his intellect, by the study of nature's laws, by a thorough and practical application to his calling, and by sterling intergrity in all his business transactions, honestly win the title of "nature's nobleman."

No farmer can afford te be untrustworthy in his business transactions, but on the other hand the exercise of manly qualities will aid much in the success of the farmer's business, and be his best passport as a farmer and a citizen. By a close study and preparation for the task that lies before us in the advancement of agriculture, we shall not only learn to produce more per acre and cheaper, but we shall learn to partially ward off a part of the effects of unfavorable seasons, and insect enemies, and our success will be more complete and satisfactory, having surmounted those difficulties. Not only so, but we shall learn to look forward to these agricultural gatherings as a sort of reunion of the weather-worn veterans and new recruits in the cause of agriculture. We hope for a large amount of facts and experience, untrammelled by vague theories and visionary ideas.

We are entirely upon a new era in agriculture. The coming farmer must not only have a general practical education, such as he can obtain in our institutions of learning, but he must be a close observer of nature's laws, and be able to sift the experience of others, and try them as in a crucible, retain the valuable while he casts away the visionary.

I shall confine myself to a limited portion of the broad field that opens before me; the improvement of the soil and the improvement of live stock, leaving the great questions of diversified industry, cheap transportation, rate of interest, and the details of the various branches of agriculture for others or for future occasions.

The grain producer must learn to produce more per acre, and thereby produce at less cost per bushel and greater profit. I lay down this proposition, that the farmers of Wisconsin can and should add *twenty-five per cent.* to the average yield of grain per acre, by the judicious use of clover and plaster and keeping of stock, with good cultivation and proper rotation of crops.

The average yield of wheat in this state, for a long series of years is less than fourteen bushels per acre, and yet there are instances in the state where, on well managed farms, the yearly average is more than fifty per cent. greater than the average of the state, and if we

allow one-half of that difference for difference in soil, we still have over twenty-five per cent. in the average yield in favor of the superior or *soil-compensating system.*

If we take the year 1869, as included in the census of 1870, as our basis, twenty-five per cent. added to the 25,600,000 bushels of wheat reported, would have added 6,400,000 bushels to the crop of wheat in a single year, and this at one dollar per bushel would have added $6,400,000 to the productive industry of the state. As the greater the yield, the less cost of production per bushel, so at least half that sum, or $3,200,000, would have been added to the farmers' profits from this *soil-compensating system* from this one crop in a single year. And if we apply this same principle to the 15,000,000 bushels of corn grown in that year, and the 20,000,000 bushels of oats, with the 3,000,000 bushels of barley and rye, we shall have a grand total that will show the difference in a single year between the exhausting and the soil-compensating systems, on the cereals alone.

As less than one-third of the cultivated land was in wheat in 1869, it would be safe to put the net profits of such improvement on all crops in the state at seven millions of dollars, or, in other words, equal to adding one hundred millions of dollars to the value of the farming lands of the state, at seven per cent. interest, and it will not alter the conditions of the problem materially, that in order to produce this result we should have applied a part of the land to keeping stock instead of growing wheat. Neither does the soil-compensating system stop here, for it is even now marked in the production of grain. And the more stock your land can carry well, the more manure for the soil and the greater your crops of grain and grass in return.

Let me impress upon your minds the liberal use of clover; and do not be afraid to use from seventy-five to one hundred pounds of plaster yearly, or once in two years, on every acre of clover you grow on clay or sandy soil,

A Wisconsin farmer, who farmed it on the exhaustive plan, producing but little manure and keeping but little stock, on a clay soil, complained that the drought of the summer and cold of winter killed his clover and he "could not grow grass," so he sold his farm and "went west." The purchaser, with deep plowing and an application of eight loads of sheep manure to the acre, produced a

fine crop of wheat and a good set of clover, and the second year produced two and one-half tons of hay the first crop and four and one-half bushels of clover-seed the second crop the same year, and the third year, with one hundred pounds of plaster, produced two tons of hay and fine fall feed, and the fourth year, with one hundred pounds of plaster, produced two tons of hay and then plowed the land, and the fifth year produced thirty bushels of wheat per acre, and the former owner of that land is still "going west" in search of land on which to farm it on the exhaustive plan.

These are no visionary ideas or vague theories, for I have applied the principles here laid down to the growing of fifty thousand bushels of wheat, and the average for the last sixteen years has been more than fifty per cent. larger than the average of the state for the same time, and did these limits permit, I might name scores of farmers in this state that are now applying the same principle, and with like results.

IMPROVEMENTS IN STOCK.

Having shown how we can increase our production as a state, at least twenty-five per cent., I will now proceed to show how we can apply the rule of increased profit to a part of that production—that part consumed in making beef, pork, butter, cheese and growing live-stock.

Let us examine the dairy product of the state. By the census of 1870, we find there were 308,377 cows in the state, and they produced 22,473, 036 pounds of butter , and 1,591,798 pounds of farm-made cheese, and factory cheese to the value of $249,056, which, at 12½ cents per pound, would amount to 1,992,448 pounds, besides 2,059,105 gallons of milk sold. On the basis of two and one-half pounds of cheese being equal to one of butter, the total product was only equal to eighty pounds of butter per cow. But as this only includes the butter and cheese made and milk sold, if we add 25 per cent. for balance of milk used, we shall have as the total product only equal to one hundred pounds of butter per cow. And if we allow three pounds of cheese equal to one of butter, the result will be still worse.

A showing so unsatisfactory to our state should call for thorough and decisive measures for improvement. The average should not be less for the whole state than 160 pounds of butter, or 400 pounds

of cheese. Mr. White, of Kenosha, averages 600 pounds of cheese per cow annually, but he raises his own heifers and keeps them in growing condition all the time. They are graded short-horns, and their cheese product is equal to 240 pounds of butter per cow, and cannot the state average two-thirds of that amount? The remedy is to improve the common stock of the country with thoroughbred stock, and then feed on milk-producing food while growing. Then if we feed our increased production to our improved animals, our net profits will again be increased 100 per cent. at least, and the same rule holds good in the production of beef, pork, and all other live-stock. The grade short-horn will keep as easy as the native, and weigh at three years old more than the native at four years, and bring a much higher price per hundred, thus not only saving one year's keeping, but getting so much more and realizing one year sooner. Had I time, I might recite experiment after experiment that have proved these facts conclusively by hundreds in this and other states, where the improved stock had not only doubled, but had thribbled and even four-folded the meagre net profits on the native stock after paying all costs of improvement.

The census of 1870 reports $45,000,000 of live-stock in the state of Wisconsin. Now, to double the net profits on that is equal to a perpetual loan of $45,000,000 to the farmers of Wisconsin, free of interest. A mine of wealth within our reach nearly equal to the consolidated Virginia mine in the Comstock lode, above the 14,000 feet level, that is now attracting the attention of the world, and the cost of rendering that increased wealth available, is no greater than that of mining that precious mineral, but because it will take longer to realize we are slow to invest. From 1860 to 1870, Vermont, Ohio, and Michigan added over 25 per cent. to their average production of wool per head on their sheep. Some other states have added even more than that to the net profit on their beef, pork, and horses, yet in this state we have depended so largely on the wheat, and a large majority of farmers have neglected their stock and partially exhausted their land, and wheat having failed, the hard times has too many farmers in its iron grasp.

Should there be any farmer present who thinks the importance of improved live-stock is overdrawn by me, let him closely consult the sales at the live-stock yards in Chicago, and then take the testimony of those who bred and fattened that stock, and they will

cease to doubt. At the late great Smithfield Cattle-Show, which is one of the largest in England, the short-horn at three years and three months old, beat the most successful animal in all other breeds at four years and eight months old. If they will do this as against other improved breeds, what will they do when compared against the natives?

The farmer who crops his farm on the exhausting plan, and keeps only scrub stock, is ever on the descending scale, and nothing pays; while the farmer who tills his farm on the soil compensating plan, and keeps improved stock, so that he not only produces more and cheaper, but turns his product so as to bring more per hundred, or per bushel, is on the sure road to success. Unfavorable seasons may come athwart his path, and for a season retard his progress, but if he profits by their teaching and the experience of others, he soon surmounts those difficulties, and moves on with renewed vigor and a more intelligent system.

I am fully aware that recent efforts have been put forth to improve the stock of this state, and the result of those efforts are very conspicuous at our annual fairs; but those efforts have not yet reached the great mass of the farmers of the state in the improvement of their common stock, for here is where the results can be attained so cheaply, and at the same time so quickly.

It is time the inquiry was on the increase, and many, who a short time ago were opposers or doubters of this question of improvement, have became firm advocates and active workers, while others, having failed to investigate the results, plod on in the same old rut, and are ever complaining that farming does not pay. The merchant who would bring his goods from New York by way of New Orleans, thus losing much time, and cost double freight, might as well expect to succeed, as the farmer who keeps stock that consumes fifty per cent. more fodder and time to accomplish a given result, and even then have to sell for a less price. In this improvement we are being aided by the press of the country, and I hope the time is not far distant when every paper published in the state of Wisconsin shall have its well regulated agricultural department. Not only in a financial point of view will the improvements of the farm and stock result to the benefit of the farmer, for such improvements once commenced and pursued in earnest, the farmer will become attached to his calling and justly pride himself on the improve-

ments, and his sons, if rightly educated, soon see that there is something worthy of their best efforts, and feel proud of their accumulations, as one who said "the proudest moment of my life was when the governor of the state rode up and said, 'young man, will you sell me one of those heavy shearing-sheep of yours that I have heard so much about?'"

A Lawes, a Johnston, a Geddes, a Randall, a Hammond, a Bakewell, a Booth or a Bates are greater benefactors of their race than the greatest politicians of the day.

At the conclusion of the President's interesting and profitable introductory remarks, Secretary Field announced to the convention that it was expected that when papers were presented, such discussions would be had upon the subject-matter of the paper as the convention thought desirable, saying: This convention was called for the purpose of reading papers and an interchange of views by discussions upon all questions relating to the industrial interests of the state. I especially requested that farmers' clubs, granges, county societies and all other industrial organizations of the state should send delegates here and participate with us.

I am informed that many of those present, and many more that will arrive to-day, are delegates representing those different organizations, and I wish to say here, that it is not understood to be strictly a delegate convention. We invite all workers, regardless of whether they represent any society or not, to take part with us. I have sent a programme to each member of the Legislature, and as many of them are farmers, I doubt not they will participate with us in the general discussions.

It is desirable that those gentlemen representing organizations as delegates, should send up their names to the secretary's desk, showing the names of delegates and the societies they represent.

And perhaps in order to open this discussion I may say this one item struck me in the President's paper as of great interest, that we should request all the political papers of the day to devote at least a page or two each week to the industrial interests and all legitimate enterprises which help to make up a great and noble state. Our papers now are filled with what? Well, to-day with the senatorial question, but it is not of that overshadowing importance that it should take up all the space alloted to the reading matter in the various journals of the day. We should all take those

papers that have such a class of reading in them as we desire and as will promote our interests.

Mr. J. M. Smith, of Green Bay, said: Mr. President, you spoke in your paper of short-horned cattle being superior for beef. I have no donbt of that; but did you intend to state them to be superior to the full blood, or that they can be so only as a stepping stone to the full blood? You spoke of them being superior, but did not say whether the full bloods are superior to the grades or not.

President Stilson. I remarked that the way to improve the thorough-breds was the use of blooded stock on the common stock. They probably would be superior if it was not for their exhorbitant cost, but by the use of the in and in breeding, or the free potency as we call it, we approach more than half way to the full blood by the first cross, and the only means in the reach of the common farmer, is by an improvement of the common stock by the thorough-bred. The first cross is more than half way towards the thorough-bred, owing to the intensity of this in-and-in breeding for several years; and this may be made comparatively cheap in that way. They are not superior, but they are cheaper.

Mr. Clark, of Green County. The matter on which the address of our President touches is a matter of importance and touches the vital interest of all farmers—the improvement of his land. And as he referred to one experiment in the way of plaster, I will say, I came into Wisconsin in a late day, only four or five years ago, and I was told that plaster had no effect on the lands of Wisconsin, and for three or four years I didn't try any. But two years ago I went and got two barrels of plaster and sowed it on some clover on a poor piece of ground, on which the wheat a year before I could not bind. On the east and north of that ground was some new land which had only raised one crop, and when I mowed I had two tons on the ground where the plaster was, and where I didn't sow plaster I could not get half a ton; but on the new ground I got about a ton, and I got a large crop of seed on the old ground, and but a medium crop on the new. And the next year I sowed it with plaster again, and the wheat on the plastered ground some of it fell down. On the unplastered ground, some of it was only six inches high, and right by the side of that, on the plastered ground, it was three feet high. And it seems to me a very silly thing in farmers

not to sow plaster when it will produce so much more. Last year I think I got 500 per cent. on the money I invested in plaster. If we can increase fertility of our soil by plaster, we are making good headway. I will state that plaster does not have the same effect upon all soils.

Mr. Tuttle, of Kenosha, asked Mr. Clark, what effect does it have on sandy soils?

MR. CLARK. At the east it was more favorable than on any other soil.

MR. PORTER, of Waukesha. I suppose the question was asked with reference to the reading of the paper our President has just concluded, and the questions are to be asked with reference to that. I wish to inquire in reference to the improvement of the soil, with reference to clover on exhausted soil. I wish to inquire whether it was intended to be understood that he would recommend clover previous to the improving of that soil by manure. My experience in reference to that has been fruitless; the attempt to improve land by clover without first improving the soil by summer fallow or manure, or something. I think I have sown for ten years about fifty barrels of plaster a year, and yet I have not been satisfied.

President STILSON. I have always used manure in advance of plaster, and I shall flank the chinch-bugs by sowing clover on every acre of wheat. They do not like clover, I have seen it where I could tell at sight where the clover was. I have used manure in advance of either clover or plaster, and my experience is to confine the plaster almost entirely to clover.

Mr. CLARK, of Trempealeau. I wish to enquire about what amount of plaster it is profitable to sow to the acre?

Mr. CLARK, of Green. I usually sow a bushel upon three acres, and I do it very quick. I generally have two or three teams in the field, if I am working four men, a couple of boys and myself. We take two double teams, one drives and has two barrels of plaster, one barrel in the hind end, and the other on the near side. I take the field so that the dust from the plaster will blow towards the center, and sow from the wagon about two miles and a half per hour, sowing towards the center. We had three teams last year, and went over seventy-five acres in a little less than half a day with six men. I generally sow from the wagon, it covers more ground and spreads further than if sowed from the ground.

Mr. Northrop. I rise to inquire about how muchweight there is in each barrel.

Mr. Clark. There is about three hundred pounds.

Mr. Benton, of Dodge County. I have experimented on this question considerably, and thought and read over it considerably. It has got one very important consideration that I think has so far been lost sight of, and that is conveyed in the term plaster-sick. I wish to know whether any of you gentlemen, have any knowledge of the out come of plaster using. If a man sows plaster from year to year and takes off the crop, is that land going to respond to plaster afterwards, or is it going to be like the human system, under stimulants, finally failing to respond, or does it stimulate his land at all? Is it to add fertility? It is a question with me what effect it is to have on the soil in the future.

I have arrived at the conclusion that we cannot always take out of a pocket and always have it stay just so full, and if these men increase the product of their land by plaster, are they more rapidly going to arrive at development by cropping with plaster? And what is the best method of plowing in, and whether it is improved under the compensation of plaster? Can we renovate with plaster alone?

I have done it absolutely alone without using anything else, and put my land in splendid condition, as well as increasing its fertility. I don't need so heavy tools, or so heavy teams to make it work, and that is one of the best uses of plaster—the condition the soil is reduced to. The root-growth of clover acts almost like sub-soil in giving us compensation for extreme wet and dry land, and the advantage of plaster is that it increases root-growth as well as top-growth, and it ameliorates our heavy soil.

One gentleman raised the question of the amount sown to the acre, but that is not so material, as that you put on some plaster; and we all understand that some soil will not bear plaster.

Another point. I see it stated a great deal in papers that the use of plaster may increase the growth of our cereals, and some find fault that the clover is stimulated by the plaster. It is not the plaster that makes the grain grow the next year, so much as the condition of the soil by the clover roots. For instance, I am sowing wheat; next spring I do not expect to see any difference by the plaster sown on it, but the next year after that I know I shall.

I took one of those farms that was wheat-killed. The man I bought of said he could not make clover or timothy stick, and he went west, and left me to commence farming on a worn-out farm, and I made that farm fertile with clover and pasture alone, without any plaster.

Mr. CLARK, of Green. I should like to have my farm very sick with plaster. I have known in New York, the wheat regions, when I first commenced farming, where the land was in about the condition of the land of Wisconsin, they had gone down to 10 or 12 bushels of wheat per acre. I have known that land now 15 to 20 years without any manure, and no clover plowed in. It is only seeded down and cut off, and I have known the wheat crop to be doubled, so that they raised from 20 to 30 bushels per acre; and land after it has been plastered 20 to 30 years, if it is not sick, I will take the chances of it. As to the benefit of plaster there is a good deal of discrepancy. The difference is so astonishing sometimes, that no man can give a reasonable solution. I have my theory, which is that plaster is one of the cheapest absorbents that we have. No man that goes into a stable in the winter and feels the ammonia rising up, and throws plaster on it, but will find that it is gone in a few minutes—it absorbs it. My theory is that it absorbs ammonia from the atmosphere, is thence carried into the soil, and makes it rich in plant food.

Secretary FIELD. A single idea strikes me right here. I think Horace Greeley, among the other good things he said about farming, never said a truer thing than that he would put plaster on the soil, and gather ammonia from the atmosphere above it, and he would also steal it from his neighbor's farm. I don't believe there is much fertilizing property in the plaster itself; but that it does gather ammonia from the atmosphere is evident, much of which would not be put into that particular piece of land from the rains, or in any other way than by this particular fertilizer. I think that is the great benefit that arises from the use of plaster. I never have used it to any very great extent in my farming, but what I have used convinced me that there is where its great beneficial property lies. Now here are large amounts of ammonia and other fertilizing properties, arising daily from this and every other city throughout our broad land, and from the stables and other places in the rural districts, and of course large quantities of this plant-

food, and perhaps all in time, are brought into the soil again from the agencies of rain, dew and snow, and there never was a truer saying than that the snow is the poor man's manure. Snow and rain gather the ammonia, and it all goes into the soil when the rain descends and the snow melts, and the plaster gathers a much larger proportion of it than would otherwise be taken into that particular piece of land.

MR. BENTON. We do not want to attribute too much magical influence to plaster. Many farmers can arrive at the same result by rotation—the resting of the soil two or three years, and the change of crops. We do not want gentlemen in considering this question of plaster, to make that the great cure-all, like certain patent nostrums of the day. It won't cure all. We find many times a great increase of fertility without the use of plaster. Rotation and resting the land, etc., will do very much for the increase of crops.

I wish again to state that the beneficial use of plaster depends somewhat on the soil. In some cases it renders the condition of the soil much better for crops than in others.

As I wrote in an article a few years ago, I think the cheapest way in the world to sub-soil is to sow plaster and clover.

MR. MORROW, Editor Western Rural, Chicago. I want to call the attention of all the gentlemen to the fact, that when we try to settle this question, we should bear in mind the fact that when we apply 100 pounds of plaster to an acre of land, we are applying it at the rate of 1-27th part of an ounce to a foot, or a pound to 433 square feet of land; and if any of you fully satisfy yourselves of just how that plaster absorbs enough ammonia, or just how it does any other thing and accomplishes the result, I wish you would tell me. We know the fact, but I am afraid that none of us have found out just how the effect is produced.

W. J. RICH, of Dodge county. Why is not thoroughly dried earth as good as plaster? There is no better absorbent than dry earth. My theory and practice is that the best way to use plaster is to plaster your clover and then feed that clover to some good stock, and draw the manure back on to the land.

SECRETARY FIELD. I desire to say a word in answer to Mr. Morrow. As to the particular how, I think it don't matter. I believe he states that the ammonia is gathered from the atmosphere

through the agency of the plaster, as to how I don't think it matters. If I have a gold dollar in my pocket, and I know that will buy me one dollars worth of any kind of goods in this market, I don't care what particular process in nature that gold out of which the dollar is manufactured went through to become gold; but I am satisfied with the fact, that is enough for me. If more plant food is placed in the soil by the use of plaster, which I believe is conceded, that is what we want to know. Facts are what we want.

Mr. RICH. The question I asked is whether plaster is better than dry earth?

Mr. ORLEDGE, of Kenosha. All lands are to be affected alike with the use of plaster if that is the way it is done, and we know they are not. I recollect when I came into Wisconsin, twenty-five years ago, I went on to Harvey Durkees farm, in Kenosha, and I can recollect of scattering 100 bushels of plaster, and scattering it over a great many acres, and even where the barrels stood and burst open, I never saw the least particle of good from it. And if it had got ammonia from the atmosphere I should have seen some good somewhere. I think the ingredients of the soil to produce a certain crop must be of a certain character; if sulphur is absent, I think plaster will do good. If it is there in sufficient quantities what is the use of plaster? These things are well understood in chemistry. We sometimes plaster, and sometimes not; and I advise all you gentlemen in the use of plaster to go slow, as a friend of mine said to me just now. I believe there is a good deal of philosophy in making haste slowly. As to the use of plaster, so far as I have been able to ascertain, and I was raised in the old country where we used that to a large extent, the result was simply as when I take a little whiskey sometimes; there is no use of using it without it is for some purpose. If it is a stimulant, and the land wants stimulating, then use it. We grew clover in the old country, and put our sheep on, and hence plaster stimulated the growth of our green crops, as we call them.

Mr. BENTON. Will a chemical analysis of our soil determine where plaster is necessary, and where it is not?

Mr. ORLEDGE. I think it will.

Mr. STILSON. Inasmuch as this discussion has been called out by my paper, I will state to you briefly what has been my experience with plaster, and what would appear to be the probable

deductions of its effects, knowing that men differ very materially on the effect of plaster. We know that plaster requires over five hundred times its bulk in water to dissolve it, and if applied in dry weather, without rains and dews, it is inert and inoperative. But when there comes a good rain it seems to touch the clover as with a magic wand, and it springs forth and produces abundantly. I hold it to be three-fold in its benefits; an absorbent, solvent, and manure; an absorbent, as stated. As a solvent it may be more powerful than any manure in the world, to render the ingredients of the soil valuable for plant food.

And the great trouble with lands becoming plaster-sick is this: Where crops have been produced and taken off from the soil, and no return of compensation in manure, that is the trouble. You take out the ingredients of the soil, rich like that in the Genesee valley, lying where no other plant food but the waste coming from the adjacent hills can reach it; apply no manure and it may become plaster-sick. But if you manure the land it will never become plaster-sick; but if you sell your hay and keep no stock on your land, and do not manure it, it may. I find it more effective upon clay and sandy land, and it does produce a good effect even upon black ground; but not so much as on clay soil.

MR. SMITH, of Green Bay. Have you tried it for peas and such crops.

MR. STILSON. I have with success.

MR. COOPER, of Mineral Point. I wish to know about the price which would pay to buy plaster at.

MR. STILSON. I think that $10 a ton is the highest price I ever paid for it in bulk, and under favorable circumstances I have had it pay me from 200 to 500 per cent.

MR. CLARK, of Green County. I see that the price of plaster in Milwaukee is $6.50 a ton per car load, and I think it can be got on the Mississippi River at about the same price.

MR. BENTON. For the experiment, a man could afford to pay $5 a pound if he never had used any of it. It was a question whether I could afford to pay for the plaster which caused the additional crop of hay on the land for three years. I think I can. The first season I sowed it, clover sold for $8 a ton, and that would be $12 an acre extra, and I could afford to pay $12 for 100 pounds of plaster, and have made money by it.

The following societies, granges and clubs were represented:

State Agricultural Society.—President, Eli Stilson; Vice-Presidents, Geo. E. Bryant and John L. Mitchell; and Messrs. Dean, Cooper and Field, members of the Executive Board, and numerous life members.

State Horticultural Society.—Secretary, Geo. E. Morrow.

Northern Wisconsin Agricultural and Mechanical Association.—President, J. M. Smith, and Secretary R. D. Torrey.

Wisconsin State Dairymen's Association.—President, Chester Hazen.

South-western Industrial Association.—President, R. D. Pulford; Secretary, T. S. Ansley, E. J. Cooper.

Boscobel Agricultural and Driving Park Association.—President, B. M. Coates.

COUNTY SOCIETIES.

Waukesha County.—Edward Porter and W. A. Nickles.

Fond du Lac.—Secretary, Dana C. Lamb and W. H. Hiner.

Juneau.—President, Luther Beckwith.

Kenosha.—Vice-President, W. S. Maxwell.

GRANGES.

Welcome Grange.—J. B. Cochran, H. B. Cochran and Xury Whiting.

Clinton.—S. S. Northrop.

Galesville.—Isaac Clark.

Bradford.—Master, James McNee.

Evansville.—J. A. Sawin.

Magnolia.—Aaron Broughton.

Blakes Prairie.—Geo. W. Lee.

O'Keeg.—C. K. Stewart, B. F. Cooper and D. B. Holt.

Golden Rule—J. G. Hull.

Sumner.—John Whittett.

CLUBS.

Mount Horeb Farmer's Club.—Gabrael Mickkelson and Michael Johnson.

Sun Prairie and Burke.—Messrs. Doty, Lewis, Eastman, Smith and Flint.

Skillet Creek.—Secretary, J. W. Wood, Levi Cahoon and Lewis Cowles.

Many representatives were present, whose names, with the organization represented do not appear, as they failed to hand them to the secretary.

A number of the state officers, members of the legislature and other influential and leading citizens participated in the discussions and general work of the convention, prominent among whom were Governor W. R. Taylor, Ex-Governor James T. Lewis, President

John Bascomb and Prof. W, W. Daniells, of the State University, Geo. E. Morrow, Editor Western Rural, Chicago; Senator Francis Campbell, Hon. B. M. Coates, Hon. Delos Abrams, W. Orledge, H. W. Roby, Hon. Hanmer Robbins and Prof. T. C. Chamberlain, Beloit College.

PEAT—A CHEAP FUEL IN THE NEAR FUTURE.

BY W. H. NEWTON, MADISON.

In presenting the peat deposit of this state, as a substitute for wood or imported coal, to supply the people of the populous counties of this state with fuel, I am aware of the prevailing opinion that it is impracticable to so utilize peat. Analyzing the local, pecuniary and physical causes now demanding a substitute, and reviewing the theories and partial experiments upon which this prevailing opinion is based, and eliminating the facts applicable to new processes and radical changes in forms of prepared peat, will solve the question of using peat fuel for this state. Fuel, like food, is a prominent element in the economy of human life; a necessity, requiring the same wise forethought and careful consideration to supply, as food.

Wisconsin, not twenty-seven years a state, has exhausted the supply of available fuel from her forests, compelling one-third of her population to import coal, who have heretofore used wood only. This is the present situation of the populous southern counties, and the towns and cities on Lake Michigan, and the same causes are now actively operating to extend this area of coal consumption, as the population increases, and the present generation must confront the pertinent fact, that our unexplored, undeveloped mineral districts, will, in a few years, be alike dependent, but more seriously effected, as their products are practically valuable or valueless, as fuel is cheap and abundant, or expensive and scarce.

Statistics show an enormous increase of import of coal annually into Milwaukee, and from the best data I could obtain, there was imported into this state in 1874 500,000 tons of coal, at an aggregate cost of $4,000,000. Three million of this was paid to other states, and thus becomes an onorous tax, draining the resources of the state

to provide fuel, an amount exceeding the net profit of the state in the great staple product, wheat. The import and inevitable effect of this drain cannot long be ignored. The struggle to supply wood fuel for domestic use, must soon cease, as it already has to provide fuel for maufacturing or metallurgical purposes. The effect is forcibly presented in the report of the commissioners of eminent citizens to the legislature of 1867, on the preservation of our forests. They maintain with all the energy of honest conviction, that the forests of this state have been wantonly and profligately destroyed, and that with strange fatuity the ruthless waste is unchecked. Far-seeing economists, realizing the import of denuding a country of its forests, warningly present the history of other countries as analogous to ours in the climatic effect of sweeping off forests, and claim that this effect is already felt in the southern counties of the state, in an increased temperature of the land in summer, and decrease in winter. Diminished humidity of atmosphere as forests vanish, evaporation and ultimate dryness increasing, springs diminish their flow, and inland lakes and streams are reduced in volume by the increased rapidity of drainage. To this startling prophecy, made in this report in the name of Professor Lapham, of which the following is an extract, we ought to give heed. "But in the meantime our descendents will witness another process equally exhaustive; the population will follow coal wherever it is to be found. * * * The working classes will accept the invitations of the master that bids the highest. That is what they must do, for it is the law of existance. * * * Cut away our forests, denude the state, and years are not far distant when the agriculture of the state will change to pasture and stock-raising. * * Men must then give place to oxen and sheep. * * Until that other and more distant day shall come, when the winds and drouth shall reduce the plains of Wisconsin to the condition of Asia-Minor." I do not find these apprehensions are entertained by scientists, invariably. Professor Henry states that the tabulated observations recorded in the Smithsonian Institute do not show any appreciable effect in the annual precipitation from the destruction of forests. Professor Newbury, in his report on the geological survey of Ohio for 1871, presents the same result in the ascertained volume of water in the Ohio River at this time, as compared with another period. Hayden, in his report to Congress, shows Salt Lake valley to be beneficially changed in cli-

mate by the extended cultivation of her lands. M. Tiserand's review of the proposal of the French government to cut away her forests, presents the view more in accord with our wants and the law of our progress. "The development of a country in wealth and population is incompatible with the existence of forests, and it may be laid down as a law, that its prosperity is in inverse proportion to the extent of its forests; therefore, to restrict the clearing off of forests under certain well understood conditions, is to oppose progress, an opposition quite unavailing." Wood is distinguished from all other fuel by the property of rapid re-production, and also the fact that it passes through various stages of beauty and utility to man before it is converted into fuel, and its use as fuel links many of us by sweet memories to the hearth-stones of our ancestors. Thus our interests, our sentiments, and our honor prompt the re-production of forests. The pertinent fact remains that forests and their products are not only useful, but indispensable, and their preservation will be controlled by the economic surroundings. And it might be added, the moral obligation of this generation, to make good the waste we have committed, in cutting manorial oaks from an entailed estate, brings conviction to every honest mind that we cannot live for ourselves alone, wickedly and profligately spending the rich gifts of our soil and climate, and that we should take measures to re-produce forests upon our farms to supply the wants of those who come after us, if we would not write as the standard of our civilzation "after us the deluge."

Illinois is prompted by her worthiest men to enter upon this system of re-growth of forests as entirely practical, owing to her extensive coal deposits furnishing cheap fuel. I propose utilizing the peat of this state, that our forests may re-appear, as they only can by furnishing cheap fuel, a pre-requisite to their re-growth. Again, this duty of our people to reproduce forests, may be performed under the stimulent of the ruling motive, profit. To supply wood for fuel and other indispensible uses, requires three cords per person per annum of the entire population. The population of the state to-day is 1,176,000, requiring 3,528,000 cords per annum. Protected forests of healthy, hard wood increases during a period of twenty-five years, annually, an average of one cord per acre. This would require 3,528,000 acres to be maintained in growth for twenty-five years, to provide wood for fuel and for other indispensi-

ble purposes for the present population of this state, from the annual product of these unprotected forests. By the census reports of 1870, there was 11,715,000 acres in the farms of this state, and of this area in farms, 3,437,442 acres were denominated wood-lands. So nearly does this wood-land area correspond with the acreage required to provide fuel and wood for other indispensible purposes, to the entire present population of the state by its annual increase alone, that we are compelled to acknowledge we need only to replace the brush, dwarf oak, poplar and willow, etc., on our farms to solve the *domestic* fuel question for all time for ourselves. But the increase of our population must be provided for. Then extend this area of protected re-growth of forests to fifty years and the annual increase will meet that demand.

The estimated product of an acre of land of protected growth, of healthy, hard wood is estimated at forty cords, worth, in 1905 not not less than $2 per cord stumpage, or an accumulated wealth to the state, distributed among the owners of farms, of two hundred and eighty-two million dollars in thirty years. By the census of 1870, the population of the state doubles in thirty years. Then the coal imported into the state must equal one million tons annually, at a cost of $8,000,000 annually, or an aggregate of $180,000,000 paid out to neighboring states for coal, without any increase of manufacturing, smelting or metallurgical operations in the state. And in contrast with the present system, it would show a gain of $426,000,000 to the state in thirty years, if peat is utilized for fuel. To the state, the inducement is strong enough. In view of the fact that the geology of the rock formation of the state precludes the hope of ever finding coal, we cannot expect coal to be cheaper than at present, with the nearest coal beds three hundred miles distant from the present center of population, and that center moving more distant annually.

There are conditions imposed upon people who depend upon imported coal for heat and warmth, other than pecuniary, such as an impaired moral sense, and loss of manly independence in the presence of a monopoly control of a necessary of life, aided by facile combinations of men, who so nicely adjust the smallest supply to the largest demand, as the owners of mines, miners and transporters of coal are; who create well timed panics by their unhallowed combinations, and who extort from their fellow men, through their suscepti-

bilities and weaknesses; thereby engendering cowardly fear and apprehension among consumers of coal, that their cart loads will become pails full, and their shrinking weight will increase in price, as they are doled out by middle men, whose harvest comes when snow, ice and dread winter chains their victims. A glance at those who are thus dependent will indicate the loss to a state whose poor are cold and hungry. Prof. Emmons, in his report on the Geological Survey of New York says, "anything that will save further destruction of forests, and we have it in the homely substance peat, an available article, which prejudice alone can prevent general use." Naturally the question arises, how a substance found in such quantities, and generally existing in those districts where fuel is expensive, should so long have been overlooked. The reply must be found among those anomolous facts that men often fail to do that which their interests demand from fear of failure, or until compelled by the tyrant necessity. This inconsistency is most marked by the indifference of the people and their representatives on the subject of fuel supply. Enterprising and indolent alike, have drifted into the use of coal without a thought of the unnumbered millions of tons of valuable peat fuel scattered throughout the state, seemingly to provide for our absolute needs, while speeches, lectures, sermons and essays, eminating from the best and most learned men, if not the most practical thinkers in the state, are produced and reproduced upon other subjects, until finance, transportation and tarriff are common place in every household in the state, while the supply of fuel, a vital element that touches our actual physical existence as food does, involving the future progress of the state, is ignored, abandoned or surrendered to rings and railroads, without even an effort on the part of our legislature to know through any systematic examination of the subject, whether the industrial efforts made to substitute peat fuel were based on sound principles, or were a mere repetition of previous experiments in preparing it. And this inconsistency is confirmed by the fact that peat has been used since the twelfth century, prepared by hand labor, and is used to day in Wisconsin, if used at all, in the same crude form as for centuries past.

While the calorific power of peat as compared to coal or wood is as well known and defined by actual use, scientific experiment and careful analysis, as either wood or coal, showing that when it is

condensed and dry as mineral coal, it is equal to bituminous coal, pound for pound, for generating steam or for metallurgical purposes, and has a higher value in the production of what are known as the higher grades of charcoal iron, as is shown by the following tables:

In a paper read before the New York Polytecnic Association by J. B. Hyde, I find an analysis of eleven samples of English, Scotch and Irish peat, showing them to consist of 43.3 carbon, 48 vegetable matter, 6.7 ash. Coarse grass-peat contained 17 per cent. ash, fine grass-peat 3 per cent. ash, pitch-peat 8 per cent. ash, lower bed-peat 8 per cent. ash, Abbyville 5 per cent., and Eschfield 27 per cent. And the ash from wood charcoal, as follows:

Young Ash	15 per cent. ash.	Birch	30 per cent. ash.
Old Ash	11 per cent. ash.	Canada Pine	23 per cent. ash.
Beach	37 per cent. ash.	Norway Pine	25 per cent. ash.
Willow	6 per cent. ash.	Hickory	9 per cent. ash.

Bituminous coal, New Castle 3.3, Welch 3.25, Scotch 4.25, Pennsylvania 4.75, Illinois 7, Indiana 7.

Prof. Johnson's table of relative value of wood and peat, give:

Beach-wood split and dry 100. Peat, air-dried, containing 25 per cent. water, 100. Peat, hot dried, containing 10 per cent. of water, 148. Peat-charcoal from condensed peat, 173. Peat, simply cut and dried, 80. Beach-wood charcoal, 190. Oak-wood, summer dried, 118. Birch, summer dried 95. White pine, 72. Alder, 65. Linden, 65. Red pine, 61. Poplar, 56.

And also relative value of peat, wood and anthracite coal, in carbon—wood 39.1, condensed peat 47.2, authracite coal 91, Illinois coal 51. Compressed peat to a specific gravity of 1.160 give coke, 1.04 specific gravity. Hard-wood, ash, elm 0.800 to 0.855 specific gravity.

Mr. Hyde, in his paper, gives a table of comparative calorific power of several combustibles:

Pure Carbon	340	Peat from lower beds	250
Surface-peat	277	Charcoal	290 to 325
Dry hard-wood	100 to 140	Compressed peat	237

Specific gravity, 1.160.

Intensity of heat from dense peat, and from coal coke about equal, and compressed peat charcoal more intense, as the fuel is more dense than wood coal.

M. Berthier, gives the following table of results of tests of the smelting value of different fuels:

	Per cent.
Oak, beach, birch and pine wood	31
Maple, ash, poplar, charcoal	68
French peat, crude	26
German peat, crude	34
Irish peat, crude	45
French peat, charcoal	49
German peat, charcoal	67
Irish peat, charcoal	84
New Castle coal, bituminous	70
Glasgow coal, bituminous	66

This table shows peat (crude) equal to wood; and peat coal, exceeding wood charcoal, New Castle and Glasgow bituminous coal in combustible element, and in calorific power. Charcoal from good air dried peat will equal about 33 per cent. in weight of the peat, and contains about 90 per cent. of carbon, and double the density of hard wood coal, and being free from sulpher, it is extremely valuable in the arts, particularly in the manufacture of the finest steel. In 1865 there was 10,500 tons of peat used in Massachusetts for annealing wire; 80 bushels weighing 1850 lbs. was equal to one cord of chesnut wood. Taylor, in his coal statistics, and others, quote from the report of Mr. Williams on common peat. Mr. Williams had been employed for twenty-five years experimenting upon the economy of different fuels for generating steam. Peat was by powerful mechanical pressure condensed to specific gravity of 1,160 atmospherically dry. Charcoal from this peat had double the density of that from dry hard wood. This peat was used on a Thames steamer for generating steam; 12 cwt. equaled 2800 lbs. of New Castle coal, and extended experiments show 11¼ cwt. of this peat to equal 18¼ cwt. of bituminous coal. Dr. D. D. Parmelee in a paper read before the American Institute, states that carbonized, compressed peat gives a fine coherent coke of great value for metallurgical purposes. A locomotive was run over 70 miles of road for three months and showed a saving of 30 per cent. over bituminous coal, using coal furnaces and flues with fire door open and dampers down. M. Barstall, Bristol, England, gives his result in the use of peat in generating steam. Evaporating 5 lbs. of water with one of peat fuel, this, as compared with dry oak wood was found 10 per cent. superior. The French Emperor requested Mr. Rogers to experiment on the Paris and Orleans Railway with peat fuel, who re-

ported the quantity of steam to exceed that of coal coke 3 times, and steam was got up in one half the time. The blaze was so great as to pass out of the furnace. This foregoing well authenticated evidence, is pertinent to show the value of compressed peat for railway fuel and all metallurgical purposes, and that the cost of mechanically compressing peat, even to a specific gravity of 1,160, or 72 38-100 lbs. per cubic foot, alone has precluded its general use, and as none of the grosser impurities were removed, its value was variable for smelting purposes as heretofore prepared. Taylor in his coal statistics says: "The history of manufacturing iron with bituminous coal or coke is a striking instance of the disposition not to change. The English forge masters maintained with all the energy of honest conviction, that peat coal could not be used in the fabrication of iron, and treated with ridicule all who made such attempts. We have witnessed the triumphal results and its universal and successful application. So also the application of anthricite coal in the process of iron-making had baffled for a long series of years every attempt to employ it, and but a short time ago it was pronounced so surrounded with difficulties as to be impracticable. We shall show in the progress of these pages, that it is not only practicable to employ peat as the fuel for fabricating iron; but that, at the present moment it is absolutely in full operation on an extensive scale, not only in high furnaces, but in puddling, refining and reverbratory furnaces and forges, in fact in nearly all the processes of iron manufacture * * * * * * *

Taylor, closing an extended detailed description of processes of preparing peat for manufacturing iron, (none of which was compressed by mechanical power) and in the careful analysis of the several kinds, says. "We now see it is managed with equal or even more facility than bituminous coal, and there are no obstacles to its general use," France, Bohemia, Bavaria, Westphalia and Wurtemburg are now using peat, thus settling the question in the only way it ought to be, practically and succesfully. France in 1842, employed 59,000 men in preparing peat-fuel, at a cost of $1.75 per ton for gathering and stacking. The relative value of the peats referred to, compared with the Wisconsin peat shown in the report of Dr. A. A. Hayes of Boston in 1871, on samples from the farm of Col. W. B. Slaughter, show its inflammable part has high heating power; burns freely and cleanly from ash. Taking its inflammable com-

pounds as representing the combustible matter of the peat, we have caloric equivalent closely corresponding to that of oak wood, and I am led by my results to expect an equal heating power from an equal weight of peat burned, in comparison to coal. * * * This peat has mavelous power in producing gas. * * * It exceeds all common cannel coal. There are only two or three cannel coals known which afford so much illuminating material. Again, I took from the top of a bog, immediately under the grass, within two miles of this city, a bucket of peat, added to it an equal volume of water, then ground it in the water, destroying the fibre and breaking up the air cells, then put the whole into a box (without bottom) placed on grass, where it soon precipitated and dried in the air. When it was broken up, one portion was analyzed by Mr. E. T. Sweet, an assistant on the Geological Survey of Wisconsin, and another portion is before you for examination.

Mr. Sweet, reports analysis — Hygroscopic water 13.77. Organic matter 62.21. Ash 24.02. Specific gravity 1.280. Calorific power 100 pounds, equal to 88 pounds of perfectly dry oak wood. Its combustion is perfect. I would call special attention to the specific gravity as compared to that prepared by Mr. Williams. This sample was condensed by precipitation to 80 pounds per cubic foot, while that compressed by machinery is but 72.3 pounds per cubic foot. This difference is a pertinent fact, directly affecting the question of cost and value, as its density and combustibility for metallurgical purposes governs its use.

The oak wood of this state, summer dried, weighs 3,500 pounds per cord. Prof. Lapham estimates oak wood at $8 per cord as cheaper than bituminous coal, as it is delivered at $5 per ton. Relativly, this sample before me would be worth $6.38 per ton. Prof. Newbury, in his report on the Geological Survey of Ohio, in a chapter on fuel, says, eminent railway men, estimating the consumption of wood by the roads in Ohio in 1861, at 1,000,000 cords, and its value at $8 per cord, as compared to bituminous coal at 6 cents per bushel, or $1.68 per ton, owing to the sulpher and its destructive effect upon the fire-box and flues of the locomotive, bestow a high commendation on peat (condensed as the sample before me is) for railway fuel.

The relative value of condensed peat fuel, and wood or mineral coal for all purposes, domestic use, generating steam, smelting ore

or other Metallurgical purposes, as it is established by the evidence presented, is confirmed by a very large volume of well authenticated pertinent facts, as to its diversified use, establishing this combustible as equal to wood or bituminous coal and therefore a good fuel substitute. Its ultimate aggregate value to the people of this state depends entirely upon its amount and availibility as found in the bogs or deposits of the state. I find in the report of Prof. Chamberlain on the Geological survey of the Eastern district of this state for 1873, this reference to peat. "He did not feel justified in spending the necessary time to test the peat bogs in the heavily wooded regions, however much interest there might be attached to such observations. * * * There is scarcely a township in the district inspected that does not possess more or less peat. It is found in marshes and swamps, varying in depth and purity, and in this district, the amount is estimated at 300,000,000 cubic yards or aproximately estimated in condensed, dry and purified peat fuel, 50 millions tons. The attempt to utilize it as a fuel, at several points have varied in success. In almost all cases it seems to have furnished a very fine fuel, and in some cases it is claimed to be equal to the best hard wood. Briefly noticing the errors in preparing peat fuel the Prof. enumerates." 1st. Too much expected by those engaging in its preparation. "2d. The modes that were adopted left too small a margin from the price of other fuel. 3d. Error in selecting the marsh. 4th. Error in using peat near the edge or top of the deposit, or bog. 5th. Error through failure to dry peat before using it. 6th. Want of best conveniences in burning it, as our stoves and furnaces are not adapted, being without grate to its perfect combustion. 7th. Want of knowledge on the subject and an indisposition to change habits. These and other errors will readily be corrected by experience, and if the laudable efforts that are being made to develope new sources of fuel are sustained and encouraged by an enterprising public spirit, we may confidently anticipate a final success."

Prof. Whittlesey, in 1873, says: "In the iron districts of Penoka, Bad River, and on White River, there are large deposits of peat, and in other places peat exists in valuable quantities. Peat is used in Europe for smelting iron, and produces metal of the same grade as charcoal iron." Taylor, in his coal statistics in 1842, states that "large deposits of peat are found in the valleys throughout the

mineral districts of the state." Mayor Cooper, of Mineral Point, informs me that there are extensive bogs in that locality. The extensive tamarack, cranberry and other marshes and swamps, almost all contain peat, from a few feet to fifty feet in depth. The bogs surrounding Madison are believed to contain many million tons of peat, and from the known amount in the eastern district of the state, I estimate there is not less than one hundred and fifty million tons of peat in the state, and this estimate is below that of more intelligent and close observers. Massachusetts, by careful estimates, has one hundred and twenty million tons.

This enormous amount of fuel, at the lowest estimate, is sufficient in connection with that obtained by the necessary destruction of forests in the now unsettled portions of the state, to supply this state for a century with a vigorous, increasing population added, and employed in all the varied industries, vitalizing the now dormant manufacturing of the mineral products within the state, instead of exporting the ore from our mines to neighboring coal bearing states for smelting. The cost of preparing this condensed peat fuel is the practical question, as it meets all the requirements of a substitute for coal, high combustible value, and great density, equal to bituminous coal. Therefore, peat fuel, free from all sand and most of the clay or oxide of iron usually found in the peat of this state, and other gross impurities, condensed to a specific gravity corresponding to that of bituminous coal, becomes a specialty, purer and more dense than any referred to in the preceeding tables of relative value, tested by experiment or analysis. Peat condensed by precipitation, its hygroscopic character destroyed, and partially freed from sand, has been prepared in Illinois successfully for two years. The process however, required the bog to be drained to permit it to be excavated by hand labor, and also required the water for precipitation to be *pumped into the mill* and *there mixed with the peat*, and also required *hand labor to cut it into blocks* when dry enough for removal to sheds, there to becomefit for use by atmospheric evaporation.

A gentleman of more experience in working peat, and more pecuniarly interested that any one in this state, stated to me that from personal investigation at the works in Illinois, the cost would be $2.50 per ton. The proprietors of the works claim that it will not exceed $1 per ton. The sample furnished me from these works

weighed fifty-one pounds to the cubic foot. As most, if not all the extensive bogs of this state are submerged, and as it is impracticable to drain them to any great depth, generally they must be worked in this submerged condition their full depth, at the minimum of cost for excavation and dredging, and in large quantities, (as it can only be prosecuted in summer) to warrant reliance upon a full and permanent supply, and at a moderate cost of machinery, capable of preparing 500,000 tons per annum. By a process exclusively mechanical, combining the well known, long-tried hydraulic excavator, all expense for removing brush or grass from the surface of the bog is avoided, the excavation and dredging is performed to any depth of the deposit, removing roots, stone or sand. It is excavated, disintegrated, washed free from loose sand and floated by an hydraulic current as in hydraulic mining. It is in this state of suspension, pumped or sucked up to, and through a mill fitted to grind the peat in a volume of water, to destroy all fibre and break up all air cells (there being an average of 93 per cent. of water to 7 per cent. of peat) in the volume sucked up from the bed. When ground, it passes by hydraulic current through large wooden pipes laid on the surface of the marsh or bog, to the adjacent dry land, and is forced into a large condenser, formed by laying on the ground a thick foundation of brush, covered with marsh hay, circular in form. Poles from eighteen to twenty-four feet in length are set perpendicular around this foundation, closely enclosing it, and a small circular area in the center, formed in the same manner as the outside. Inside, verticle and horizontal pipes formed of bamboo are placed, to drain every cubic foot of the condenser.

The peat precipitates by means of the rapid drainage, until the condenser is full of precipitated peat surrounding these drainage rods, and as the mass shrinks from the sides and drainage rods and becomes compact, the rods are then removed, leaving air passages through the mass, through which evaporation goes on until the whole is as dry as the surrounding atmosphere.

As the volume of peat and water pass from the mill under pressure, all remaining sand being disengaged by grinding will be deposited in the bottom of the pipe, the same as in sluice-mining, where by rifles the gold-dust is deposited, and in this case the deposit is constantly removed, and the rapid drainage of the water by

the precipitation of the suspended peat, carries off a large percentage of the oxide of iron and clay that has been floated in the water, thus removing by inexpensive devices the grosser impurities found in any or all deposits, in many cases constituting so large a per centage as to preclude its use as fuel. This mass of peat, solidified by precipitation and shrinkage, standing on its own base, is perforated with air passages through every cubic foot from base to top, each acting to create a draught of the hot air of summer through these passages, whereby rapid evaporation continues without cost, except time, until the ultimate degree of the surrounding atmosphere is attained. In this form and condition it may be enclosed with earth and carbonized at the same cost as wood after it is cut and placed in the pit for burning to charcoal. By this process submerged bogs may be excavated and dredged to any depth below the surface of the water, without additional cost over the shallow beds. By this mode of dredging the peat only is raised, and as it is disintegrated it is washed free from sand and other gross heavy impurities without additional cost.

It is thus excavated, dredged, washed, conveyed to and through the mill to dry land, and deposited in a condenser by hydraulic current alone, where it is condensed and dried by natural percolation to the drainage rods into the porous foundation, and these rods being withdrawn, air passages are formed by which the moisture is evaporated by natural currents of air, and the mass, dry and condensed, is stored until required for use, by one operation, and it is continuous and complete, at the minimum cost of pumping water to a height of 25 feet. This cost may be estimated by every one present. I base its cost upon the preparation of 250.000 tons per annum, which would require 1,373 tons per day for 182 days, or work 20 hours per day, (the machinery can be worked continuously) would require 2,280 lbs. or one gross ton per minute. As the water is estimated at 93 to 7 of peat, or 3,250 gallons of water to be pumped to the height of 25 feet per minute, or 32,500 lbs. raised 25 feet per minute would require 25 nominal horse-power. To excavate, disintregate and wash, 2,280 lbs. or 7 cubic yards of crude peat per minute, requires a jet of water discharged from a nozzle 1½ inches in diameter, with a velocity of 125 feet per second, requiring a 40 indicated horse-power. To grind 2,280 lbs. in water, to break up all fibre and air cells will require a 11 indicated horse-power.

The effective horse-power required, 76, to which add for a contingent 50 per cent. making 114 indicated horse-power, operated by one superintendent, two foremen, four engineers, two firemen and twenty laborers, at a daily cost for wages for 182 days, from April 10th to November 10th, of $65, or $11,700. Fuel, oil and waste, per day $10, or $1,820 per annum. Repairs $5 per day, or $910 per annum. Interest on investment of $1,200 for one year at 10 per cent. Wear and tear and depreciation of machinery, 20 per cent. $3,600 per annum, or 250,000 tons of prepared, condensed peat, cost $18,600, or 7½ cents per ton, or adding 220 per cent. to the cost for contingencies, and it will cost 25 cents per ton.

I invite and request a most rigid and careful investigation of this process, as I feel assured that it is based upon accurate, well defined and practical daily mechanical results, and in no respect a greater tax upon the credulity of intelligent men, than the locomotive, harvester or threshing machine, whose first projectors were by sheer force of their honest, intelligent convictions, induced to give expression to their deductions.

Regardless of criticism, or fear of successful contradiction, I present to the citizens of Wisconsin, evidence that peat fuel is the only cheap, abundant and available substitute for wood or coal that can be secured in the near future, and this convention, as representing the people, cannot mistake the overwhelming importance of cheap fuel, a question involving considerations touching the very germ of all progress, wealth and civilization. Prejudice nor ignorance cannot undertake to controvert the logic of facts, and they show an aggregate sum of public and private interests involved, that dwarfs all questions of tariff or transportation. The possibility of preparing 150 million tons of fuel from the waste bogs and swamps of the state should command the attention of this convention, saving to the state $5 per ton, or in 50 years $750,000,000, from the cost of imported coal; and enforcing thereby the law of accumulation in the re-growth of forests, for the same period, then equal to 7,000,000 acres, worth for fuel alone $700,000,000. An aggregate accumulation of available wealth of $1,450,000,000, which is distributed broad-cast to every consumer of fuel. Every farmer can by the same men, using the same power, with the same machinery as used for grain threshing, convert the peat of the bogs into fuel, for every farm, hamlet or settlement, in this state, at less

cost than the wood could be cut, or the coal be hauled from the station, and the consciousness of possession of an independent supply of fuel from the re-grown forests, will forever check the growth in our midst of monopolists to control this necessity, and the new lines of roads that will lead from our large peat deposits, to our iron, zinc and lead mines, will solve the transportation question, as our accumulations of wealth will reduce the interest on money. And I stand ready here to-day to prove my sincerity, by tendering the result of a year's earnest labor and study to the solution of this great question of cheap fuel.

I cannot convey more forcibly the practical view of this subject than by quoting the close of the report of Prof. Winchel on peat to the Minnesota Legislature in 1873. "A few years ago a feverish excitement spread over the country in reference to peat, which entirely disappeared, and nothing remains to witness the folly, but idle, rusty machinery, invented or purchased, and almost forgotten bogs which were eagerly bought. This phase of the peat enterprise is not however the just criterian by which to judge it. It is only an index ot a deep seated want. The immature development of the first peat agitations in this country were enough to start into flame the desire of the people for relief from the high prices of wood and coal. The result was wide spread speculation. From this there has been a corresponding reaction. This has not, nor does not detract from the value of peat as a fuel. Sober minded men, consumers of large quantities of fuel have in some instances and in various parts of the country, steadily and presistantly followed up the matter. Here and there a railroad, an iron furnace, a manufacturing establishment or a family has continued to produce and use peat fuel until it has regained much of its lost favor, and it is now in actual demand by consumers of the heaviest class, who are ready to purchase largely at remunerative prices. The demand however, is one that will not be met by anything less than the constant and steady supply equal to its requirements. It calls for the best machinery and process, equipped with the best facilities, and aided and backed by large capital."

Mr. Stilson. I wish to ask a question. I remember an attempt a few years ago to warm the capitol building here with peat. Was that free from sand?

Mr. Newton. No, sir; it was not, and it was owing to the wa-

ter in the peat that they did not succeed. It was not ground fine enough, and had sand in it and was not properly dried.

MR. DELAPLAINE. I wish to give a little experience of myself and partner in attempting to convert this crude material into commercial fuel. It was some 13 or 14 years since, we obtained what was then considered to be the most effective apparatus for converting this fuel into commercial form, and make it equal to coal. Mr. Levett had been endeavoring for years to perfect the matter. He had been laboring with Mr. Nicholson, the patentee of the Nicholson pavement. He had been endeavoring to obtain the Prussian prize of $200,000 to the person who would obtain a fuel of that cast. I visited a number of points where peat was being converted into fuel. I was where peat was taken from the meadow and in 25 minutes was placed in the furnace of the apparatus they were using, and burned equal to coal at that time. The question of the value of peat is settled, and the only question is how it can be converted into proper commercial fuel so it can be transported from place to place. We all know that crude peat when thrown on the ground very soon disintegrates. A year ago last winter I warmed my house with an ordinary coal grate with peat, and found it very much cheaper than coal; and a few years ago we kept our offices warm with it, using a soapstone stove, and we found it more profitable than coal.

In all the experiments at Rush, Indiana, in Canada and New Jersey, and more particularly at Rochester, all the trials have proved unsuccessful. They never have produced a fuel that would compete with other fuels. Millions of dollars have been sunk at Meridian, Connecticut. They were offered a contract of a million tons, but the works have all been sold out and cast aside, and there is not a single apparatus to day in use of that kind.

One firm expended about $5,000 in experiments. We had cut peat, we ground it fine and converted it into fuel, but we could not place any in competition with other fuels. But I have the pleasure to announce this fact, that we have parties, one engaged for twenty years, a Mr. Sexton of Canada who have made a fuel by a process by which they make it more dense than anthracite coal, and they say this fuel can come in competition with other fuels. It is made in about half an hour from the time it leaves the bog.

With reference to the quantity of fuel, I think Mr. Newton is

correct. I know there are thousands of acres near our capitol, and in one place 28 feet deep.

Mr. Newton. What is the cost of this fuel which you speak of —its manufacturing cost?

Mr. Delaplaine. They claim they can manufacture it at a dollar and fifty-five cents a ton at the works.

I will say that Mr. Roberts, who had the machine that is now left, over which there is a law suit at Rochester, contracted to furnish a certain amount of dried peat, but they found in drying this peat they would have to invest about $70,000 for lumber, and offered to furnish it for a dollar a ton on the ground. He went to work and dug so much one afternoon there as to frighten the people he had made the contract with, and they broke the contract, and he sued them and recovered judgment.

Mr. Newton. There is an establishment at Fond du Lac, or near it, that have brought to this country at an expense of 30 or $40,000, the Bridges' machinery as it is called. They have used it for two years and find that it makes a peat of about the same density of Levetts' machine, and the lowest cost is about $2 a ton, and Mr. McDonald has examined my plan and this one that Mr. Delaplaine refers to, and also the process in Illinois, and he expressed himself so satisfied with the process, as to undertake to utilize it next year.

Mr. Delaplaine. There have been numberless theories advanced, all of which involve a great amount of means. I have said this to parties who have written to us to engage in it; these theories are all good for nothing, and not a dollar more will we put into any theory, but give us the mill, machine, or apparatus and we will go into it, and not only we, but all the railroads in the country. These theories are all well enough, but there are twenty different effective grinding machines, and the thing is to condense and dry the peat and make it a cheap commercial fuel. It cannot be used in its crude state. It is dug near the Gray wire works of Worcester and Lowell, but it is dug and used right at their works, and it is cheaper than other fuels; but the great desideratum is to get it dried and condensed and make it marketable.

Mr. Newton. I suppose this theory is like all others; it has to to be tried to know whether it is good or bad, but to condemn the theory before it is tried would be idle, and you could not convince any one here when I show what I have done, and the value of a

sample has been tested. And to say it is a theory would involve a question of whether it is solid or dense.

Mr. DELAPLAINE. Do not understand me as making that statement. As soon as you can produce it for a dollar a ton, you will find all the railroads in the country using it, and furnishing all the money necessary to carry on the operation.

Mr. NEWTON. I have already prepared for the manufacturing of it on a large scale, and if it proves to be successful, as I think it will, I will produce fuel for the whole city of Fond du Lac next year.

Paper by Hon. Hanmer Robbins was called for, upon "Transportation."

Mr. Robbins said,

MR. PRESIDENT: I did propose to discuss the question of transportation here sometime during the session, but I am not ready now. I would like to present my subject about the time the interest question comes up.

Adjourned until 2 o'clock, P. M.

AFTERNOON SESSION.

Mr. Benton asked if any gentleman had had experience with orchard grass, and if so he wished to know the results of their knowledge as to its milk-producing qualities, &c., also what kind of grass will yield the most and lengthen out the time of pasturage, and make pasturage more rich and productive.

Mr. Stilson said that in regard to mixing grasses, he thought it was an established fact that several varieties of grass will produce more than any one variety alone, but in regard to orchard grass he had no experience.

There seemed to be no gentleman present with experience on the subject, and the question was dropped.

PROTECTION FROM LIGHTNING.

BY PROFESSOR JOHN W. STERLING, OF THE UNIVERSITY OF WISCONSIN, MADISON.

The object of this paper is not only to give practical directions as to the best means of protection against lightning; but also, and

mainly, to present in concise form, the scientific principles involved. The laws of electrical action must be clearly apprehended in order that one may be qualified to judge correctly in regard to the practical appliances proposed for warding off the effects of this destructive agent. It is in the light of such knowledge only, that the practical rules furnished by science can be successfully applied to the varying conditions constantly occurring.

We have undertaken this work, not because we have any thing new to present. The principles relating to the subject in hand have all been known to science since the time of Franklin. Nor have there been invented any improvements in the practical application of these principles, essentially different from what was suggested by Franklin himself.

It seems to us, however, that there is occasion for calling anew the attenton of farmers and others to this subject. Had we statistics at hand, we should be glad to lay before you definite information in regard to the loss of property and life caused by lightning. This, we think, would be found greater than is generally supposed. It is obvious that the means of protection, as actually applied, are far from effective. Buildings, apparently well provided with rods, are often struck by lightning—oftener, it may be, than those without them. A thorough understanding of the elementary principles of electricity would show the cause of this failure, and would restore confidence in the complete protection afforded by rods constructed and put up in accordance with the laws of electricity; and thus, we are assured, much property and many lives would be saved. It is the more important that these laws be generally understood, since so many false notions are disseminated by charlatans and so many impositions practiced by agents and venders of rods—each claiming for his wares superiority over all others. Moreover; what appears in the public prints on this subject, generally comes from interested parties, is partial, one-sided, and by no means trustworthy; while the publications of scientific men are, for the most part, in a form not readily accessible to common readers.

We desire here to call particular attention to an article on Atmospheric Electricity, by Professor Henry, secretary of the Smithsonian Institute, published under the head of Meteorology in the Patent Office Report for 1859. If the principles presented in this publication were generally understood and practically observed,

nothing further would be needed. We express our obligations to this paper in what follows.

The proper object of scientific investigation is the explanation of natural phenomena. This consists in a logical reference of these phenomena to some general law, or in pointing out the steps by which they may be deduced from some principle already established. Electricity is subject to laws as definite and uniform in their operation as any other department of nature. The general laws which govern electrical action are well established, and may be so stated as to be readily apprehended. A moderate degree of study and exercise of the reasoning powers would enable one to understand and apply these laws in explanation of most of the electrical phenomena which come under his notice. Besides the satisfaction derived from this exercise of the mental faculties, the knowledge thus obtained would be of great practical value. It would enable one to anticipate hurtful results and to devise proper means for warding off danger. A knowledge of the elementary principles of science—now happily within the reach of all—would afford the most effectual security against imposture, and form the best antidote for many of the evils which afflict society. We bespeak, then, your candid and earnest attention to a subject so intimately connected with the security of your crops and your homes.

We propose briefly to state the general laws or principles which govern electrical action—to point out some of the more important deductions from these principles, and finally to give some practical directions which should be observed in the construction and erection of conductors for the protection of property against injury from lightning.

For clearness of apprehension, we shall, in stating the laws of electrical action, use the language of Du Fay's theory, which assumes that the facts of ordinary electricity may be referred to the action of two subtle fluids, called by Du Fay *vitrious* and *resinous*, but now generally designated as *positive* and *negative*.

To explain electrical phenomena by the mechanical action of these fluids, the theory assumes the following postulates:

1. These fluids pervade all matter, its particles being so minute as to exist between the atoms of gross matter.

2. The particles of each of these fluids mutually repel each other with a force varying inversely as the square of the distance.

3. The particles of each one of these fluids attract those of the other with a force varying according to the same law.

4. Each of these fluids pass freely through some bodies and very imperfectly or not at all through others. The former are called *conductors,* the latter *non- conductors.*

5. When these two fluids exist in equal quantities in the same body, or when they are so united that their mutual attractions and repulsions are neutralized, there are no indications of electrical action, and the body is then said to be in its *natural state.*

6. By friction and other processes, these fluids may be separated and accumulated in different bodies. Then electrical action is exhibited.

7. When a body has an excess of one of the fluids it is said to be *positively electrified,* when it has an excess of the other it is said to be *negatively electrified.* This excess of either fluid is called *free electricity.* It is to this free electricity that all electrical phenomena are due.

In adopting this theory in regard to the nature of electricity, we would not be understood as asserting its absolute truth. Its value does not depend on this. If it furnishes, in exact and intelligable language, an expression of all the phenomena of electricity; if all the logical deductions from it are in strict accordance with observed facts, so that we are enabled by it to predict the form and time of their occurrance, it has the same value to us as though it were absolutely true in all that it assumes.

Having then a general law or theory by which, on mechanical principles we can anticipate and explain all phenomena of common or frictional electricity, we proceed to give some of the more important deductions, and especially those intimately connected with the subject under consideration. These deductions can all be verified by experiment.

Electrical phenomena belong to two general classes: 1, *Statical Electricity:* 2, *Dynamical Electricity.* The first relates to the phenomena of electricity at *rest,* the second to those of electricity in *motion.*

STATICAL ELECTRICITY.

Let us first turn our attention to some of the more simple phenomena. By friction or other processes, all bodies may become *excited;*

that is, may become charged with either the positive or negative fluid in excess of its natural share, If, for example, smooth glass be rubbed with woolen or silk cloth, the two fluids are separated; the positive fluid being accumulated on the glass, and the negative fluid in equal quantity on the cloth, as careful experiment proves. This excitement is shown by each body's attracting light substances, such as a pith-ball suspended by a silk thread. Now, if this pith-ball be touched by the excited glass, it will become electrified, that is, will receive free electricity from the excited body, and will be instantly repelled. The same takes place when sealing wax is rubbed with a woolen or silk cloth. That there are two kinds of electricity is obvious from the fact that two pith-balls, when both are electrified by contact with the excited glass or sealing wax, mutually repel each other; but if one be electrified by contact with the glass and the other with the wax, they mutually attract. So all bodies are susceptible of being excited by friction with either positive or negative electricity.

To illustrate the difference between a conductor and non-conductor, let us suppose a globe mounted upon a glass standard. If the surface of the glass be free from moisture, and the air dry, this globe is said to be *insulated*, that is, surrounded by non-conductors. Suppose now, the globe to be touched by an excited body; if the globe be a good conductor, as metal, free electricity will instantly be diffused over its whole surface; if the globe be a non-conductor, as glass, it will become electrified only at, or a little beyond the point in actual contact with the excited body. So, if the electrified globe be touched with the finger, or connected with the ground by a good conductor, it will, if of metal, instantly part with all its free electricity; but if of glass, only that at or near the point in contact with the finger. Thus we may determine the character of different substances as conductors of electricity, by the time an electrified body is losing its free electricity when touched by rods formed of these different substances.

A body, insulated as above explained, will retain its free electricity for some time. If there be moisture on the surface of the glass standard, or in the air, it will soon conduct off the free electricity. If it be perfectly insulated, it will gradually lose its charge by connection, that is, the particles of air in contact with the body become electrified and then are repelled. These are followed by

others taking their place, till the whole charge is carried off.

DISTRIBUTION OF ELECTRICITY.

It is an obvious inference from the theory, that free electricity must, from the mutual repulsion of its particles, exist only on or near the surface of bodies. Experiment shows this. If a hollow globe of metal, with an opening in the top, be insulated and electrified, a small pith ball, coated with gold leaf and suspended by a silk thread, when brought in contact with the inner surface receives no charge, but when made to touch the outer surface, is instantly electrified and repelled. In the same way it may be shown that if there be depressions or cavities in a charged conductor, there is no free electricity on the depressed surfaces. This fact is established by a great variety of experiments.

In all bodies of regular form, the distribution of the fluid can, according to the theory, be mathematically calculated, and the results of such calculations have been confirmed by experiment. If the body be a sphere of metal, the fluid will be uniformly distributed over the surface. If it be cylindrical and terminate in spherical surfaces, the fluid will accumulate more at the two ends. If one end be drawn out more and more towards a point, the fluid will accumulate more and more at that end, till at length its tension will become too great to be retained. Accordingly it is found that an insulated conductor with a sharp point cannot be charged—or only very slightly—and that an electrified body is instantly discharged by holding a pointed conductor some distance from it. These facts are of importance in their bearing upon the construction of lightning-rods.

INDUCTION.

It is important to clearly understand the general fact of *induction*, which explains many electrical phenomena, and is intimately connected with the subject under consideration. In general we mean by *induction*, the electrical disturbance in one body produced by the proximity of another electrified body, when there is no transfer of electricity from one to the other. Clearly to apprenend this, let us again refer to our insulated globe. Suppose this to be highly charged with positive electricity. Let now an insulated cylinder of

metal, and in its natural state, be brought near the charged globe. It will be readily seen what ought, according to the theory, to take place. The free electricity of the globe will repel the positive fluid of the cylinder to the far end and attract the negative fluid to the near end. Thus the two fluids, which being united in equal quantity throughout the cylinder, before neutralized each others action, are now separated and accumulated at the two ends, leaving near the centre a neutral point, or when the two fluids are in equal quantity, if the globe is of metal, it is plain that there will be a like distribution of the two fluids in it. Thus by a series of actions and re-actions, this separation will go on in the two bodies till there is an equilibrium between the attractive and repulsive forces of the fluids accumulated at the two ends.

If now another insulated cylinder be brought near the remote end of the first, the same disturbance will take place in its electricities, though not to the same degree. If the second cylinder be placed in contact with the first, the positive fluid accumulated at the remote end of the first will be driven farther from the globe, and more of the negative fluid drawn to the near end. Thus the effect will be greater as the length of the cylinder is increased. If the remote end be connected by a conductor with the earth, the effect will be greatest; for this will be equivalent to increasing the length of the cylinder indefinitely.

All this is a logical deduction from the theory, and is fully confirmed by experiment.

You will now understand why bodies in their natural state are attracted by an electrified body. First, induction takes place; then the attraction between the unlike electricities acting at a shorter distance is greater than the repulsion between the like electricities; hence the bodies tend towards each other.

This enables us also to understand the cause of electrical *discharges*, giving rise to the phenomenon of the electric spark or *lightning*. The attraction between the opposite electricities accumulated by induction becomes so great that they rush together, rupturing the intervening air with an explosive effect.

It will be readily seen that the probability of an explosive discharge depends, (1) on the intensity of the charge in the electrified body; (2) its distance from the body on which it acts; (3) the conducting quality, not only of the body in which induction takes

place, but also of the electrified body; (4) the length of the body in which electricity is induced, and (5) the perfection of the point presented, which has great intensity of action and tendency to open a passage through the air for the electric fluids.

This inductive action takes place at a great distance, not only through the air, but through any intervening non-conductor. Thunder-clouds are sometimes so highly charged that a discharge takes place through an intervening distance of miles.

DYNAMICAL ELECTRICITY.

The phenomena of frictional electricity *in motion*, in consequence of its great velocity, are very difficult to investigate. The mechanical effects due to this agent are produced by it while in motion. In a state of equilibrium it seems to produce no effect upon the bodies in which it is accumulated. It is only when it passes explosively from a charged body, that mechanical effects are observed. Electricity which is developed by chemical action is so different in kind from frictional electricity, that we are not warranted in reasoning by analogy, as some do, from one to the other. Frictional electricity is of much higher tension, showing a repulsive force between the particles of the fluids which does not seem to exist in galvanism.

The limits of this paper will allow us merely to state the leading phenomena of Dynamical Electricity which bear upon our subject.

1. When a discharge takes place between a cloud or other electrified body and the Earth, the fluid will always follow the line of least resistance. Of several conductors equally good, it will take the most direct. It may follow a circuitous path in preference to the direct, if the former is a better conductor. Lightning often seems to pursue a very fitful course in passing through a building, but it is always determined by the general fact just stated.

2. In the transmission of electricity through a conductor of sufficient size, the fluid passes on or just beneath the surface. In this respect it differs from galvanic electricity, which pervades the whole mass of the conductor. If the charge be very large compared with the conductor it may pervade the whole mass, in which case the conductor is generally dissipated or destroyed. That frictional electricity in passing through an adequate conductor is confined to the portion

on or near the surcace, Prof. Henry has shown by a very ingenious experiment.

This fact has an important bearing on the construction of lightning-rods. If the rod be cylindrical, the fluid in its passage will be equally distributed over the whole surface, and its capacity will be as its surface or diameter. This will not be true of a rod of any other form. If, for example, the rod be grooved, the fluid will on account of the mutual repulsion of its particles tend to pass along that part of the surface most remote from the centre or axis of the rod, so that its capacity will not be as its actual surface. Besides, there will be a tendancy of the fluid to pass off explosively from any part of the surface approaching towards a sharp edge.

3. The passage of a discharge through any medium, as air, imparts to its particles a repulsive force which causes them to separate with explosive energy. The mechanical effects produced by lightning are due principally to this cause. A powerful discharge of electricity through a confined portion of air has been known to impart such repulsive energy to the particles of air as to lift the roof from a building. The splintering of trees by lightning and other mechanical effects of this kind, are to be explained in the same way.

4. When an explosive discharge takes place between two bodies, the greatest energy is exhibited at the points of disruption. It is for this reason that the points of conductors are so often melted.

5. In case of a disruptive discharge through the air, the electricity, even while passing through a continuous conductor well connected with the ground, tends in some degree to be given off in sparks to surrounding bodies. While in such cases, the principal portion of the charge has no tendency to leave the conductor, the quantity which tends to fly off laterally from it, is often sufficient, as Prof. Henry has shown, to ignite combustible materials. Lightning-rods therefore should never be allowed to pass through material easily ignited.

6. As water is much inferior as a conductor to metal, in case of a disruptive discharge, there will be, even when a rod is connected with the moist ground, considerable resistance to the passage of the electricity from the rod to the earth. This assistance will obviously be less as the surface in contact with the moist earth is greater. This fact should be carefully observed in putting up lightning conductors.

ELECTRICITY OF THE CLOUDS.

Many hypotheses have been advanced to account for the electrical state of the atmosphere. The one which seems to us to furnish the most complete and satisfactory explanation of all the phenomena is that of Peltier, which refers them all to the inductive action of the earth being itself in a permanent state of negative excitement. On this hypothesis certainly we can readily explain what is known to be true—that some clouds are highly charged with electricity, while others are in the natural state. That those positively charged are generally in the lower atmosphere, while those negatively electrified are for the most part found higher up. We can readily understand, also, on this hypothesis, how clouds may be re-supplied with electricity, a fact made evident by the great number of discharges from the same cloud in its passage over the earth. We shall not enter upon this explanation; but assuming that clouds may be highly charged with electricity, we can easily account for the ordinary phenomena of lightning on the principle of induction as already explained.

This inductive action and explosive discharges take place, not only between clouds, but between the earth and clouds highly charged with electricity. The places on the earth where discharges will most likely occur will be determined by the conductive character of the material and the other conditions before mentioned.

The destructive effects of lightning are due to the tremendous repulsive energy imparted to the particles of the body through which the discharge takes place, and these will depend upon the quantity and tension of the charge, and the nature of the body through which the discharge, in its transmission to or from the earth, passes. If the body be a good conductor, of sufficient size, and well connected with the ground, the fluid will pass harmlessly to the earth; but if it be of such a nature as to present obstruction to the passage of the fluid, its destructive energy will be expended on the body itself. If the fluid in its passage leap from one object to another, these effects, as the theory would lead us to infer, are greatest at the points of disruption.

Sometimes, however, these effects are produced not only where the discharge occurs, but miles away, by what is called *the return*

stroke. This occurs when, by the inductive action of one or more clouds upon points widely separated, the electricities having accumulated at these points, a discharge takes place at one point and the equilibrium is suddenly restored at the other. Life is sometimes destroyed in this way.

It should be observed that animal life may be destroyed by the simple transmission of a large quantity of electricity through the living body, though a good conductor. This is probably owing to the repulsive energy imparted to the particles of the blood and other parts of the body. In the same way living trees are riven by the lightning-stroke.

LIGHTNING-RODS.

How then do lightning-rods afford protection from these destructive effects? The answer to this question, after what has been said, will be easily understood. Lightning-rods being prominent and pointed conductors, and supposed to be intimately connected with the moist earth, present the conditions required for the most perfect induction. The inductive action of the cloud will therefore take place mainly in the rod rather than in the surrounding objects. Hence the electricity which is drawn from the earth to neutralize the redundant electricity of the cloud, must pass from the rod, instead of the building on which it is placed. So in case of the return stroke, the equilibrium is restored through the rod. To be more specific, a lightning conductor affords protection in two ways: first by silently drawing off the free electricity from the charged cloud, and thus, for the time, disarming it of its fury. This it does by the action of the point as already explained. A rod properly constructed, will in nearly all cases, by thus neutralizing the electricity of the cloud, prevent an explosive discharge. Lightning very rarely strikes in cities or villages, because the many pointed rods and spires gradually and silently conduct off the redundant electricity from the thunder clouds before they come within striking distance. Clouds watched from an eminence may be seen to descend as they pass over a village, and then rise again, showing the action of the pointed objects. But secondly, in case of an explosive discharge, the electric fluid will pass harmless through the rod only, as before shown, the charge being thus drawn away from the building itself. There is abundant proof that lightning

does often fall upon rods explosively. This takes place when by wind the charged cloud is suddenly brought within striking distance of the rod before there is time for the electricity to be conducted off silently.

That lightning-rods may be so constructed as to protect any building, and all within, from the fearful thunder-bolt, does not admit of reasonable doubt. On this point it is sufficient to quote the language of Prof. Henry, the highest living authority on this subject. He says; "In a house properly provided with lightning-rods, however many discharges may fall upon it, we are well assured from full experience and established principles, no damage can ensue to the occupants within. There is perhaps no edifice in the country more exposed to explosive discharges of lightning than the Smithsonian building. It is situated on a plain at considerable distance from any other building, at present without trees near it, except of a few years growth, and surmounted with nine towers of hights varying from 60 to 150 feet. Five of these are provided with lightning-rods, and although we should have advised the furnishing of a rod to each tower, yet thus far the building has escaped unscathed, although several explosive discharges have passed down the rods."

It is not enough to have a fine looking rod upon a building. It must conform to the principles we have endeavored to set forth, otherwise it may actually invite the thunder-bolt. We believe that rods as commonly put up by traveling agents, are, to say the least, for the most part, worthless.

We shall close this long paper by some

PRACTICAL DIRECTIONS IN REGARD TO THE CONSTRUCTION AND PUTTING UP OF LIGHTNING-RODS.

1. The rod should be of good *conducting material.* Though copper is a better conductor, an iron rod having sufficient conducting surface, answers every purpose, and is much cheaper.

2. The best form is the *cylindrical*, because in a rod of this form every part of the surface is equally conductive, and its capacity is as its surface or diameter. If the rod be of iron, the diameter should not be less than an inch; it need not be solid.

3. The rod should be *continuous.* There should be as few parts as possible, and these should have perfect metallic connection. The joints should be carefully protected from moisture to prevent rust.

For the same reason, it is well to cover an iron rod with a coating of black paint, having for its principal ingredient, lampblack, which is a good conductor.

4. The rod should terminate above in a *single point*, one is better than many. To prevent melting the point should not be too slender, and should be of solid platinum soldered to a copper socket fitted to the top of the rod. As generally made, the point contains so little platinum that it may be melted by a powerful discharge. It is important that the point be kept in perfect condition.

Thus much as to rods themselves. We add some directions in regard to the manner of erecting them. The failure of conductors to answer their purpose, we are well persuaded, is due almost entirely to the imperfect manner in which they are for the most part put up. It is difficult to give specific directions on this point suited to every case. There is especial need here of a knowledge of the laws of electricity and the exercise of good judgment in applying them to the circumstances of each case. The number and position of conductors, connection with the earth, &c., depend on various circumstances, such as the form, height and size of the building, the nature of its materials, character of the soil on which it stands, &c. The following directions, however, we regard of the greatest importance:

1. Points should be erected on those parts of the building most exposed to explosive discharges of lightning, such as the most prominent points—on those which from the presence of iron pipes, or other conducting materials, are most liable to inductive action, on chimneys in which there are fires during the season of thunderstorms—on that side of the house towards the point from which these storms usually come.

The general rule is that a rod will protect an area whose radius is twice its height above the building. Points should be placed nearer than this rule requires, especially if there is much conducting material in the building.

2. When there are two or more points on a building, they should all be connected together by rods on the roof, and there should be several conductors running to the ground. The reason is, that if the discharge from the cloud is too great for the capacity of the rod, it may divide, or if one conductor is imperfectly connected with the ground it may find a passage by another.

3. When the roof of the house is of metal, it is advisable to put it in connection with the rod by strips of copper soldered to each. When there are large masses of metal in a building, especially if they extend to some distance in a vertical direction, these also should be connected with the conductor.

4. That which most of all needs attention in erecting conductors, is *proper connection with the earth.* Failure here is fatal. A rod not properly connected with the ground is worse than useless. And yet failure just here is most common and least likely to be observed. We believe that nearly all the cases in which conductors have failed to secure protection, have been owing to some defect in this particular. All the cases which have come under our observation, were readily traced to this cause. The common method is to insert the lower end of the rod some five or six feet into the ground, without regard to the character of the soil. Even if the ground were permanently moist we regard this entirely insufficient. A rod thus inserted into dry sand, would to say the least, afford no protection.

If gas or water pipes are in use within a house, the rod should be connected with the mains or large pipes in the streets by a strip of copper wrapped several times around the pipe, one end being soldered to the rod and the other to the pipe. In such houses, this connection is essential to perfect safety. In houses where these pipes are not found, the best method is to have the rod terminate in a well of water. Where this is not practicable, two or three branches should run off from the building several feet. These should be placed in trenches so deep as to be always in the moist ground. They should be surrounded by fresh powdered charcoal and terminate in a large plate of metal deep in the moist ground. The object to be secured is large extent of surface with permanently moist ground.

The rod, of course, should be firmly fastened to the house, should take the most direct course practicable to the ground, and all sudden changes of direction in the rod, or projections from its surface should be avoided. Glass insulators, we regard of very little importance.

In conclusion, we would urge upon farmers especially the importance of not neglecting the means of protecting their homes and barns from lightning. Isolated buildings, not surrounded by large

trees, are very liable to be struck. This is particularly the case with barns when filled with moist hay. Both the moisture and the vapor ascending from the newly-gathered crop, by their conducting character, strongly invite the fearful lightning stroke.

Finally we say, study this subject; trust not the erection of rods upon your buildings entirely to agents, however knowing and plausible. See to it that they are put up in accordance with the well established laws of electricity and in compliance with the practical rules furnished by science.

MR. BENTON. Tell us what would be the best method of attaching the rod to the house.

PROF. STERLING. If it is a brick house, it is well enough to use the glass insulators with the hooks driven in between the bricks, but I do not regard the glass insulators as of any importance at all. As soon as they are thoroughly wet they become perfect conductors, and the fluid is as likely to go into the building as it is into the ground. The insulators are just as likely to carry the fluid into the house as into the ground, if the connection between the rod and the ground is not good. They should not get out of place. I think that near the ground, the rods should be cased in wooden boxes so as to protect them.

MR. CLARK, of Trempealeau. Some places the rod requires much more preparation than in others, where the rod enters the ground. In some places it is only necessary to stick a pin of iron down to secure connection for the telegraph wire, and in other places it is almost impossible to get a connection for the return current.

Now is there any means by which we can tell whether the ground is a good or bad conductor?

Professor STERLING. If the ground is wet it is a good conductor. Clay is generally moist, if it is dry, it is not a good conductor, but that is a matter of great importance, the consideration of the nature of the soil. I had a case where a rod was brought to me sometime ago, one of the scroll rods. The house was situated on a sandy bluff and the rod passed nearly over one of the water conductors, and down into the sand, and an excessive discharge took place, and it passed off on to the water conductor, and the rod was collapsed just as though it had been pounded together with a hammer. It was owing entirely to the want of proper connection with the ground. That is a matter of very great impor-

tance and I regard it as the most important point—the perfect connection of the rod with the moist ground—because there is resistance in passing from the rod into the ground, and if there is a conducting substance in the building it may pass off over that.

Mr. Clark. A writer in the *Scientific American* claims that there must be a metal surface nearly equal to the building.

Mr. M. Anderson. Professor Stack of Cincinnati stopped with me some time ago and instructed me how to put up a lightning-rod. When I came to Wisconsin, I insisted that every man should put up a rod in the manner that Professor Stack told me. He told me that the highest steeple in Cincinnati was struck by lightning; said he told them how to put up a rod, but they all knew better than he did, and the church was struck. He said, never have the rod nearer or closer to the building than 4 to 6 inches. He said he would have wood dried thoroughly and boiled in oil, and then have this wood fastened to the building, having eyes in the wood, and glass insulators.

Finally one man came along with the oiled blocks and put up the rods, and I feel perfectly safe in the way my house and barn are rodded now. I did see a rod in Ohio, on the highest court house, struck with lightning, but the stroke was so severe that it broke the point of the rod and drove it out of its socket. The rod entered a pool of water, and the grass was all cut off round the pool as if it had been cut with a scythe. Most of the rods in my neighborhood are copper strips nailed fast to the building.

Professor Sterling. In regard to those copper strips; when the charge is small they may furnish protection, but as I said in my paper, the form is objectionable. The tendency of the lightning is to go off from the edges. You can see that the particles of fluid according to that theory will be accumulated on the edges, and the tension will be much greater at the edges than at the middle.

In regard to the mode of connecting with the building, those oiled blocks are non-conductors. I regard that as of secondary importance, of no essential importance whether you have insulators or not. The only object is to fasten the rod firmly to the building. I don't think it is true that there is a difference of opinion among men who have studied this subject—scientific men, in regard to what is essential to a conductor. The main thing I in-

sist upon is the connection with the ground. You may insulate as you please, and if it is not connected with the ground properly, it is worthless as a rod. That is the main thing. In those grooved rods, the agents will tell you they have a great deal more surface. Well, they have, but not as large conducting surface. If a large charge passes down one of these rods the fluid will be confined to the edges. The tendency is to go off explosively into the building, and so far as form is concerned, it is objectionable.

Professor DANIELLS. There is a difference of opinion between men of this day and twenty years ago, isn't there?

Professor STERLING. No sir, I don't think there is.

Mr. SHERMAN, of Columbus. The question is whether the rod will contain all the fluid when it strikes the rod.

Professor STERLING. Sometimes the rod will be destroyed, and yet it will protect the building if it is well connected with the ground, but if it passes from the rod, as it sometimes does, wherever it strikes, there will be the greatest effect produced. Sometimes it passes right through a wall by the repulsive force imparted to the particles.

Mr. PORTER. I wish to ask in reference to one point. What is the professor's opinion in reference to the wind mills reaching twenty or thirty feet above a barn, with iron gearing necessary to manage and hold the mill properly. How would the professor attach the rod to protect the barn, or would that wind mill have any effect on the building with so much iron attached to it?

Professor STERLING. I do not know how they are constructed, but if there was a point attached to the iron rod above and the iron well connected with the ground, it might take the place of the conductor, if it is soft iron. If a point was attached to the iron and extended sufficiently above the barn, it might protect the barn. It would have a tendency to strike the shaft just in proportion to the length of the conductor in a vertical direction. When the cloud came along, the induction would take place according to the length of it. If it was connected with the ground, it would be more likely to strike that.

Mr. PORTER. How would you attach the rod?

Professor STERLING. I could tell better if I saw just how it was constructed, but I should run the rod above the point and have it well connected with the ground, or if there was sufficient iron run-

ning all the way up, I should attach the point above, and connect the iron with the ground.

Mr. Robbins. I have a building with a telegraph office in it. Can I protect that building so that it will be as safe with the telegraph office in it as without it ?

Professor Sterling. Yes sir. They have means now for protecting buildings. A copper plate is hung from the wire outside of the building, and another copper plate connected with it to the ground below.

Mr. Robbins. Then if I wish to have a telegraph office connected with my house, I can make it as safe as without it?

Professor Sterling. Yes sir.

Mr. Benton. A great many people think the electricity strikes a building horizontally, and in the angles of the roof, showing that the passage of the fluid is as frequently horizontal as perpendicular.

And also another condition in relation to the placing of the rod to the ground. I recollect digging a well where the soil was 8 or 10 feet above a rock, and when it was thrown out on to the ground, the dust would fly from it, it was so dry, and it seems to be almost impossible that the rod should connect with some body of water in such a place.

Professor Sterling. The electricity, when the charge passes down the rod, may, by induction, act upon the metal that is in a horizontal position and may pass into the building in that way.

Mr. Benton. Then the connection between the rod and the roof must be of equal conducting surface as the rod itself, or the connection between the rod and the house would be broken.

Professor Sterling. That is, the roof would form merely a part of the rod, and it does not need any more conducting surface by its being connected with the roof.

Mr. Benton. Then the connection between the rod and the roof must be of the same capacity of the rod.

Professor Sterling. If the building is entirely enclosed in metal and you connect the lower part of it with the ground it would need no other connection at all.

Mr. Houston, of Kenosha. I notice that it is always white oak trees that are struck, and I think it is a safe thing if there are trees higher than the building to attach the rod there, and keep the

lightning as far off the building as possible. It is the white oak trees that I notice have suffered. In many cases we have trees around our buildings, and I think it is a safe thing to put the rod there.

MR. TUTTLE, of Kenosha. I think the Professor in his paper gave us that idea very plainly, and I think the lightning-rod business is about played out. I would rather have one good white oak, or a Lombardy poplar near my house than all the rods that could be put up. I put out trees around my house; let them grow up and let the lightning hit them.

MR. STILSON. The question has been raised here in regard to the lightning striking the trees, and its preference for certain kinds of wood. I would like to ask why it is that it hardly ever breaks more than the bark of some trees, and in others, sometimes, it will shatter them all to pieces, and it will rupture some trees that will live, while those struck in summer die. The willow, the maple, and the beach ordinarily, the bark is not even ruptured when struck.

Professor STERLING. All I can say is, that if it is more liable to strike one tree than another, it is because it is a better conductor. I presume that Professor Daniells can answer that question better than I can

Professor DANIELLS. Whenever a plant is in full vegetation and is injured in any way so that the circulation of the sap is injured, the tree is very apt to die. Take a tree in full leaf and trim away a very large portion of the branches, so that a large portion of the leaves are taken away, the vitality of the tree is seriously injured, because we have taken away just that portion of the ability of the plant to prepare food for its own sustenance. So if you injure a tree in any other way while the functions of the plant are going on, you in just that degree injure the life of the tree. It is with the tree just as with any other organism. In the winter, the functions of the tree are nearly dormant, and if struck then, it may recover.

Mr. WOOD. The thought has struck me, that a platinum point at the bottom of the rod would be as important as one at the top.

Professor STERLING. I think the remark is in point. I see no objection to having points from the rod into the ground, because the fluid cannot be retained on the conductor where there are points. I never knew rods to be constructed in that way, but I believe the idea is correct. I think it would be a valuable addition to the rod

if there were points running off from the lower end into the ground.

Mr. Benton. And in terminating the rod in a cistern or well of water, would there be danger of rupturing the structure?

Professor Sterling. That is a very pertinent question. I should think there would be some danger if the rods ran to the bottom of the cistern. There might be some danger of the charge passing through the cistern.

Secretary Field. How, if the cistern is nearly full of water?

Professor Sterling. If there was a good conducting substance on the other side of the cement, the charge might pass through the plastering. When the rod runs into the water the tendency is to pass off on the surface of the water, and not through it; but if the rod should run near to the bottom and in contact with the cistern, I should think there might be some danger. As a general rule I should think it might be safe.

Mr. Benton. We see that the fluid is distributed, where it cut off all the grass around the pond mentioned by Mr. Anderson.

Mr. Tuttle. I have a point: I rode one time on Lake Huron and our foremast was struck by lightning. The fluid went down the mast and went about 3 feet under the deck and came level with the surface of the water outside, and that was the end of it. When it got to the level of the water outside it passed away, and it did not injure the vessel at all, and it did not go below the surface of the water.

Professor Sterling. In inserting the rod in the cistern I should be careful not to run it to the bottom of the cistern—that the fluid might pass off entirely on the surface of the water.

Professor Daniells. You may take a conductor, I do not care if it is a foot in diameter, and direct a point towards it, and the electricity will be discharged. It strikes me that a point would be of no avail under the ground, because there are such a multitude of minute points or particles of earth which have moisture on the surface that I do not think it would be of any consequence.

Mr. Jackson. There is another question I would like to ask, and that is, in relation to select spots for building, whether high lands or low lands are most exposed to lightning. In the immediate vicinity of where I live, there is a large tract of low lands, somewhat covered with timber, and very frequently it is visited with lightning. Hardly an acre can be found that is not marked with it, while on

the ridges above, no marks are to be seen, and I never have known in 20 years that the high land has been touched, while on the low land almost every shower, it is struck.

Professor STERLING. The low land is moist and the tall trees attract the electricity. If the conducting material is the same, the high ground is the most prominent, but if the hill is dry and the low land is moist and covered with tall trees, that changes the conditions entirely. I think it is owing to the fact that the induction takes place in the trees more on account of the moist soil in which they grow, than upon the hill. I am sorry to hear the expression that lightning-rods are played out. I must acknowledge that rods as they are ordinarily put up are, or ought to be played out, but at the same time I think the principles that I have advanced in this paper can be asserted, and that a building can be protected. And I think it will pay to go to the expense of the rod, put up in the proper way on a building.

Mr. STILSON. I wish to ask the Professor this question. In the case of the discharge, and to save human life where a person may be struck, what are the remedies always at hand, to be used temporarily by other persons present?

Professor STERLING. I don't feel hardly competent to answer that question. I have not looked at it specially; I am not posted: know the common remedies are cold water, etc., but I cannot speak with authority on that subject.

Mr. CHEEVER, of Rock county. There is no dwelling house in Wisconsin where there is not always a moist spot about it; there is always a place where the slops of the kitchen are deposited, and that is always moist.

Mr. WHITING, of Fox Lake. I would enquire if there is any such form in existence that can be cheaply procured. I am aware that a tubular form can be procured in the form of gas pipe at an expense that far exceeds the ordinary rods. The Professor said it was also important that they should be intimately connected, and that the surface should be large. I would like to ask if a tube of sheet iron could be made to answer the purpose. Would it answer to make a tubular rod of sheet iron, and have it connected by clinching in the ordinary way? Would the connection be sufficiently close? And then again, would it be necessary that the rod

should be solid, or would iron rolled up without being welded and connected at the edges be sufficient?

Professor Sterling. You know how the scroll rod is constructed. They are scrolls which are inserted into each other. I do not see any objection to that. If you have parts of iron, they ought to be intimately connected on the surface; and they are generally made to screw into each other. In regard to the practical way of effecting this, I don't know that I can give any opinion.

The rod which was manufactured at Janesville some time ago, a continuous copper rod without any break in it at all, in my judgment was one of the best rods we ever had. I believe the manufacturing of that rod has ceased. The edges were folded in, and it was entirely continuous, without any breaks in it at all, and in each of those parts where it was rolled you could put in wire to stiffen it if you wished. This scroll rod I think is very good if it is properly put up.

Mr. Benton. Is not the common inch gas-pipe made of galvanized iron with the ends screwed together firmly, a good conductor?

Professor Sterling. I meant to have tried an experiment in regard to galvanized iron, as to its conductive quality, but I did not have time. It is stated in Chamber's Encyclopedia that it is a better conducting metal than iron, but iron in the form of those gas-pipes is just as good as though it were solid, as you have less material and more surface.

OBJECTS AND METHODS OF CULTIVATION.

BY PROF. W. W. DANIELLS, UNIVERSITY OF WISCONSIN, MADISON.

In all the operations intended to aid his crops in obtaining food for a vigorous and productive growth, the farmer needs to regard the soil as the only source from which that food can be obtained.

Plants do, indeed, draw a large portion of their subsistence from the air. But the supply from that source is always abundant, and to effect it in any way either in quantity or quality is impossible for man.

The soil is the great store-house of the mineral constituents of plant food, and it is to the increase of these constituents, either directly or indirectly, that the farmer must turn his attention.

To obtain this increase, he plows, harrows, cultivates, drains and

manures, and performs all the various operations that are included under the term "cultivation," regarded in its widest sense, including all the processes in use for the hastening of plant growth by the amelioration of the soil.

A soil is rock, that by the slow but constant action of natural forces, heat, moisture and the atmosphere has become disintegrated. Upon such pulverized rock plants have grown for innumerable years, and the decomposition of these plants upon the soil has supplied the surface with a stratum that is largely mixed with organic matter. This stratum is the arable soil which contains the greater part of the food that is immediately available to plants. It is that which is popularly known as *the soil*, and with which the farmer has to deal in his efforts to secure an abudant supply of nourishment for his crops, for to that end are all his efforts directed.

How is it, that the purpose sought is accomplished by the means used?

Nothing is added to the soil by plowing or harrowing, cultivating or hoeing. A field contains nothing after these operations have been performed that was not there before, and yet these are the means employed to supply through the soil, from year to year, that which, by the wonderful magic of plant-growth, shall bring the harvest with its hundred fold.

The mineral matter in agricultural plants is but a small per cent. of their total weight, and yet it is to supply that small proportion, the ash-ingredients and the nitrogen compounds, that all the labor of tilling is required. This food must all be taken up by the plant through its roots, and consequently must be in solution as it passes into the plant. But these ash-ingredients are many of them present in even the most fertile soils in exceedingly small proportions, so that if they existed in soils in a soluble form entirely, the large quantity of water that falls and is discharged through the soil would carry them away in solution, and the richest soil would thus soon become comparatively barren. Instead of being present in a soluble form, however, they are there mostly in the form of rock, which is affected but slightly by pure water.

Now the chief end to be gained by such mechanical operations as those of tilling the soil, is to supply to the plant these insoluble rock-ingredients of its food.

Every farmer understands that his soil is not in good condition

unless it is finely pulverized. The object of making it fine is two-fold.

First, to allow the roots to readily penetrate it in search of that food which is present in so small quantities that it must be sought through a wide range of soil, and secondly, to put the soil in that mechanical condition best suited to changing the insoluble mineral food to a soluble form, in which state alone it can be utilized by the plant.

As before stated, the required change is produced by the air, by heat and frost, and by the action of natural waters which are charged with carbonic acid, and which have a much higher solvent power than pure water.

The processes of tilling are to put the soil in that condition in which these natural agents may most readily act upon it. This action takes place entirely upon the surface of the rocky particles, and consequently will be in proportion to the amount of surface exposed.

Now the extent of surface exposed to the action of a solvent is increased by increasing the fineness of the particles. Thus Magnus found that barley would grow and ripen seed in powdered feldspar, and Professor Storer matured buckwheat in quarry sand and freshly burned coal ashes. Had the material used in either of these experiments been coarse, instead of fine as they were, plants would not have grown in them. It is not enough that a soil shall contain all the elements required for plant growth, to make it fertile. The food must be dissolved, and the rapidity of its solution depends, other things being the same, upon the fineness of its particles. Hence the farmer breaks up his soil, bringing it into the finest possible condition, that the decomposing action of air and water may be rapid, and that the roots of the growing plants may be enabled to extend themselves through the soil to absorb any food there in readiness for them. Fineness of itself, however, is not enough. If it were, the heaviest clay soil would be more fertile than the lightest loam. The clay is too fine, so fine that the particles fit into the interstices, rendering the whole compact, thus excluding the air and preventing that rapidity of action which it is the object of cultivation to attain. But the highest degree of fineness consistent with lightness and porosity is always to be desired.

Cultivation of soils then, is, in one sense, analogous to the masti-

cation of food by animals. It is preparing the food for the digestive organs of the plant.

The difference between a fertile and a sterile soil is often attributable to this one cause, a want of sufficient porosity to allow the air and moisture to enter it and decompose the mineral matter, changing such as is needed to that form capable of being taken up by the roots of plants.

This is the great difference between soils and subsoils, and the latter may be made fertile by the same pulverization and exposure to which the former has been subjected. It is principally by the gradual chemical changes in the composition of the soil brought about by the decomposing action of heat, moisture and air, that soils are continued in a state of fertility from year to year. These natural forces are continually at work for the farmer, and their work will be well and thoroughly done, in proportion to the opportunity he gives them, by furnishing a light, porous and well pulverized soil.

Were there, then, no other reason for thorough culture than this one, it must be greatly to the interest of the farmer to cultivate well and thoroughly, to plow deep and keep his soil well stirred, in order that his crops may yield the largest possible harvest. But there are still other reasons why the soil's fertility is increased by its being finely pulverized. Those properities of soils that are usually termed "physical," those in which the action is mechanical rather than chemical, are also in a high degree dependent upon the fineness of their particles. The first of these to which I wish to call attention is the power possessed by soils of absorbing certain substances, and of condensing upon the surface of the particles of which they are composed moisture and gases existing in the atmosphere.

If a dry sponge be dipped in water and then squeezed until no more water can be obtained from it, it is not dry as before, but still contains a large amount of water, which exists, not as water, but as moisture held upon the surface of the particles composing the sponge. The amount of water so held, is in direct proportion to the extent of surface with which the water comes in contact, for the cause of the waters being held there is that surfaces have a strong attraction for moisture. Any one who has had occasion to thoroughly dry a glass tube or bottle, knows something of the persistence with which moisture adheres to the surface of glass. Soft

wood absorbs more moisture, and holds it with greater tenacity than hard wood, because it is more porous and hence offers a greater amount of surface upon which the moisture is condensed.

The relation of soils to moisture is analogous to that of the sponge. A soil in good condition for the growth of plants contains no water as such. The greatest pressure may be applied without obtaining from it a single drop of water. Yet the soil is not dry. Condensed upon the surface of every particle of which it is composed, is a small quantity of moisture, and the composition of the soil being the same, the amount of this moisture will be in direct proportion to the surface exposed and upon which condensation can take place.

On this account, he who would take every precaution to furnish his growing crops with sufficient moisture, and secure them against the evil effects of draught, will cultivate his soil well, that it may hold within its pores that moisture which is readily given to the growing plant, although held there with great tenacity.

Again, during our hot summers, an immense quantity of water is evaporated from the surface of soils exposed directly to the sun's rays, as are our corn-fields. Or, if covered with a growing crop, the moisture is absorbed by the plants, and through them passes into the atmosphere. In either case there is a great demand upon the soil for water, while perhaps for weeks no rain will fall. Water must be had by the crop or it fails at the harvest.

But where is the supply to be obtained after that within the immediate reach of the roots is exhausted?

Every one is familiar with the experiment illustrating capillary attraction, in which water rises much higher in a small tube than in a large one, or perhaps the wick of a lamp drawing oil from the reservoir below is more familiar. The oil is drawn up through the minute channels existing in the wick, but unless the fibres of which it is composed are quite close together, and the channels very minute, the oil would not rise to supply the flame.

Soils possess this same capillary power, and if loose and sufficiently fine, water will be brought from the deeper soil to supply this evaporation from the surface. But if the surface soil is coarse, and the deeper soil hard and compact, if they have not both been well broken up and pulverized by thorough cultivation, they are un-

able to raise water by this power for the relief of the thirsty crops.

Again then, for the purpose of protection from drought, deep and thorough tillage is necessary on the part of every farmer, and other conditions remaining the same, the production will be largely in the ratio of the depth and thoroughness of the cultivation.

All soils possess, to a greater or less degree, the power of absorbing from water, that is slowly filtered through them, solid matter held in solution by the water. The power of soils in this respect is doubtless familiar to all.

Thus every farmer knows that if the washings of his barn-yard can be filtered through the soil of adjacent fields, the larger proportion of the fertilizing ingredients in solution in the water will be left in the soil, while the water will pass away comparatively pure. Deeply colored syrups were formerly decolorized by passing them through layers of clay.

The common house filter depends upon the same principle, the impurities of the water being taken out by a layer of animal charcoal.

This absorbent power of soils depends upon the attraction existing between the surface of the particles of which the soils are composed, and the surface of the particles of solids held in solution. It is again the result of the attraction between surfaces, and consequently the greater the amount of surface, the more complete will be the abstraction of any solid matter held in solution.

Now rain brings from the atmosphere appreciable quantities of valuable fertilizing materials, especially nitric acid and ammonia, and these are absorbed by the soil as the water slowly percolates through it, if its attractive power is sufficient, and that, upon the same soil, is in proportion to the fineness of the particles. For that s the index of the amount of surface by which the dissolved particles will be attracted and held. Here again then, we have arrived at the same conclusion as before. Soils need to be thoroughly pulverized that they may take from water, with which they come in contact, the valuable fertilizing material held in solution by it.

Manures are applied to soils for several reasons. First, that they may furnish to the growing plants certain constituents that contribute directly to their growth. This office of manure is quite often supposed to be the principal function in aid of the growth of crops. Manure does indeed often furnish material that is of direct

service to the plant in building up its structure, but it is not essential that it should do so, and doubtless with much farm-yard manure this is but a secondary office, its indirect benefit being much the greater.

Secondly. Manure improves the texture of heavy soils, rendering them "light" loose and porous, diminishing their tenacity and so accomplishing the ends that are often sought only by stirring the soil with implements of tillage. This is a most important function of manure when applied to heavy clay soils.

By the thorough incorporation of decomposing organic matter in such a soil, its tenacity is destroyed, it is no longer hard and "lumpy," yielding to the plow with the greatest difficulty, but is friable, and is readily stirred in tilling.

Thirdly. Manures benefit soils by the decomposition of the organic matter of which they are composed within the soil, thus furnishing where it is needed an abundant supply of carbonic acid gas, which acts as a powerful solvent upon the mineral constituents, disintegrating them and setting free material needed by the plant in building up its structure.

Boussingault and Leroy as quoted by Johnson in "How Crops Feed," found that while the ordinary air contained but six parts of carbonic acid gas in ten thousand, air from the surface soil of a forest contained 130 parts, that from the surface soil of a pasture contained 270 parts and that from a newly manured sandy field, during wet weather, contained 1413 parts of this gas.

The solvent power of carbonic acid is shown in the natural waters which have become charged with it in passing through the soil and have in consequence taken up considerable quantities of mineral matter. This dissolved mineral matter is again deposited when the carbonic acid is slowly driven off by heat, as is shown in the coating in a tea kettle, or when it escapes spontaneously, when exposed to the air, by which method, beds of bog-iron ore are formed. and large deposits of carbonate of lime are made. Then, with such a great increase of this solvent of minerals, as is shown by the above figures, we should expect the disintegration of soils to be rapidly hastened by the decomposition of manure in their midst.

This, then, is a very important function performed by manure, and so far as it alone applies, shows the increased benefit to be gained by adding the manure to the land in a green state, allowing

the decomposition to take place within the soil. The last beneficial effect of manure upon the soil of which I shall speak, is the effect which it produces upon the absorbent power of soils. As already stated, all soils have the power of absorbing water, atmospheric gases and fertilizing material brought in contact with them in solution. But all soils do not possess this power in the same degree.

Sand absorbs and retains these substances but slightly. The water is easily drained from such a soil, and fertilizing material placed upon it is quickly washed away. The farmer calls it a "leachy" soil, because it will not retain manure. Clay soils are retentive in a high degree, but peaty soils that contain a very large per cent. of organic matter, possess the power of absorption and retention in the highest degree. Manure by its decomposition within the soil, furnishes the organic matter, and so adds to the absorbent power of both clay and sandy soils. To the sandy soil it is of the greatest importance that this power of seizing and holding all fertilizing material brought in contact with it be greatly increased by applying manure before it is decomposed, or by plowing under green sward or a growing crop.

That land may derive all these benefits from manure in the highest degree, it is essential that they be well and thoroughly incorporated with the soil, and this can only be done by thorough tilling. Then, though manuring the soil is one means of cultivation, the greatest good from its application can only be obtained when it is accompanied by that cultivation that consists in mixing and pulverizing the soil by mechanical means.

It has been my aim to call attention to some of the mechanical effects of cultivation that are essential to high fertility; effects, the measure of whose aid is in proportion to the thoroughness with which the cultivation is performed, that I might plead for better and wiser culture; better and wiser, because it will return more abundant harvests and greater gains for the labor bestowed. An average crop of wheat in Wisconsin is about twelve bushels per acre. In England it is twenty-eight bushels. Yet a recent writer says, in regard to English agriculture, that without doubt the annual yield under a better system of cultivation would be increased by an amount equal to the entire rental of lands in the kingdom, or about $20,000,000 of our currency.

I have often thought that he spoke more truly than we thiuk,

who said of the prairies of the west, that "if the earth be but tickeled with a hoe, she laughs with a harvest." But it is a laugh of derision, that man, after the use of such inadequate means should expect anything but the meagre harvest that is a full reward for the labor bestowed.

It is well that the farmers of Wisconsin are learning to prize more highly the manure made upon the farm. They will have learned another valuable lesson when they fully realize the importance of better mechanical cultivation of the soil.

Professor Daniells. I want to say in regard to deeper and better cultivation, I mean mechanical cultivation and stirring the soil, I believe it is the one thing we fail in most completely.

Go through the corn-fields in the dry season, and we have perhaps nine inches of soil. That is fine near the surface, and after resting on the sub-soil, impervious to air and moisture, which never was stirred at all, and through which the moisture cannot penetrate downward or upward, what can we expect from such a soil? It can only furnish the moisture which takes hold of those few inches, and the moment that moisture is used up by the crop in cultivation, or is evaporated away by the sun's heat, and it is carried away very rapidly by this means, there is no longer any source from which the plant can get water, nor can the roots by any possible means get to water; they are kept separate as if by walls between them.

We need to have deeper cultivation, we need to have the soil stirred deeper. The trouble is not with the soil, but it is not stirred deep enough, for it could hold more water if it was so shaped that the water could not get away. Then plants could not possibly grow there, simply because the water was there, shutting out the air from the soil and cooling the soil down to too low a temperature.

All that is needed is simply thorough cultivation—not of a few inches of soil only, but thorough, deep cultivation of the soil—and it is of a great deal more importance that this should be done, that it should be stirred deep and often so that it is porous, than that we should apply manure to the soil. If the soils have an abundance of material within them, and if you will simply get the conditions, so that these natural agents, the air, carbonic acid gas in the water, and the oxygen, and all the elements of the air may come in

contact with them, the roots then will be supplied. If you do but one thing, do this, and your crops will pay you well for doing it. There is in the atmosphere, from which the plants get the largest portion of their food, an abundance of food and the very things which the plants are always in need of—the manure and substance which is furnished by the decomposition of the soil.

What we want in our tillage is to put the soil just in that condition that it can take advantage of the means which nature affords it, and let decomposition be gradually going on by the oxidation of the air, and the solvent power of the natural water that belongs there and which is largely charged with carbonic acid.

In regard to the disposal of water—getting rid of it when it is too abundant. Water falls now upon our soils. Our rains usually come in the summer time, very heavy, at long intervals between them, and exceedingly heavy rains, so heavy that their washing power over the soil is very great, and we have about 10 inches of this surface soil through which this water can pass, and that amount of soil may absorb a certain per cent. of water and the remainder flows over the surface and washes away the most valuable portion of the soil.

The whole valley of the Mississippi has ever proved very good along the river bank, as it flowed and washed from other places; so when getting at the bottoms of our hills, where little rills have run down, we have a larger portion of the soil, the best part, carried away from the high lands. Now if the water can pass off through the soil rather than over it, then we can take advantage of this absorptive power of the soil, and the manure element will be left in it, and also, that will remain which is brought there from the water falling upon it, so that there is no view of the subject but that we see that deeper culture and evener stirring of the soil, and stirring it better, does more for the good of crops than anything else; and I would add, draining it—under draining—is a means of better culture.

COL. WARNER. I wish to ask whether the experiments upon the University Farm have shown these results?

Professor DANIELLS. I think the results have been exactly as I have stated here.

MR. J. W. WOOD. We are told that the benefit of manure is not measured by the amount of plant food that is added to the soil, but rather that it assists certain chemical processes.

I believe there is a very important point made there, and one well worthy of our consideration. I think in accordance with the idea that the Professor dropped, and from investigations that I have made, that manure is not important in growing crops. I believe it is not so important, because experiments have shown us that a plant can derive from other sources all the carbon necessary to make a perfect plant without any aid in the way of manure; so that if this manure operates in that way, it becomes doubly important that we should make use of our manure and incorporate it with our soil. And it teaches us the importance of incorporating manure with the soil, rather than spreading it upon the surface. This peculiar chemical process would show that it is best to incorporate the manure with the soil, so that the mineral matter may be prepared for plant-food.

Mr. Benton. Has Professor Daniells thought over the subject of the most fit tool for this subject?

Professor Daniells. Use such as you have and use them well.

Mr. Benton. I understand they are now cultivating by steam in Canada, and some parts of Great Britan, with a hook just dragged through the soil, just stirring it without turning it up, but we cannot put any such thing as that through our corn rows. But as I understand, the facts are to be reached from the deep cultivation of our corn crop, or to cultivate it deeper before the corn is planted?

Professor Daniells. You cannot cultivate very deep while the crop is growing without destroying it.

Mr. Benton. How deep will it do to cultivate corn that is growing, and how late? I find that most of the roots which sustain plant life are very near the surface, and that deep cultivation is not necessary. I find if I have very fine soil I am almost guaranteed against drouth.

Professor Daniells. Suppose your roots only go 4 inches into the ground, and when the moisture is used up, where are you going to get your moisture?

Mr. Benton. From the atmosphere.

Professor Daniells. No you don't, in a dry time.

Mr. Benton. Well, I think I do. I pulverize the surface of my corn field as finely as I can, and every time I stir my corn and make the soil as fine as I can, I get moisture. I think it is moistened from the dew.

Professor DANIELLS. During the month of April last, 1 26-100 inches of rain fell, and 2 61-100 inches of water were evaporated from the vessel right by the side of the one catching the rain-fall.

In May, 2 14-100 inches fell, and 5 28-100 inches were evaporated. In June, 2 85-100 inches fell, and 3 35-100 inches were evaporated. In July, 5 19-100 inches fell, and 6 inches were evaporated. And in August, 1 40-100 inches fell, and 3 97-100 inches were evaporated, and yet corn crops are to get water from the air in such a condition as that. If that is so, I don't understand absorption at all. The evaporation very largely exceeds the amount of rain-fall during the months the crops are growing.

Secretary FIELD. Wasn't the evaporation very much greater than it would have been from a large surface ?

Professor DANIELLS. Yes sir, I intended to so state.

Mr. BENTON. I am not wishing to urge any theory as to the source from which the moisture comes, but simply the fact that I did get the moisture at the surface where the most roots were. We cultivate about 4 inches deep, and the breaking of the roots could be heard quite a distance, the corn being in tassel, and the cultivator was all loaded with fine roots. Now, if I produce moisture by finely comminuting my soil right at the roots, it is better.

Professor DANIELLS. It was simply by the moisture coming from the earth below that you had moisture there. Let me suggest to you an experiment. Suppose you take a pound of earth from your corn-field at four o'clock in the afternoon and expose it to the atmosphere during the night, and in the morning before the evaporation begins, weigh the soil, and you will find that the moisture absorbed will be exceedingly small.

Mr. BENTON. I believe it is a general principle of natural philosophy that the air receives more moisture than it is capable of containing under certain conditions.

The air which penetrates the soil is rendered cooler and leaves its moisture in the soil. By cooling the atmosphere the moisture is precipitated and collected in the soil.

Professor DANIELLS. Just so much water as may be condensed on the surface. The circulation of atmosphere through soil with an impervious sub-soil is slight, but if the soil is sufficiently deep so that water shall be able to pass through it, you will then have, as the moisture passes down, really a gradual circulation of the atmos-

phere through the soil. But with an ordinary soil, and an impervious sub-soil, the circulation of air in it will be next to nothing.

Mr. Allen. I have listened to the paper wiih a good deal of interest, and I agree with nearly all parts of it. But with reference to the corn culture, I said last year, that a pony and a boy made a poor team to cultivate corn with, and I believe it yet. In my cultivation of six years, I find that my corn would wilt, and the leaves roll, and after the corn was as high as a horse's back, instead of taking one horse, I took two, and put one ahead of the other, and took one of the Madison cultivators that will dig, and I put a stone on it, and I let the two horses draw the cultivator through the corn, and the result was a good crop, and I was not afraid of breaking the roots. I let the thing run to the beam and stir up the soil.

And in reference to deep tillage, I do it with clover. Years ago I practiced the deep tillage policy with a plow, and now for the last 8 or 9 years I have done it with clover, and it is better; I like it much the best. The clover roots go deep and get drainage for the crops.

Mr. Anderson. I think this is perhaps the most important paper that will come before us at this meeting, and it would pay us to discuss it the whole three days. I was well pleased with the reading of the paper, and with the recommendation of applying manure at the roots of plants. I have practiced that for a good many years. That subject of applying manure is very important. The president of this association understands what good manure is. Feeding grain and clover makes good manure. I think the best manure I get is by feeding clover hay to sheep, with grain, and feeding grain to hogs and horses. I don't call rotted straw manure at all, and I never have any rotted straw on my farm. I don't depend on straw for feed. I think I would differ with some men in regard to the amount of nourishment crops receive from the atmosphere. I manured last year for corn, and yet I could see to the very row the difference. I hope no farmer present will expect to raise good crops from his land with gas received from the atmosphere, if the soil is not in good condition. Above all things depend on the soil being rich, and then the atmosphere will not injure it. I have tried manuring in various ways, and I think the best way to apply manure is to get it out of your barn as quick as possible and put it on the ground and plow it in in the fall 3 inches deep, and in the

spring plow it up and plow 6 inches deep, and during the thorough harrowing and cultivating you will have it just where you want it. I apply this more particularly to corn ground. I think to have manure where the young corn will receive the benefit from it early in the season is best. I want to cultivate the corn deep when it is young, and shallow when it is large. I don't want to tear up all the roots of the corn, but I do want to cultivate deep in the early part of the season, and shallow in the latter part of the season. I find that plowing manure in in the fall, and plowing it up again in the spring is better. My mode of cultivating has formly been in that way, and my rotation of crops is one year in corn, one year in clover, and one year in small grain. But the chinch bugs have cured me. I have got tired of raising chinch bugs and I don't propose to sow any more wheat. I think my neighbors will be foolish enough to sow wheat, and I will exchange some of my corn and oats with them for their wheat, if they raise any.

I have a sub soil-plow that has no mold-board to it, and I follow the plow with this sub-soiler loosening the soil and leaving it in the furrow. That plow loosens the ground 12 to 13 inches deep. The horses do not walk on the plowed ground. One horse walks on the side, and the other in the furrow, so that there is no packing down of the soil, and when the chinch bugs come, no difference what you cultivate, they will destroy it; and the looser your soil, the more they will breed and destroy your crops.

MR. J. M. SMITH. I understood from the paper that it was possible to keep land in good condition by cultivation rather than by manure.

Professor DANIELLS. They raised in England 21 bushels of barley to the acre annually, for 20 years, without manure.

MR. SMITH. I had occasion only a day or two ago to look at some comparative statements about wheat, and as I understand, the average was about 13 bnshels, and on the plat where farm-yard manure was used it was 36¾ bushels, and where phosphates, from 35 to 38, and on the best plat it was 40. Where no manure was used 13.

Professor DANIELLS. I do not want to be understood as saying not to use manure, I mean the more, the better; but we can take bricks just burnt and pulverize them fine, and still raise corn in that brick dust without putting any organic matter in it at all; but of

course plants would not do as well in such a soil. But what we need is to furnish the conditions best suited to increase the amount of mineral matter. It is very much better to manure than not to, but the object of putting manure on the soil is not to furnish organic matter, but to furnish means for decomposing the mineral matter. Plants take in no organic matter, or next to noue, through the roots, and it is not necessary that they take up a particle of it.

If you furnish the proper elements, in sufficient quantities, of mineral matter, the plants will look out for the organic matter sufficiently.

I meant to manure heavily, but do not expect that manure will do the crop much good by supplying the animal matter, but it aids the soil in solving organic matter very materially. That material is directly soluble, and is taken up, but that is not nearly so essential as the other, and that is, the aid which it affords for decomposing the mineral matter.

Mr. Orledge. I have listened with a good deal of attention to the Professor, but I wish to say that practical men should be carefull how far they follow professors. They should go slow. I have always failed to find that a good dinner ever hurt me, and I never found that good manure ever hurt soils.

Professor Daniells. I was showing that the good came not from the manure, but from the change it produces in the condition of the soil.

Mr. Orledge. You know how difficult it is, gentlemen, to dispute with professors, but still I cannot admit that the only good manure does is to change the condition of the soil. I believe that organic matter from manure is necessary in some soil. With regard to deep plowing, I would have you very cautious how you go into it; go gently. I recollect when I came to this country I had been used to deep plowing, and I put the plow in seven or eight inches, and plowed one acre a day, and had to work hard at that. And a man came along and says, "you are fooling away your time. I shall have better crops than you;" and he did, too. The fact was, I brought up a lot of new soil to the surface that wanted time to be put in condition by the sun and air to make good plant-food. I recollect, when a young man, occupying a farm that had about ten acres of land in one piece, on top of a hill, and I don't think there was ten inches of soil above the rock anywhere, and I think I have

run the plow along several acres right on top of the solid rock. I recollect my father did not have good crops from that piece of land; but when I got hold of it and put the sheep on it and went to growing grain crops, I found I could grow good crops on that land. It bore good crops because the manure from the high land was always washing down upon, and enriching it. But, gentlemen, if you want good crops, don't forget your manure; there is nothing will pay you so well, except getting your water from under it. Then put on your manure, and don't care what professors say, stick to your manure. [Applause.]

Mr. PORTER. We, each of us, farm our own land just as we think best, and if we succeed the credit is our own, and if we don't succeed we sell out and go west. But, so far as the recommendation from our worthy Professor is concerned, I believe he is right in many respects, but to follow up his recommendation would ruin the whole of us. I mean to say, to follow it because it is a recommendation, it would absolutely ruin the whole of us. I believe the most of us are acquainted with our own soil, and what that soil requires. I have observed while I have been here, and I see every man farms his own farm on his own hook. And if he is beat he gives it up, and if he succeeds he goes along. But I don't care how much he makes out of it, his very next neighbor won't follow his example.

I have a farm of a considerable number of acres. I followed manuring for a number of years in a certain way, and I found that I was not succeeding as I ought to and thought my land was not as remunerative as it ought to be, and I thought there must be some other way to apply that manure so it would pay better. And I think about twelve years ago I took it into my head I would try the plan of summer fallowing. A large amount of my land is strong clay land, and I now summer fallow from twenty-five to fifty acres every year. When my harvest is ended, I haul out from three to five hundred loads of manure on that summer fallow, and I sow my wheat on that land, and I never failed so nearly as this year, and this year my crop came to a little over fifteen bushels. Next year I shall plant corn, and the next year use clover. Now that is not the common plan, but it is a success.

But if I were to recommend it to you, and you were to follow it, very likely it would ruin all of you. My finances are better by it, and that concerns me most; but I think it would be an outrage for

you to try my plan. If you would follow the recommendation that I give to my neighbor, very likely you would get into difficulty.

And now our papers have said, plow deep. It is all wrong. I have said, "boys, plow light in the spring. I don't care how light you plow, but in the fall of the year I never have plowed my land with less than three horses, just as deep as we can get in with the plows we have.

Now my experience is this, in reference to plowing deep in the spring. If I plow deep, the first rain that comes sets the ground as hard as a brick. and I cannot help myself. I don't care what is in the soil, but if I have a deep subsoil, and I take the land that has been frozen or left exposed to the atmosphere, I can work it all summer. Now that is my way of working my farm. But now, gentlemen, don't go home, and come back here next winter and say there was a big, fat fellow over there in Waukesha that told me something that I followed out, and have lost $500 to $600 by it. Here is the thing—these respectable farmers before me know the condition of their soil, can manage it better than a Professor from the University, or a Professor from any other institution of learning.

Now if we leave a company of men like this and go out into the streets and see men selling wood, as I went to half a dozen men since this convention commenced, and I said, "do you know there is an agricultural convention here." Well, three or four of them knew, and the rest did not know anything about it, and they were all Dane county men too. One man says. "Yes, I know there is," but says he, "I know what they are. They are a lot of thieves and shysters, and they just get their living out of other people, and I could not be hired to go there."

In reference to our neighbor, we shall have to do this, we shall have to educate our brother farmer up to that point that he will be interested in the State Agricultural Convention, and to the importance of farmers attending it.

Mr. Clark, of Trempealeau. This is a subject that should interest every person. But the Professor has a report there that we want to hear from, so far as deep and shallow plowing is concerned.

Professor Daniells. I want to say that in all the remarks made there has been nothing said that you will find anything opposed to in my paper, so far as I understand it. In regard to sub-

soiling, it is precisely as Mr. Porter says, you cannot take sub-soil and grow crops upon it at first, because it has not been decomposed and you cannot make it mellow; but you can do it by putting manure on it. It is a decomposition of the soil that is wanted.

Professor Daniells here read from his annual report to the Board of Regents of the University of Wisconsin, for the year 1874, relative to the experiments in sub-soiling, which will be found in this volume nnder the head of "University Farm."

SOME OF THE LESSONS OF THE PAST SEASON.

BY J. W. WOOD, BARABOO.

A very cursory examination of the condition of our agricultural interests in Wisconsin will show us that they are far from satisfactory. A great amount of land is under cultivation which is not profitable to those who carry it on.

The past year has been unusually disastrous on account of the drouth, with its attendant evil, the chinch bugs, and thousands of acres of grain which were hopefully sown have not paid the expense of harvesting and threshing. The markets of the world are such that wheat is ruling unusually low, so that what we do raise brings us but little money. All classes of business are suffering on account of this, and our agricultural convention meets this year under rather discouraging circumstances.

I shall attempt to review some of the experiences of the past season, in order to find what lessons may be learned which will help us in the future. But first, as to the condition of agriculture in our state. I have no doubt but that in its general management it averages below the methods of those who are met in this convention. If a man has enterprise enough to give the time and incur the expense of attending here, the probability is that he is dissatisfied with his present achievements, and this is the starting point in the highway of improvement.

The great work which we wish to accomplish as statesmen and well-wishers of our race, is to move the masses of our farmers to adopt better and surer methods, so that, if possible, our granaries may always be filled. The low price of wheat is nothing when

compared with the emptiness of our bins. We are liable to see it lower. We must not be too selfish; a low price for food is a great blessing to multitudes whose needs are greater than ours. We must not indulge ourselves in looking upon it as a calamity. What we want is to raise our crops so surely that they may still be profitable. The proceeds of an abundant crop of wheat distributed over our state, even at present prices, would quicken all of our industries into new life.

This result cannot be produced by urging those who are in the channel of improvement, into higher methods, so surely as it can by quickening the great mass of our farmers into even moderate improvement. * * * That there are ways by which individuals may prosper amid general depression, I do not doubt. It is in the midst of hard times for the masses that many fortunes are made. By good management, a man may build up his own farm at the expense of his neighborhood, but I am not laboring in this interest. If I suggest a method which is not as available to the humblest farmer as to the most fore-handed, I wish to be rebuked for it. We need not hope for general improvement but through the use of simple and practical means which lie within the reach of all.

There is nothing singular in our case. We are but repeating the history of all the agriculture of which we have knowledge. Rich land carelessly farmed until exhausted, then by compulsion, improved methods, by which the land is often restored to more than its original fertility.

If the people will it, they have now reached the bottom of the scale, and may date improvement from the present moment, or they may descend lower and find improvement still more difficult. If simple and efficacious means of improvement exist, it is important that we find them. Still there are some things settled with absolute certainty which we are slow to learn. I think I can safely say, after extensive reading and close observation as to the methods by which exhausted lands are restored, that in all lands and in all times the use of clover, or its equivalent, has been the one simple and sure way which has never failed; and if it will restore that which is worn, it will be the most effectual method of preventing that entire exhaustion which is so much to be deprecated, for the simple reason that the greater contains the less.

There may be many adjuncts to the use of clover. I have seen

it stated that the use of lime lies at the bottom of all improved husbandry, but it is used in connection with clover or its equivalent, and this plays the most important part. While this is so well established, how few there are who recognize and act upon it. If it were expensive, requiring a great outlay of capital and time, it would alter the case; but, on the contrary, it will produce prompt and satisfactory results from the start.

While there is much clover grown in the state, yet it is more difficult to find a man who raises it regularly in due course of rotation than might at first be supposed. Its real character and place on the farm is not so generally understood as it needs to be. Some have sown it for permanent meadow, and because it killed out in two or three years have abandoned it. Others have sown it at spasmodic intervals, but because of the high price of the seed have often substituted timothy. Timothy, for hay and pasture, is generally preferred to clover, and possibly with reason. But this is not the whole of the case: the good of the land must be consulted as well as the tastes of the cattle. A man who has once secured a crop of clover seed should never have occasion to buy seed again. I never sell myself short of a year's supply in advance. On my own farm I have no use for timothy, only as I seed new, stumpy land, which must be mown with a scythe for a few years. My land is a tolerably heavy clay loam, which easily settles down so hard as to lock up its fertility until opened by the strong action of the clover. Under the clover rotation it will vie in mellowness with the best of prairie soil.

Timothy exhausts land, while clover improves it. Of its mode of action I do not wish to speak now. We discussed this at some length in our convention a year ago. I will refer to the piece of land owned by George Geddes, which, since the year 1799, has received no other manuring than its own crops of clover turned under once in five years. The clover in its rotation has been plastered, now for more than fifty years, with still increasing benefit. In 1849, when Prof. Johnson visited this country, his attention was called to this piece of land, and while he was astonished at the result, he predicted ultimate failure. Twenty-five years have since passed, and Mr. Geddes still reports an increase of fertility. If a five-year's rotation will improve land steadily for seventy-five years, who will place the date of its failure?

I alluded to the fact that the use of lime has been said to lie at the bottom of all improved husbandry. This is eminently true in Great Britain. It is also extensively used among the worn-out lands of Virginia and Pennsylvania. It is of no great avail unless it finds organic matter in the soil with which it may act. Clover will furnish this immediately at hand, but it is often the case that the soil is abundantly supplied with it in the form of humus. This is chemically recognized as an acid, and the elements composing it often lie in the soil perfectly inert so far as helping the growing crop is concerned.

You have all doubtless observed that our diminished crops are in few cases accounted for by any apparent exhaustion of the land. The most of our prairie soil looks as rich and plows up as handsomely as it ever did. In some of the sinks of the surface, where the wash has accumulated, the plow cannot reach the bottom of the black loam which fills them. Such spots, judging by their appearance, would be pronounced inexhaustible; and yet their productive power has greatly diminished. I believe that on all such land, quick-lime would be found of great value, even though the neutral carbonate may abound in the soil. Its benefit is never fully measured by its direct agency in furnishing the plant with the lime needed in its growth, but rather by its chemical effect upon the inert organic matter which the soil contains. This is unlocked and made available to the plant in more soluble forms.

The southern and eastern parts of our state abound in lime rock, and the drift formation of the state is filled with cobble-stone of the same material, which makes it accessible to all, and extensive experiments ought to be made with it. Let no one be content with the idea that lime abounds in his soil. It is only in the condition of the neutral carbonate which is withdrawn from the sphere of chemical action.

The chinch-bugs played a very conspicuons part the past summer, and are worthy of a full measure of notice. They appear so insignificant, when taken singly, that a man can hardly imagine what a terrible pest they may become. They were first described in this country about eighty-five years ago. They were then supposed to confine themselves to a belt of country far south of this. I can well remember when they made their advent in this state about twenty-two years ago. The tradition which

came with them was, that they would stay about three years and then depart for good. This expectation has not been realized. They have done more or less damage every year since they came. There is nothing in their past history which makes it necessary to suppose that they will be unusually disastrous the coming summer; nor is there anything which forbids it. We must take our chances. The country is abundantly supplied with their seed, and if the winter and spring are favorable for them we have great reason to fear their ravages. They have experieneced many checks in the past, and we may escape serious damage in the future; but one thing is certain, that is, they must be recognized as among the "powers that be" in any well regulated system of farming. We are under profound obligations to watch well their habits, and adopt some system, if possible, which will keep them in check. There is no hope of their extermination; they can only be regulated.

If we look through a series of years we can see that the plagues and diseases of one generation give way to others in the next, so that in this line we may be continually looking for something new. The memories of many of us reach back to a time when some of the most alarming diseases of the present day were unknown, and so with the farmer's pests, they are continually changing. There is one thing highly probable, viz.: that in farming, the method which deals most successfully with the evils upon us, is the one most likely to ward off evils to come. It is our excesses in farming which lead to our overthrow. These insects all exist, but are held in check by the natural balance of things. We open up conditions favorable for some particular species and they multiply until our crops are ruined. The cure, if there is any, will be to introduce conditions unfavorable for them, so that they will be remanded back to their original position.

There is one problem susceptible of demonstration, and that is, that with a given number of bugs to the acre, if we can by any means double the growth of the crop on the same acre, we halve, at least, the probable damage. This points us towards good culture and rich land. And here comes in another element in our favor: if we double the amount of forage produced by the acre, we doubtless retard by half the reproduction of the bugs. So that by good culture on rich land we are exposed to but one-fourth the damage that we are likely to experience without it. In dry, hot weath-

er, under favorable circumstances, the bugs multiply with great rapidity, so that a few days difference in the time of ripening will expose the latter piece to greater risks than are borne by the earlier one. This points to the importance of early sowing and planting in order to secure early harvests, and this, not only on account of the bugs, but because of rust and other evils.

I planted several varieties of corn with the view of testing their comparative productiveness. The whole was injured by the bugs to such an extent as to seriously modify the value of the experiment, but I found that the best pieces were the earliest ones of their kind, simply because they ripened out of their way. The flint varieties, though early, were more seriously injured because of their softer foliage. This points also to the selection of early varieties for seed. It would at once condemn the Odessa wheat, which, with us, is several days later than the Rio Grande varieties. It would still more forcibly point to the introduction of winter wheat in all localities where it may be successfully raised.

There is no doubt but that the area sown to winter wheat is rapidly increasing in this state. There are many inducements for its culture. It can be sown at a time which relieves the great pressure of work which we sometimes have in an unfavorable spring, and the same in harvest. Mine is always securely stacked before the cutting of spring grain begins. This is an important item, for with the hot weather, the bugs and the rust, we have had of late years but two or three days, at the out-side, in which our cutting ought all to be done. We may sow grain two weeks apart in the spring, but it will hardly make two days difference in the time of harvesting. The latter piece will be assailed by something which will drive it in upon us before we are ready for it.

The past season was a very severe one for winter grain. Many pieces which were sown late were ruined. Men expressed themselves as discouraged with it in the early part of the season, but before harvest the same men said that it was their only chance for wheat. Many men who are raising it, now say that if they should lose it every second year it would still pay them better than the average of spring wheat. The report from the University farm will confirm this view. It is often said, that in the Baraboo timber we have land exceptionally favorable for this grain. This may

be true, but the Univerity farm reports a larger yield than any in our vicinity.

There is another point in favor of this wheat. If we have a favorable stand in the spring, we are reasonably sure of a crop. But few men would exchange it for twice the acreage of the spring varieties, while if it fails, we can still devote the ground to other crops. We do not necessarily lose, in addition to the seed and labor, a year's use of the land.

A short rotation of crops, returning often to clover, I believe to be our most effectual method of dealing with the chinch-bugs. Clover belongs to a different class of plants from the cereals, and is so unlike them that its insect enemies will not be likely to be the same as theirs. The clover sod, too, presents conditions quite unlike those under which the bugs prosper best. We have with it, a compact surface, a dense shade, and the dews and rains are retained a long time by the foliage keeping the ground cool and moist. We can induce no healthier conditions for our lands than to have them in pasture, and this presses upon us the importance of a diversified industry—diversified not only on a grand scale, affecting the industries of the state, but also diversified, as far as possible, upon each individual farm.

If we look clearly, we will find that in every community, even in the midst of general failures, there are instances of partial if not complete success. In common parlance it would be said that one man had better luck than another with some particular crops. I do not wish here to discuss the doctrine of luck, or the theory of probabilities, but, so far as my experience goes, the most of these cases of reputed luck can be resolved into the direct operation of cause and effect. This is so likely to be so, that all such cases of success are worthy of investigation, in order to find out whether they may not be underlaid by some law which will in all cases produce like encouraging results. The fact is,—all our processes in farming are slow. It takes a year at the shortest to demonstrate a failure, and several of them to prove any given method a success. It is like a complex machine, a little wheel out of order will entirely defeat its operation. In farming, a success at one point will often guarantee a success at another, while a failure will leave its traces behind for years.

I sowed a piece of new rich land to wheat about the first of

October. I knew that it was late, but I hoped that chances might work favorably, as they sometimes do, and give me a crop, but they did not. The wheat went into the winter weak and small, and the most of it was killed in the spring. That which was left was attacked by the bug, and being late, the rust finished it. I only harvested it in patches. Where there was no wheat, the weeds grew very luxuriantly. Many of the pig-weeds had to be cut with an axe. The whole had to be mowed, raked and burned before I could plow it in the fall. The ground is now full of foul seeds, and I have thought it best to change my plans in reference to it, and so have seeded it down in order to get a new start at some future day. Had I sowed it a month earlier, the probality is that I would have harvested a splendid crop of wheat, my bins would have been filled—and consequently my purse—my ground would have been free from weeds, I would have been saved great labor and expense in preparing it for the next crop, and my plans in reference to it would not have been disarranged as they are now. I had another piece of ground which I counted too poor to adopt at once into my rotation. It had not been profitable to its owner for some time before I came into possession of it. I sowed it to oats and seeded with clover. I harvested 25 bushels of oats per acre. The next spring I sowed plaster and secured a tolerably good growth of clover. There came a copious rain the last of June, and while the ground was in good condition I plowed the clover under. I then dressed it with 40 bushels of freshly slaked lime to the acre and sowed it to buckwheat. When the buckwheat was at its best estate I plowed it under and sowed it to wheat. The spring, with its dry freezing, was very bitter on winter wheat and injured it just in proportion to the lateness of its sowing, or inversely as it was rooted. In due time the bugs assailed it, and the rust hovered about it, but I threshed 28 bushels per acre of wheat, that brought me at the Baraboo mill 25 cents per bushel more than the market quotations. On land of the same quality in an adjoining field, spring wheat hardly paid for harvesting. After I have repeated the clover and buckwheat process, I shall adopt this land into my rotation.

There is nothing which more thoroughly disorganizes a man's plans than to have his grass-seed fail to catch. Without a reasonable certainty in his seeding, a rotation of crops seems impossible. However general the failure may be, there are always pieces which

succeed. The conditions of success must be carefully studied. If I was liable to failure in this respect it would be the most discouraging circumstance in my farming. I have never yet failed to any extent, but yet, I cannot deny my liability to do so. I believe that the longer a rotation is practiced, the more likely a man is to succeed. Land in good heart and well cultivated is far more liable to catch, than when it is poor and in bad condition. It is important that the seed should be sown at the earliest possible moment. No possible amount of freezing and thawing can injure the seed. It must have the cool, damp weather of spring in which to push down its main root, so that it may stand the drouths which are near at hand. I would not hesitate to sow the seed in March, two weeks before I could sow the wheat on the same ground. The ground must not be too loose and open. I think that fall plowing thoroughly mellowed on the surface by the common harrow, is as good a seed bed as can be prepared for it. The seed should always have the benefit of the last harrowing. On light soil, a roller is doubtless a good thing, but on my clay soil I never use one. A good heavy rain will leave the surface as hard as desirable. I have succeeded well in seeding with any of my spring crops by having this mellow surface with firmer soil below. The roots soon strike this firmer soil, which will promptly furnish them with moisture as long as the ground contains it. I think that small grain stands up better on land so prepared, and at the same time I get all the growth of straw that is desirable.

The longer we practice a short rotation the surer we will be to succeed with our seeding. If a clover-stubble which has been cut for seed, be turned over and cultivated in corn, and then plowed and sowed to wheat, there is likely to be a stand of clover without the sowing of seed. There is nothing more disastrous to the prosperity of the bugs than clover. They will live in timothy if driven to it, and seem to enjoy life reasonably well, but they find nothing congenial in clover. If there are any processes in legitimate farming which will restrain them, it is important for us to know it. My experience thus far induces me to believe that it may be effectually done by the persistent use of clover. It would be very desirable for a whole community to make common cause in this matter, and this brings me to the important subject of co-operation.

I do not limit my application of this to a combination of men

whose chief aim is to secure high prices for their own wares and low ones for every one else, but a general co-operation in communities by which a local reputation shall be gained for excellence in whatever may be the products of the locality. A few illustrations will best convey my meaning. It seems that in Chester county, Pennsylvania, a number of farmers combined in breeding with care a style of hogs which have become widely known as Chester-Whites. They have attracted attention for many years, until the whole country has become filled with them. I have no statistics in reference to them, but we all know that many thousands of pigs have been sold from that locality at large prices, so that it must have been an immense source of revenue to that district of country. Breeders have made large fortunes in the sale of these hogs. It would have been of doubtful policy for a Chester county farmer to have rejected this breed in favor of any of those which are now preferred before them. His true policy would have been to have co-operated with the rest in securing as high a grade of excellence as possible in the hog for which the district was famous.

We hear too, of Orange county butter. A national reputation for excellence in this product has been achieved in that locality. Orange county land may be excellent for many purposes, but the probability is that a man in that region can do no better than to fall in with the local industry and help to maintain the local reputation, which is a fortune for the whole region.

It does not matter in the least what may be a man's individual opinion of the comparative merits of the Devon, Durham or Jersey cattle. In the Island of Jersey it is probable that the breeding of Short Horns would be a failure, and so would the Jerseys be a failure in Devonshire or Durham. I have realized lately more pointedly than ever, the mistake which any neighborhood makes in scattering in its aims in so small a matter as hog breeding. While one still clings to the Chester Whites, another prefers the Berkshires, and another the Poland Chinas. This makes it far more difficult and expensive for us to secure suitable crosses than it would be if we had a common aim. We are now all likely to degenerate together. With concentration of effort we might easily secure the best of either variety, and so establish a local reputation which would be of advantage to us.

I made a journey the past fall to a locality where I supposed

that great attention had been paid to the breeding of draft horses. I supposed by this time the vicinity would abound with animals of this kind. I was entirely disappointed with the result of my visit. There had been no unity of action in the vicinity, and no local reputation had been gained.

I can illustrate this failure near at home. For 25 years a herd of Short-Horns has been located in Sauk county. It might reasonably be supposed that by this time the country would be well stocked with full bloods and high grades, but the efforts at improvement have been scattering and no great progress has been made.

One thing that we want is more local experimenting. I do not mean that profound research into organic laws which lie too deep for common opportunities, but a series of prompt and easily conducted experiments, which will determine the varieties best adapted to our own localities. We often hear of some new variety which is giving great satisfaction at a distance. We incur expense in introducing it, only to be disappointed with the result.

There is a great deal said of late about the propriety of changing seed. This may be desirable, but does not go very deeply into the merits of the case. It is always desirable to change poor seed for better, but if our own is the best, it is the proper seed for us to sow. If we hunt deeper, we will find causes of failure which cannot be reached by changing seed. We want to study the adaptations of our own localities. We know that nature recognizes great differences in the different parts of the same forty acre lot. There will be the oak and hickory ridge, the maple grove on the slope, the basswood and elm on the flat, and black ash and alder near the creek, and coarse grass and cat-tails will fringe the banks. This order of things cannot be reversed, and it suggests the great importance of intelligent adaptations in our farming. The natural flora of the sandy portions of Sauk county is widely different from that of the clay land and bluffs. The Baraboo river draws a line as marked by different natural productions on either side as might be found elsewhere by two hundred miles of travel. We know that our cultivated grains have wonderful powers of adaptation, as cultivation has given them a cosmopolitan character, but still it would not be strange if we could find varieties peculiarly adapted to our various situations.

We measure the yield of our small grain because it is generally threshed for us by the bushel, but we seldom place different varieties under the same circumstances of cultivation in order to fully test their comparative merits; still we are generally better informed as to these things with our small grains than we are with our Indian corn.

I am confident that I have known men to plant inferior varieties year after year, when they could have changed their seed with but little more trouble than the asking. Men will express strong preferences for one variety above another, with no good reason for it, and without once bringing the matter to the actual test of experiment.

There is an idea prevalent in the matter of corn, which I would like to have effectually exploded, and that is, that a large cob and long kernels are necessarily desirable. If we were buying it in the ear we might prefer such corn, but in selling, it would be against us. Practically, the large cob will require a larger crib, and this with the increased labor of husking, is the full measure of its disadvantages. These experiments with corn are easily tried, but to be valuable must be tested with accuracy. It will not do to guess at the result. We raise nearly 550,000 acres of corn annually in our state, and a variation in the yield of one bushel to the acre materially affects the revenues of the state. I tried an experiment of this kind the past summer, and have found a difference of yield amounting to eight bushels per acre, and a difference of four bushels in varieties largely cultivated. I propose to continue them until I am satisfied that I have the variety best adapted to my own circumstances.

There are very important facts bearing upon our business which can only be learned by reading statistics. These tables make exceedingly dry reading but they cannot be overlooked by intelligent men. A thorough acquaintance with them will show us that prices are governed by laws scarcely less immutable than those which govern the stars.

Our own failure in wheat proves to be of no great importance to the world at large. There are but three principal factors affecting prices. Supply, demand and transportation. The cost of production has nothing to do with it. If this cost is so great as to render production unprofitable, the only remedy is, to discontinue it.

Transportation is the only factor which can be reached by legislation. Unobstructed competition is the sure road to cheap trans-

portation. Demand is subject to no voluntary control. Necessity, real or fancied, governs it entirely.

Supply might be controlled by voluntary action, but is not likely to be. If anything will teach men to regulate it, it is the study of statistics. These tables teach us that there is an over production of the cereals in the United States. We are obliged to look for a foreign market. We are also taught by these same tables that there is a prospective foreign demand at moderate prices which will require it all. These tables teach us the absolute necessity of varying our industry.

Our new territories are opening up with immense rapidity. Wisconsin has already seceded from the second to the fonrth rank as a wheat producing state, and this in the face of the largest crop we have ever raised. All these new countries must pass through an excessive wheat producing stage before they are prepared for other pursuits. It is wisdom for every man who can, to turn his attention towards other sources of income until this wheat mania shall pass away, as it inevitably will. An excess of other grain is sooner disposed of, as it is food for both man and beast, while an excess of wheat has to wait for a market until it is wanted by the human family.

Contentment never prompts to great exertions, nor leads men in the path of improvement. The most hopeful sign of the times is the wide-spread discontent which prevails. We want to learn to doubt our own wisdom, and not let our indifference nor our prejudices lead us in unprofitable paths, although they may be well worn by centuries of use. While we indulge in profound veneration for our fathers, yet we want to see wherein we can improve upon their practices. There is no doubt but that our present system of farming must give place to improved methods if we wish to make it profitable.

The great point to be consulted is the good of the land we cultivate. In working a team we aim to get out of it the greatest amount of work consistent with its continued ability to perform the same. The earth is not much unlike our fellow men. If we pinch and cheat them they soon refuse to deal with us. We may appropriately apply to our intercourse with it the same divine rule which is given us to direct our conduct towards our fellows: "Give, and it shall be given unto you, good measure, pressed down and

shaken together and running over, shall men give into your bosom. For with the same measure that ye mete withal it shall be measured to you again."

Mr. Allen. I want to extend the hand of fellowship to brother Wood, for he expressed in his paper my views exactly on chinch-bugs and all. You may just as well raise a good crop of wheat as not. In the first place you want the grain put in at the proper depth. The chinch-bug when it first comes to light is a tiny thing, a little point something like a mosquito's egg, but they will have life before you can see them. They may commence by the first of June, and if the wheat is covered up deep enough, so that they cannot find the roots, they won't breed there. If it is covered up an inch and a half deep, they cannot get to the roots, and if the land is mellow, it should be pressed down with a roller or something. If there are corn roots or something of that kind they will breed there. Then again, as to a further preventative, I would sow clover and plaster. After the clover grows and shades the grain, you will not find many chinch-bugs on the ground.

Mr. Anderson. I want to discourage the idea that clover will prevent the chinch-bugs from eating wheat, for I know to my sorrow that it won't do any such thing.

Two or three years ago I thought I prevented the chinch-bugs from destroying wheat by having a very heavy undergrowth of clover, but since that time I had heavy clover and straw, and yet they destroyed it all. The last season on the best land I had, they took it so I never threshed it at all; and I had a heavy crop of straw; but I never sow small grain without sowing clover. I hold that any farmer who believes that he can save his crop of wheat by sowing clover, is mistaken, if we have a dry, hot June.

The idea that rolling the ground prevents bugs is a fallacy. Last year my grain that was rolled was nearly all destroyed with bugs. My clover and wheat were the best where my ground was in lumps as big as my fist all over the field, and my clover and wheat both did better by far; so that theory is gone.

In regard to the bugs hatching in corn-stalks—in dry corn-stalks—they do not do any such thing. They hatch a little under the ground, and they will hatch just as quick in the stalk, or in a blade of grass or wheat. Eggs laid by chinch-bugs are not laid in the fall and hatched out in the spring, but full-grown bugs live

through the winter, and lay their eggs in the spring, and the egg is deposited from the first to the fifteenth of June, and about the middle of June you will see a few small bugs; and they were so numerous by the 4th of July last year that the wheat turned white in spots, from their ravages. I think it is said that bugs plowed in with corn-stalks would be likely to remain in the ground; but that is not so. They will winter around your fence-corners, under your fences, under leaves; but not in the ground. You can easily find them. Turn over a flat stone, if it is dry, or turn over a rail, and you will find them; but they will not live in wet places. And if you can find bugs in the spring it is risky to sow wheat; but if a good heavy rain comes at the right time, it will plaster them tight into the ground, and hold them there.

Last year for the first time chinch-bugs hatched in 2 crops of mine, and they hatched in Fox-tail grass, and I think, many of them have gone into nice winter quarters, and therefore I shall not sow much wheat next year. But they won't eat flax, so I shall raise some flax next year; but they will generally settle on barley, wheat and rye.

Mr. PORTER. I remember several years ago we had chinch-bugs the same as we had this year. I met the manager of the La Crosse Railroad in Milwaukee, and says he, "Porter, how are the crops?" "They are gone up," I said. "With what?" he enquired. Says I, "chinch-bugs." "Well," says he, "you farmers are the most troubled people in the world." "Yes," I said, "and if you don't find out the chinch-bugs are in your railroad next year, I will be mistaken."

And then I met him in the spring again, and says he, "I guess we have got the chinch-bugs any way. We don't have any wheat to carry."

In the hot days of June last, I was satisfied that the chinch-bugs were going to take every acre of my wheat. I went into Milwaukee, and I think I brought out 3 barrels of salt, and I took one barrel and sowed it upon 3 acres of that wheat in a 30 acre field. One part of the field was nearly destroyed, and the other part that I sowed the salt on 7 days later was not hurt at all. And I have just been to the agent in Milwaukee and ordered 30 barrels of salt for this year.

MR. WOOD. I did not state that the eggs of the chinch-bugs

were spared through the winter, I said the country was well supplied with seed; it don't matter what the seed is, whether eggs or whole bugs. In reference to the bugs living in winter among the corn-stalks, we must be allowed to make observations somewhat for ourselves.

Last fall I was engaged in plowing while the men were engaged in husking, and I turned under the stalks so clean that no one could tell whether it was corn-ground or not, and the bugs had come from the barley-field and crept in, and I turned them under as long as I was not prevented from plowing by the final freezing up, and there was no rain, and they were just as handsomely housed in there as anything in the world. And the bugs in the spring commenced coming out right where I had turned under those stalks, and a good many of my neighbors went with me and examined that piece of ground. It seemed so strange at first, I didn't know why the bugs were so bad in that particular spot. My spring wheat averaged me 18 bushels to the acre all but that piece where the bugs were so bad; but the bugs were certainly wintered in the corn-stalks.

Mr. Benton. I have not had much experience with the chinch-bugs, but my observation is that their operations are greatly extended in rough, loose soil; that is all they have ever operated on my land. So I am inclined to think we are getting at the general principles involved. Probably there was a good deal of organic matter in it, and I know positively that land can be so hard, chinch-bugs won't hatch in it, and I have got some of it too.

Mr. Porter. I wish to enquire of the professor from the University whether he knows anything about salt having any influence on the chinch bugs, or any merits salt would have as a preventative against their ravages.

Professor Daniells. I do not know anything about it. But salt in any ordinary soil would strengthen the growth of grain a good deal, but whether it affects bugs or not I don't know. But I want to ask or suggest one thing. It was suggested to me last fall that chinch-bugs would not pass through grass 4 or 5 rods in width, and if that is so, it seems to me that is a thing which every farmer ought to know. And it is well worth while if they do not know, to find out, because if a man can keep them out of his field

by plowing in the center of the field and leaving grass around the outside it is well to know it.

A STRANGER. That is another of the humbugs we have heard of. I saw them last summer pass right across a pasture and eat up every spear of barn grass on the field. You could see them eat 4 or 5 rods a day. They passed across a 40 acre field of grass in a week and eat it all up.

Ex-Governor LEWIS. I happened in here for a moment to hear this discussion. I have had some experience and thought I would state it here. I found I could raise wheat upon clay land when I could not upon sandy soil. I found when chinch-bugs were plenty I could raise wheat on a not very light soil by rolling or packing, and for the last 2 or 3 years by sowing winter-wheat which ripens 2 or 3 weeks earlier. Last year the winter-wheat was 2 weeks earlier, and the spring-wheat right along side of it was entirely destroyed, while the winter-wheat went 30 bushels to the acre. This year I tried the same experiment and the spring-wheat was entirely destroyed, while the winter-wheat was 20 bushels per acre. I have tried salt. It is said chinch-bugs won't work in the midst of salt very much. I tried this experiment last year. After sowing my wheat, a German on my farm said he wished to take half an acre and work it as they did in Germany. I told him to go ahead, and he did. He went into the field, and after the wheat was sowed and just commencing to sprout, he gave it a thorough top-dressing with manure, and that wheat came up and looked very nice, but when we came to harvest there was not a kernel of wheat in the patch, and I found that top-dressing just furnished a nice place for the bugs to hatch.

Secretary FIELD. Was that the way they raised their wheat in Germany?

Ex-Governor LEWIS. That is the way he said they did in Germany. If the season is wet you won't be troubled with them, but if the season is dry and you sow your wheat very early you will get ahead of them; and if you sow it on hard land you will generally beat them, or if you sow it on good soil and pack it thoroughly you will not be troubled much.

Mr. ALLEN. I wish to talk about this salt question a little. Three years ago I made an experiment with salt upon wheat and the result was favorable. I tried this experiment. I mixed salt

with plaster and the results were very favorable indeed. I have tried larger and larger quantities of salt and plaster mixed and ground together for the last few years, and the results have always been very favorable. But whether this is the reason the chinch-bugs did not trouble me or not I don't know; but of one thing I am certain. If you sow plaster and sow clover seed, you can make the clover rank and strong. I believe in making a grass field all over my wheat field. I sow the salt as early as I can in the spring.

Mr. Anderson. I believe this salt sowing is all played-out in Illinois. Those that experimented with it last year did not make anything of value out of it. Mr. Allen never had much experience with chinch-bugs. There never were many of them in his neighborhood; so that his experience won't do for a guide. A man that could raise 16 bushels to the acre has not had many chinch-bugs on his land.

I defy a man to raise three bushels to the acre where the bugs are bad; but I will acknowledge that where land is very hard clay, the bugs are not so bad. The last year they destroyed the wheat totally on the best land there was in the country. In a buggy year like 1874, there is nothing that will prevent them. In regard to wintering them over in the soil, Mr. Wood explained that very well. I plow at least one hundred acres of corn stalks every year, and I never knew any injury to result from bugs wintering in the corn stalks, and I never knew them to winter in the ground.

Mr. Porter. Had the hot weather anything to do with spoiling your wheat?

Mr. Anderson. Hot and dry weather brings bugs. I have raised thirty bushels to the acre in hot weather when there was no bugs. But I adhere to the clover system—I believe in it, but I don't believe in this theory of plaster for all classes of land. My land is so rich that clover will lodge without plaster. My men told me year before last they could stretch out the clover as long as a pitch fork handle.

Col. Warner. The thing that would have prevented fire in some cabin perhaps on the prairie, would not have prevented fire in Chicago when that terrible holocaust came; so with chinch-bugs. I have seen some places where the whole country was swept away

by chinch-bugs, and if Mr. Wood had been there he would have been in the same fix with the rest of them.

Adjourned till 7:30 P. M., to meet in the Assembly Chamber.

ECONOMY IN FARMING.

BY JOHN BASCOM, LL. D.,
President of the University of Wisconsin.

Farmers, to a patriotic or philanthropic mind, constitute a most interesting class. The prosperity of our nation, and the prosperity of Christian society, must depend very much upon them.

They are a midway class between the rich and the poor, between capitalists and laborers, between the educated and the uneducated. Farmers, a farmer, can easily move upward; there is no social ban upon him. He can easily sink downward, there is nothing in his calling to sustain him. As midway men, they furnish the natural cement of society, they keep labor in countenance, and check the hauteur of capital. They are the peers of everybody and above nobody. They bring us constantly, in our estimates of our fellows, to what a man is, rather than to the calling which he pursues. Farmers thus furnish the core, the democratic—I am not speaking of politics—center of our republican society.

Farmers are broadly diffused over our entire country, and their interests are much the same in every portion of it. This assertion would be almost absolutely true, was it not for the cotton and sugar interests of the south. Scattered everywhere, yet one in pursuit and in character, the elevation of the farmer, his thrift and intelligence are points of national import, and give its national features to society. This interest, attaching to the position of farmers, is sustained by their numbers. They are not only more numerous than any other one class, they about equal them all combined; they compose not far from one-half the nation. They are thus by numerical strength properly the body, of which other classes are the members; nor this alone by numbers, but also by the farther fact, that they are the source of nutrition, the quality and the quantity of our nourishment depend on them. We who are scattered through a hundred other employments, are but outlying limbs fed and sustained by this bulky body of farm labor, with whom most primitive

production rests. We eat the food and build the houses whose material has come from the farm. Nor is it our lives only, but our industries also that are fed by the farm. Thence comes our leather, wood, wool, cotton,—outside the metals and minerals—the raw materials of almost every product.

Socially, the farmer has much the same interest that falls to him as an industrial element. There is no class of our citizens who have better conditions for a truly sober, honest, intelligent life, one, therefore, which shall better meet life's great ends, than farmers. I say this, however, in the face of the past history of the world, and I must limit it largely to American farmers. Farmers, the rural population, have hitherto been, taking the world at large, the most uncouth, ignorant and I might say, dull and brutish of any portion of the nations to which they have respectively belonged. Farm labor has been, first slave labor, then surf labor, then peasant labor, and at length has become, in most countries, the labor of small, dependent and oppressed tenants and farm-hands. This fact is finding slow correction elsewhere, and is only a very limited fact in our happy land, the paradise of the farmer. Here, we repeat it, no class has better conditions for an honest, sober, useful, self-sufficing life than the average farmer. I cannot say that I think that he always, or even very often, reaches such a life, but it is certainly open to him.

While safe oportunities of production, and moderate motives belong to the farmer, motives, perhaps too moderate to quicken the mass of them, there also fall to the ambitious among them, social distinctions, positions of trust and proffers of knowledge. I cannot say that I altogether regret the ripple of political activity that is now running through and disturbing the farmers in the West. I only fear that their leaders may be too strong for them, and we shall have the spectacle of a sleek, massive, kind-eyed bovine, meekly led by a sly, tricky boy for his own ends.

My point is this, and it must bring me directly to my subject: our farmers, a numerous class, and fortunate in the conditions under which they are found, occupy a border ground of influence, from which they may easily and justly rise—but are in danger of not rising—to a central position in society and government. The one inclusive thing that everywhere interferes with progress, is the want of intelligence; but, in the case of the farmers, I must make a specifi-

cation under this, or my theme will be much too broad. Farmers are very destitute of economy, and so, in part, lose the condition of growth.

Economy in farming I am prepared to discuss.

There is a good deal of what we call parsimony, stinginess, among farmers, but there is very little economy. Stinginess is compatible with great waste, but economy is not. Farmers are accustomed to hard work and small gains, and these sometimes lead them to small ways, which may properly be called stingy. This fact is not at war with the assertion that farmers are the most uneconomical and wasteful of classes, and that the want of forethought involved in this waste, and the waste itself, are most serious and general obstacles to progress. An ordinary farmer on a moderate sized farm can waste, and often does waste, as much as he makes. It is not possible for a carpenter, a blacksmith, or a mason to be as wasteful as a farmer may and usually is.

Economy has two branches: that of saving, preventing the needless loss of things actually won, harvesting the entire crop such as it is; and the higher branch of sufficient and wise outlay to secure the full result of what is done, to make the crop what it ought to be. In both of these particulars, a thrifty, intelligent farmer is characterized by economy, and in both of them, as a class, farmers are signally deficient. They often mistake what I have ventured in plain words to call stinginess, for economy; when it is not economy nor at all allied to it. It springs from quite another spirit, and often interferes with economy. I address intelligent farmers, and their intelligence will make them patient with plain statements.

Economy, a frugal husbandry of means, and yet a wise, sufficient adaptation of them to ends, so that the largest results may follow from the least labor, this, which is the knack of wealth-making, is our present exhortation, and we proceed to deal with particulars.

My first specification is tools. It is astonishing how much has been done for farm-tools in the past twenty years. No other leading branch of industry can show equivalent progress. On the well provided farm, the farmer mounts one seat after another, from his plow to his reaper and rake, and makes a royal progress through the season. Yet, it is surprising how many poor tools are still used by farmers, and how good ones are abused by them. It is characteristic of a skilful, thrifty workman, that he will not use poor

tools. If we were to decide the position of farmers by this test, how would they stand? More signal is the failure to keep well the tools they do have. How many plows, how many reapers still lie where they were last used, or are inadequately housed, or are the perch-poles of hens to the equal injury of both? Imagine a carpenter leaving his tools on the ground till the next season, or the next day's work, even! Such stupidity as this sets a man apart to eternal poverty. It is not merely that the reaper will not last out half its days, but that it will unexpectedly—for everything is unexpected to this class of men—fail when most needed, and occasion vexation, delay and loss in the middle of the season.

The farmer does not see his losses at once, as does a mechanic. He has no one to talk plain English to him and discharge him for his carelessness and poor work. He is both overseer and workman, and so is apologetic to shiftless ways. He must make bare his own back for his stripes, and so he lays them on with a gentle hand. A man buys farm produce without knowing or caring whether the land was at its best yield or not; while a poor mechanic is brought to a standard of efficiency every time he does a day's work, or offers an article for sale. A farmer can do a little something in a weak, poor, careless way, and lay the rest to his luck. He wants some one to tell him what his luck is; not his laziness, but his stupid industry.

Farm-buildings are closely allied to tools in their offices and in the neglect they suffer. It would be unreasonable to expect in the West, that farmers should be able to show at once their disposition at this point by the erection of snug, adequate, comfortable barns. The destruction of the poor is their poverty, and many of our farmers must needs work till their land and stock are paid for, and the necessities of life provided, before they can devote their attention to farm-buildings, necessary as these are. Abundant traces, however, of the same faults and the same negligence which prevail in our older states, we fear, may be found with us in our beginnings. The chief mistakes in economy at this point, are too many, too small, too poor buildings, and buildings slovenly kept, and negligently dealt with. There is not a more dreary spectacle of waste, of loss, discomfort and heedlessness in our physical civilization than some barn-yards present, nor many sights more comfortable, stimulating and consoling than they can be made to present. A half dozen

buildings sprinkled in at random, poor in quality, badly watched over, devoted to any use the last exigency happened to require, embraced by one pervasive, omnipresent mud-yard, whose only choices lie between ankle-deep and knee-deep, thick mud and thin mud, green slime and black slime; the remains of broken enclosures and unhinged gates, as if the one thing desirable was a quick exit in every direction; and stock, it matters not much whether good or bad, standing about with the subdued, disconsolate meekness, or with the vicious irritability which fall to habitual discomfort, give us a picture of the most wasteful, brainless, heartless husbandry, and one which must tell on man and beast in profits and in position, in the most disastrous way. If we oppose to this, compact well-arranged, comfortable, sufficiently large and well-kept barns, clean and easy of approach, with a neat house-ward side, and rear enclosures well-drained, warm and cheerful; tenanted by contented stock in good heart, suggesting their own enjoyments and the enjoyments of their owner, we have a contrast which speaks of the widest moral, intellectual, social and physical differences. Heaven and earth smile on the one owner, and unite to make his face frank, thoughtful, and cheerful, and his purse full. Heaven and earth frown on the other owner; bring to his features stolid endurance or chronic irritation, and one disease and disaster after another on his cattle, to deplete his purse. The wealth of our soil may save such a farmer for a while, but nature hates him, and will have her way with him in the end.

The points of economy that I make in reference to farm-buildings are these. First, small detached sheds, wagon-houses, horse-barns, and hog-barns, and no barns are to be avoided. Farm-buildings are to be centralized and sustained by one capacious, well-ordered barn, which holds completely in itself most of the service and produce of the farm. The expense of six buildings, both in their erection and maintainance, is much greater than the expense of a single building having the capacity of them all; while the convenience of work, especially in the winter, is much less. Barn buildings, in the one case, lose all interest to the eye; in the other, they may be pleasing, even imposing structures.

The second point is dryness and warmth. The expense of these, in the first instance, is very little, while the decay, the disease, discomfort, and additional consumption of food attendant on wet yards

and stables, are very great. If we had any assurance that the ground, open to us for improvement, would be well occupied, we might be thankful that so few of our barns are built, that so little stands in the way of better work. The danger is, we shall build a little at a time, as we find ourselves able, and with no comprehensive plan, and hence no satisfactory, economical result.

Passing tools and buildings, we come to the handling of cattle and lands, as still more closely allied to wise farming. If there is any one point of intelligent, enterprising, wholesome enthusiasm in farming, any one thing which lifts it above drudgery into a fine art, it is the breeding and raising of fine stock.

One ought never in any calling to miss the opportunity of spreading his sails to a moderate, healthy wind of enthusiasm. It is economical to do so. Progress is achieved, character helped along and money made, by that special insight in any department which generates enthusiasm, and that special interest which follows enthusiasm.

It is a saving of life-forces to do what we do with interest. It is not weight but *dead*-weight that pulls us down; it is not work, but stolid, stupid work, that wearies us.

Enthusiasm gives buoyancy, and buoyancy renews strength. The moment a man puts a little thought and feeling into his labor, it begins to grow light, and effort follows effort as gayly and easily as water flows down hill. We can not doubt, therefore, that the higher economy of life, by which we make our labors minister to our pleasures, and our pleasures to our character, and character to social position, is subserved by that thoughtful handling of the living things entrusted to us, which cause them to develop in our hands, and disclose to our lively attention their innate powers. The farmer is peculiarly fortunate in the number and variety of living products committed to him. Fruits, vegetables, grains, fowls, flocks, herds, horses, all wait on his skilful touch. From this point of view, we can not regret the occasional fanaticism that has characterized stock-breeding.

One thousand dollars for a merino, has a fancy element in it, but even those stern old Romans for purposes of breeding gave $20,000 for an ass. So says Mommsen. A round price to pay for a donkey, considering the much greater value of money then than now.

Nor does the brute, judging from his present status, seem to

have responded very well to the effort of his friends to raise him in life. Perhaps it is shame and regret at this fact, that now find utterance in his bray, for, truly, no burden of sorrow was ever poured at once in such volume on the air, as by the voice of the ass.

As to the lower economy of immediate money-making, it cannot be doubted, that it requires constant and universal attention to the quality of stock. If there is any way in which mere thought can be coined, it is by substituting good for poor stock. Poor stock has nothing to commend it, unless it be that it gives cheaper expression to indolence and indifference, will suffer less by abuse. A keen, intelligent, admiring eye with selection in it, seeing the good, and marking the poor for extinction, should belong to every farmer, as it now does to a few farmers. The universality of attention to breeding would at once reduce speculative prices, and sober and guide public opinion. It is the ignorance of the many, which makes the extravagant notions of a few pass over into a general fever. Let me give at this point of economy one contrast between the average farmer and the average drayman. The latter expects, as a matter of business, to have a vehicle that can carry a full load, and a team that can manage it; many a farmer gets along,—a thing that so many of us are doing, getting along—with a wagon that will not bear, and a team that can not draw, a load. So he draws a jag of straw, a jag of hay, a jag of wood, and contentedly pockets the price of a jag in place of that of a load.

When I turn to speak of the management of land by farmers as a point of economy, I suffer disadvantage in the West. Nature here takes the laboring oar, nay, both oars, in her hand, and through the quality of the soil she provides, and its ease of tillage, sets the wise man and the fool more nearly on a level than she does at the East. Yet there is a chance even here to point a moral. In the East, it would be a first consideration to lighten and warm the heavy, cold soil by drainage. Here, it is a consideration to be ready for the rains when they come, and to carry our crops through the long, dry days by a soil deeply and thoroughly pulverized, in good heart, and well-clothed with vegetation. It should be our purpose to husband all the moisture we have, both because the original supply is scant, and the distribution in time is very unequal. If our lands are not in danger of being drowned out with water, our stock is in danger of being left unwatered. If it be

true, as I have been assured, that farmers sometimes leave their cattle a week without water, they commit a sin that like forked lightning, strikes two ways, toward heaven and toward earth. There are three or four-fifths of the work for a good crop which a farmer must do; the remaining fifth, upon which the complete success of the whole depends, he may or may not do. Here is the point of wisdom, of economy, in putting the time of sowing the seed, and the method of cultivation in such harmony that a full crop shall, if possible, be realized. Failure in method, failure in nice touches of skill, waste half the work that goes before them. An obvious instance of this adjustment of labor to the right time is seen in the gathering of crops. Why should that timothy, which was brought me last fall, have lost twenty or thirty per cent of value by being cut too late? It was sheer, inexcusable waste to turn toothsome and nutritious hay into straw and wood-fibre in this way. Why should it have lost another ten or twenty per cent of value by being allowed, in part, to mould in spite of its hard, dry, fibrous quality, and so, not merely to rob the horses that fed on it of their pleasures, but to endanger their health? If the hay throughout the country, in many places the most important crop, were subjected to rigorous examination, it would disclose an astonishing amount of negligence and thoughtlessness—faults sure to reappear in the stock fed upon it. The degree in which we miss that economy, that skill, which commands the largest return in crops for labor, is seen in contrasting the yield in wheat in this country with that in Europe. We so fail nature, that, in spite of all her prodigal gifts, our English cousins leave us out of sight in the race of intelligent husbandry. The average produce of wheat per acre, in Michigan, is 11 bushels; New York, 14 bushels; Ohio, 15 bushels; England, 26 bushels, with a maximum produce of 60 bushels.

It is almost useless in this region to talk about manure, but at this point in farming at large is found the crowning waste of all. Farmers, as a rule, will waste manure just as long as they can waste it; and, when they begin to save it, their providence is very inadequate and incomplete. A farmer's eye ought to distend and gloat over a well-saved manure heap, as holding, buried in it, sacks of gold; nay, more than that, his own good sense and fore-sight. No man's brain was ever shoveled in and in, in a well-wrought com-

post heap, without blossoming shortly in beautiful fields, and returning again in well-filled cribs and granaries. Plants are dainty feeders, and to spread for them a sufficient and hospitable table, with food adapted to instant consumption, is a thing wise and difficult enough to do to thoroughly interest us; economical enough, to thoroughly reward us. A clod-hopper can abuse the world, but no one but a wise man can woo it, and make it a comely and faithful spouse.

There are many other considerations of economy that lie in the background, for the farmer's calling is the most diversified of all pursuits. It is possible for a man to raise the price of his butter five cents on a pound—twenty or twenty-five per cent.—by the bare suspicion, I may say, of neatness and skill. There is that forehandedness of labor by which we work with the seasons, instead of limping in a lame way behind them; there is that forest economy by which we keep all our land at work, keep our woods thrifty and growing, and plant the timber of coming years. These and like economies we must pass because we wish to enforce in closing, a higher educational and social economy, in itself more valuable and noteworthy than even physical thrift, though growing up with it.

It is the crowning social economy of the farmer to deal wisely and generously by his household. Not to do it is at once stingy and stupid. If a farmer's children are, in some very partial sense, his working stock for the farm, they are much more his stock in trade for purchasing and commanding a position in society. The farmer lacks educational opportunities as compared with the artisan. Our city and village schools are superior to our country schools. This is a very unpleasant fact, but it is in part the fault of the farmer, and one to be changed by him. It is not so easy to maintain a good country school as a good village school, but this is not the entire explanation of the inferiority. I fear it would be found that farmers hold a good school in less appreciation than they ought, are not as ready as they should be to meet its expenses, nor always anxious to avail themselves of it when provided. There are inconveniences inseparable from the country, especially in a new state. It requires a bold, determined spirit to overcome them, but if they are not overcome our households are sure to suffer. A good school will often require larger districts than farmers are willing to concede, while schools of higher grades must be placed at a

still greater remove from the farmers who sustain them, in town or county centers. These schools, in strict dependence through their several grades, and in constant interchange, are a primary means by which the farmer should organize himself and family, socially and intellectually, into the community. It will cost time, effort, enterprise, money, but it will amply repay all. It is a form of action truly economic, as it demands immediate expenditure in behalf of remote but large returns. The fool will stumble at this first obstacle in his path, and fall, and there will be none to pick him up.

Let the farmer hide himself away in the country, hide away his family, cut off his school from its direct dependence on those above it, and a boorish, uncivilized temper will take possession of him and his household, hostile to all social progress. This is the natural tendency of things, and farmers need unusual self-assertion and enterprise to counteract them. They need constantly to be reminded that a school separated from its natural, living connections with those above it, neither feeding them nor being fed by them, is of little educational value, and destitute of social force.

Here, I think, I may rightly urge a point more immediate to my own work. If the University is to exert the influence it ought, its power must be felt, descending through every grade of instruction to the most primary. The brain-power of any class will ultimately be its social and political power, and if farmers are fully to win and firmly hold what belongs to them, it must be by virtue of many and accessible paths upwards into every grade of knowledge. I think we mistake at this point, and are ready to feel that a high school, a normal school, a university, are not direct educational forces except to those who attend on them. Knowledge, social influences, are much more subtle and penetrative than this opinion implies. A community, with whom education commences well in its primary forms, and passes up by unbroken gradations to the liberal training of the university, acquires a general intelligence, sagacity and brain-power which every one of its members is sure to feel, and of which every one of them is made a large partaker. Such a community is transparent, the light of ideas penetrates everywhere.

Suggestions, thoughts, theories, pass from man to man, and those who have enjoyed little school education become none the less educated. The bright minds, like stalactites in a cave when

the torch is introduced, scatter light in brilliant reflection on all sides. Farmers are ready to regret that a son sent to the University, even to its agricultural instruction, is lost to the farm. Two things are to be said here. A son is not lost to the farm interest because he is lost to farm work. The farmers are to be the factors of many other classes, are to furnish supplies not merely in food, but in that better staple of tough and sturdy young men. These young men, whether in mercantile, professional or political life, will not easily forget the farm that was a true parent to them; nor the farm-house that holds their best affections and tenderest recollections. Set it down as one of the advantages of farming that it yields so many of its sons to so many callings; that it can and does so deeply penetrate the entire life of the state, and give so much to it in so many ways. The second thing to be considered is, that in proportion as farmers are thoughtful, intelligent and possessed of that fore-handedness which true economy confers, the occupation will become more attractive, and draw to itself more of its educated children. I hold fast to my first assertion, there are very few callings that promise the same sober, honorable, pleasant life as intelligent farming; and if any prejudice remains in the public mind against it, it is chiefly becaues of the dull, stolid, insufficient way in which much of its work is done. Let us struggle with this actual burden of ignorance till we cast it off; let us catch the promise of the years to come and realize it, paving a way which all feet can travel, to that period in which the plain but substantial comforts, uniform intelligence and social power of our farming population shall make them the body of a strong and prosperous nation; shall capacitate them to deal wisely and kindly with those political and social questions which press on their consideration. Farmers are under training now as never before. The agricultural fair, the agricultural convention, are all effective in their way. There is only requisite, knowledge enough, social activity enough, to allow these yeasty elements of thought to work upward and downward, and leaven and enliven the whole lump. Some farmers are non-conductors to truth. They want an industrial conversion, a sudden and violent waking up, till they can see and feel the things that make for their economic and social salvation; till the force of example and precept can find its way among them. We are sometimes given to a laudation of farming, true neither to our convictions nor our feel-

ings. It is begotten of superficial sentiment, or of the arts of the demagogue. Farming is a rugged, in some aspects of it, a coarse calling. Hard hands, severe exposure and dirty work are staples with it. Its difficulties are not to be removed by a sprinkling of rose-water. Yet in spite of all, it gives better conditions of health, more play to thought, more delight to the eye, a larger perception of natural beauties, and more favorable opportunities for generous living, primitive hospitality and cordial, social intercourse than most pursuits. Let the farmer be intelligent and all other essentials will follow in due order.

I have flattered you to night by telling you in a plain way the plain truth as it presents itself to me. There are many farmers to whom my criticisms do not apply, many to whom they only partially apply, but these know as I know that there are many to whom they do most emphatically apply. This land, our goodly land, in all its physical comforts, its social privileges and political powers, will fall to farmers, if only they will go wisely up to possess it, with toil of hand and toil of head and generosity of heart. It is not flocks that are wanted,—men gathered into fraternities, and bell-wethers to lead them leaping into somebody's else field—but individual strength that achieves its first victories over and on its own acres, and, standing there, claims what rights belong to it, and must fall to it. I believe in farmers, let them believe in themselves, and when they have won the intelligence which is the key to the store-houses of nature, they will stand as Joseph stood in Egypt at the door of his granaries, able to buy up the entire nation.

Mr. Anderson. I think I never have listened to an address on this subject that I could take less exceptions to. It appears to strike the question right in the face. I think President Bascom must certainly have lived on a farm in his life-time, or he could not have photographed the farmer as he is, in the masterly manner he has in that adddress. I am only sorry that we have not a larger number of farmers here to listen to that address; but I hope it will be placed where we can all read it, for it certainly should be read by all the farmers in Wisconsin, and read in every farmers club and grange.

Mr. Grant. I feel, for one, that if the address could be placed in the hands of every farmer in the state of Wisconsin, it would do him good. I am satisfied that it contains the best things ever told to farmers. I learned from the address some things that I did not

know, although I have been a farmer all my life—one of the low, clod-hopping kind—but I have come up to Madison, and now I can see just where I have missed it, where I have lost a good deal of money, and I am satisfied that address should be in the hands of every farmer in Wisconsin.

President STILSON. The state issues 5000 copies of this address printed in the annual report, and where the next volume is published you will be able to get copies. Gentlemen of the convention, I have one single word in regard to the address, that if it had been possible for the President to have written it since the discussion in the room below this afternoon, where one of the professors was handled somewhat roughly, I should have thought, perhaps, that he had applied it particularly to that case; but as it was written some time before, I think he has fully squared off with us.

Adjourned until 9 A. M., Thursday.

THURSDAY, 9 A. M.

On motion of Secretary Field, it was ordered that no member of the convention be allowed to speak more than five minutes on any subject, and not more than once without permission of the convention.

THE NEED OF ORGANIZATION AMONG PRODUCERS.

BY HON. M. K. YOUNG, GLEN HAVEN.

This paper, allow me to say at the outset, is intended as suggestive of thought, rather than the record of opinion.

In speaking of the need of organization among producers, I would be understood to allude only to the producers of material values.

The producers of intellectual values, whether in literature, the professions, or science, being surrounded with the critical observation and scrutiny, of minds alike engaged, are mutually aided by each others failures, as well as triumphs, and with them, organization for high achievement, or mutual welfare is not an absolute necessity; still they organize, to aggregate their wisdom to be drawn upon for further individual or general effort.

Likewise, in commerce and trade, those who produce new values, by saving the time of others engaged in the production of other new values, and whose conflicts or alliances tend directly to elicit aggregate skill, fall back on organization to attain an ultimate perfection.

With these classes of producers, organization is a historical as well as a fixed fact, elaborated almost into a science. Not so with the producers of material values. Their crude attempts at organization are more modern, less general, and less perfect.

Laborers, mechanics, manufacturers, farmers and horticulturists need much more the experiences of those alike engaged, for in them lie the varied sources of the material wealth of this nation. Organization to them means much more than to other classes in the great activities of life, by reason of their less frequent contact with each other.

There being a right and a wrong way of doing the most simple performances of labor, it becomes important that the experiences of as many, or all engaged therein, be massed for the benefit of all.

To the ax-man it is of importance, not only that the implement he uses have a keen edge, but that the arc of that edge be just what is best adapted to the principles of the sliding-cut, while the face of the implement have the utmost smoothness as well as just such increase of thickness and shape as will allow it to sink the deepest into the wood, consistent with the necessity of clearing itself of chips. All this secured, and the handle of the implement must be of that length and construction to enable the chopper to place the second lick just where the first left off, in sinking the carf to the greatest extent with the least possible expenditure of force.

To the splitter of wood it is important to know just how to apply the principles of inclined planes to the grain of the timber, and the resistance of knots, as well as that construction of the beetle which gives him the nicest control and the utmost power in propelling the wedge in the execution of its work.

To the mechanic it is important to compare the different methods of manipulating details and adopt only those in harmony with the highest excellence and most economical construction.

As to the manufacturer, all this is true, and more. But when we come to the farmer and the horticulturist, can we over estimate the importance to them, of the experiences of the past as well as

the present, in the varied departments of these productive industries?

The horticulturist, to meet the advancing demands of the hour, has not only to draw upon the experiences of the past and the present, but by mastering the laws of vegetable physiology, must strike out into new fields of physical control and development.

And the farmer has not only to do all this, but in addition, has to command an intelligent mastery of all the intricate problems of animal physiology, as modified by all other physical laws. He, more than all other producers, needs the experiences of the past and the present to make even a ripple of control on the great fountain of knowledge, from which all germs of his products are nourished. He makes no movement in sunshine, shade, or shower upon the farm without encountering physical or organic law. The first gleam of light that in the morning penetrates his dwelling, comes in obedience to law, demanding obedience to law. In normal conditions it comes an unmitigated good; in diseased conditions it comes an approximate evil. The first ray of sunshine that trembles in the dew-drop is the creature of law and law in itself, requiring obedience with sterner exactitude than ever distinguished the Medes or the Persians. The farmer in feeding his pigs or his poultry does it in obedience or disobedience to law. Be the food of sugar, starch, oil, fibrin or glutin, its proportions must be adapted to the age, development and organic structure of the animal as influenced by temperature and moisture. But it is when he comes to the reproduction of animals according to a given outline for a fixed purpose, that the farmer finds himself impelled to bow gracefully to the stubborn yet harmonious relationship of fixed laws. In the pig, he must take the lowest temperature and moisture of his locality, and starting off with proper indications of appetite and assimilation, look well to the breeding and nursing powers, allowing no more vitality than will meet the cold of winter, and then adjust the size to the demands of the market. The nicest adjustment in the production of the pig is to secure enough, but not too much vitality. An additional amount of food is the penalty for too much; disease is the penalty for too little, either of which is too costly for the farmer to tolerate.

But breeding takes a still more extended range in organic law, when the farmer attempts for a given purpose to produce that prince

of domestic animals, the horse. The uses of the horse, calling for power and motion more or less combined, a new force auxiliary to these, crowds itself into the calculation. This is the nerve force. The nerve force is indicated by the volume of the brain and the temperament of the animal. In the production of the horse then, the farmer has to secure the best mechanical adjustment of bones, upon which, by relative contraction and expansion, is brought to bear the muscular force, which is stimulated by the nerve force, more or less active according to temperament; all of which must be made to point precisely to the use for which the animal is intended. The cart-horse needs a very different bone structure from the roadster or race-horse. The cart-horse needs power more than motion. The roadster needs both, exercised however in harmony with just conceptions of style. The race-horse needs both in a pre-eminent degree, but he must also have that preponderating susceptibility to motion, which enables him to concentrate all his forces into it. Here is a nice problem for the farmer, and the nicety is augmented when he wants to add endurance to speed. It is an accurate combination of skill to produce the quarter nag. It is an achievement compatible only with the highest order of philosophical thought to produce the heat nag. These have never been produced in the same animal. The fastest speed and greatest endurance are incompatible. It is interdicted by organic law. The highest speed comes from an adapted anatomy, good nerve force, nervo-sanguine temperament, and a weight and volume of muscle for which under extreme exertion no pair of lungs could long continue to furnish arterial blood.

The heat nag cannot carry the muscle essential to the quarter nag; his protracted motion has to come from sources of lighter power, from greater nerve force, longer but lighter muscle, acting upon a better average of bone structure, with less sanguine temperament, which enables his lungs under continued effort to keep up a healthy circulation, freeing his extremities from venous blood.

Allusion is made to these things to show that the farmer makes not a movement in the stable or stock-yard without risking a penalty for blind or stupid mistakes. Nor is he more secure in the field, the pasture, or meadow. How important to him then are the experiences of the past and the present, to be secured in no other way so completely as by organization.

In contemplating the fruits of organization, in furnishing to

each the knowledge of *all*, as developed in the past and present, we are naturally led to the demands for improving the future. And in view of the varied outline of production upon the farm, the question arises, is not too much diffusion in human effort inconsistent with high attainment; or, more in detail, can any one mind master the highest skill in all the branches of farm production? The practical inquiry then is, would the great interest of agricultural production be promoted by a division of labor? Critical observers have dwelt upon the proneness of our farmers to cultivate more land than they could cultivate well, to carry more stock than they could care for well, and if this be a mistake, which none will deny, how much greater mistake are we making individually, in attempting so extended a range of farm production. If we fail in the former for lack of labor or means, do we not risk more in the latter from want of knowledge? Is there any good reason against a division of farm production more than a division of mechanical or manufacturing production? Is there any good reason why the same individual should grow wheat, corn, oats, potatoes and peas, and breed horses, cattle, sheep and hogs? If there be, it is certainly independent of the conclusion that he can attain a greater skill in the production of one than in the production of all, and would not the solution of such inquiries as this, as well as all others bearing upon the production of material values, be reached more readily and intelligently by general organized research and investigation, than in any other way?

But why strive to grow two blades of grass where but one grew before, if the second blade be allowed to assimilate into other than a legitimate ownership? Or why apply time and skill in the production of wealth and allow others to control its distribution and consumption? The advantages of organization to the producers of material values, though indispensable to the greatest attainment in production, *end not here,* but become more potent and apparent when applied to the consideration of their special welfare. The producers of other values organize not only to perfect methods of production, but to perfect methods of aggrandizement to their special interest. This, without in any way being just cause of complaint, becomes worthy of consideration, by all whose welfare may in like manner be promoted. Indeed, in view of the history of mankind, and especially the more recent organiza-

tion among producers of material values, it becomes infused with all the sacred considerations of duty. Constituting, as they do, a very large majority of the population of this country, the public welfare is involved in their special welfare. The public interest is promoted with their peculiar interest, and every inspiration of public spirit, crystalized into a common love of country, demands that their peculiar interest be not sacrificed by any power on earth. The special interest of the producers being a cardinal condition of the public welfare, not only from the number of such producers themselves, but from their being the source of all material wealth, it is cheering to reflect that, by the exercise of justice, while the protection of that interest may not be degraded into selfishness, it cannot escape being dignified by the greatest of public virtues. But, take the selfishness of the human heart as the strongest element of control in human affairs, and admit the contingency of injustice to others, will it violate the doctrine in government of "the greatest good to the greatest number?" Blot out all regard for equity in public affairs, and, in the absence of all public rectitude, allow things to drift into special favor to producers, would it not then be an improvement upon the history of the past? The classes favored being composed of more than three-fourths of the whole people, and their products being essential to the very existence of the whole, such favoritism becomes not only compatible with, but synonymous with the general welfare and the public good.

Is there anything lame in this logic? It seems to me that were I not dealing merely in the suggestions of *thought*, I would advance this proposition as an impregnable outline of unavoidable conviction in defiance, too, of all the appliances of sophistry.

Conceding, then, that favoring a very large majority of the whole is *not*, but that favoring a very small minority, alike interested, *is class favoritism;* and conceding that a preponderance of favor enjoyed by the many *is not*, but that a preponderance of favor enjoyed by the few *is* contrary to the spirit and perpetuity of republican institutions, it may be well to draw upon the past for recorded illustration of the tendencies of capital to produce wealth by the skillful control of itself and the absolute command it is prone to exercise over labor. Observation teaches that the enjoyment of realized wealth brings with it immunity from toil. Freedom from

toil favors mental activity. Mental activity gives mental force and clearness. Hence, the tendencies of realized wealth, arising both from the power inherent to wealth itself, and the active shrewdness of those enjoying its use. These tendencies manifested themselves in various ways, in primitive history, without any special pertinence to the subject other than the uniform result of seizing upon the control of everything within its reach that could be tortured into subservience to its sway. Its conflicts and triumphs are written upon every page of the civilization of the Old World. Our fathers, however, thought that they had given it an effective root-pruning in withholding the right of primogeniture and entail. But they vitalized it greatly by admitting and cherishing that monstrous wrong—*the proprietorship of African labor.*

This not only degraded the ruder forms of human effort, but brought into contempt the rights of the many in contradistinction to the comfort of the few. The Boston tea-party, the clash of arms, and the promulgation of the *magna charta* of American Liberty, though they gave to mankind a nation, gave neither personal freedom nor the rights of labor to the African. In the meantime came the rage for creating artificial persons, to secure such public good as could not be accomplished by the means and enterprise of natural persons. This rage grew apace, and ultimately absorbed the vital control of public sentiment. The accumulative result became an array of palpably growing artificial persons. As they grew in number and power, they grew into a philosophizing frame of mind. Forgetting their origin, they philosophized themselves into the conception that, as artificial persons, their rights were commensurate with the rights of natural persons, and the *transition-idea* to them became easy, that they were an integral element in the aggregate sovereignty of the state, and to the extent within their reach, they might define and control the powers of the state, not even denying themselves the privileges of intimidating or subsidizing the legitimate authority of the state. Corroborative of this, we have had resistance to the Potter-Law in Wisconsin. Corroborative of this, we have had Pacific-Mail and Credit-Mobilier investigations at Washington. Corroborative of this, the greenback, originally receivable for all dues, was finally made receivable for dues to the people but not to the government. Corroborative of this, the 5-20 bonds originally redeemable in greenbacks were made redeemable in gold.

Corroborative of this, in 1862, when we had a million of men in the field and not a dollar to feed or clothe them, we had the minions of these artificial persons come down to Washington in a threatening attitude, with the cry of "No more greenbacks; no more irredeemable paper, or we withdraw our moneyed support to the Government," in order to extort from father Abraham the privilege of issuing 300,000,000 of bank-notes upon the faith of the people, redeemable with the people's greenbacks, but securing to themselves a margin of at least fifteen per cent. per annum. Corroborative of this, is the fact that since the rebellion was crushed, and our necessity removed, this banking privilege has been maintained and extended at a needless cost to the people of over twenty millions a year. Corroborative of this, is the purpose of resumption by contraction, being freshly fastened upon us, giving the entire control of the currency, and consequently the control of all material values to these same artificial persons, who, like the chieftain of the Pacific Road Construction Company, will be disposed to put their money "where it will do the most good."

If thirst suggests the use of water; if hunger suggests the use of food; if respiration suggests the need of air, this state of things certainly suggests to producers the need of remedy.

The question arises, then, can there be a remedy without organization? Producers have the power of remedy, but the power of remedy must be intelligently applied. Can this intelligent application of remedy be secured without organization? The remedy, to be effectual, must be just and equitable to the producers themselves. Can this be secured without organization? The remedy, to be lasting, must be just and equitable to all concerned. Can this be secured without organization? It is difficult, in this state of the investigation, to avoid the conclusion that organization is the preliminary and indispensible step toward remedy. Then, organization is the word! Organization to the producers, to-day, means what Independence meant to the colonists in 'seventy-six. It means freedom from oppression and foreign rule. For, disguise it as you may, the moneyed encroachments in this country, draw their inspiration and power from the moneyed feudalism of Europe. Organization then, becomes an unavoidable necessity. Producers must make themselves felt in public affairs. We must meet realized capital squarely, and say, "*we will give you half but not all.*" And

it may not be amiss to briefly reason the case; for truth, generally, is a tower of strength, still, with the moneyed power, not equal to numbers. Say, then, to the capitalists of all christendom, that whan mutually interested "you regard your labor and their money as known powers of a just equation in the ethics of production."

Say to them "that if they propose to use their brains to disturb such ethics, you propose to use your numbers to prevent it." Say to them, "that this is both your choice and your necessity. Your choice, because it is just. Your necessity, because if you give them ten to fifteen per cent. for the use of their money, while realizing only four or five per cent., the difference has to be met by a draft on your own, which, as an exhaustive process, would bankrupt you in everything but labor."

As organized producers, we must say to all artificial persons, "we created you for the public good, we will help you fulfill but never to prevent your mission," and it may not be amiss to briefly dicuss the situation. We may say to them, "your special privileges were granted you to promote your special good, but not at the sacrifice of the public good," that as trustees of the public good, we must both *judge and control*, and that aside fron any constitutional provision we have the right to do so. That the right of self-preservation in eminent peril is an *inate* right of the individual, of which peril he alone must judge; and that the aggregation of this individual right into the general sovereignty of the state is complete and unimpaired. That the aggregate sovereignty of the state cannot be impaired, and the state being unable to part with any of its sovereignty in creating artificial persons, or otherwise, must still retain all the functions of absolute control over them which belongs to unimpaired sovereignty. That this right of self-preservation and consequent control in the state is further established and illustrated by its permitting *artificial persons* to exercise the right of eminent domain, which to them is intrusted but not surrendered, because it is an attribute of sovereignty and cannot be surrendered.

We must say to them authoritatively—and especially to their attorneys—"that their very existence is a trust." That charters are not contracts. That sovereignty contracts with sovereignty; that the sovereignty of a state contracts with the sovereignty of another state, as in the cases of treaties, or with the sovereignty left in natural persons, as in the building of a capitol, or the purchase of

a cord of wood, and hence the fallacy or muddle of the Dartmouth College case.

We must say to these artificial persons, that as a controlling element in the powers of the state, we propose to see that the purpose of their creation be fairly carried out, and that they be justly and liberally paid for it. But as modesty is no virtue when concealing the truth, we may as well tell them that the charging more for a less service, the discriminating between persons and places, the adjusting of rates to cover fictitious investments, the condemning of lands without just compensation, the transporting hirelings to vote loans of credit, the floating of supply, construction and transportation under currents, by which stock-holders are left minus their dues, *is severally and generally* opposed to the public good, and can not be tolerated by those with whom that good is intrusted, and that any such authority whatever that neglects to control or remedy such wrongs, we propose to see superceded as speedily as possible.

And now for a word to all our officials in trust of power.

As organized producers we must distinctly say to them, "We choose to have you regard our special welfare as the *butt-end* of the general welfare."

We must say to our servants at Washington, you made a mistake in repealing the Income-Tax; it ought to be restored at once and made a source of large and enduring revenue. In repealing that law, you ignored the soundest principle of taxation that was ever known to fiscal rule; because the increase of wealth furnishes the most equitable and exact scale of charge for Government protection, as well as a uniform basis of exemption. But you did not ignore proneness of capital to shun its own legitimate burdens, by placing them upon the shoulders of labor.

That reciprocity treaty, too, with Canada, in itself, was more than a mistake; it was a blunder, and can only escape becoming a folly by the action of the Senate, upon the heels of an abrogation of even a better treaty, as late as 1866; it would look like an imputation upon our common intelligence, were it not for the ever shadowing features of a crime, derived from its sacrificing the *many* to the interest of the *few*. Independent of the enormity of giving a very great deal of what we need for a very little of what we don't need, is the additional enormity of turning the control of the reve-

nue over to the treaty-making power, when it constitutionally belongs to Congress.

But the most *serious* and *puzzling* development of questionable statesmanship, that for years has been enacted by our servants at Washington, is the one previously alluded to, of forcing the resumption of specie payment. It is *serious*, because, either viewed in the light of analogous record, or that of the existing facts controlling the subject, it must affect seriously all the interest of production in this country. It is *puzzling* on account of involving the contradictory tendencies of both contraction and expansion with nothing clear as to which will preponderate. If the ultimate preponderance should be expansion, it would augment the amount of specie to be provided for resumption, and to that extent increase the burden of indebtedness. If, however, it should ultimate in contraction, it would carry with it still greater diminished production, stagnation in business, and hopelessly doom the earnings of the many to the mercy of the few. Two things in it, however, *are certain.* It fixes a day for resumption, thereby advising financiers when to look out for their chances, and it contracts greenback currency which costs the people nothing, and expands bank note currency which costs the people from 15 to 30 per cent. per annum.

Owing as we do, according to the New York Shipping Gazette, within a fraction of *ten billions* of dollars, which is about $248 per capita for our entire population, and having not more than one hundred and fifty millions, or three dollars and seventy-five cents per capita in specie, it must be seen that the difference between our liabilities and solid specie basis, aside from the amount of commercial exchanges, is too great to be floated safely by any or all the forms of credit.

As the currency is contracted, credits expand, even in adjusting diminished values, but can these credits or their expansion be relied on to cover the difference between *three* dollars and seventy-five cents and $248? Then gold must be borrowed and the interest and principle added to our indebtedness.

And how will you find the gold market after setting a day for resumption, when less than a dozen millionaires in New York can control all the gold in this country, while the Rothschilds can corner it in Europe? Allow all you can for deferred maturity of these credits, or their negotiable or convertible forms and you will find a

deficiency against you sufficient to shake all public confidence. And that is what realized capital is constantly seeking — a panic — a shrinkage of value — and in the general sacrifice it commands a higher interest on loans, or invests at the *ebb*, while at work creating a *tide* in the market in which again to realize. If realized capital can control the basis of the currency, it can on general laws control the volume of the currency, independent of the special laws of control, which it now wields through the banking privilege and other forms of special favor.

But the parallel record which imparts a most serious aspect to this movement at Washington is to be found in the financial history of England from 1815 to 1823, as effected by Sir Robert Peel's bill for resumption. This record, however, was epitomized by the father of Sir Robert, when in speaking of it he said: *"Robert, you have doubled my fortune but you have ruined your country."* Showing most unmistakably the tendency of such measures to make the rich richer, and the poor poorer. And as this paper is intended for the suggestion of thought, it ought not to omit the suggestion that each producer refer to Doubleday's Financial Monetary and Statistical History of England for information upon this subject. Thomas Doubleday, esq., was a bullionist of the strictest school, but had to deplore the measures of confiscation, culminating in the Peel resumption that bankrupted half of England.

Aside from the inadequacy of specie, the great error manifestly involving this whole subject, is adherence to the *historical idea* of a mixed currency, or a currency in which *commercial* value is blended with *legal* value. The commercial element being subject to commercial changes and conditions drags the legal element with it, and divests the currency of uniformity, stability and confidence. And, if the scarcity or indestructibility of the commercial element suggests or justifies it, it disappears with the first symptoms of public distrust, and is hoarded, thus increasing the chances of instability and insecurity of the whole. Herein the conception that the currency must rest on a basis of innate, inherent or commercial value is deceptive, because, without adding a particle to the safety, it infuses into the currency all the uncertainty that may pervade the market for such value, with the additional tendency in moments of distrust, to be withdrawn both from the market and the circulation. The experiences of Amsterdam, Geneva and Venice, as well as our own country and England, are illustrative of this.

Then why have any commercial value or specie basis in our currency? A legal value alone is much better. Then the currency could not be controlled by commercial uncertainty, nor the bottom, or basis, knocked out by the process of hoarding. A purely legal basis, resting upon the faith and credit of forty millions of honorable and virtuous people, possessed of thirty billions of material wealth, ought to be basis enough. It is basis enough. It has been so regarded by American citizens for the last twelve or more years, and in less than that time hereafter will be so regarded by the balance of mankind. Greenback currency then is good enough. With the inter-convertible provision it would be perfect. It would be cheap, reliable, elastic—abundant without redundancy—contracting and expanding to measure the volume of exchangeable values.

What is demanded, then, by the producing interest, is to "retire all national bank, state, city, or other currency or scrip used as such. To issue a paper currency which shall be a legal tender for all dues, both public and private, except such as have been made payable in gold by the express terms of the law contracting said debts. To make this issue directly to the people without any intervention of any banking system whatever. To enable each and every holder of 100, 200, 300, or any number of even hundreds of dollars of this currency, to a United States registered bond, for an equal amount, bearing a rate of interest not to exceed 3.65 per cent. per annum, said interest payable annually, or at the redemption of said bond, and said bond being reconvertible at the option of the holder, to be taxable by state and municipal authority, the same as other property."

This would work speedy relief from our burdens growing out of the state of the currency, largely including that of exorbitant interest. And as means, in demanding and exacting the adoption of this measure, we still have left to us, the right of petition, the right of free thought, free speech, and the omnipotent consideration of numbers as expressed in the unified force of organized purpose.

But how and when shall we organize? At once and in any way that will secure united, determined and persevering action. Organize in the club, the grange, the council, but organize in some way, and allow no distrust, or difference of opinion in regard to

the method of organization to distract your attention from its object and its necessity.

As toilers in the manual industries, we have been regarded as plodding, credulous, stupid, suspicious and generally incompetent to harmonize into a common attitude of defense or aggression, and that if we did as a mass, we could be easily *sold*, if we could not be cheaply *bought*; consequently, our habitual neglect to insist upon our rights has induced the conclusion that all this is true, or that we lack the *manhood* to do it.

As producers, it is impossible for us to avoid seeing that we are all adrift in the same boat, upon the same sea, and that if the boat is either to be skillfully rowed or safely piloted, we shall have to do it ourselves.

With faith and confidence in each other, then, relying upon a common safety for continued effort, we must plant ourselves squarely upon our own resources and adhere persistently to our own expedients. And first among these expedients is to make sure of reliable sources of information. Facts we must have. A large proportion of these may be reached by adapted details of organization, but the press must furnish a still larger proportion. The press then must be scrutinized, and if need be graded upon a known scale of reliability, giving to outspoken, fearless and unselfish devotion to the promulgation of truth and justice, commensurate commendation and support.

Our public schools and text-books must be looked into and put into such shape as to favor the highest discipline of mind and development of sound morals, together with a fixed desire in our youth for usefulness in the great industries and equities of life

Our colleges and universities must be examined. Their fruits and tendencies noted, their text-books studied, and particularly their text-books on political economy wherein the great subjects of the production, distribution and consumption of wealth are taught to the students, should be analyzed and their truths commended, but their false teachings condemned and exposed.

The popular movements in constituting authority in public affairs should be changed. The caucus system, as now run, is a boisterous failure or sneaking sham in the transfer of power, leading all honest observers to the conviction that if all experience has been able to furnish no better, neither chance nor intention

could possibly furnish any worse. It should be abolished or the attendance of all voters should be made compulsory. And the ballot should be made compulsory also.

There is no reason why the citizens should enact the soldier under duress in times of public peril, while the voter, in equal peril, should be allowed to vote.

There is no reason why the state should educate the growing citizen to fit him for voting and then lose it all by leaving it to his discretion. In allowing voters to absent themselves from the polls the rule of the majority becomes utterly impracticable.

All these cardinal considerations, as well as the special, contained in the main drift of this paper can be studied and applied most effectively by organized effort. Indeed they are a part and parcel, if not constituting the foundation of all our grievances. Our hopes for justice and fair play being in the intelligent organized application of numbers to the remedy of abuses, we may as well strike at the source from whence they come. We may as well cut off all chances for rings and collusions by which results are manipulated in the primary transfer of public authority. We must at all times, and forever, say to the office-seeker, "stand aside till we call you," for all experience proves that whoever is habitually found seeking public authority is seldom to be trusted with its exercise. In this great work, then, of securing to ourselves the just and equitable enjoyment of the fruits of our toil, it is expedient and proper to commence at the centre of the problem and patiently but promptly work it out to its utmost circumference.

On motion of Secretary Field, half an hours' time was set apart for the discussion of this paper.

Mr. WOOD. I believe I am in full harmony with the sentiments of the gentleman as to the importance of association and co-operation among the farmers. But, as I have listened to his paper, it has struck me that all the remedies for the evils he has proposed, lie solely through political action; that is, we need to shape our laws to correct the evils that are pointed out here. And if to correct those evils, political action is required, must not this organization that he speaks of, be purely political in its aims?

Mr. YOUNG. I would say that my impression was at the time I wrote this paper, that it would not be absolutely necessary.

Mr. ROBBINS. I would like to ask where the remedy for the ex-

isting evils lies? If not political, in what direction do the remedies lie, in your opinion? If it is not political, I would like to have that question answered; for I think it is absolutely necessary, if we desire any remedy at all, there should be some mode pointed out. It is very easy to take a programme of somebody's else and work it up, but to make a programme for ourselves is very difficult to do.

Now what this convention should do, I think, would be to point out some programme by which we can remedy the evils that we complain of. I have not any I must admit. I think it would be severely criticised by this convention if I should mark out a programme. I would much rather some other man would mark out the programme for me to pitch into.

Secretary FIELD. I think we all would agree, every one of us in this convention, that here is an evil—an evil which has been suggested by the able and lengthy paper which has been read; and, as has been suggested by my friend Robbins, it is easier to tear down than to build up. I have seen men in the Legislature that were most magnificent men to tear down, but I seldom ever saw such persons suggest the best method of building up. I perhaps would agree with my friend Wood that this was not political in one sense; but in another sense it is political. I would give very little for any power these times, unless the people who form a political party stand behind it—very little. And allow me to say here, that while I would not be in favor of the farmers and producers of this country organizing a separate and distinct political organization, I would have them agree upon certain questions which they believe to be of vital interest to them; and I would have them say to one or both political parties, "now engraft these ideas into your platforms, or else you cannot have our votes." [Applause.] And if one party will not do it, I tell you, gentlemen another one will. Whenever one-half of the voters of this country come up and demand their rights, demand things which lie at the very foundation of their interests to be done, political parties will be very happy to step in and say, "gentlemen, what do you want? Anything you desire is at your service." There is no difficulty on that question whenever we are united, but when one farmer says, I demand this, and another says I demand that, which is the reverse, then you cannot ask or expect that they will be settled by the political parties of the country. But when we as farmers de-

mand of any political party—I care not what it is—that they shall carry out those views in their platforms, speeches and acts, then they will do it and not before.

I have served many years in the Legislature, and I always acted upon my convictions of right and justice unless my constituents told me what they wanted, and if they did advise me of their wishes I always told them I would carry out that idea. A representative should do that or resign.

Mr. ORLEDGE. There are one or two remarks in the paper just read that strike me forcibly, that is, forcing people to do what they don't want to—forcing people to go to school, and forcing people to vote or to do one thing or to do another thing. I like that idea. There is something very nice in having a government above us that can tell us just what to do, and when to do it. It takes away a good deal of trouble. We must not obey the dictates of our own minds at all. I hope the people of this country will think many times before they go into forcing people to do anything.

Mr. CLARK, of Green county. It appears to me that the gist of the whole matter is, forming public opinion. If we form public sentiment, let it be understood that the public opinion of the farmers in this country is demanding such and such actions, and there is no trouble in having political parties adopt them.

It seems to me one of the greatest objects is to know how to mould that public opinion, and in doing that I think the farmers of the state and of the United States make a great mistake. We all know that the public press is probably the greatest power in the land. Monopolists of all kinds know that, and have sustained it, and sustained it liberally. They sustain the press that sustains them, and crush if they can those who oppose them. Now is not that an example that the farmers ought to follow? Do we sustain the papers that sustain us? Do we sustain the agricultural papers, or the papers that take up industrial interests for us? As far as my experience is concerned we do not. On the other hand we are throwing in our dollars and dollars to sustain other papers that are doing all they can to crush us and sustain the moneyed monopolies of the country, and we are letting the papers that are fighting the battles for us starve and die.

Mr. ANDERSON. I must acknowledge that Mr. Young expresses my opinion ably and well, and much better than I could have done

it myself. They are ideas that I have been thinking upon in regard to financial affairs for years, and I do think they are eminently sound. We have reached a stage in our existence and a time when we must do something. If it is true that there are 10 billions of debt on the United States, it becomes an important question, can we shoulder that debt and pay the interest annually out of our industry? Every intelligent man present knows that every dollar is earned by labor, and not produced by the loaning of money. Money loaned never produced any wealth.

Money has certain values, and one of those values is to represent value, and another is to accumulate value by interest, and another is to distribute values by commodities. Those are some of the values of money. We have been taught from our earliest boy-hood that there is some intrinsic value in gold and silver; that there is an actual value there, but the truth is, unless for mechanical purposes, gold and silver have no actual value, but have a legal value when coined into money. This is one of the errors of the age. If I had in my pocket a ten dollar bill and a ten dollar gold piece, the gold might be the more valuable, but if I go into a store and spend the two, the value is gone and one is of no more value in the world than the other.

We use money as a circulating medium. We must not permit ourselves to be taxed and burdened heavily because our progeny would like to see a few shining dollars. Here is 10 billions of debt; if it is 5 per cent it would be 5 millions of dollars a year. How many working men would it require to earn that amount of interest a year. We do not have perhaps over 5 millions of laboring men in the United States, and each of them would have to earn $100 over and above what is necessary to support his family, to pay that rate of interest. Can we pay that enormous interest? And why have we allowed such wealth to be accumulated in the hands of the few? Because we have permitted the few to make our laws and rob labor and enlarge capital. So long as you will send to Congress 270 lawyers and only a dozen farmers, and a large number of bank presidents, they will make laws in their own interest, and not in our's. Does not every one know that the capitalists of the country are all organized, and if they cannot pass their laws themselves they send lobbyists to the legislatures to buy their laws? And would it be wrong to have an organization of

farmers for self protection? There is no use of my working on my farm and earning 2 or 3 per cent. when others with capital are permitted to earn 15 per cent. Just as interest goes up, down goes the price of my land, and as interest comes down, up goes the price of my land.

Mr. MERRILL. It is quite evident that we farmers are laboring under a great evil. We all feel it. Well, it now becomes us, as Mr. Young in his remarks tried to show, that there is an adaptation of means to ends—it becomes us to adapt the means to the end, and not to jump rashly at the conclusion.

Now, we may draw an analogy from medicine. The quack doctor has a remedy instanter for every disease, and just so in this country everything jumps right into legislation. We think if we can only affect politics we can remedy this matter, forgetting that we are borne down already by too many laws. Should we not let natural laws have some sway and do away with a little of this meddling? I hold that would be one way to begin to do away with all this artificial intermeddling in every branch of industry.

The remedy which is now proposed is organization. By that is meant secret organization. We understand that organization as carried on through the country is secret organization. Well, what is the result? It is arraying class against class. Truth is a tower of strength. Now we want to commence building on the basis of truth and work up from that, and not like the quack doctor load up with every kind of nostrum; for actually the American people are just like a drugged patient, and if we would remove some of those drugs there is vitality enough in the people to rise above all these obstructions. You will find the great remedy among farmers is legislation, until we pile up volume after volume on the subject.

I think I see one evil resulting from secret organization. The welfare of the farmer is the welfare of the country. Well, in one section up north it is secret organization every where; and what is the result? Farmers go into the grange. When they have organized a grange they think they have done a great thing and have commenced to hew down those evils that are troubling American commerce, and they lose sight of the fact that it is intelligence among the laboring class that is going to get at the root of all the trouble, and bring to bear public opinion. And there is where we

mistake. We do not bring to bear the things that we ought to, to make every evil doer tremble. Those farmers when they go into the grange think that their work is done. What was our *Western Farmer* at Madison? It was a grand and good thing for our state. I have seen their writings in the papers; the best means for bettering the condition of the farmer intellectually and financially was given us each week, and we rejoiced in the paper. It was a good thing, but it collapsed, it is gone. I think I see this secret organization sticking out there. I am not talking to make myself popular; but this is suggested from this paper.

President Bascom. Gentlemen, I am sorry that I could not have listened to this entire discussion. I think it is concerning matters of the utmost importance to you and all of us, and I feel that I shall not say what I say quite so ably as if I had heard all you have said and knew how you all felt on this subject.

It seems to me that nothing unworthy can be said against organization among farmers; but much can be said in favor of organization among farmers; and while that is true, there is very great danger in connection with them. I have always maintained strikes, although I believe nine out of ten of them have resulted in injury; but, for the sake of results, and for the sake of the last results, I think they have a right to strike, and I think you would do them mischief if you took away from them the right to combine or strike. If a man cannot learn that a stone wall is a stone wall in any other way than striking his head against it, let him do that. Now, if farmers can discuss their own interests, and if they make some very fatal mistakes, nevertheless, it seems to me, they must be allowed and encouraged to organize and discuss their own interests; yet I apprehend a good deal of danger and loss in connection with the way these organizations would actually be administered and developed.

If farmers could make it their business to understand thoroughly their own interests, and at the same time as thoroughly understand the interests of the entire community, knowing that it is no more possible for them to separate their interests from the interests of the community, than it is for any other class to do the same thing —for they may use organizations for this purpose, wisely to consider their own interests, and at some time to divest themselves through that means of a class of imbeciles, which leads them to look upon

others as opposed to them, then I say those organizations will result in profit, and only in profit. But because they may make some mistakes, I cannot see that they should not be tried.

What I am afraid of is what I hinted at last night, that the mass of the farmers won't think, but will yield themselves into the hands of a class of men that will think not rightly for them, but lead them like a bell-wether into somebody's else field. If they will think and know that their interests are identical with all the interests of the country, then we can get good from these organizations. I think the last gentleman was correct when he said we are not to look so much to law as to abolish laws for our advantages. We are not to expect to take the hand of law and put it into the national crib and draw it out for our own benefit.

The paper dollar is wholly a creation of law, and if that law did not sustain it, it would disappear instantly. And that is the reason I want to go back from the paper dollar to the dollar of nature.—The paper dollar is the creation of law.

Mr. ANDERSON. Is there such a thing as a natural dollar.

President BASCOM. There is such a thing as a natural dollar?

Mr. ANDERSON. I dispute it entirely and emphatically.

President BASCOM. I mean if there was no civil law in this community a gold dollar would circulate without any law, if no precise stamp was fixed upon it.

Mr. ANDERSON. Is bullion a legal payment?

President BASCOM. No, sir; but bullion will circulate in the community and pay debts just as well as an ox or a bushel of wheat will pay debts. I cannot compel a man to take a bushel of wheat, but it will pay debts to its own value all the time, and bullion will do the same thing, but the paper dollar won't pay a single dollar unless you have a government to back it up with an army. Therefore I say let us not try to sustain ourselves as farmers by law, nor by law to push somebody's else hand out only that we may put our own hand in; let us push every man's hand out and so stand off and leave us with God and nature and give us a fair opportunity, and let us lay hold of and use the forces at our disposal.

We do not want to fight a fight in behalf of farmers alone, but in behalf of all men.

Mr. G. E. MORROW. There are many things I should like to say, but I will say this in response to the question Mr. Anderson asks

in relation to the effect that was had upon the Western Farmer by secret organizations. I want to say very frankly and fully, that I do not think that any degree of failure which that paper met with is due to any secret organization among farmers. So far as I know, I never knew of but one man who ceased to take it because he was or was not a Granger. But I think it is due to an incorrect impression which got out in regard to that particular point.

COMPARATIVE ADVANTAGES AND DISADVANTAGES OF MACHINERY IN AGRICULTURE.

BY E. H. BENTON, LEROY.

In this essay we design to treat mainly of such implements as are of comparatively recent inventions, and mainly such as are operated by steam or horse power; making a practical distinction between a grain cradle and a reaper, mower or harvester, a hand hoe and a sulky cultivator, the common needle and a sewing machine, the paring of an apple by a common knife or by a lightning parer, corer and slicer, or planting potatoes with a common hoe, or with a True's Potatoe-Planter, which cuts, makes the furrow, drops, fertilizes and covers, all complete in one operation. We make a still further distinction between those on which the operator rides and those where he walks—designating those on which he rides as first class and others as second class. This division is for convenience and not as an opinion relating to their comparative utility, simply remarking that we consider the highest aim in the construction of farm-machinery should be to get the operator on a seat combining comfort and ease of operation, to conform to changing conditions, and at the same time have perfect control of all its operating parts. Neither shall we confine ourselves to the pecuniary results involved, but include the whole range of social condition involved in the terms political economy and mental and moral culture.

The most obvious advantage to be derived from the use of machinery is, the greater amount of work which can be accomplished

in any given time. For a sample illustration, take True's Potato-Planter, with which one man, a boy and horse can plant one acre per hour, fixing the rate of travel at two and one-half miles an hour and the rows three feet apart. At a reasonable calculation, the same force, without the planter, would plant one acre a day; thus the planter virtually increases the effective force of the horse and workmen ten times. One more illustration may be useful. Take the "Superior Grain-Drill," of eleven hoes, six inches apart, which would plant three rows of beans two and one-half feet apart, at a time, two acres an hour, at a speed of two and one-half miles an hour, with one man to drive and operate it. Estimating the team at the working value of one man, we have two men planting twenty acres in one day by the aid of the drill, and alone they would plant but one acre a day; giving the drill the power to increase the effectiveness of the two men twenty times.

Leaving these two illustrations as sufficient to indicate the multiplying power machinery gives to manual labor, we will next consider the comparative cost per acre of planting by machinery or by hand, and we will premise that the preparation of the ground for planting be the same in either case, and the amount of seed planted the same. Estimating the days work and board of a man at $1.25 a day, and of a horse at 75 cents, and the boy at 75 cents, and the wear of machinery, repairs and interest at fifteen cents an acre, we have as the expense of planting one acre, thirty-seven and one-half cents, and by hand $2.75, making a gain in favor of machinery of $2.37½, or nearly one-seventh, being about as high a per cent. gain in cost as in time, with an added consideration that the work is better done and the seed more evenly distributed. A like gain in favor of the drill is easily seen and need not be accurately figured.

Passing to the after cultivation of what are commonly termed hoed crops, and a like large gain in favor of machinery will be seen, both as to time consumed and the expense involved; besides which we must add another item in favor of the machine-work, and that is, that it will be far more effectively done, reaching deeeper and leaving the soil looser than a hand-hoe can, as ordinarily used.

In the sowing of small grains we do not find near as much gain in time or expense, but we find two operations performed by the same machine, sowing and cultivating, and a marked improvement in the evenness with which the grain is distributed, and in the case

of the drill a saving of one-third of the amount of seed required to sow an acre, which saving would of itself pay for the drill in sowing two hundred acres, allowing it to cost one hundred dollars.

No comparison will be instituted as to the quality or the amount of crops which would result from hand or machine sowing or cultivation, but I simply make the assertion that machinery is obtainable which will show a like gain in what is not the least important branch of agriculture, namely, the harvesting and housing of our crops. We freely grant that we have chosen rather extreme cases of labor-saving in the machinery directly cited, but will reduce the comparative advantage of modern machinery applicable to the operations upon the farm, to the low estimate of two to one as compared with such implements as were in use twenty or thirty years since; considering that this low estimate will cover first cost, repairs, shelter, &c., even at the high rates paid since the war.

We look to the use of horse or steam power in connection with well constructed and well adapted machinery to solve in a great measure this labor question for the farmer, more than doubling the value of his own time, and rendering each horse of more worth than the average hired man.

But we must pass to the other advantages arising to the farmer and his famly as more or less directly derived from the use of machinery; we mean its influence and bearings on general culture and social condition. We have seen that the use of machinery so facilitates farming operations that there is at least 50 per cent. of the farmer's time gained to him which he may use in reading, improving and adorning his farm and house, attending conventions, lectures, concerts, fairs and other places where profit, pleasure and knowledge of the world is to be obtained, under circumstances calculated to wear off his awkwardness, broaden his views, and make him less a mere machine and more a manager and participator in the general life around him.

Instead of plodding home wearily in the dim twilight, or by the light of the moon after a prolonged day of toil, he can ride home with light feet and a frame simply refreshed by light exercise in sunlight and fresh air, ready to put things to rights around house and barn, to give the garden and orchard a visit, to read or write with zest and enjoyment during the evening, a fit companion for wife and children.

The boys and girls can be spared to go to school or for a picnic or ride; money may be had for music and pictures, to make a home in fact and not in word only, and the children will be far less likely to spend their evenings away from home and mother, and far less likely to abandon the farm for the city or the over-crowded professions.

There is far more of manliness in directing brute-labor, and using feet and hands of iron and steel, than in crooking the back, stooping the shoulders, and hardening and deforming the hands; much more of dignity in mixing brain and muscle than in the use of mere brawn; much more of true development in educating both head and hand than in either alone. Man was made to have dominion over the beasts of the field for his use and enjoyment, and yet how many make mere beasts of themselves, both in the kind and amount of labor performed, often delving all day with a hoe to accomplish what a horse, hitched to a good cultivator, would do in one hour, and do it much more effectually.

I have known a man to spend all day cutting and putting up one-half acre of grass, when the same work could have been performed with a mower and horse-rake in one hour; or, to make a different comparison, he could cut and put up in one day as many acres of grass with the proper machinery, as he could alone with scythe and rake in ten days, leaving him nine days in which to earn means to pay for his machinery and team—and yet the team is not fairly chargeable against the machinery indicated, it being already upon the farm as a part of the ordinary equipment at all times.

There are but few neighborhoods where a first class reaper and mower, purchased at a reasonable cost, and receiving for work done on other farms a fair price per acre, could not pay for itself in two seasons, there being no need of one on every farm, unless from two to four hundred acres are in grass and grain. By a little calculation in seeding time, and in variety of grasses sown for mowing, haying and harvesting may be made to extend to forty working days; and averaging eight acres a day, at seventy-five cents per acre, we have $240. as earnings for one year, and crediting one-half of this to the machine, we have $120. to credit against first cost; and fixing the working life of the machine at five years, we haye $600. as earnings with which to pay first cost, repairs etc.,

and money enough left to purchase another one, and considerable left to add to means for increasiug the productiveness of the farm, or in other words, to increase the available capital. And right here we will indicate one direction in which inventive genius may be exercised to the great advantage of the farmer, we refer to the idea partially perfected in the Hollingsworth Sulky-Rake, we mean the use of the same axle and wheels to drive several attachments, such as a plaster sower, and grass seed sower, each of which becomes a perfect machine of itself, entailing but a slight additional cost above the rake to secure three separate machines, and we think it quite praciticable to add to these a hay tedder, a cultivator, a corn planter, and possibly some others.

It is well known that the sowing of plaster and grass seed are attended with certain difficulties in distributing them evenly and in constant quantities and which are well nigh impossible to be overcome by hand-sowing. Just contrast a man carrying 25 or 30 pounds of plaster, sowing it unevenly, with the wind blowing it in his face and covering his clothes, with his feet and legs drabbled with wet and dirt, sowing perhaps 8 or 10 acres a day, and the same man sitting in a spring seat, trotting along comfortably and clean, sowing 30 or 40 acres a day, even and uniform, and choose which you like best, and the course you deem wisest and most profitable.

An incidental advantage generally induced by the introduction of machinery on the farm, is the cleanlier culture, more level and smooth working, the leaving of strips of grass along the fences or border of the field for the purpose of turning around and to obtain access to the different fields at all times of the year, and also the necessity of large fields to save time in turning around. Perhaps very few have ever computed the loss of time and labor, as well as money, occasioned by dividing a farm into 5, 8 or 10 acre fields as compared with 20 or 40 acre fields, and yet taking lost time, lost land, and money expended in fences, the crops raised in the 8 acre field will cost nearly twice as much as those raised in the 20 acre field.

Finally; the use of machinery necessitates acquaintance with the various kinds offered for sale, so that the best may be purchased for the existing conditions and the variety of crops to be raised—acquaintance with the general laws of mechanics so as to be able to judge as to the efficiency of the machine from its construction

and relation of parts, which also have an important bearing on its durability and ease of draft—and finally such a general mechanical knowledge as to be able to keep it in such condition as to get the best performance from it, by adapting the whole construction to the conditions implied in the use of machiuery. It is well known that of two men, one will use a machine with entire success, and the other with the same machine will make an utter failure—the first has something which the yankee calls "knack" or "gumption," but which is only the faculties, given generally without distinction to all who are alive to the work in hand so as to comprehend the needs of it; a trained faculty to enter into sympathy with the machine, very much as an old hunter fells toward his dog and gun which have become as a second self from his constant care and attendance, or the wild Arab of the desert, who cares for his horse till he shares his tent and affection second to no other being in the world. Coupled with all this he needs a small kit of tools, a few extra bolts, some copper wire and rivets with which to make small repairs, and thus save loss of time in the field and expense of going to a shop perhaps miles away; and he should never be without his wrenches and oil can, and never fail to go over every part of his machine every day to see that no part is loose or out of repair.

We have not forgotten that there is another field in which machinery may help to lighten labor, and exercise just as potent influences for good—we mean the home, the household-economy of the farmer; for while machinery in the field dispenses with nearly all the hired help, (so necessary without it), and thus lightens the labor of the housekeeper, so the wringer, the Blanchard churn, the washing-machine, the sewing-machine, the apple-parer, corer and slicer, &c., &c., expedite affairs in the house as other machinery does on the farm.

Having thus very briefly sketched a few of the advantages of machinery, we must in justice consider some of the most obvious disadvantages, for we have not time to consider them all, even cursorily. The use of machinery has facilitated the raising of the small grains, and has thereby about ruined millions of acres of the best land in the west, and impoverished their owners, and indirectly, in conjunction with the threshing-machine, led to loose, slovenly methods of operation, and to a ruinous waste of grain. So, also,

the great avidity with which farmers have sought after all descriptions of machinery to facilitate grain-raising, has not only overstocked the grain-market, but has aroused the cupidity of manufacturers and agents, and they have exacted from one to three hundred per cent. profit, thus loading production with an intolerable burden that is just being in some measure realized, and has, more than all other causes combined, contributed to the rapid growth of the Patrons of Husbandry. So, also, such great production has stimulated the construction of machinery, (or railroads and elevators), to move it, and these have also laid a monstrous tax on the means of marketing the productions of the soil; and thus it comes about that the producer is ground between the upper and the nether millstones of extortion and monopoly.

Closely allied to this disadvantage in the introduction of machinery in farming, is the distribution of foul seeds in threshing-machines, and also in the slovenly course of so many in simply running over their lands, exercising no care whatever to clean or to keep clean the seed they have sown. We do not expect that the increased facilities which the farmer becomes possessed of in the purchase of good labor-saving machines will give him more brains, or more knowledge of the laws of cause and effect, or more regard for the interest of himself and his neighbors; but we do know that it multiplies his facilities to distribute mischief and work his own ruin, both by scattering pernicious seeds, and educating himself and family in the course to pecuniary and moral ruin. If a man drives fast, it becomes very important that he drive carefully and in the right direction, else the longer he drives the farther he will be from safety and success.

The question under discussion is much involved with others pertaining to the political economy of agriculture, but there is no question that an increase of power involves a like increase of skill in its management to obtain the highest results for good, and if there is not a right direction of the added power, there is a corresponding danger of evil resulting. We come then to the conclusion, that to avoid the disadvantages inhering in the use of machinery, the farmer must be educated in the principles of mechanics and must be thoroughly conversant of and obedient to right methods and laws of cultivation as regards his soil and crops, the principles and methods by which the fertility of his land is maintained and increased,

and the general adaptation of the means needed to secure the ends sought. In fact he must study and think; for the penalty of placing power in the hands of ignorance is that it will inure to the harm of all concerned, and it is an open question worthy of extensive investigation, whether the average farmer of to-day is not very far from being equal in every respect to the laborers in other avocations; but machinery rightly constructed and fitted to perform the work to which it is assigned *is the most efficient means* by which he is to raise himself to a commanding position among his fellows.

If the farmer of to-day is to be helped by labor-saving machinery, he must not permit his wants to exceed his means, nor expand his credit as he expands his facilities—but rather as a rule let him advance towards more thorough methods, cleaner culture, and more constant results, for it should be known by every cultivator of the soil, that through a right cultivation he may very nearly eliminate the influences of heat and cold, wet and drouth, making a very narrow margin for variation from climatic influences in the yearly average yield of his fields.

As a nation we are but in the infancy of agricultural science. Our fertile soil has nearly been our ruin, in that it has so readily yielded bountifully to the merest excuse for cultivation, and has therefore been quickly ruined by excessive cropping, and has become as rapidly the hot-bed for a host of pernicious weeds to get the ascendency and choke out more useful plants.

Our machinery in some respects is the best in the world, and yet some of it, in some respects is bungling, heavy, and excessively costly, and much of it constructed with such poor material and so poorly put together that it is little else than an imposition to put them on the market. Then again, the farmer may justly complain of the patent laws and their workings, which entail a burden additional to the legitimate one of manufacture, of nearly 100 per cent. in some implements; and further, we shall never have a perfect combined reaper and mower, until about a score of more of patents terminate, so that the principles they cover can be united in one machine.

Last but not least of the difficulties which environ the perfection of agricultural machinery, and also its use, is the fact that it is to be used in dirt and dust, must be driven on rough, uneven land, and be more or less exposed to the action of wet and dry, heat and

cold; and as these will all exist in some degree as necessarily incident to agricultural operations, it is not possible for the farmer to derive an equal advantage in all his operations from the use of machinery, as does the printer, the miller, and all the multiform industries which can command a fixed power, constant resistance and which will therefore last longer, do better work and more of it with a corresponding less investment of capital. Considering then that the use of machinery in farming implies large farms or its equivalent, a large area on which to use it to make it profitable—it is a very doubtful investment for small farmers and only a few days use—and judging from the number to be seen on the farms of Wisconsin, we think the matter is overdone and that our farmers would gain by ceasing to purchase for a while, and several adjoining farmers unite in the use of those already on hand, especially of reapers, mowers and threshing-machines. The greatest profit from the use of machinery in connection with farming, is seen in the cheese-factory and creamery; where a large number combine in one object, and it suggests the proper course to follow in all neighborhoods of small farms, with all machinery.

Mr. Warner. In my experience, the greatest difficulty in purchasing farm machinery, is in selling wheat for sixty cents a bushel to pay for a $250 machine. Mr. Benton's statements reminds me of the story that some agents tell about their wonderful machines, and especially when he tells us that the machine works forty days, and pays for itself and more in one season.

Mr. Sherman. I think this is a very nice paper. If I never had any experience in farming, I am sure I should agree with Mr. Benton, that it was a very nice business to farm. I have had a little experience, and I am bold to assert that you take Wisconsin, and good machinery is a damage to us financially—take the state together I think you can count it out.

I farm a mixed farm of 200 acres. I cut forty to seventy acres. I have a machine—a marsh harvester, probably as good and economical a machine as we ever found, but I figure up and find that the expense of that machine is $50 a year, counting interest and repairs. I think I can cut my grain at any reasonable price of labor, and lay it in the swath, and perhaps a little more, for that.

Secretary Field. Will that amount of hand labor cut the gentleman's grain without a machine?

Mr. SHERMAN. Yes, sir; I am speaking of hand work, I am talking financially of course. The amount this machine costs me a year will cut my grain and a little more undoubtedly, though that depends on the price of labor somewhat. But machinery according to my experience runs in the same channel, though perhaps not so expensive. Of course it is a little easier to ride on the machine and drive, than to bind; but we must figure on the finances if we are figuring for profit. There is some other machinery that pays a little better.

Mr. BENNETT. I would like to ask the gentleman if he could cut the grain on his two hundred acres for fifty dollars without a machine. In my experience he could not do it. It would cost him fifty dollars to cut fifty acres without a machine. Now, I don't go for machinery as much as some. Where we can save labor by machinery, I go for the machine, and for the best one. I think we pay too much for our machines, but I know where there is a greater evil. A man will buy a good machine and won't buy oil, or is too lazy to use it, and when he gets done with it, is in too big a hurry and won't draw it home, but leaves it out in the field until the next year; or if he draws it home, he takes it, very likely, out to the side of the road and leaves it exposed to the weather. And the next year, "well, my machine don't work good!" "What's the matter?" "Well, it is not good for anything; it never was good for anything." He lays all the blame to the machine, when, in fact, if he had put the machine under shelter and kept it oiled and well cared for, it would have lasted twenty years.

Mr. ROBBINS. This question of machinery is a very important question to the farmer. It has been one of the most important questions as far as my success has been concerned in farming. I bought a McCormick reaper of a deaf agent that laid around in Grant county, he could not hear a single thing against his interest. I took that reaper up there as an experiment among my neighbors. He said he wanted to send it up to Platteville, he believed it was just the thing we wanted. I hauled it from Freeport to Plattville, and when I got there I didn't know anything about putting it up, and the old man come up and put it up on Sunday. He was a Sunday man, I don't know whether he worked on any other day or not. The old man thought I bought it, but I never did, but he always thought I bought it, and so I had to pay for it $120. It was a good

machine only it was difficult in managing. I run it four or five years and left it out doors thinking I could get rid of it, but it never would rot or break, and never would give up. I tried various other machines, and I knew if I bought one I would get swindled, but finally there was an agent there who wanted me to buy a McCormick Advance machine. He said I could cut my grass and grain with it. I would not take it, I wanted to buy a Marsh Harvester, I would not buy any other. But this agent would not keep any of them, and so my boys agreed to take the Advance on trial, and went to cutting wheat with it. It made little small bundles and it would take ten men—cutting five acres—to handle it in a hot day. And when I got my ten acres I said I never would cut another acre with it, and I sent for the agent and said, now come, take the machine away; would give him $10 to take it away. He said he would not take it away at all; he said never mind, your boys bought it any way, and you must take it. So then I went and took a Marsh Harvester, and agreed to pay $235 for it, and I took it out into my land right where I had left this Advance, hoping I would run into it and break it all to pieces. At any rate I commenced and I drove the team myself and drove them just right, though it would not go more than two feet where it was heavy, and I sent for this agent of the McCormick machine, and that man could not hardly waddle along he was so fat; and says I "what I want of you is to stay there, and my boys can bind around the field quicker than you can walk around there, and if they cannot do it, I will buy your machine." And he says "they cannot do anything of the kind;" but when he got about half a mile he sat down puffing and said he would not walk any longer; But I had to keep his machine for he would not take it back. I have run the Marsh Harvester five years, and I never paid out $5 for repairs on it; and my boys average eight to ten acres a day with it. Two men bind and one sets it up, and the boy drives the reaper, and I save a dollar an acre over and above what I could save with the McCormick machine on my farm, more than I could with that great big machine, and the Advance machine was not worth hauling into my field.

Mr. Bention. I wish to make an explanation. Those figures in my article I have worked out on my farm, and I speak whereof I know and have done.

Question. Don't you think forty days rather a long time to be haying in this country?

Answer. I said haying and harvesting all through.

Mr. SHERMAN. I agree with my friend in regard to the Marsh harvester, and my neighbor here did not understand me as to the amount of grain which I cut. I don't doubt but that the larger the farm the better the machinery will pay, so far as the machinery is able to perform its work. If a man has 250 acres to cut, he can do it certainly, and make it pay better; but I was speaking on general principles in Wisconsin.

Mr. WHITING. This subject of farm implements is an interesting subject, and one in which all farmers have an abiding interest. I think the gentleman is correct in his statement on general principles, that reapers in particular fail to pay; and I believe he is also correct in stating that he can hire labor, and hire his grain cut at a less price than by a machine, if he has only 40 to 60 acres. The difficulty however, in the way of rendering this plan particable, is this: when our wheat is ripe it must be cut. If we depend on hiring it done by our neighbors with their machines, they are generally all busy, and we cannot get it done in time, and to leave it from three to four days beyond the proper time of cutting is a matter of very bad economy; and hence those of us who own small farms are necessitated to buy reapers and get them at the enormous price at which they are sold in order to continue our operations. If you can hire that labor in proper time, then I say one-half the reapers in use and perhaps two out of three should be disposed of.

One idea in regard to the patent law. It seems to me something ought to be done in this regard to alleviate the burdens of the farmers. It is monstrously extravagant for us to pay $225 for a machine which can doubtless be constructed and leave a reasonable profit to the manufacturer and to the patentee for twenty-five or thirty per cent. of that amount. And if our American Congress can interpose by legislative enactment an obstacle to the progress of those men who are making themselves immensely rich at the expense of a vast number of the farming community, they will do a thing that is exceedingly for the good of the people.

I happen to be just at this time a little interested in patent rights myself. I have an invention for which I hope and expect to receive a patent, but notwithstanding, I hope there will be an

enactment by which those great monopolists will be foiled in their attempt further to burden the people in this direction.

It is right that brain labor should be adequately rewarded; but when McCormick, a great many years ago made his plea before the Patent-Office for an extension of time, he admitted in that plea that he had made many hundreds of thousands of dollars in all, whereas he says that his machines had been the means of introducing and enlarging the capacity of farmers to extend their acreage, and had resulted in increased production of crops to such an extent that he had not been remunerated. Such sophistry.

Secretary Field. I would call for an elaboration of the matters set forth in President Bascom's address last evening.

Mr. Anderson. This patent law is something that our farmers should take hold of. There was over sixty applications last year for renewals on farm-implements alone. A very heavy tax on farmers. But talking will do nothing, if we can have an attorney at Washington to oppose the unjust extension of the patent rights that we are interested in, we might do something. This question of machinery is a very important question. I can cut wheat per acre with hand labor perhaps just as cheap as you can with a reaper, but I can only cut a little of it.

I remember when I was a young man I could cut an acre of grain for a dollar and a half, and could make money at that. And you could get plenty of men to cut wheat with a cradle for fifty cents an acre at that time; but after all I am in favor of machinery.

I have now the first reaper I ever bought in Wisconsin, some fourteen years ago, and it is in good working order; and when Mr. Robbins spoke about his Advance machine, I thought he meant an advance in prices from $125 to $250, or something like that.

President Bascom. I think the arithmetic of the farmer must be a little different from that of the mechanic, or from the arithmetic of the merchant. I intimated last night that I never had farmed it, but I did own a farm for eight years, and farmed it by tenants, and I learned a great many things not to do about the farm. And there is a good deal that won't pay on the farm, if you count all your money at first cost. Working a farm through a tenant, I could do nothing only as I paid him ordinary day wages, and then I could not get back any returns. I don't think that is fair farm arithmetic to count your horses at the money which it would cost

to secure other horses, and your own time at day wages, and then expect to get back within a particular period your money. One must know as a farmer that he cannot count his entire time entirely and precisely as the mechanic would count his time, and as a man engaged in business would count the time of the man whom he hires. A farmer has a great deal of time that relatively is leisure time, and he must not count that time, though he may make it pay if he puts it to good use. A man must do a great deal on the farm largely from the motive of pleasure—the pleasure of seeing it improved in his hands, and although the returns of that year may not be safely counted up in ordinary arithmetic, yet to me it is a labor I will venture to say will pay in its way on the farm. The youth leaves home at the end of his time with more muscular and vital forces, and the labor of life on the farm, taking a series of years together will fully justify the methods, and yet a good many of those very methods if applied by the ordinary arithmetic would have proved failures if we had counted each day's work at $2.50 a day, counting all his time. He would not have entered upon those improvements that turned out to be profitable, and yet the difference between unthrift and prosperity in ten years will be found just there, that one man had entered upon those improvements, and the other man did not, and that in his arithmetic he included a good many things he could not count in money. If the remote returns, and if the social and physical advantages were all taken into the estimate, it will be found at the end of a series of years that the course taken abundantly justified itself.

And also in reference to this question of machinery. It should be said, I think, that machinery, through its introduction for farming, has enlarged production very much, and that reduction of price has accrued to the benefit of the whole world, and consequently a large portion of the benefit that might otherwise accrue to farmers alone has slipt away from them and has gone to other classes; but we ought not to regard that. If the farmer can do his work as well and easier, he should be content, and he should feel, if he can do his work with no more expenditure of labor, and then hand over this larger production and easier conditions of life to his fellow man, it should be a thing that he should be willing to do, and that indirectly, advantageous results will come back to him. He passes over produce to all the mechanical and economical world, and they, in

turn, will pass back machinery and commodities to him on lighter conditions, and we are to find better conditions when it comes from us and then comes back again to us multiplied and enlarged, and then we enter fully into our share of that gain. And if the whole community has been gainers by this machinery, the farmer will incidentally because of his relations to the rest of the world be an equal gainer. Therefore, I say that farmers' arithmetics must be long-sighted and comprehensive, and he must have enthusiasm in it and be satisfied with the results in the time of progress, even if they do not, in the first instance, bring back a return in money. They will justify themselves in the return of products to the farmer, by and by.

Mr. ROBBINS. Farming to pay, means intelligent farming. I have been trying that, so that I know that a farm to pay, must be intelligent farming. We have got so many implements that we use on our farms today—you have your gang plow, your seeders, your corn planter, reapers and rakes, so that we ride now to do the work of our farms, and a man must be a mechanic, an engineer, and a man of science who understands all kinds of machinery, to do intelligent farming. Now I know this by experience. I have taken my two boys off from my farm this year and put them at something else, because I thought they could make a little more, and I thought their wages were worth more off the farm than on; but I have no question, but I have lost $600 and my opinion is I have not saved anything. I have made it a little easier for them, I have got the best help I could get. I do not know but what we could have made money in farming if it was done without intelligence when our land was new; but I must say today, it needs an educated man to run a farm and pay expenses. I don't believe an ignorant man could go on to my farm and pay three per cent. on the investment, if I would give him the use of the machinery. What I mean to be understood now is, that we must educate our boys so that they may know something about a farm, something abont machinery, soil and other things. We must educate them so they will like the farm. I know how it is, boys get sick of the farm, and they go away just as quick as they can get away. When a boy is sent to school, he never comes back on to the farm again because he imagines it to be as it was when he left it. But if he could see a farm run with intelligence, I think after he got his education, he would go right back to the farm. I have got ten years

longer to live, if I live to be seventy years old, and there is nothing that I should delight in so much as to go on to my farm. I believe I could take more enjoyment on my farm now than I ever did, and if I had known as much about farming twenty years ago as I do today, I never should have said anything about exhausted soil, but should have raised larger crops because I planned it intelligently. So let us educate our boys so they will come back on to the old homestead; I desire to have my homestead handed down to future generations, and my children, their children and grandchildren live and thrive there.

Mr. BARLAND. In regard to this machine; the life of it is very much akin to the life of a human being; through carelessness or ignorance either may be lost, or its usefulness much impaired. I have in my eye a neighborhood where the majority of the farmers are ignorant of a machine. You take a highly-organized machine like a reaper, and you have got to know something about it before you can use it. I have in my eye another neighborhood where one farmer has had one reaper in nse for the last ten years, and he understood how to use it, and the others got their wits from the blacksmith. But how much better if there was a farmers' club, where those who have this large knowledge could impart it to neighbors, and have a mechanics' library, and have knowledge of machinery and such things by the advice of those having practical knowledge.

Mr. CLARK. This subject is familiar, I presume, to most of us, and it is a matter we can discuss in our organizations, and as we have the privilege only once in the year to hear from these professors whom we have here at our service at this time, perhaps there will be no more favorable opportunity than this to hear from them, and I suggest that we hear something from Professor Daniells.

Professor DANIELLS. What I have said in regard to lime, it seems to me is sufficient already. Lime can be used beneficially on soils which have any large amount of organic matter in them, and used occasionally; but continued use of large quantities of lime will destroy the productiveness of the soil without continuous additions of very large quantities of organic matter.

Question. Why is it they have to depend so largely on lime in England for the production of large crops of wheat?

Professor DANIELLS. Vevy large quantities of lime were used forty years ago in England, sometimes one hundred bushels to the

acre; but in the first place you want to take the different conditions between England and Wisconsin.

Every particle of organic matter, except the grain raised upon the soil, is put back again. There is no straw or hay sold from the farm scarcely, and the grain that is sold, is sold mostly in the form of beef, and if it is sold as grain, a large proportion of the money which is obtained from the sale of that grain is used in the manufacture of manure and returning it to the soil again.

Now if farming is done in this way—if there are large quantities of organic matter placed back upon the soil each year, you can continue to use large quantities of lime. But, even in England, the large quantities of lime that were used forty years ago, are not used now. They have learned the fact that they can only use lime when they have very large quantities of organic matter in the soil. There are some localities where the soil scarcely contains any lime —where the rocks from which the soil is formed are granitic rocks. Where the water is soft there is not sufficient lime in the soil for plants, but the amount of lime that plants require is exceedingly small. The ash of plants is scarcely ever over three per cent.

In all our soils in the West there is no deficiency of lime for the use of plants. Lime is an indirect manure, and is not used directly by plants, and that is true of other manures as we attempted to prove to you yesterday.

President Bascom. I didn't hear the professor's paper, but if I understood him, he says, "lime is chiefly beneficial because it is to act on the organic matter in the soil, and put it in a favorable condition for the plants." I would like to have him reconcile his second position when he says at another time, that " the organic matter is to put the mineral matter in proper condition."

Professor Daniells. Nearly all the nourishment which plants take up from the soil is inorganic matter, almost absolutely all of it. This is contradicted by men who say they have been raising plants all their lives, but I never investigated it, but simply have the fact that for more than one hundred years there have been men who have made this their life study, and they have found this to be true by actual experiment.

Organic matter through the soil is not necessary to the growth of plants, as I told you yesterday, if it were, you could not grow plants in coal-ashes and powdered brick-dust, which you can do. In de-

composition, the organic matter in the soil produces a large quantity of carbonic acid, and large quantities of other acids—organic acids, humic acid, etc., and those acids hasten the decomposition of the soil. When the water is charged with them, the mineral matter is taken up.

Now there is some organic matter very probably taken in through the roots, but what we wish to keep in mind at all times, is, that the organic matter will take care of itself, if we will furnish a sufficient amount of mineral material, or nitrogenous compounds. As we hasten the decomposition of the organic matter, we hasten the conditions that are necessary for the changing of the soil.

There is a little too much chemistry in the composition of soils, for me to make it plain to you. All clay from fertile soils which have an absorptive power for the gases of the atmosphere, and for the material which is held in solution by the waters, have a large absorptive power for ammonia. I think, indeed, all fertilizing materials which we can bring into soils are compound silicates. There are silicates of ash, alumina, and potassa, and the principal object is to obtain the potash in combination with them.

The salts of lime will act upon the soil by taking the place of the potash; by allowing the potash to be set free and allowing the plants to take it. So all manures act largely in an indirect manner.

We may put manures in the soil, which contain just those ingrediants that the plants want. Stable manures contain considerable of just the organic ingrediant the soil wants in a form which is easily changed into the form needed for the plant. But the organic matter is not entirely useful for the decomposition of the soil, but partially so. Liebig's theory was that there was not anything but organic matter.

Question. I understood that the lime takes the place of the potash.

Professor DANIELLS. The lime may do that.

Question. I have seen instances of it, where it was put on the leaves of plants; for instance, potatoes that were looking yellow, they would then grow green and nice.

Professor DANIELLS. Plants take in nothing but gases through the leaves; they do not take in any organic matter in that way. We have been experimenting on the University farm for some time

with new kinds of seeds, planting new varieties and testing them. and since 1872 we have been testing the Fultz wheat. That is a winter wheat; probably it is a red wheat; but is lightish colored. We have sown it three years, and we raised the first year thirty-three and one-half bushels, and at that time we sowed several other varieties and they all killed by the side of it. In 1873 it yielded twenty bushels to the acre; last year thirty-five bushels to the acre with simple ordinary culture. Last year it was raised on new land, no other crops ever having been raised on it. It had protection from the north by timber ten rods wide between the wheat and the lake. You want to remember that manures furnish quite a large portion of food; the larger portion of it is mineral food and the smaller part of it is organic food.

The atmosphere is filled with just what your plants want. We are sending up from this town to-day a great many tons, from coal that we are burning. Every twelve pounds of coal forms forty-four pounds of carbonic acid gas, and the principal material of which plants are composed is carbon, and that is organic—it will burn.

Now plants take this substance—carbonic acid gas—from the atmosphere and decompose it, and give the oxygen back again to the air, and takes the carbon in that way, and with what mineral matter it needs, which it takes from the soil, it builds up its structure in that way. So, the oxygen of the soil is the oxygen of the mineral matter, and the reason the organic matter assists the growth of the plant is, the plant can only take up that material in solution, and when the plants have taken up all the soluble mineral material they can get, when that is completed, the soil is barren—that is, when you have taken out all those materials. There is plenty of organic matter left yet for the soil to get, because that is furnished from the atmosphere. But what we must depend upon for the fertility of the soil is to keep this mineral matter constantly changing, and what we must do is to keep changing it, that which is not soluble into soluble form, and bring more and more of that insoluble matter into soluble matter. Now, of course, this is not all, but largely the office that manure performs. Now we apply special manure often for bringing into the soil just what the soil wants. We apply others when the soil wants potash.

There is nothing in salt that plants want—the plants will not

take it—it is destructive to them; but salt will assist in furnishing a substance from the soil which the plants do want.

President STILSON. I think, Professor, your remarks yesterday would lead people astray, from the fact that you omitted to state that a part of the organic matter is taken up. My experience is that I can grow wheat and make it stand up better by the use of manure from stock.

If we take the chemical analysis of a stalk of growing corn in its different states, we find that it varies very materially—that it returns a portion of its elements to the ground itself, before it ripens, and what remains in it, when it ripens, of organic matter, is so much matter abstracted from the field, and must be returned to the soil to keep it in good condition.

Professor DANIELLS. Suppose you take a ton of manure and burn it, how much silicate of potash would you get in it? In the first place, it is about seventy per cent. water. You ought to remember, if you put twenty-five tons of manure on to the land, you return a very small quantity of organic material. Seventy per cent., and often more, of that manure is water. I want you to understand this; that every man wants to make all the manure he can, and he wants to handle that with the greatest economy, and put it all back upon his land.

In my paper I was pleading for better cultivation, and I say it is very greatly needed in this state. I was leaving the other things out. I was only stating one thing, and not misstating anything. You want to get all the manure that you can make, or that you can buy, and then use plaster too, if what I said yesterday is true. I said, apply and use all the manure you could, and I said, apply it for the purpose of furnishing this organic material, and then cultivate! cultivate!! cultivate!!! The more thoroughly the manure is mixed with the soil, the better growth the crops will have. I wish to say that while manure is beneficial, still, that it may be aided very much by cultivation. You want to remember this, that in all your cultivation, everything that you do in regard to your soil should be done with a view to furnish those materials needed for plant-food.

GYPSUM, OR LAND PLASTER, AND HOW TO USE IT

BY N. E. ALLEN, FOX LAKE.

There has been much discussion in the agricultural papers, and otherwise, in reference to the benefits or results of plaster use. Perhaps the opinion of one who has had some experience and observation in reference to it may be of interest to the public at large; and in no way could the information be so well communicated as in this farmers' convention. This is the proper place to compare notes and judge of results. It is emphatically the farmers graduating school. There is nothing to which I look forward to with more interest than this annual farmers' convention.

I shall not endeavor to explain the chemical properties of plaster, or its chemical action, but only state my experiences and observations in its use.

How and when should it be used, are questions the farmers of Wisconsin and the northwest are asking. Some are making failures, others indifferent success, some are meeting with entire success in its use. The question is what causes this difference. Is it in the soil, or not knowing how to use it? In our opinion it is both. Some soils are better adapted to its use than others, still in my opinion almost any of the dry lands of Wisconsin would be benefited by its use if properly applied. The question then is, how and when should it be used? Always in seeding land to clover, it should be sown just *before the seed is sown, and cultivated in*, unless it can be sown long enough before to have it wet, dissolved and mixed with the soil ready to act with the first growth of the plant.

There has a very erronious impression been entertained in the public mind in this regard, particularly in our state. People use it as they did East, when we have a climate, soil and quality of plaster all different. We have a dryer climate than at the East, particularly the last of May or the first of June. Plaster will do no good while it remains a dry dust on the surface of the ground or on the leaf of the plant. *It must be wet, dissolved and incorporated with the soil before it can act.*

Somebody has said it must be thrown on the leaves of the plant, while the dew is on to make it adhere, and because somebody said so, they, the people, accept it and act accordingly, without stopping to think, if it is founded in reason. I should as soon think of feeding my body by putting food into my boots, as of feeding the plant by putting food for the plant on the leaves. It must be mixed with the soil, and the plant food must be brought into a condition to be readily assimilated and taken up by the plant, before it can derive nourishment from it. The action of the plaster is to fix the ammonia in the soil, enabling the plant to take it up in growth, also, to aid in the decomposition of the vegetable substances turned under. I would always sow plaster before seeding to clover, it will keep it from dying and stimulate its growth. It is not the quantity of seed we sow that makes a good seeding, but the quantity *we make live.* The plaster will do it on any land of my acquaintance, if properly applied. Don't wait until you have your grain all sown, and your corn planted, until the dry spell has commenced, until your clover begins to kill out, or *is* half killed, then sow it expecting to bring it to life. Plaster will not bring the dead to life, neither will it act until it is wet, dissolved and in the soil.

Plaster should be sown on all newly turned sod, timothy or clover, unless it is yet strong in the soil from previous sowing. Why? It aids in the decomposition of the vegetable substances turned under, and also, it aids the soil to retain the ammonia instead of its being evaporated by the sun and drying winds, it being an exceedingly volatile substance. It should be sown on new sod if it is expected to sow wheat or any of the cereal grains, or be planted to corn. It will double a crop on such land in my experience. It should not be sown on old land that has been cropped to wheat for twenty years, until all the wheat producing elements are exhausted, simply to make wheat grow, it will not do it; you must not expect something from nothing. Plaster will do no good on wet land, neither will it do good on clear sand, unless there is some vegetable substance in the soil upon which it can act, still upon very poor sandy land it will make clover grow, and this should be the means to use to improve the sandy lands of the northern and western part of our state. Plaster will do very little good on land that is made very rich with thoroughly rotted manure, that is readily assimilated to the growth of plants, but if coarse manure be spread or plowed

in, plaster will act with profit. Plaster will do very little good to make any of the cereal grains grow on old or exhausted land, except clover be sown with it. The clover growing shades the land, keeping it moist, and the wheat or other grain will fill better than if there was no shading or clover with it, besides the clover will in a large degree take the place of weeds, which it will choke out if it is made to grow strong and vigorous.

A simple rule will enable any one to determine if plaster will benefit his crops. If the crop looks yellow and sickly, he may be sure plaster will greatly benefit it. If the leaves are tinged with *purple* or red upon the ends, although the growth is small, plaster will do no good; the farmer must look for some other remedy. Probably his land wants drainage. If the growth is rank, of a dark green color, and vigorous, plaster will do very little, if any, good. The plant-food in such soil is in a condition to be readily taken up by the plant without the aid of plaster.

It may be asked, how do you know about these things? I answer: I have used on my farm in the past eight years at least seventy tons of plaster, and have sown as much as eighty bushels of clover-seed, and have practiced turning my clover-sod in the fall, after cutting my second crop of clover for seed or for hay, and sowing to wheat or planting to corn, with good results every time. Pardon the egotism, but I have more than doubled the production of my farm in the past eight years by the use of plaster and clover, as indicated above, without extra expense more than the resultant profits year by year. There is no secret about it; any man can do as well, if he will but use the proper means at his command.

Question. What kind of soil is your farm?

Mr. ALLEN. My farm is both prairie and openings, about equally divided, but the plaster does not act with as much effect upon the prairie soil as upon the openings, at least it does not act as quick; but on any soil with the proper conditions it will make a very great difference.

Question. How much to the acre do you sow?

Mr. ALLEN. About ten pounds.

Question. In what way?

Mr. ALLEN. I sow it broad-cast.

Question. What time would Mr. Allen sow plaster on meadow or pasture?

Mr. ALLEN. As soon as you can in the spring.

Question. Have you not also made free use of manure as well as plaster?

Mr. ALLEN. I have; but by the aid of the plaster I have been able to raise great crops of clover, and keep stock and make mauure.

Question. How much clover do you sow to the acre?

Mr. ALLEN. Well, as good a seeding as ever I made in my life I made with four quarts of clover seed to the acre, but I would recommend more than that; but with plaster sown on the ground at the time of seeding, about four quarts will make a better seeding than ten or twelve quarts will without it. The plaster makes it live.

Mr. J. N. SMITH. Has the gentleman tried plaster upon potatoes, beans or peas?

Mr. ALLEN. I have. On sod ground it will double the crop of peas; but it will do no good on a crop of peas on old ground.

Question. Why not?

Mr. ALLEN. I cannot tell you that, I wish I could; that is one of the things I cannot understand.

Mr. WHITING. I happen to be a neighbor of Mr. Allen, and his land lies on two sides of mine, and I know somewhat in regard to the history of his use of plaster. Although he is a very enthusiastic man and sometimes he is accused of riding a hobby, I don't thiuk he has ever ridden the hobby of plaster. I am satisfied that his neighbors pretty generally have become convinced that plaster is very profitable to use on the land in that vicinity. I would offer one criticism on one point. He undertakes to tell in that essay his experiences—what he knows, what have been his results, but he deviates from that to theorizing when he tells how and in what manner plaster effects those results. I don't think he knows anything about it.

Mr. BEMENT. Has Mr. Allen ever tried lime? In my experience, lime does more good than plaster. It is well known that twenty-nine years ago we could raise a big crop, if we did'nt half put it in. The fact was, the ground was full of alkali. Now is that alkali in lime, or in plaster or manure? My experience is, it is in the lime. I think in a dry season lime will give a better result on my place than plaster. My soil is a black clay with a very little sand mixed with it. And also I have seen lime on clay

soil East. I knew a man, his name was Allen too—who come in there and bought a very poor farm that he was satisfied would not raise white beans; but there was a lime quarry on it, and he said he was going to burn lime, and he did, and put it on his land in large quantities, and in less than five years he had the best growing farm there was in the county.

Mr. Allen. About 15 years ago I had a lime kiln and I scattered a few loads of that lime on my soil, and I can say that I can use plaster with much more profit. There is no sort of comparison between them.

Mr. J. W. Wood. I will give a short experience in the use of plaster. The first year that I used it, I sowed it after my clover was half knee high. I intended to do it earlier, but the clover was pretty thick and began to look yellow, and I sowed the plaster in a dry time at the rate of a bushel on four acres; and for the purpose of testing it a neighbor had a piece of clover adjoining mine, with a fence between, and I without his knowledge got over and sowed in his clover for a little way, and after a while I told him I had committed a trespass and had put some plaster on his field, and I wanted him to find it, and in ten days the clover had changed its appearance and was growing ranker and greener, and as some of my neighbors could probably testify, there was twice the growth of clover produced where that plaster had fallen upon it. And it was so with the plaster I sowed on my neighbors piece, and you could tell even the motions I made in sowing on that man's land in the growth of the clover. And by the way, that same year I had some wheat and seeded the land to clover, and the clover was up, and the wheat, oats and barley were knee high. I sowed a strip clear through and back across the three kinds of grain, and I saw no particular difference in the crop; but the next year I took our Farmers' Club out to see where the plaster was sown, and they could pick out where I went and there was double the growth of clover where I sowed the plaster the year before. And accordingly some of the members of our Club took a notionto sow plaster with their wheat this spring; but I don't know whether it did much good to my own clover or not, but my clover was small in the fall. But a neighbor of mine who owned this land where I sowed plaster the year before, sowed plaster with his clover about ten days later than I did, and his seeding entirely failed and he plowed it up again; so that while Mr.

Allen is so strenuous for early sowing, it may be good; but I sowed it late and still it was good and I don't know but I got as much benefit from the late sown plaster as I would had it been sown earlier.

Mr. PORTER. I want to say a very few words in reference to the subject of fertilizing our soil, and I am in harmony with all that Mr. Allen has said. I think he is perfectly right in reference to the instructions he has given us, so far as plaster is concerned, but there are other things connected with our fertilizing of importance to the whole people of the United States.

If there be a single thing in the management of farms in which we are deficient, it is the one thing of fertilization. If we fertilize our farms and do it knowingly, without thoroughly thinking the subject over carefully, and becoming thoroughly aware that we are right, and right every time, we shall be living, as a part of us have been living and are living to-day, upon what we term exhausted soil. Well, the thing is a disgrace to every thinking farmer, to think that we live upon exhausted soil. In my opinion there ought to be no such word in the vocabulary of the farmer—there is no call for it.

Why, your unworthy speaker was born upon the land his forefathers had lived on at the time of his birth over nine hundred and fifty years, and yet that farm was not exhausted by any means. It grew larger crops at the time I was a boy than it had ever grown at any time in the history of the farm, and I believe it is growing the same to-day. It never will be exhausted; and the farmer's soil has no business to be exhausted.

No farmer must say that his farm is exhausted, that he cannot grow this, that, and the other thing on the farm, because his land is not adapted to such and such crops. I know farmers all around me tell me their farms won't grow clover, they have tried it. And I said to one of my neighbors who was complaining that way, "you are about beat with that land, what will you take for it? And he says, "I will take so much." I took it, and a few days ago he asked me, "why could not I grow clover on that land as well as you." Says I, "you never tried." "Why," said he, "I spent over two hundred and fifty dollars in buying seed to put on that land, and I never could get anything." Said I, "you did not try until it would grow nothing else." He had gone on the idea of wheat, oats, and corn, and took everything off from it, and then he expected

it to grow clover. Let us put our land in condition and it will grow clover; but let it be in condition for the crop that is put upon it.

Now, about this talk whether plaster is good, or salt, or anything else, why everything is good in its place. I grow every year from four to fifteen acres of ruta-bagas. I do not use plaster, but I use land on which plaster would do but very little good. I rake up every hog yard I have got, and all the back yards, and all my ashes, and all I can get, and I mix the ingredients, fifteen, twenty or thirty wagon loads, and put it on and I would rather have such fertilizers than anything else.

Let us know how to work, and we shall not be coming in here and finding fault with our politicians. Thank God our state is happy, and will always be in spite of all our grumbling. I tell you gentlemen farmers, when we have a good hearty wife and family, and a good healthy farm and everything connected with it, the fault is our own if we cannot live like kings, that is all I can say. Then let us shut up this eternal grumbling and fault finding, and let us work out our own problems on our own farm, and to the whole United States of America will be peace and prosperity, long life and happiness. (Great applause.)

Professor DANIELLS. It seems to me we can tell so well when we need to use lime, that every man should know. There is plenty of lime in the soil in this country for the use of plants, but if we have a soil with considerable organic matter in it and which is not very fertile, by adding lime to that soil will hasten the decomposition of the organic matter, and so improve the soil for the present. But to use lime continuously for any length of time, would ruin it unless there was a very large portion of organic matter replaced in the soil. It would hasten the decomposition and very soon the organic matter would disappear. The organic matter in the soil being entirely insoluble, lime decomposes it, and renders it capable of being taken up for plant food. And so far as plaster is concerned, I do not think there is any man in the world knows anything in regard to it.

AGRICULTURE—A GLIMPSE AT ITS PAST, PRESENT, AND FUTURE.

BY J. M. SMITH.

President Northern Wisconsin Agricultural and Mechanical Association.

When Adam and Eve were driven forth from the garden of Eden, they were followed with denunciations, among which were these remarkable words: "Cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field. In the sweat of thy brow shalt thou eat bread, till thou return unto the ground; for out of it thou was't taken; dust thou art, and unto dust shalt thou return."

Whatever opinions we may entertain as to the condition of the earth previous to the utterance of these words, there seems to be no doubt of the fact, that since that time the earth has steadily refused to support any large number of her population with any degree of comfort, except by cultivating the soil. Another fact may here be stated, viz; that the history of the world shows that nations have become civilized, prosperous and wealthy, just as the agricultural conditions of those nations have been permanently prosperous or depressed. It follows almost as a matter of course, that such must have been the case in the past, and such must still continue to be the case in the future, from the fact that the first great and imperative wants of any people are plenty of food and clothing. It is useless to look for or expect any permanent advances in the fine-arts until these two great wants are supplied; and the supply promises to be both plenty and permanent. The facts are, that the people have neither the time nor the disposition to devote themselves to other things until such is the case.

In the preceeding remarks, I refer of course to civilized nations, and not to the savage tribes of the world who live from day to day without thought or care for the morrow, nor to those semi-barbarous and nomadic nations, like the Huns, Goths and Vandals,

whose civilization has only and ever been obtained at the expense and destruction of those more civilized and enlightened than themselves.

Now, while bearing these facts in mind, let us look back at the past, and take a brief glance at the agriculture of the more favored of the ancient nations. Before proceeding, let me say further, that in nearly all the ancient nations the manual labor was principally performed by slaves, and, too, with very few or none of our modern improvements. Hence, whenever the lords of the soil became embarrassed, during their almost continuous wars, the agriculture of the country was almost the first interest to suffer, or would, perhaps, be entirely destroyed for the time being. Hence the origin of the saying, "war, pestilence and famine." And the famines of those days were sometimes things fearful even to contemplate.

Amid the earliest records of profane history, Egypt bursts forth upon our astonished gaze in all the glory of a high civilization. Some of her monuments, as well as some of her temples, were even then crumbling with age; but there they stand to-day, silently pointing back to the glory of their ancient days. And, what is still more remarkable, all around them, and in fact all of the then known world was enveloped in darkness and barbarism. The restless sons of Ishmael wandered then, as now, from place to place, without a settled home or habitation. What, then, was the secret of this high state of civilization? It was merely this: Ancient Egypt was simply the valley of the Nile, one of the most fertile spots upon the surface of the earth; and, in addition to that, the regular annual over-flow of the river enriched the soil to such an extent that artificial fertilizing seemed entirely unnecessary. The agriculture of Egypt was mainly under the direction of the government. In fact there are some reasons for believing that during at least a large portion of her history the whole title to the land was centered in the reigning monarch; but, be this as it may, the government spent almost incredible sums of money in digging canals and making artificial reservoirs for the purpose of irrigation. Indeed, so extensive were their works, that Herodotus, the ancient historian, considers one of them, Lake Mœris, the noblest and most wonderful of all the works even in that land of wonders.

Let us bear in mind that rain was almost unknown in Egypt; hence, the absolute necessity of irrigation. The land usually pro-

duced one good annual crop, merely from the annual overflow; but where artificial watering was introduced and followed up, three annual crops were the products of that wondrous land. We have no reason to believe that their cultivation of the soil was superior to that in practice in civilized nations to-day: but, learning the necessity of irrigation at a very early day, they followed it up, and brought it to a degree of perfection that has never been equaled in the history of our race.

And what was the result? Egypt was a long, narrow strip of territory, variously estimated to contain from 12,000 to 18,000 square miles; or, perhaps, one-fourth as much territory as is contained in the state of Wisconsin. What the population really was is not definitely known. Yet, it is certain it ran into tens of millions. It was the boast of Thebes that although she contained one hundred gates, she could send out ten thousand fighting men from each gate. Nor was this all. After feeding the millions of her own land, Egypt was still the granary of the then known world. Her agricultural resources seem to have been watched with zealous interest for many hundred years after her people had ceased to build either pyramids or temples, or even to repair those that were falling into decay. For more than two thousand years was this interest protected and encouraged, and so perfect and permanent had the improvements been made, that for generations after the death of the beautiful and voluptuous Cleopatra, who was the last of the native rulers, and at whose death Egypt became a Roman Province, they still boasted that even their captors were obliged to come to them for bread. We have no means of knowing how extensive the crops actually were, or their yield per acre; but the fact that the other nations, and almost all of the large cities of the known world, turned with eager gaze to this garden spot of the earth for a large share of their bread, proved conclusively that Egyptian Agriculture was early brought to, and for a long time maintained in, a very high and prosperous condition.

If we turn from Egypt to other ancient nations, we find nothing at all comparable to her in agricultural prosperity. There is but little doubt that the plains of the Euphrates around Babylon, were once in the highest state of cultivation, and that it was done by means of irrigation, although we have but little information with regard to it. In short, after leaving Egypt there is very little in an-

cient agriculture to attract our attention until we reach Roman history. The ancient Greeks excelled in the cultivation of the grape, and some other fruits, but they were never famous for the production of grain; and being much devoted to commerce, they exchanged other articles for grain at a cheaper rate than they could produce it from their naturally thin soil and hilly country. The land of Palestine once supported an immense population, although their agricultural implements, as well as their modes of cultivation were of an exceedingly primitive and simple character. The first account that I have found of any regular, systematic mode of cultivation as we now understand it, is given by Cato, who died 150 years before Christ. At that time, a large farming system was fully established in Italy. A rotation of crops was fairly understood, also plowing under green crops for manure, as well as summer fallowing. For a long time agriculture was the favorite pursuit of the wealthy and aristocratic classes of Romans. The labor was entirely performed by slaves. Slavery existed in its most terrible form. It included not only all the evils of modern slavery, but in addition, the life of the slave was simply at the mercy of the master, without any reservation whatever; and their slaves were so cheap that the loss of one or of a dozen was no object. The price of a slave in the market often being but little more than the price of a sheep or a goat.

There we see that although the system of Roman agriculture seemed to combine much of what is now deemed good practical cultivation, still it contained a system of slavery so horrible that we shudder as we contemplate its results. The larger portion of the country was originally cut up into small farms and cultivated principally by the owners of the land; but after the introduction of slavery and slave-labor upon farms, the more wealthy owners gradually absorbed the smaller farms, and the landed estates finally fell into the hands of comparatively a few of the more wealthy of the Roman citizens.

For a long time, bread was plenty and cheap throughout Italy; but the system by which it was produced, assisted very much in bringing on the final overthrow and destruction of that immense empire. The Emperor Cladius during his reign mitigated somewhat the horrors of slavery. This was well for the slaves, though it was too late to save the masters, who had previous to this time

become so enervated by idleness and luxury, and debauched by crimes and immoralities, that the empire became an easy prey to the savage hords of Huns, Goths, and Vandals, as well as other barbarous tribes from the north of Europe, who swept down over Italy like avenging demons, and buried the science of Roman agriculture as well as the other arts and sciences of the empire in one common ruin. In this overwhelming destruction, slavery, in the form it had long existed, was destroyed.

In its place a sysetm of Feudalism grew up and speedily spread itself over the entire continent of Europe. This was in fact, a modified form of slavery. The Feudal lords being the proprietors of the soil, and their serfs or subjects being the laborers by whom the soil was cultivated. The pay in almost every case being simply a meager supply of the plainest food and clothing, merely sufficient to sustain them in working condition, and a cheap hut or hovel to protect them from the cold and storms. In addition to their labors, the serfs were obliged to perform military duty whenever their haughty lords commanded. The agricultural condition of Europe was in a most wretched condition.

Such was the situation at the beginning of the eighth century; and from that time down to the middle of the fourteenth centnry, the history of Europe is one of ignorance, bigotry, superstition and barbarous inhumanity. It is useless to follow the science of agriculture through those dark ages. As a science, it ceased to exist. A meager subsistence was all that was expected or obtained by the cultivators of the soil, and the comforts and luxuries of life, as we understand them to-day, were utterly unknown to them.

During the last half of the fourteenth century, there seemed to be a little improvement, at least in some places. Strange as it may seem, the fact is, that we know but little of the agricultural condition of modern Europe until within the last one hundred and fifty years; and that little is not at all calculated to make us proud of our ancestors.

We have a description of the British Islands as they were about the commencement of the seventeenth century, by Macaulay. It is the fullest and most perfect that I have been able to find. He, in his History of England says: "According to a computation made in 1696, the whole quantity of wheat, rye, oats, barley and beans then annually grown in the kingdom, was less than ten millions of quar-

ters, or eighty millions of bushels. The wheat crop was estimated at less than two millions of quarters." This estimate will make the grain crop of the United Kingdom but a trifle more than the grain crop of Wisconsin for 1872. The wheat crop being not any more than the same crop in Wisconsin for the year 1870. The population at this time is believed to have been not less than 12,000,000. "Wheat was only grown upon the strongest clay, and was consumed by those in easy circumstances." The rotation of crops was very imperfectly understood. But very few kinds of vegetables were then grown. Turnips, at present one of the most valuable of their crops, were just being introduced. The potato as an article of food for the masses, was unknown. Wages were generally fixed by law, and ranged from four to six shillings per week, the laborer to furnish his own board. In 1661, the justices of Chelmsford fixed the wages at six shilling per week in winter, and seven in summer. This is said to have been the highest remuneration paid in the kingdom for agricultural labor between the time of the Restoration and the Revolution.

At this time the price of wheat is given at seventy shillings per quarter, or $2.12 per bushel. Meat was cheaper, comparatively, but it was estimated that only one-half of the laborers could taste of meat oftener than twice a week, and the balance, at most, not oftener than once in a week, if at all. Gregory King, who is considered good authority, estimated that more than one-fifth of the entire population were more or less dependent upon public charity for help. At the present, in ordinary times, it is estimated that one in thirty receive more or less aid in this manner. The great majority of the nation lived almost entirely upon rye, oats and barley. Clothing of nearly or quite all kinds was higher then than now. Such articles as tea, coffee, sugar, &c., were of course, entirely beyond their reach. It is estimated that the annual yield per acre of the different crops was less than one-half of what it is at present.

Such was the condition of the most free, independent and enlightened nation of Europe, less than two hundred years ago.

Now let us come down to the time when agriculture began to take its place among the sciences, and efforts began to be made to place it in a condition of prosperity.

The first Agricultural Society of which I find a notice, was organized in Scotland in 1723. It had only a short existence, as did

some others that were started soon after. The first permanent one was the Highland Society of Scotland. Its first annual meeting was held in 1784, and was incorporated by Royal Charter in 1787. It is still not only living, but is, with one exception, probably the most useful association of its kind upon the British Islands. The Royal Agricultural Society of England was established in May 1838, and then consisted of 466 members. In twenty years its membership had increased to more than ten thousand. It is still in successful operation, and bids fair to be still more successful in the future than it has in the past.

The first Agricultural Society in this country was the Philadelphia Society for promoting agriculture, established 1785. A few others followed previous to 1800. There was one in my native county, I think as early as 1810, at which premiums were awarded for the best workmanship at different kinds of farm labor. My now aged father took the first premium (a silver cup) for doing the best plowing; it was sometime between 1810 and 1820. Agricultural societies are now permanently established, and generally well supported throughout the civilized portion of the civilized world. They have been and still are the means of great good in bringing farmers and communities together; in encouraging the backward to some improvement, and stimulating those more advanced to still further progress in exchanging ideas, and in many other ways that I cannot now stop to mention.

The first school or college that I find devoted to agriculture, was started at Hofwyl, in Switzerland, in 1806, by Fellenburg. This seems to have been a success from the start. In thirty years no less than 3,000 pupils had been trained in agricultural knowledge, and made, as is believed, more useful to themselves and the world than they otherwise could have become. Since that time many other schools have sprung up in different parts of Europe. In France, Russia and Prussia they are supported by the general governments. In other portions of Europe they exist supported by various methods. I need not stop to more than mention the agricultural colleges in our own country; one of them in each state, where it is to be hoped they will prove to be permanent blessings to the whole country.

Agricultural papers seem to be a peculiarly American institution. I believe they are not numerous outside of our own country. The

first successful agricultural paper of which I have any knowledge, was started in Albany, New York, about 1830, by Judge Buel. There had been two or three started previous to this, although I believe none of them were successful. Judge Buel's paper was called the *Cultivator*, was issued monthly, and was not more than one-quarter as large as the Chicago *Evening Journal*. The price was 50 cents per year. Such was the birth of American agricultural journalism. To-day it is undoubtedly the best means of educating the masses of our farmers that exists in the world. Some of these papers are edited with great skill and ability and are as firmly established as any of the great papers of our country.

Thus have I glanced in the briefest manner possible at the past. But who would exchange it for the present or for the bright prospects of the future? Remember, too, in the views given, I have selected only the most favored nations of the past. If we compare the most favored days of the past with the present, what do we see? The great masses of the cultivators of the soil, ever and always bound down beneath a load of ignorance, bigotry, superstition and crime. For them there was no bright to-morrow ever to dawn. No change of administration ever ameliorated their condition. The fall of one dynasty and the rise of another, found them still toiling and suffering. From the hovel to the field, from the field to the hovel, with no education, no hope for the future, no Sabbath, no rest until they sunk down by the way with their eyes closed in death and were buried from sight and forgotten. Thus the uncounted and countless millions of the tillers of the soil, in the ages of the past, have lived and died, with none to hear or heed their sad, bitter cries, except Him who hears the raven's cry and notes the sparrow's fall. How is it with us to-day?

Suppose we take a section of our country, commencing at the Ohio river, and take a district of territory on each side of the Mississippi 200 miles in width and extend it 600 miles north. This would give us a territory of 240,000 square miles, a territory somewhat larger than France, Belgium and Holland combined. As to fertility of soil and capabilities of raising bread and meat for the support of mankind, its healthful climate, and, in short, its combined advantages, we may safely say that there is not another spot of its size upon the face of the earth that equals it. The men who labor and cultivate this soil, are, in almost every instance, the own-

ers of the soil which they cultivate. But, whether a man owns the land or not, he is equally as free as the owner. He calls no man master. He bows in reverence to none except his God. We claim to be citizens of the most free and independent nation upon the earth. If the members of our legislature displease us, we leave them at home aud send others in their places. If the governor does not satisfy the majority of the people of the state, he is quietly left at his home, and another man elevated to his place. If a member of either house of Congress votes or otherwise conducts himself in any manner unsatisfactory to his constituents, they have no hesitation about restoring him to private life and sending another man whom they suppose will be more obedient to their will. All this is done quietly and without disorder or disturbance of any kind. The people are literally their own masters, and the law-makers are their servants.

Again, in all that goes to make the ordinary comforts of every-day life, we are the most wealthy people upon the earth. This may seem a strange statement to some present, and I do not mean to say that we have more gold and silver than any other people; but, gentlemen, did it ever occur to you that the West and Northwest is the only territory of any size in the world where the masses of the people can afford to have wheat bread, butter and meat as the main articles of their daily food? And yet, such is the fact, that no nation, either ancient or modern, has ever before been able to provide the above named articles in sufficient quantity and at prices to place them within the reach of the laboring classes as articles of daily food. Our stock of all kinds is almost incomparably in advance of that of any previous to this century. In short, the last quarter of a century has almost completely revolutionized the science of agriculture. It is doubtless evident to all that the next twenty-five years are to be marked with still greater changes, and that they are to be in favor of the cultivator of the soil, provided he is wide-awake and takes his place in the steady march of improvements as they come along. The dull, ignorant plodder who refuses to do otherwise than as his fathers did, and believes that they knew it all, will be utterly forsaken and forgotten. No, perhaps not quite forgotten, he will serve us to look back to, and see the advances we have made. I run no risk of hurting the feelings of any of this class, as they never attend conventions, neither do they ever take

papers and read the account of conventions or of any other agricultural proceedings.

Great as have been the improvements made in stock within the last twenty-five years, the next twenty-five will doubtless see an advance of which we little dream to-day. We have some specimens of different kinds of stock in the northwest that can scarcely be excelled upon this continent, or upon the globe. This improved stock of the different kinds is doubtless to become generally distributed throughout the northwest. In our own state, we have noble men leading the way. Such men as Murray, Williams, Ludington, Stilson, Stoddard, Hazen, Sherman, Bryant and many others who might be named, deserve the thanks of all friends of improvement in our state, as well as their hearty co-operation. In improving the fertility of the soil, our people are not so far advanced as is desirable; but they are fast being awakened to the fact that the soil must be improved, and when they once come to that conclusion, they will not be long in finding a way to make the improvements.

In this connection let me mention the result of one of the experiments of Mr. J. B. Lawes, of Rothamsted, England. It is well known that he has been carrying on a series of experiments for many years, and it seems to me that the result which he gives of his experiments upon his wheat field alone, ought to be worth millions of dollars, not only to his own people, but to the farmers of this state as well.

The following is the result of the last ten years experiments upon his wheat fields; one field being sown continually with wheat, with no manure whatever, has averaged 12⅞ bushels per acre for the ten years. This, it will be noticed, varies but little from the average of our own state. Another field, upon which farm-yard manure was used during the same length of time, averaged 35¼ bushels per acre. Three other fields upon which artificial fertilizers of different kinds were used, averaged, respectively, 32⅛, 37⅝, and 40 bushels per acre. Now gentlemen, here are practical results, and if Mr. J. B. Lawes of Rothamsted, can obtain them, I believe that Eli Stilson of Wisconsin can, and if Stilson can do it, there are many other men in the state who can; for as able a farmer as I think Mr. Stilson is, I by no means believe that he monopolizes the farming abilities of our state. These results show the largest average was made by artific-

ial manures entirely, thus showing that you are by no means dependent upon the barn-yard for fertilizers for the farm.

We have just entered upon the last quarter of the nineteenth century, and if I retain my life and health until its close, I shall expect to see vast improvements made, not only in the cultivation of wheat, but in the fertility of the soil and in the quantity and quality of nearly or quite all of our crops. I shall see the noble specimens of different breeds of stock, now held by comparatively few, scattered far and wide throughout all of our state. I shall see the great mass of our farmers much better educated than most of us are to-day. I shall still see some who, like balky mules, refuse to take one step in advance until they are compelled to do so by a force that it is impossible to resist. But these will be the small minority, and they will grow less and less as the years advance.

I shall see homes made more comfortable and pleasant than they are to-day. Farmer's sons will not be so anxious to desert the farm for a clerkship, or law-office, as heretofore. The books, the papers, the music, and the comforts of a farmer's home will be much more pleasant to them than the home of strangers. Fewer of them, after having borne their parents to their silent homes, will return to the old homestead, and sadly say, "This old place is all run down and worn out, and will not support us in comfort, and we must leave it for other business or other homes. But they will rather say: "Father has made this a pleasant home, he has kept the farm improving for years and has so taught us, that we can still go on with improvements, and make it still more pleasant as well as more profitable than he was able to do; and so we will stay and make the old homestead our abiding place and our home." There will be fewer pale-faced, care-worn wives and mothers seen upon the farm, toiling from early morning till late bed-time, until the daughters, warned by their mothers' ceaseless toil and labor, declare that they will never marry a farmer.

I shall see the profession of the farmer elevated far above what it has ever been in the past, or is now, and not only financially but socially, morally, and intellectually. The aged man as he retires from the battle of life may look back upon the years not with sadness or regret, but thinking that he has done something for the elevation and comfort of his race. The young man may look forward to the profession, full well assured that he is in possession of a bus-

iness that, if intelligently and industriously pursued, will lead him not only to a competence in his old age, but to the front rank of influence, as well as of distinction among his fellow men.

Mr. Robbins. I do not see hardly how I am going to pitch into that paper. I am well satisfied with it, and have nothing to say. I don't know much about ancient farming, and according to that description of it, I don't care much about it; but so far as modern farming is concerned, it is all right.

Mr. G. E. Morrow. Mr. President: That is not the kind of paper we generally have. I don't know whether we ought to applaud it or not. But, joking aside, it occurred to me this morning to put this question that comes up so frequently, about the difficulty of keeping our sons on the farm. I want to suggest a thought that again comes up. It seems to me that one of the ways *not* to keep our sons on the farm is to continually refuse to admit that there is anything pleasant, desirable or profitable in farming; to continually insist that men in every other calling are making money easily, and are having no trouble whatever. While such a paper as this may bear the possible criticism of making it a little too rosy, is it not infinitely better for those of us who are, directly or indirectly, interested in agriculture, to have some faith in it, and some confidence in it, and some enthusiasm over it? I would rather believe that I was going to succeed and have a good time, than believe that I was going to fail and go to the dogs. I want to say that farming, intelligently pursued for any long series of years, must pay as well as any other legitimate calling on earth. If that is not true, then the intelligent Creator of the earth made a mistake. I do not believe that he ever made any such mistake. I am glad Mr. Smith has called our attention to the fact that, with all the disadvantages under which we labor to-day, there never has been a time or generation in the history of the world, when we enjoyed so many of the practical blessings of life as in this generation.

Compare the last twenty years with the twenty preceding it, and we see the world steadily advancing in every thing that makes life comfortable, and no class of men who ought to look up and thank God for the comforts of life, ought more truly to look up to God and be thankful, than the farmers.

I do not wish to discourage any practicable effort to rid ourselves of those difficulties; but I wish to say that the man who has faith

and confidence, and who is willing to admit that there is a bright side, will much more successfully resist evil and combat every thing that is oppressing him, than the man who by his talk seems to indicate that it is always hopeless, and that we are sure to be beaten and destroyed.

I do not believe it. I do not believe that we believe it. We are succeeding now about as well as the average of men in other kinds of business, and we are going to succeed still better by insisting upon our rights, and removing the evils with which the farming class are enveloped. We shall do better and better, and live more happily and wisely.

Secretary FIELD. I desire to ask Mr. Morrow if the farmers are succeeding as well as any other class of people, why it is that nine-tenths of all the young men that we educate up to a certain point where they are capable of transacting other business; where we would say they are better calculated and better qualified to do farming than ever before; why it is they leave farming and take up with other vocations, if it is paying as well as other branches of industry?

Mr. MORROW. Let me make a statement now of what I do believe. I believe what I said before. I believe as fully and heartily as I believe in any thing, that all things considered, with the capital, the education, the amount of intelligence, the amount of labor, everything considered, the farmers of this country in any considerable series of years have prospered as well as any other class of men, or any particular number. That is what I believe. One of the principal reasons why the thing Mr. Field asks is true, is that we, in our talk have not admitted that we believe that. One of the principal reasons why the farmer boy at an early day gets the opinion that he wants to leave the farm, is that he is taught to believe that he can do better elsewhere. Another reason is, that there has been a market in other callings for what we call educated labor, skilled labor, a greater demand than has seemed to exist for it on the farm; consequently, with all respect to the farmers, (and I am a farmer's son, and a farmer's grandson,) the consequence is, as Mr. Field intimates; the best educated men, the men of sense, the men of intelligence, have left the farm, and engaged in some other calling; therefore, it is not strange they have succeeded, they ought to have succeeded better, other things being equal, than those

who were not so well educated and remained on the farm; but if we change our tactics, and teach as Mr. Smith teaches, that farming with all the disadvantages under which it has labored, has done reasonably well, we can then induce those of our sons who have received an education, to still remain on the farm.

I do not say that for the last five years, particularly here in the northwest, or any part of the country, farming has been generally a successful business; but it is also true that with all the discouragements it has, it is in a much more prosperous condition than many other kinds of employments, and taking any considerable scope of the country together, that is true entirely. The thing I want to insist upon all the time is, that as a matter of pleasant delusion for the time, I want to believe in the possibility and the probability of the success and the prosperity of farmers.

Mr. Clark. I want to ask Mr. Morrow one question; why it is, that in the decade from 1850, to 1860, statistics show that unproductive property has increased very largely over the increase of farming.

Mr. Anderson. I should be very much pleased to have such a state of affairs exist as Mr. Smith described should exist among the farmers, and I am looking forward to that "good time coming." But so far as my experience goes, we cannot expect such a state of affairs, so long as a young man will have to work on the farm for $200 a year, when he can go to the City of Madison and get $1,000 a year for standing behind a counter, and not work half so hard. And that is one of the reasons why a young man don't want to work on the farm, when he can get $1,000 or $2,000, for riding on a steam-engine or in some other way make more money. To make our business popular with young men and to enable us to support our families in the same style and condition as others do, we must make our business pay as well as other classes of business, or else we cannot live and dress as well as those engaged in other occupations do.

I deny that farming has paid as other kinds of business. Take from 1860 to 1870, the best time farmers ever knew in the United States and I deny that farming paid one-half as well as capital invested in manufacturing, and I am satisfied that it will not pay as well in the next ten years. The man who has made the most mon-

ey is the money lender, and yet he don't produce one dollar of wealth.

Mr. MORROW, About how much money do you suppose the average young man you are speaking of would have made lending money if he had commenced and made that his business?

Mr. ANDERSON. Say two young men, at twenty-one, were at work and they earned a dollar a day above expenses—earned three hundred dollars a year—and one of them put out that money at interest every six months, and added interest to interest. At the end of sixty years, the young man who put out his money at interest, at ten per cent., would be worth over $300,000, while the other would not be worth comparatively anything, if engaged in any avocation of industry. Or, let one young man put his money into a farm and the other put his money out at interest, and the one who loans his money will be a millionaire, while the other will be worth only a small farm, or something of that kind. The truth is, that had there been one dollar put out at interest at the time America was discovered, at the present time there would not be money enough in the world to pay the interest. So long as we live as we do, we must live in an inferior position to those who receive from ten to fifteen per cent., and just as long as we permit ourselves to be robbed in this way, so long will we be poor and miserable.

Colonel WARNER. I suspect my friend Anderson has been discussing the next paper that will be read by Secretary Field, rather than the one that has been read. I enjoyed the paper of Mr. Smith and Mr. Morrow's ideas concerning it. I should like to be near him and get some of his enthusiasm. One remark made by President Bascom this forenoon I liked. He says that "a farmer's arithmetic is different from a mechanic's." He says that "he is to look more for the remote results." He said that he owned a farm, and once undertook to run it on business principles by hired help, but it was a failure; and I am glad of it. You see men investing money in a farm, and proposing to make it pay ten per cent., they fail every time. Not the first man has ever succeeded who undertook to farm it in that way. On the other hand, we have in Dane county plenty of men who are a success, and they have their bread, butter and meat, and those are important things to have. They have enough to pay their taxes, and are on the square with everybody. They are at home and their own masters, and that is

something. Their boys are going into the professions, and are going to take the active, laboring-oar in the nation in twenty-five years. They are not growing up in indolence. Therefore I like to take a hopeful position. If we are honest, independent, and get our bread, butter and clothes, I think we have reason to rejoice.

Mr. Ford. I have given this subject a great deal of thought, how I am going to keep my boys at home, and who is going to take my place when I am gone. Enthusiasm and faith won't do it. As soon as my boys get large enough to go into the city, they are going where they can have more money to spend. The fact is we have got to do something to make our farming pay, so that our sons and our daughters can ride in just as good carriages as our city cousins. Then they will stay at home.

Mr. Robbins. My boys are going to stay at home on the farm, and they can farm twice as well to-day as I can or ever could, and we are going to have a happy home. We are not going to send our boys to the city. The fault is our own if we farmers cannot keep our boys at home, and the fault is nobody's else. We can just as well do that as to send them off to educate them. I have rented my farm to my boys, and I believe they will make twice the money out of it that I ever did. I was raised on a farm, but I hadn't any tools to farm with. It would take three boys with the horse, to hoe an acre of corn a day, there were so many little round stones there. We used to have about ten acres of corn, and we were hoeing it nearly all summer, and when we came to harvest it we didn't get but very little. That was in New York, forty years ago, and I have been here thirty-seven years and I havn't done much of anything, but I have pretended to farm for over thirty years, and the farm is in a condition now, so the boys can make a living off of it.

I don't know anything about the ten per cent. business, for I never had a dollar to loan in my life. I believe if I had the difference between seven and ten per cent. which I have made myself, I would be worth a great deal more than I am to-day, but that don't settle the question. I got the money and did the best I could with it. Now let us make folks think we are happy at home, whether we are or not. Let us delude our children and make them think we have got the happiest home in the world, and then they won't want to leave it. That is the kind of home I have got.

I am most sixty years old, and if I live for the next ten years I am going to farm it; and I think I will know more at the end of the ten years than I know now about farming.

Mr. WOOD. It seems to me I must keep even with this convention. It seems to me that Mr. Smith's paper is characteristic of the man as I have got acquainted with him through the "*Western Farmer.*" I think his paper read to-day is of far less importance to us, than simply what he has given us through the years past, in his giving us the kinds of market garden products that he has been cultivating at Green Bay. I have been home-sick ever since we lost the "*Western Farmer,*" and I don't know what we are going to do about it. It seems to me it would be well to take some action in this convention with reference to it. I believe we had the best agricultural paper in the United States, without exception. I had got acquainted with a number of friends I never had seen, through the columns of that "*Western Farmer.*" I believe the state of Wisconsin can support the paper, and I believe if it had been left to the people of the state of Wisconsin, they would have made great efforts, rather than have the change that has taken place. I believe if it had been necessary I could have brought up a fine addition to the list of subscribers.

Now there is one other question. I have heard Mr. Anderson for two years past telling us how badly off we are as farmers, how we are imposed upon; but I must acknowledge that in his statement he didn't describe my own case at all. The great trouble with him at the present time is I think the railroads and corporations that are so grievous upon us—that they charge him so much freight per bushel for shipping his wheat off to market. The trouble is I find in getting the wheat, and I shall not quarrel with them until I have something to ship. I don't feel that it is a great crying evil pressing the vitals out of the whole community; but I feel we have a hopeful surrounding pictured to us by Mr. Morrow and Mr. Smith. I go out to my work cheerfully and I am interested in the results of each day's work. I work cheerfully and feel that I am pretty well off after all, and I believe we all are. I feel that much of this talk that we have indulged in does not correctly describe the circumstances. It may be possible that farmers make less percentage, but they have less risks, and I believe if you follow up

the average of those who go into the city, they are not doing any better than their brothers who stay at home. A man said to me to-day, "when I was getting fifty dollars a month for certain labor, I didn't lay up as much as I did when I got sixteen dollars a month." I believe the smaller wages that restrict our boys and keep them from the temptation of extravagant expenditure is worth more than the larger wages they can get by leaving farming. I know of young men who have left their parents and entered other pursuits with large prospects, who are a great burden to the old farm now.

Mr. Webster. I came into this state in 1842 at Fort Atkinson, Jefferson county, and when I arrived there I had some three dollars and fifty cents, and I loaned that, and I never got a cent of it back again, and I commenced then on my own hook and tried to do something. I own a good farm and I am content on it.

I have two boys, one seventeen, one nineteen. I think the trouble is we don't educate our boys enough. I think we try to work them too hard and keep them at home too much. I am now trying to educate my boys well, and I am going to educate them for farmers, and when I see that they are not smart enough for farmers, and their heads are not good enough for that, I propose to make professional men of them, or something else. I think we don't educate our boys; they need to be educated for the farm as well as for the professions. That was one trouble with me; I wasn't educated. I didn't know how to farm right. So I say to farmers, don't fail to educate your boys for the farm.

Mr. Smith. I have not said here that I thought farming was very remunerative as it is now prosecuted, but I think if it is carried on as it ought to be, it will pay. I maintain that cultivating the soil well, so as to get good crops, will pay. I have raised some poor crops in my time, and I never had a poor crop that paid well. I have raised some very large crops and I never raised a large crop that did not pay me handsomely. I know when the year comes around what my land has cost me and what my crops have cost me, and paid me, and I know that big crops pay, but poor ones don't pay It seems to me there is a panacea for the evils we are suffering, and a better time for all of us, when we will have something to sell, something for the railroads to carry. In other words, when we get big crops we can afford to quarrel with the railroads and make them pay big prices for what they get of us. So teach all the

boys that good cultivation of the soil will pay. We expect our boys to be cultivators of the soil, and they don't expect to be anything else, and we are training them for that purpose.

I am satisfied that I am a better cultivator of the soil to-day than my father was at my age, and I know that my boys are a great deal better cultivators than I was at their ages, and if they live to be as old as I am, they will be much better cultivators than I am now.

We never had any trouble to keep our boys at home, and the simple reason of it is, that we try to make our own home pleasanter for them than it is anywhere else, and they are never away, and they are content with their labors. Two of them have bought land and are working for themselves, and the other two that stay at home, when they come of age, I pay them as much wages as they can get anywhere else. I teach my boys that I cannot pay as big wages as some other men get, but they are learning business that will support them, and by which they are learning to make money. I say to them, "If you went to Stewart's, in New York, to learn his business you would have to work three years for nothing, while you get pay right along on the farm, and the chances are ten to one that you would fail in your business, while you are almost sure to succeed in intelligent farming, for if that business is well carried on it will pay."

Mr. BENTON. I want to add two or three thoughts—one way that I educate my boys is this: I take a certain piece of land and I give them a share of the crops, and I noticed almost instantly one of the first things my boy did, was he sat down and wrote to a publisher for a pamphlet on the cultivation of that crop which he proposed to raise on his ground, and the first thing that I knew, I saw him studying how to get the best results from that crop. Well, I found I had hit the nail on the head—he was seeking to find out how he could beat his father in getting big crops from that land.

In the evenings we figure up how much our neighbors have made, and how much they have lost, and how to avoid their losses and short-comings. And then I find our boys and girls are interested in various publications, and those they are interested in I buy for them, and let them have them to read; and they look for the mail to come just as if they were going to have a thousand dollars in it. In this way we discuss this matter of farm machinery, and we get those machines to help, so as to make our arms longer and stronger, with steel and iron.

If I get an idea they soon catch it, and then try to see if they can't beat me. But if my boy has got a talent for an engineer, I propose to help him in that. If he has not a taste for farming, I don't think it is any disaster for our boys to go to any occupation in life that they are best fitted for.

Mr. PORTER. I don't know that I should have said any thing on this subject if it had not been for the young men that I see around us. I know this has agitated the farmers of the United States, the subject of who is going to farm the land when they are gone. Well, I believe there will be men enough to direct our farms if we leave good ones. And there is no doubt but our boys will be willing to follow in our foot-steps if they see that we take care of ourselves. If they can see their father's from the first they can remember, striving to make them a home, and they see that he has added twenty, forty, and sixty acres until he has got a noble, good farm, and they see that father has not only grown, but must continue to grow and become a more influential man, so that the people will look up to him and take cognisance of his actions. The boys will then say: "That father of yours is just about the right man in the right place."

I tell you friends, a good deal depends upon our action in this direction. If we work ourselves to a physical stand-still, of course our boys will leave. If we work ourselves to a mental stand-still they are sure to leave us, but if they see that we keep getting better physically, mentally and morally, and everything with us appears to be growing, they will want to follow in the foot-steps of their fathers.

I am not among the number of farmers who love to loaf about the villages, and neglect their farms. I believe I am in the midst to-day, of the most respectible portion of the farmers of the State of Wisconsin. We have hundreds all around us—intelligent men, who are not here, but I wish they were, and of every gentleman here to-day I wish to inquire, how are you educating your boys to become farmers? It is not all of farming to learn to plow, sow, reap, and mow; not by any means. It is not all of farming to know how to feed sheep, hogs, and cows; not at all; that is only what every common laborer can do, or any body else; but there is a higher and nobler calling for your boys to know, and know it all along. Now, how many of you gentlemen have abso-

lutely thought that it has been your duty ever since your boys came to know anything, to teach them the management of the stock, how to manage stock, both in sickness and in health, and to know every thing pertaining to stock. How many of you farmers can tell me what is the arterial system of our horses, our cattle, sheep, hogs and every thing.

I am happy to tell you that the man who is talking to you, can answer you that question in a moment. For instance, you come home and find a horse is sick, and your son runs to you and says, "Father this horse is sick; what is the matter?" You walk right up and tell him, and he says, "Father, how do you know," and you explain it to him.

If a boy saw a horse rolling around in the stable a considerable time, and he says, "Father that horse has got the colic," and the father could say, "no my son, it is pleurisy," or something of that kind, and the father could teach the boy what to do to the horse, then the boy would begin to have confidence, and there would be business connected with the farm.

I tell you gentlemen, we ought to know these things ourselves, and if we don't know them and cannot teach our sons the things which pertain to our business, it will be to our great disadvantage.

If the boy don't know any thing about it, and the father cannot tell him how the horse dies, the boy says, "I tell you, if that is farming I don't want to have anything to do with it. We must educate our boys in everything partaining to common sense as well.

Five or six years ago I was in the city of Detroit with a load of long-wooled-sheep that cost me about fifty dollars apiece. There was a professor from the Agricultural College, Michigan, passing along with five or six of his students with him. They come along, and they looked at those sheep, and the professor told me that the boys had graduated, and were going to follow farming. I says to them, if they were ready to go on to the farm, I should like to ask them a question. I says, "I suppose all your boys can tell me the age of that sheep," pointing to one of the sheep. "Well," says the professor, "I don't think they can." Says I, "professor, don't *you* know the age of that sheep?" "Well," says he, "I don't of *this* one", but "I think *that* is a yearling." "Yes sir," I says, "but did you tell me that because you knew, or because you guessed at it?" "Well" he said, "I think it is a young looking sheep, so I

guessed at it." Opening the mouth of an old sheep, he says, "that is a very old sheep." Said I, "there is an old Scotchman there looking on who can tell you the age of all those sheep, and says I "professor are you going to send boys out to farming that don't know any thing about such matters?" "Well," said he, "that is a branch that we never thought of."

Go to our stock sales, and see young men looking around, and they really don't know whether an animal is good or bad, because they have not been taught anything.

President Stilson. I have but one thing to say at this time, as I don't wish to keep the convention very long. I have long been a farmer in this state. I came into it at an early day, with but little means, and I have seen many discouraging periods. But I must say that through the darkest day I have ever seen, I have never regretted that I made farming my calling. I have made it not only my occupation, but I have made it my calling.

I have passed through many days of difficulty and embarrassment, and have walked my floor to study to know where the next five dollar bill was coming from, but perseverance, untiring energy and tolerably good physical strength brought me through, and the result has been reasonably successful.

I see before me an intelligent body of men who will compare favorably with the same body of men taken promiscously from the occupations of the world generally—I care not where you go—to the city or to the richest part of America, I think you will find that as a class, the farmer has more of the comforts of life than the average of men. "The greatest good to the greatest number," is the best principle that can be laid down for success. Although the farmers chances are not so glittering and brilliant as the occasional meteor in the commercial or financial world that may for a time dart athwart the sky, yet as a mass they come up into manhood and womanhood with a knowledge of life very much better than that of other classes. We are inclined to take out only here and there the men that are successful. It is not that we pass rapidly upward in the ascending scale; it is enough to know that we do make progress. The man who may point to his millions, can take no more comfort than any of these farmers before me, who many of them can count their wealth by hundreds only.

Therefore, I say to you that the agriculture of to-day, while it requires nerve and untiring perseverance, presents to me a bright and happy future.

INTEREST ON MONEY—A HIGH RATE RUINOUS TO PRODUCTIVE INDUSTRY.

BY SECRETARY W. W. FIELD, BOSCOBEL.

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Money is a convenient medium of exchange of the varied products of a people. It is a friendly and valuable servant when used as was intended by those who instituted it for exchange. It is impracticable if not impossible for each person to grow or manufacture every article he may desire or need, hence the wisdom of governments in making or coining money for the benefit and convenience of all. It may not possess any of the qualities or elements necessary to supply our daily needs, but is simply a representative of each and all. A grows grain, B produces meat and other products of the soil, C mines coal and other minerals, D manufactures cloth, E boots and shoes, F hats and caps, G the useful and beautiful in art, and so on to the end of human wants, each contributing something to the physical, moral or spiritual condition of man, hence making life more pleasant and enjoyable.

To barter or sell the products of each to all the others is difficult and expensive, but either may be sold for money, the legal representative of each and all of these commodities, and this money can be exchanged for each or all of the other products, at the leisure of the possessor or to suit his convenience or necessity.

A person may convert his property into this medium of exchange, representing thousands of dollars, place it in his pocket and take it with him to distant parts of the country without inconvenience, and there purchase property again or loan it for interest, while if he should desire to transport property, actual value, the same distance, it would be burdensome, and for some property quite impossible. These are the beauties and benefits of money. They show clearly that it is an excellent servant, a valuable representative of all desirable things. But how is it when this representative of all

other values, this servant created by the people to aid in the necessary distribution of the products of the people, assumes to dictate and control all other values, so that the law of supply and demand is not allowed to obtain legitimately and for the best interests of humanity? Instead of occupying the more humble position of servant, it now becomes, by long sanctioned usage and unwise enactments of law, absolutely master, and dictates with a despots power the rate of interest or amount of the products of labor it will draw to itself annually.

Money, to be valuable, must be parted with, as it cannot accumulate interest in the hands of the possessor. Not that money has the power to produce money, but to draw to itself the accumulations, labor or products of others. For instance, if A loan to B $1,000 in the legal currency of the United States at the rate of ten per cent. per annum, he does not expect this money to accumulate its like to the amount of $100 at the expiration of the year, but that said sum shall be paid to A from the profits of the labor of B or others he may employ.

This accumulation of money is what coustitutes its power and determines its value, as much as the value of a common laborer or skilled workman is determined by the amount and kind of labor each can perform, or as the quality and quantity of crops grown upon certain soils determine the value of such land for agricultural purposes. In proportion to the power of money to accumulate by interest is this power and value increased. A workman who can do double the work of his fellow laborer, and do it as well, can command twice the wages, for his labor is doubly as valuable. So money, the higher the rate of interest, the more valuable it becomes to him who parts with it for this increase. If the rate be ten per cent., it is twice as valuable as though it was only five. One hundred dollars in the one case is equivalent to two huudred in the other. The same is true of bank and railroad stocks and other forms of investment. They are valuable just in proportion to the dividends they will pay per annum. By a high or low rate of interest, money measures or represents more or less property, labor or products of the country, just in proportion as it varies, while its nominal value remains the same.

Conceding that money loaned should bear a just rate of interest, let us for a moment consider whether the present rate is right and

just, and if not, whether we can arrive at an honorable and equitable basis, so as to be just to capital and generous to labor. "Supply and demand," says one writer, should regulate money. Another writer says: "No man of ripe years and sound judgment, acting freely and with his eyes open, ought to be hindered with a view to his advantage, from making such bargains in the way of obtaining money as he thinks fit, nor anybody hindered from supplying him upon any terms he thinks proper to accede to."

Is money like wheat, corn, meat or other products produced by the labor of the people? Not at all. It possesses the power to measure or represent the value of each, without possessing in and of itself intrinsic, actual value for the supply of our necessities. It is simply a convenient medium of exchange of all commodities, and should have a fixed value, and such value can only be determined by the rate of interest it draws to itself. We must also bear in mind that whatever that rate of interest is, must be paid by labor, and if that rate is too high, then the whole surplus products of labor must be paid to capital and the laborer receive a bare subsistance.

The Congress of the United States "shall have power to coin money, regulate the value thereof, and fix the standard of weights and measures." So says the Constitution, Article 1, section 8, subdivision 5. Weights and measures have been fixed by law of Congress and every person understands their respective lengths and size; and I doubt not that our national legislators, in their wisdom, believed they had discharged their duty honestly and faithfully when they regulated the value of money, by saying that twenty-five and three-tenths grains of gold and four hundred and twelve and five-tenths grains of silver should constitute the dollar and not the rate of interest which it annually will accumulate. But so far as its practical working is concerned, regulating the value thereof in fact, or the ruinous effect which such regulation has upon the legitimate, productive industry of our people, Congress might as well have said, the yard-stick is thirty-six inches or three feet in length, but when yard-sticks are scarce they may be contracted to half that length and still measure a yard, or that weights and measures shall only be made by Government, and when they have been gathered into the hands of the few for the purposes of gain, that these weights and measures may be so changed as to suit the selfishness, greed, and cu-

pidity of their possessors. We are never troubled, even in times of the largest products of the soil and manufacturies, to procure the requisite number of scales, weights and measures, to weigh the crop, or the number of yard-sticks to measure the cloth. These have been fixed by Congress and are a standard by which we are all governed. This would be equally true of money, if regulated by law according to the true value thereof, the interest it shall accumulate, and according to the true meaning of the language referred to in the constitution. The preamble of this same constitution says that Government was formed "to establish justice, insure domestic tranquility and promote the general welfare."

Let us see whether this tremendous accumulative power of money "is justice and for the general welfare," whether such rate of interest is right, and for the general good of the labor and industry of the producing interests. Capital is simply the amount saved from the labor of the past above subsistence. Now what proportion of the profits of the varied industries and legitimate activities of the world shall the labor of the present and the labor of the past have, both working together as they must do to advance these material interests? If interest is so high that the laborer pays the capitalist all his surplus earnings, except a bare subsistence, food, clothing and shelter, with none of the luxuries of life, with no time or money for recreation, no means of social or mental culture, at the same time the capitalist is enjoying all these and more, and at the same time is adding and increasing his wealth, so that in the future he can take a still greater share from the surplus earnings of labor: Then is this justice and for the general welfare? If so, then the laborer of the present is a slave of the capitalist, who simply holds in his possession the labor of the past.

Suppose a far-seeing individual, at the early settlement of the United States, say in 1620, two hundred and fifty-five years ago, realizing the wonderful accumulative power of money by high rates of interest, had conceived the idea of his immediate descendants owning the entire property of the country in 1875. If he had $10 in British gold to invest at the legal rate of interest in this state—now ten per cent.—and had loaned it at that rate; collected the interest annually, and loaned that at the same rate, and continued to keep the principal and interest at work, it would have doubled in seven years, three months and ten days. But give it eight years

to double, giving thirty-two and one-half days each year to collect and re-loan, and by educating his children and children's children to continue this humane "justice and general welfare" work until the present, they would have been entitled to the snug little sum of $43,000,000,000. Here is wealth, accumulated in the possession of a single family, aggregating in two hundred and fifty-five years, three times the assessed valuation of the entire real estate and personal property of the United States, and $12,000,000,000 more than the true valuation as estimated by the census report of 1870. The accumulations of this $10 has been more by the sum of $12,000,000,000 than the true value of all the surplus earnings of the labor of the people of this vast country for the two hundred and fifty-five years, and more than $28,000,000,000 above the assessed valuation thereof. Yet, with this vast sum in the hands of these few descendants, they probably would not have been happy, because when they came to settle up and take the entire property of the country, in 1875, they find that they have actually lost in the investment $12,000,000,000, according to the true value of the entire property of the country, and have lost $28,000,000,000 according to the judgment of the assessors. Is this "establishing justice, insuring domestic tranquility, and promoting the general welfare?"

Again. We will take the increased gain in wealth in our own state from 1860 to 1870. a state rich in agricultural and mineral resources, and during a period of great prosperity, a state which has increased rapidly in wealth in the last decade, much more so than an average of the states of the Union.

Wisconsin, in 1860, contained property valued at *$350,000,000 in round numbers, and in 1870, $456,000,000, an increase of a fraction over $100,000,000 in the ten years, or a little above three per cent. increase per annum. Had the $350,000,000, the valuation of the property of this state in 1860, been owned by foreign capitalists and sold to the people of this state at ten per cent. interest, the interest collected and re-loaned annually to them at the same rate, it would have taken the entire surplus earnings of all our people to have paid the aggregated principal and interest at the end of ten years, and have been in debt $450,000,000 to the parties of whom we purchased. In other words, the entire labor, skilled, educated

*It is but just to say that this was based upon an increase of 90 per cent. over the valuation of 1860, to correspond with the increased valuation of 1870 as determined by the board of equalization.

and all, has been able to accumulate on this entire property, above food, clothing and shelter, with possibly a few of the comforts and luxuries to the most skilled and better class of educated workmen, about $100,000,000, while the capitalists who sold us the property have accumulated upon the investment of $350,000,000, so that it amounts to the enormous sum of over $900,000,000, having absorbed the $100,000,000 and leaving us in debt $450,000,000, a handsome mortgage for the labor of future years. We started in 1860, owing $350,000,000 and, in 1870, we owe $450,000,000. At this rate, how soon shall we become paupers, or at least slaves to the accumulative power of money at high rates of interest?

Again, take the great state of Ohio, one of the best agricultural and manufacturing states in the union. In 1860 her assessed valuation was, in round numbers $960,000,000, and in 1870, $1,168,000,000, a gain of $208,000,000, or a trifle above two per cent. per annum. Look at this great state, striving with all the productive energies labor can command, to grow and manufacture many of the necessaries and conveniences of life, saving barely two per cent. above the maintainance of her workmen, while capital is making a requisition upon labor, equal to five times that sum, or ten per cent. This interest, at ten per cent., is equivalent to saying to labor: You shall double the capital of a state or nation in less than eight years, give it to capital, and at the same time support yourself and families the best you can.

The interest which money bears, determines its value, and also the rent of land and other property. If A. loans B. $1,000 and pays therefore $100 per annum, it is equivalent to the annual rental of $100 for a farm, worth $1,000. In other words, the man who rents a farm worth $1,000, must pay the owner, above taxes and insurance, one-tenth of another farm equally good and valuable, each year, or an entire farm of equal value at the expiration of ten years, or to compound the rental as interest accumulates, he must give the owner another farm in less than eight years, of equal value with the farm rented, and educate his family so that they may take rank among the business men and women of the country. Can he do it? Never. If he gains three per cent. he does well, and above the average of the legitimate industries of the world. When the partnership of labor and capital cannot increase the wealth of the country above three per cent. per annum, and economy and frugal-

ity have to be exercised rigidly to do that, shall capital step in and take ten per cent. upon her share of the capital supplied? If so, labor must practice self-denial which borders upon penury, want, and starvation, and occupy that position in society which is neither "establishing justice, insuring domestic tranquillity, or promoting the general welfare."

Take the population of Wisconsin in 1860, in round numbers 776,000, with an assessed valuation of $350,000,000, and suppose that nine-tenths were producers and one-tenth capitalists, it would give in round numbers 700,000 laborers, or 140,000 families of five persons, each with an average capital of $2,500. With this capital they pursue the various trades and avocations which help to make a great and prosperous state. They work on early and late to the end of the year, living economically, having all the necessaries, some of the comforts, but none of what may be termed in these days, luxuries; they give a trifle to charitable, benovolent and religious objects; clothe their children comfortably, but not expensively; send them to the common school, and occasionally they all go to a lecture or other place for mental or social recreation, not often, for funds will not admit; they practice self-denial in many ways and are temperate in all things. When all this is done, at the end of the year they take an inventory of their effects and find that they have increased their capital from $2,500 to $2,575, or three per cent. per annum. If this was their own capital, it is well. They have increased their capital, and with the same economy and good health in the future their gains will be greater. But suppose this $2,500 capital was not their own and they have to earn ten per cent. or $250, to pay to a capitalist for the use of it for a year, a difference of $175 between their gain above a living and the sum to be paid to capital. If this family has lived upon $500 for the year, $175 must now be taken from it, even though it bring the labor of the family down to cost, a bare subsistence, food, shelter and clothing, or the cost of the labor of the ox and horse. And still the Government says: "This will insure domestic tranquility, and promote the general welfare.

A single individual in Wisconsin is reported to be worth $15,000,000. This vast sum placed at interest, at the legal rate now in this state, ten per cent., would in about eighty years, or possibly in the lifetime of some of our children now living, aggregate

to nearly $15,000,000,000, or an amount equal to the value of the entire property of the United States to-day.

A hundred men, who loan money at ten per cent. compounded, with good security, will increase their fortunes four fold in fifteen years, while the same number of persons, who borrow at that rate of interest and invest in the legitimate industries—those which add to a nations prosperity and wealth—will not be able to double theirs in the same time, and if they lived as luxuriously and extravagantly as those of whom they borrowed, they would absolutely gain nothing. Nothing is, therefore, more clearly established, from examples given and others which are daily before us, than that the man who conducts his commercial or manufacturing business on borrowed capital at ten per cent., although he may conduct it with skill, prudence, and economy, will, in nine cases out of ten, if not ninety-nine in each hundred, come to bankruptcy, and those he employs to manage and conduct his affairs, barely obtain a living. The farmer, also, who mortgages his farm for half or more of its value, to secure money at such ruinous and extortionate rates of interest, hoping that his surplus products will cancel this incumbrance, will, in a majority of cases be disappointed and sold out, after struggling for years to stem this mighty current of accumulative power which never slumbers or sleeps, not having respect even for the Lords day, and growing stronger and stronger by this ceaseless and incessant accretive power. An editorial in the *Herald*, of Aurora, Ills., strikes this evil in its vital parts as follows:

"Ten per cent. will, every ten years, produce a crisis in which all the profits of the borrower are gobbled up by the lender. Ten per cent. paid on the investment will stop the wheels of every manufactory in the United States. Ten per cent. paid on the investment in railroads, will stop their running or impoverish the country through which they run. Ten per cent. paid on the value of farming property will eat it up in ten years. Ten per cent. on the value of town property will turn every poor man out of house and home. Ten per cent. paid by the merchant will soon drive him into bankruptcy; and to these high rates of interest may be traced most of the financial evils under which the country is now laboring."

Is there anything more sacred or divine about the accumulation of the labor of the past, whether the same is in money, lands, stocks,

or other property, that it should draw to itself the whole of the joint earnings of labor and capital, except a bare subsistence to the former, and that the possessors of the latter should be enabled to "dress in purple and fine linen and fare sumptuously every day," enjoying the fruits of the labor of the past and present too? By no manner of means. While it is true that capital—the labor of others—accumulated in the hands of the few, has absorbed an unjust proportion of the profits of the varied industries of a people in all ages and in all countries, it has not been by any natural or divine right, but by unwise, unjust and wicked laws, instituted by governments at the will of capital. The true value of money, which is the annual interest it accumulates, and the relations which it bears to the legitimate industries and work of the world, is not a matter of such profound mystery as many of the writers on political economy would have us believe. These writers are teaching our children in all our higher seminaries of learning, that money is a commodity and subject to change as the products of the farm or factory; that money should be regulated by "supply and demand;" that the party holding money should be allowed to obtain for its use, all he can. No greater fallacy could exist. Money, being the measure of value for all products, should have a fixed standard of value, and that can only be determined by the rate of interest, and if that rate is too high, more than the average of the profits of the productive industries of the people, labor suffers, and capital increases its gains unjustly. This is the practical result, whatever may be the theory.

Governor Randall, in his annual message to the legislature of this state, in 1859, truthfully says: "Interest is the rust that is rapidly consuming our people. It not only eats away at our surplus profits, but in a majority of cases is eating deep into our capital. It is unaffected by poor crops and worse markets. It gathers strength, weight, and oppressive power continually, whether we sleep or wake, while we rest as well as while we labor. There must come a bitter end to such a policy. There is but one rule at all times safe, which alone can guard against ultimate prostration, and that is to limit the rate of interest at a point below the average, clear profit of productive industry." High rates of interest have been the rule in this state under the pretence that it invited capital hither. Capital came, improvements were made, and now note the

result. The high rate of interest has taken the entire surplus earnings of our people, leaving a bare substance, as witness the mortgages, trust-deeds, and other forms of incumbrances upon the books of the register of deeds in each county of the state. This outrageous rate of interest is a cancer which is eating at the very vitals of our industries.

This terrible evil and injustice must be met by the people. The problem is perhaps not easy of solution; first, because of the power and influence of capital; and second, because the masses of the people are not yet aware of the terrible financial disease which afflicts them, and hence do not know the proper remedy to apply. When the people understand this question in its true light—and the agencies for their enlightenment are rapidly increasing on every hand—then will they demand of their representatives in Congress that the interest on money shall be regulated by the power that creates it; and that the rate shall be so low that the productive industries of our people shall be stimulated, instead of crippled as under the present laws; so low that the laborer shall receive a larger share of the profits his labor produces, and be enabled to place something to his credit for old age, sickness, or when his labor is not in demand.

While I would have the Government fulfil existing contracts to the letter, I would have it raise annually a large tax upon the luxuries of life; pay the debt as rapidly as possible, thus lifting a burden of interest which has to be paid by labor; fund the debt on such time as the maturing bonds could be met by the accruing revenues and at low rates of interest—say not to exceed three per cent. —then supply money to our people upon undoubted and unquestioned security at a similar rate, so that capital could not combine to extort higher rates, allowing them to return such money at their pleasure for bonds bearing a similar rate. When the Government fixes the interest which money shall annually accumulate, and so guard it that capital cannot obtain a higher rate, then "supply and demand" will legitimately obtain, and not till then.

The General Government must step in and protect the industries of the people or the representatives of these industries must organize co-operative banks similar to those established in Germany some twenty years ago, and which are said to have proved a great blessing to the producers and laboring masses. The capital of these banks consists of funds known as active and reserve. The first is

derived from the monthly or annual contributions of members; the latter is made up of admission fees and from retaining a percentage of the profits in the bank to be distributed in case of dissolution. Deposits and loans are made, and these, with the active fund, constitute the working capital. No interest is paid on contributions, but members receive a dividend from the general profits averaging some fifteen per cent. per annum, and are allowed advances at a low rate of interest, to the amount of their stock, and larger sums by giving security of other members. The aggregate business of these banks in 1867 was $13,000,000, and the proportion of losses was but one-quarter of one per cent., which is creditable alike to the administrative ability of the officers and the honesty and integrity of its members.

Henry Villard in the Journal of Social Science, volume 1865, 1870, closes an interesting article upon these banks as follows: "They were intended to provide workingmen with the same banking facilities that, previous to their establishment, were the exclusive privilege of the capitalists, and this mission they have certainly fulfilled. They are now universally appreciated as a healthy and powful factor in the social economy of Germany, and as such have lately obtained recognition and protection by special laws which distrustful governments long hesitated to grant."

What the people want is sufficient money to transact the legitimate business of the country, and at such rates of interest as the profits on such industries will justify. Supply this want, and our people will be employed, speculation upon the necessities of the laborer will be crippled, and the outlook for the future be full of hope to those engaged in the world's industries. There is certainly something wrong in the distribution of the wealth of our country, when capital is doubling in a fraction over seven years; when a few, in nearly all of our principal cities are millionaires, living in silver palaces, furnished in gorgeous style, at the same time that thousands in these same cities, whose labor produced this wealth, are to-day asking for employment and cannot obtain it; hence are objects of charity in this land of plenty. This accumulative power of money is the prime cause, and the result of this ruinous system will be more and more apparent as it increases in strength and power, until we see the property of the country, real estate and all, accumulated in the hands of the few, as in England and all the

countries of the old world. Some of our writers upon wealth statistics inform us that as much property is now held by four persons in each hundred of our population as by the other ninety-six. At the present accumulative power of money, the four will soon draw to themselves the other half, and the ninety-six be serfs and slaves to capital.

Kellogg in his Monetary System, when speaking of the rights of labor and property, says truthfully: "The avarice that pervades the civilized world has been ingrafted upon society by the too great power of money. In most countries it has made production by labor degrading to the child, whose necessity compels him to perform it. The skill to gain by lending money, and by taking advantage of others by bargaining, has been and is taken as evidence of superior talent, until by example and precept, avarice has been instilled into the minds of children. It has grown with their growth and strengthened with their strength, until it has corrupted the very foundations of society. The percentage incomes on banks, railroad, state, and other stocks, and the rates at which money can be borrowed and lent, are the great leading topics of a business community. The topics are not, how we shall try to produce by our labor the greatest supply of all the necessaries of life for the general good, but on the contrary, how shall we contrive to get the largest possible percentage income with the least possible production on our part? This state of society is directly at variance with such a one as a just monetary system would naturally induce. It is as much opposed to the natural rights of society as falsehood is to truth; and no continuance of competition in production or distribution under the present monetary laws will be any more likely to remedy the evils of this debasing system, than competition in falsehood would be likely to produce and sustain truth. We must begin improvement by doing away with the great gain by unrighteous percentage interest on money; and then the wealth will naturally be widely distributed among those who do the most for the good of man, instead of being gathered by a few, who thus become the great oppressors of the human family."

This question of interest I deem of more importance than any or all other monetary or financial questions of the day.

President Grant in his last annual message attributes the great cause of our industrial, commercial and trade prostration to a de-

preciated currency, and claims that we must return to a specie basis in the near future to restore prosperity. Our legislation should, of course, be shaped in that direction which will place our money upon a substantial and unquestioned foundation; but that we can return speedily to specie payment without producing insolvency and ruin to the agricultural, manufacturing and other legitimate industries of the people, I do not believe. Speedy resumption must only result in giving capital another opportunity of still tightening its grip upon the labor and industry of the country. What we want is a low rate of interest, and so controlled that no combination of capital can increase it, and when this is done it matters little whether we resume specie payment this year or ten years hence.

Among the many objects of a republican government, none are of more importance than the protection of property and the issuing of money to measure or represent that property. Where there is no property there are no people; and where there are no people no money is needed. Why do we need money which we are obliged to redeem in something else? Money is convertible into any property, and that is its true function or office. I have no objection to the redeemable in gold and silver feature, provided only a dollar in paper is issued by the Government for one of metal in her vaults, giving to the people a strictly mercantile currency, except that there is not half enough for the business of the world—but a gold base for money, as practiced by this and nearly all other countries, is a delusion, a cheat and a lie. Gold, as a basis, says the capitalist and the speculator—gold-bearing bonds and the issuing of paper representatives based thereon. In this gold base and gold bond lies hidden the most dangerous system of money ever instituted. When business is prosperous and labor all employed, then it matters but little whether the base of money be gold or the faith and credit of the Government; but when stagnation in business ensues, when the storm sets in, gold is hoarded, and the people are bankrupt and ruined. Witness continental money; witness the panics of 1837 and 1857. The mouey was then all based on gold. We hear much said about resumption. Who are asking it? Gold-gamblers, stock-gamblers, and speculators in the labor and industry of the people. Fix a time to resume, as has been done by Congress, and these sharpers will look forward to the time with delight. They can

demand gold, well knowing that it isn't there, and a rich harvest is theirs at the expense of the nation's industries. What the people of this country want is a sound currency, like the Government greenback, so called, with a fixed, low rate of interest, based upon the precious metals dollar for dollar--mercantile currency—or upon the faith and credit of the country—paper money, pure and simple —or partly upon each, as the needs of business may require.

Now, if the people of the United States allow this greenback currency to be retired and destroyed, and private parties to give us a currency, such as we formerly used in the states, and which was never reliable, they will demonstrate most clearly, to my mind, their incapacity to protect their true and vital interests, if not their want of capacity for self-government.

When money is made merchandise, it is no longer currency. It cannot be a just and equitable measure of the value of property, unless it has a fixed and unvarying value in itself. To permit money to be bought and sold like commodities, and the rich to gather it into their hands to hold for extortionate rates of interest, the entire currency of the world would not supply the necessary wants of business in the United States. Under just, monetary laws, there is no reason why money should be scarce, when there is an abundance of property susceptible of representation and capable of amply securing it.

Walker, in his Science of Wealth, says: "A great conflict between labor and capital is now imminent throughout the civilized world, but if there shall ever be a good and satisfactory solution of the great question at issue, it will be because the capitalist and laborer have been educated to understand the laws of wealth, and the true relations between the two great competing, but not antagonistic forces of production." There is no antagonism between labor and capital so far as production is concerned. The evil and antagonism exists in an unjust distribution of the profits of the partnership of these forces. The capitalist says, practically; I will take all the profits, except what is absolutely required to keep the laborer in health and strength to perform my work, and to rear a family so that capital shall have a full supply of laborers in the future. How to justly distribute the profits of labor, and honestly protect the industries of the people against the selfish greed of capital, is the coming question. It is a question which interests every laborer

and industrial worker in the land, for it determines to a great extent "what he shall eat, what he shall drink, and wherewithall shall he be clothed," what shall be the shelter for himself and family, what he shall sell his produce for, and what shall be the price of that which he buys. The fight will come between labor and capital on the question of distribution—between the capitalist who loans and gathers in his ten per cent., and those who labor in the avenues of industry and barely earn three per cent. Money now rules, labor will then.

Capital must be taught that it shall not accumulate in interest, on the average, more, if as much as a like sum invested in productive industry. The rate of interest should be so low that capital will seek the legitimate channels of industry, commerce and trade, and this, in my judgment cannot be done except by the General Government supplying the people with money at low rates of interest and upon such security as they can give. Homesteads, improved real estate, and possibly other property, should be as good security as United States bonds, upon which money could be issued or loaned. But says one, would you have the Government regulate interest? I would. What are the objects of Government but to protect all the people in their just rights—to give to every man a right at least, to "life, liberty, and the pursuit of happiness," neither of which he has under the present rates of interest, except the former, and that even would be denied him if necessary to increase the percentage of gains to capital.

Various societies for the better protection of the producing classes are being organized throughout the United States, and to some extent this combined effort will better their condition, enabling them to buy and sell to better advantage, increase their products and better their profits, but as well might these combinations of laborers expect to change the natural laws governing the growth of crops, or those of health and life, as to expect to materially better their condition with this mill-stone of rapidly accumulating interest, weighing and pressing them down. So long as this high rate of interest continues, the only ray of hope for the laborer is, that he may be allowed to live and work at the will of capital, a slave to those who, judged by intelligence and every element of the best manhood, are often his inferiors.

Senator Windham, chairman of the Senate Committee on Trans-

portation, in his report to the Senate says: "That a new department should be organized, styled the department of industry. This bureau should exercise appropriate supervision over the agricultural, manufacturing, mining and commercial interests of the country. But the limits assigned to this article will not permit a statement of the reasons which demand the creation of a new department. Let the first step be taken and its advantages will demonstrate the necessity for the more perfect organization of the great industrial interests of the nation. The producers and the workingmen of the country, who constitute its real wealth and power, will then demand and receive a recognition of their rights at the hands of Congress."

When this bureau is established, as I hope it soon will be, its first work should be to recommend some feasible plan by which the aggregation of capital by interest shall be controlled, and the great producing industries, the real wealth and strength of a people, be enabled to obtain money at a rate of interest which will stimulate and encourage these foundation interests, and better the condition of those who earn their bread by the sweat of their brow.

In conclusion. 1. Money being national, its value should be controlled by the General Government, and this can only be effectually done by regulating the interest which it may annually accumulate.

2. Money being instituted to represent property and facilitate the exchange of products, it should be based upon property and the honor, faith and credit of the government.

3. The rate of interest determimes the proportion of profits which shall be distributed between the two great forces of production—labor and capital—and a high rate tends to the accumulation in the hands of the few and to deprive those engaged in agriculture and the various industrial avocations of a just share arising from their labor.

4. In proportion as interest is decreased, labor and capital are increased; legitimate industries are stimulated, given new life and vigor; speculation is checked; labor is fully employed, and the country is prosperous.

5. The amount of money should only be limited by the wants of business and the ample security which the property, faith and honor of the Government can give; and the rate of interest should be

fixed and stable, and so guarded and controlled by the General Government as to prevent extortion of a higher rate by combined capital, and such rate should be as low as the annual increase of wealth by the channels of productive industry.

The prosperity of a nation, socially, morally, and financially, must depend upon the success of those engaged in productive industries, and their condition can never be hopeful and flattering until there is a more just and equitable distribution of the weatlh which their labor creates. The capabilities of this great country for production can hardly be computed; but, if we ever expect to reach our utmost possibilities in that direction, our statesmen and philanthropists must devise some plan similar to those I have here feebly outlined, so that capital shall be changed from a despotic master to a valuable servant, and the great producing forces of labor and capital work harmoniously together, both in production and distribution, or the source of all wealth—the lands of America—will, in the near future, be in the possession of the few, as in England to-day.

"Who owneth America's soil?
Is it he who graspeth the hard red gold;
Whose glittering gains are by millions told;
Who bindeth his slaves to the woof and loom,
And chaineth their souls in a living tomb,—
The tomb of hopeless toil?
Not he, not he—by Heaven!

"Who shieldeth America's land?
Is it he who counteth his ships by scores;
Who plucketh his gains from a thousand shores;
Who buyeth and selleth, and worketh not,
And holdeth in pride what by fraud he got—
With hard and griping hand?
Not he, not he—by Heaven!

"Who guardeth America's right?
Is it he who eateth the orphan's bread,
And crusheth the poor with his grinding tread;
Who flingeth his banknote lies abroad,
And buildeth to worship a golden God,
A shrine to Mammon's might?
Not he, not he—by Heaven!

"Not these, not these—by Heaven!
But to those who labor for God and man;
Who work their part in the world's great plan;
Who plant good seed in the desert's dearth,
Who bring forth treasures from brave old Earth;
To these the soil is given;
To these, to these—by Heaven!

"To these must the soil belong;
To the men of all climes whose souls are true—
Or Pagan, or Christian, or Turk, or Jew;
To the men who will hollow our glorious soil—
The millions who hope and the millions who toil
For the right against the wrong;
To these shall the soil be given—
To these, to these—by Heaven!"

Mr. G. E. Morrow said the question involved in the paper just read was too big a question for him to attack without time for more thought on the subject, but he called upon President John Bascom of the State University, who was present, to favor the convention with his views on the subject.

President Bascom said: Before I enter upon this discussion I wish to say something with reference to the remarks of Mr. Warner. I owned the farm for six years, but I was engaged all the time in other business and could not go out to it more than once or twice a week. I worked it as it were at the tip of my fingers, and I found that I could not work that farm by paying day labor, but I did manage it even under those disadvantages for six years and realized my six per cent. on it, which was what I had to pay for the money. Now, in relation to interest.

In the views advanced in this paper I think Mr. Field is sincere and philanthropic. If there is a division between capital and labor I shall certainly take my stand with the laborers, and what I say will be in behalf of the laborers, so far as I say it in behalf of any one class, although I do not believe that there is any possibility of the ultimate and successful separation of these two partners, capital and labor.

Now, I must deny Mr. Field's fundamental proposition, that money differs essentially from other commodities. I believe it does not. I think, therefore, it is to be regarded as other commodities

are. I do not look upon mere paper as money at all, in any proper sense of the word. I think my friend, Professor Perry, has stated it rightly: "It is a lie on the face of it." It does not pretend to be money. It purports to be a note; and it is no more money than a note is money. And it will cease to be money for all uses whatsoever when men cease to believe it will be paid. We now hope that some time it will be redeemed, and hence it passes from hand to hand. It will be with us as with the confederates. When payment was not likely to be made, their money ceased to be of value. So it was in the revolution. A treasury note is not money, and never can become money except it rests back upon true money, or something which represents money.

If we look back at the beginning, we find men exchanging one thing for another, and that is simple exchange; afterwards expressing the price of things in oxen, and using oxen as money. There is no difficulty in using them as money, except that it is inconvenient to transfer them and impossible to divide them. An ox can be made money,—as an Arab says "it is worth so many camels"—though lacking a great deal of convenience because not easily transferred or divided. Because of this difficulty there came to creep into its place a commodity which is easily transferred or divided, namely gold, and that passed by weight. Abraham weighed it out. It was bullion, and it came to take the place of oxen, camels, &c., because it was more convenient than they. So it came to crowd them out. Then it was found inconvenient to fix the value of gold by weighing it every time. Thus it became necessary to mark the value of the gold so it need not be weighed.

Governments have often tried to give a false value to gold. Money is a real commodity though it has a higher value assigned it than it is really worth. No government in the world has ever been able to maintain permanently in coin an essentially higher value than that of mere bullion. The strongest governments have always failed in this. England and all other countries have failed when they have tried to give a greater value to it than the value of gold as a commodity. We can get our gold no cheaper than to work just here and give our products in exchange for gold. It will cost us as much labor to dig for gold, as to raise wheat and exchange it for gold, because there is that amount of labor represented in gold,

and it is by virtue of that labor represented in the gold that it has the power to become an exchange medium.

I may take this paper, which I decline to call money, and have my pocket full of it. It is good enough while law sustains it and does not multiply it. If our Government could multiply it at will, no power on earth could sustain it; that is to say, no possible legislation in this country can restore the paper dollar to the value of the gold dollar; this is beyond all legislation. The very moment I take this paper money and go out of this country, it ceases to have value. It would absolutely have no value, were I not able to dispose of it in another country, in the hope that it would travel back here; while gold has value everywhere. Therefore, its power rests on the fact that it is itself a commodity, that it cannot be secured without labor, that it represents so much labor in the market, The mark of the dollar on the face of the gold piece is simply a convenience indicating the weight of that piece of gold and no more.

In the matter of exchange, we have sought for greater convenience, starting with oxen and camels, going to gold as bullion and then putting on it the coin stamp. When did it cease to be a commodity and become money? At no step. The camel was a commodity at the beginning and so was the gold. That is what makes honest gold pass, because it is a commodity. That is what makes it money. The whole difference between honest and dishonest currency, is that honest currency is a commodity, that it stands for so much human labor and so much value.

Now, in the West we are discontented with the high rate of interest. And there are two reasons for the high rate, first we have but little capital and, second, we have large profits. If we had more capital it would be seeking investment; and if it sought you for an investment, it would come to you for terms. But we have too little, we are too anxious. We want more capital, and that is the reason we have to pay so much for it. And the reason we want it is because we are doing so well, and not because we are doing so poorly.

Take Wisconsin for the last thirty years, and I appeal to you, gentlemen, who have been here for thirty years, take the square miles represented in Wisconsin, and what other equal number of square miles on the globe have reaped such profits or can show

wealth gathered so rapidly as that in your hands. I say it is a thing extraordinary in the world's history, that property should be accumulated as it has been in Wisconsin in thirty years. If we are grumblers in the midst of this prosperity, what might those have been who went before us? The opportunities have been very great. Many of you have realized comfort and opulence for yourselves and your posterity; hundreds besides you have done the same. It is these opportunities which have created this great demand for capital. It was only by capital that you were enabled to enter into these opportunities. And in reference to that demand, the supply has been too small. Now how does Mr. Field propose to help this matter? He proposes not to increase the amount of money but to diminish what we get for it. Now I say in reference to this, that there is no more reason or honesty in it, or any more probability of its succeeding than if, because I cannot get as much wheat as I want for a dollar a bushel, I should offer fifty cents a bushel, and insist that men should bring me the wheat at that price. They will not do it, and all the legislatures in the world could not make them do it.

Is it philosophical, because ten per cent. will not bring as much capital to Wisconsin as we want, to say that a less rate will do it? It cannot be done in that way. The only way we can bring capital to Wisconsin, is by paying what under the natural law of supply and demand, that capital is worth to us. And when we go into market and pay ten per cent. for capital, we do it because we know we can handle that capital, even at ten per cent. to advantage. If we did not go into the market for it, it would accumulate and search us out, and offer itself for even two per cent., if we could not be induced to give any more. Capital is absolutely good for nothing unless parties can use it to advantage. Capital above all things must enter into competition for labor, because it is unproductive until it finds labor. But as long as we are as prosperous as we are now, and as long as we can make such remunerative use of money as we think we can, we shall make a large demand for it, and as that large demand is felt, and our capital comes from a great distance, that capital will bear a high price.

President STILSON. I hold in my hand a penny, on which it says "one cent," I would like to ask President Bascom, what is the intrinsic value of that without the Government stamp on it?

President Bascom. I don't care what its intrinsic value is, for there is a difference between small coins and large ones. If it was not worth half a cent you could pay a penny debt with it, but if it was an eagle and lacked the true value, you could not pass it for a moment for more than its true value. But people will not resist the fraud in the small matter of a penny if it is not of full value. We have been able to issue a nickle five-cent piece because that was so little a thing. We can gouge people on a small scale and they will not stop to resist it.

Mr. Stilson. Is it worth one-fourth af a cent?

Mr. Bascom. That don't make any difference.

Mr. Stilson. What right would the Government have to stamp that commodity for four times what it is worth, and compel me to take it for my wheat, when it don't stamp my wheat or my ox at four times its present value?

Mr. Bascom. But let me ask the gentleman up to what sum does the Government allow that to be a legal tender? Only for a little contemptible sum; as I say, it will condescend to a small shave.

Secretary Field. I am very happy that President Bascom has given us the benefit of his knowledge upon this money and interest subject; indeed, I invited the professor and others to come here and participate in this discussion. I was well aware of the line of argument which those gentlemen would pursue.

Now, sir, the President of the University here stands up and says that paper money is not money. He says it is a lie upon the face of it. I want to show, gentlemen, to you, as I believe I can, and to the world, that the gold base upon which he and nearly all other educators stand, is to-day and ever will be a base deceit, a fraud, and a lie, while three to ten times the amount of paper is issued to one of gold with which to redeem the same. It has been so in all ages of the world and it will be, unless you will simply issue one dollar in paper for one dollar in gold in the treasury.

I wish to repeat what I said in my paper. "Gold as a basis says the capitalist and speculator, and gold bearing bonds based theron. In this gold basis, bonds, &c., lie hidden the most dangerous system of money ever instituted. When business is prosperous and labor is profitably employed, then we enjoy prosperity. But how is it when stagnation in business from any cause ensues? When the storm sets in, gold is hoarded and the people are bankrupted and

ruined. Witness Continental money, the panics of 1837 and 1857." But some of you perhaps never saw one of those little "shin-plasters," so called, though you have heard of the Continental money in this country. Was that paper money pure and simple? No, sir. It was paper money based on gold. Was it ever worth anything? No, sir. Here is a copy of one of those little bills.

No. 182. Half Dollar.

This bill of half a dollar shall entitle the holder thereof to receive gold or silver, at the rate of four shillings and six-pence sterling per dollar for the said bill according to the resolutiou of the convention of Maryland, held at Annapolis the 14th day of August, 1776.

(Signed) ——— ———.

Mr. BASCOM. Did it cease to be money when it was based on gold, or when it slipped off from its basis?

Mr. FIELD. It did not slip from the base, but the gold wasn't in the hands of the Government, hence she couldn't redeem. Our national currency to-day is sound, not because of the gold in the country with which to redeem it, but because of the faith, credit and stability of the Government.

Now, Mr. President, why was not this coin obligation good? Why wasn't it just exactly as good at that time as any greenback or Government bond in this country to-day? It was based on gold precisely as our money to-day is. If the President can say that it was not I wish him to answer that now.

Mr. BASCOM. It was not based on gold, and I don't believe in a money based on gold. Neither of them were based on gold because you could not get gold for them. To-day you cannot get gold for greenbacks.

Mr. FIELD. I want money upon the faith and credit of the Government, upon property. We want money to represent the property of this country and not based on the rich man's property, gold, but based on *all* of the property of this country, which is lands and other property as well. We never had a currency in this, or in any other country that was based on the property, faith and credit of the country. It is based on gold, and what is the result? It is this, that just so long as the currency issued on that gold circulates, just so long as the farmer will take it, it goes. But the very moment that stagnation in business comes, or we mistrust the

power of the Government to redeem in gold, that very moment we hoard that gold and every man who has a dollar of that money has lost it all.

President Bascom. In what sense could you base your paper money on the property of the country? I can base my notes on the property of my farm, because I have over me an authority which can transfer from me to another my farm. An individual cannot prosecute the Government and take the whole property.

Secretary Field. We have no business to require money to be redeemed. What do you want redemption for? What was money instituted for? It was not to be redeemed in something else. It was simply instituted to be converted into any and all commodities of the country. We would not need it, if it was not for that purpose. The gold basis is a false basis. It is the rich man's basis, and has been deceiving us all our lives, and will to the end, if our instructors here and everywhere else teach our children that it is the foundation of a sound currency. I say it would be far better if we had money made of some material not possessing intrinsic value, and used gold for other purposes, for ornaments, utensils, or what we please. We don't want it for money; we don't need it. We are being wronged and ruined by it every day.

President Bascom. How much paper money would you issue?

Secretary Field. I would have all the money issued that the people want and can secure. And if the rate of interest was fixed and unvarying, the amount would easily be regulated. If we have an hundred millions of property in this country and we want a certain amount of money to represent it, and that is all money is for, to represent property, we have a right to have just as much of it as that property will secure, and the business of the country demands.

President Bascom. How long would that money retain its value?

Secretary Field. Just so long as the Government exists, money should increase as property and business increases. But I say right here, that there is no more reason why a gentleman with a hundred thousand dollars in gold should have the privilege of issuing five hundred thousand dollars of paper on that gold, than a person owning a like amount of property in real estate. Neither are just. The bank of England is doing it to-day; at least this bank, I am informed, has five to fifteen dollars in paper issued to every one of gold in

her vaults; and the truth is they cannot redeem one dollar of it beyond their deposits. But it is the faith they have in that government and not the gold that is behind that keeps the currency of the bank good. Every man who has got a greenback in his pocket feels perfectly safe. It is not because there is gold behind it, for there is not five cents of gold in the vaults of the Treasury of the United States to-day, to redeem our greenbacks with.

President BASCOM. If we were to fix the rate of interest as the gentleman proposes, suppose we should fix it at five per cent., though I do not see why it should not be two or one per cent. If you undertake to fix the price of wheat, why not fix it at twenty cents?

Secretary FIELD. I would have the Government fix the rate of interest below what can be shown to be the average profit annually accumulating from the legitimate productive industries of the country. And it is not good argument to say that because you regulate the value of money, you have the right to fix the price of wheat or other commodity—one is property, the other the representative only.

President BASCOM. Gentlemen, that is exactly where interest stands to-day, because men borrow in view of those profits, and they borrow in order to make those profits. And although A. B. and C. fail, a sharp man goes in and uses his money so as to realize those profits.

It is to suppose us to be all fools, to suppose we take money at a higher rate of interest on the whole than we can realize again in the use of it. We don't do that; we are not bound to have money to carry on business, because we are not bound to carry on business, and for us to carry on business when we are all losing by it, is to demonstrate that we are all fools and nothing short of it. We borrow because we can use money to advantage to ourselves. And we have used it in Wisconsin, as I have said, for ten per cent. and have come out with these fruits of thirty years labor and accumulation instead of exhaustion. We have more than paid for that capital, and are where we are to-day because of the fact that we took it at that rate, and that profits have been the very things that have determined the price of money.

But I say if the gentleman undertakes to step in and say what the rate of interest shall be, he may just as well say one per cent. as

five per cent., and all the better say one per cent. I would ask him to follow it up and say it shall be nothing. Who is going to come here and furnish money at five per cent.? Nobody. Is anybody coming from abroad to furnish it at five per cent.? It will not be forthcoming any more than wheat would be forthcoming if the market price was one dollar and we should only offer fifty cents. Government can fix the rate of interest at five per cent. but it cannot make any one furnish the capital at that rate.

Will I take the easy course of lending my money, or will I take the more laborious course of entering into business? If I cannot get what I can make in business, I will enter into business. There are plenty of men even now who prefer to do their own business because they can make more than to loan the money, and if you undertake to say you will not give what the money is worth, for it, they will keep their money at home and do their own business, and you will have no money. You must follow up your law by saying men shall lend to you. Your law is just good for nothing if you don't do that. We may as well say that men in the west must sell wheat for fifty cents because we want it at that. The wheat will not be forthcoming, and we then send constables to see that it is forthcoming.

The gentleman has no limit to his proposition. Why not say, instead of a hundred millions, just as much money as we want? Then the first boy in the street would fill his pockets and step into the store and find that his pocket-full would not buy a stick of candy. Then he would empty his pockets again of that worse than worthless stuff. I can sit at my table and write paper money, and I can make myself rich according to your plan, but I can tell you the world is not made on that scheme. You and I will have to work for our wealth.

President Stilson. It is sometimes to be regretted that theory and experience do not agree. I must beg to disagree with the learned president at this time, in the operation of the usury or interest law. My hair is now gray and a little over half of my years have been spent in this beautiful state of Wisconsin, and I have seen the time when we would take in exchange for our commodities, the Marine and Fire Insurance Company money of Milwaukee, which had no banking powers, had no collaterals whatever, except the integrity of Alexander Mitchell, and yet we were very glad and anxious to

take it, as we had a gold and silver currency, but we could not get it; it did not come here. When we came here, we brought a little gold with us, but as each man had never but a very little gold, there came a time when we had no money and we took Mitchell's money without any basis except Mitchell's promise to pay.

President BASCOM. But, supposing Mr. Mitchell had not paid, what then?

President STILSON. We should have lost what we had Mitchell's promise for, and we took those promises to pay because we had adopted those absurd theories of President Bascom—a metalic currency—and we reaped the bitter fruits. The money shark came along here, Mitchell's promise was out here, a man had a little hard money in his pocket and he wanted to loan it for six per cent. a month and shut up Mitchell. In the territorial times we said, will you have banks or no banks? We voted to have no banks and we made a mistake. The money lender said you have provided no banking-law and the strong arm of the state was invoked and took hold of Mitchell and shut up his doors. Mitchell had a million of money and he might have retired; he might have said, I would have redeemed my pledges but you would not let me go on. He might have said, good-bye, and walked off with his money in his pocket.

I still remember when the hard-money lender demanded six per cent. a month, and did the borrower pay it because he expected to make it out of his business? No; he had been unfortunate and was compelled to surrender his property or pay to the money-lender six per cent. a month. I thank God I never was compelled to pay six per cent. a month; I have taken my pail of butter to town and sold it, as well as this, that, and the other article, to pay unlawful interest to the money-lender, when the law said he should not take but twelve per cent. and he took twenty-five per cent. But, thank God, by my perseverance I soon shook him off. Finally he was put down to twelve per cent. then to ten, then to seven per cent. Then the Government was in an extremity. Government could not make seven and three-tenths per cent. out of money, but she was in an extremity and had to carry on an unholy war, and she bid seven and three-tenths per cent. And then in Wisconsin we were limited to seven per cent. Then the money men said, the Government is paying higher than the state will permit you to pay. Therefore, the law was amended and made it ten per cent., and

the moneyed man is still fastening his grasp on the industries of the country and demanding his ten per cent.

I recollect when I was engaged in the lumber trade. Employed on my farm were about a dozen men, and in the mill about fifteen men, and those men were hired for two dollars a month in money and the rest in lumber. And the money-lender was demanding six per cent. a month all the time. One time I went in to dinner, and said I, "boys, I have sold a load of lumber and have got all the money for it." By the way, I would say I run the mill all the summer long and never took as much money in the yard as it took to buy the oil for the mill, and when I said "I have got all the money for the lumber that I sold," one man said "yes, it was a back load, I saw the man carry it off on his shoulder."

President Bascom. I wish very much to make myself plain on this subject, because I do believe it is one of vital interest to you as farmers. I believe if you run into any wild-cat scheme of currency you will in the end rue it. There is no way of settling prices except by trading things of value for things that have value. If I could multiply paper indefinitely, then I could not, in a short time, sell it for anything that could not be multiplied indefinitely. Everything that had value would cease to exchange itself for that which had no intrinsic value whatever. If we were to increase our paper money, immediately it would be in excess of everything else, and prices would again go up because money was going down. Now, the point I wish to make is this, that it is always very disastrous to the farmer, compared with any one else, if prices are going up. the price of farm produce is settled very much by the price of breadstuffs, and these are settled by a foreign market. If all the things at home are rising in price, and your wheat is not rising in price correspondingly, you will find that the things you sell are low, but the things you buy are high, and therefore the rise is taking constantly out of your pockets. It is not as necessary for any other portion of the community that prices should remain comparatively firm as it is for farmers, because other articles will change prices more easily, and your articles will go up more slowly, and therefore the balance will always be against you. I believe all classes, especially farmers, ought to stand up for a sound currency which keeps prices steady. The whole history of the world is against the scheme of these gentlemen. Why the world has tried again and again to make money

on paper, and it has never succeeded. The whole gist of what was said about Mr. Mitchell vanishes at once when we find out that Mr. Mitchell *paid* and the Government don't propose to pay. If Mr. Mitchell had refused to pay, that would have been the end of his money. If the Government issues money and don't propose to pay, it will come to naught, just as other countries have done.

The gentleman uses the word "extortion" in relation to capital, while at the same time he says, you must furnish him your goods for his price. We will regulate by law, what you shall furnish your goods for. Remember much of our money comes from England, or Europe. How are we going to get that money? If it is not brought here, then the price of money will still be too high. If we offer less inducements than we offer now, we shall not get the capital without we can follow up the law by a law compelling men to furnish us their capital at our prices. That, it seems to me, would be a far greater extortion than to let supply and demand regulate the price of the commodity. I say the farmers in Wisconsin are relatively in good condition. The capitalists have no power over them. The capitalist has come a long way on purpose to help those who need help; you would have been no better off if they had not come. Europe brings us railroad-iron and many commodities that have value. My money is not a thing peculiar by itself, but it stands in the same relation as other commodities. It is ungrateful on our part to say these men have done us an injury; they are no more greedy than you are, not a bit. They are no more exacting than you are or I am. We stand on pure natural business principles. It is a free-trade transaction, and we all stand on natural law. They use what they have and use it as skillfully as they are able. And you use what you have, and use it as skillfully as you are able.

My friend, Mr. Field, is where he is to-day by borrowing money, if he did borrow, aud he has no right to curse the man who helped him.

Mr. ROBBINS. I want to borrow some money. I know where I can get it at ten per cent. I have got some men that have been working on the railroad, and their pay is due next month. But I know where I can get it at ten per cent. Now will you pass a law that I shall not pay ten per cent.? You and I, Mr. Field, had a clatter once in the legislature on that subject of interest. Now, I

want to borrow some money and how are you going to help me do it with your theory?

Secretary Field. I would have Government fix interest at not more than three to four per cent., and fix severe penalties for a violation of the law. That rate is as high as the industries of the people will warrant them in paying.

Mr. Robbins. What are you going to do with me, I want to borrow some money?

Secretary Field. When the law was ten per cent., people loaned at ten per cent., and if you will bring it down to six per cent., a large portion of the capital will be loaned at that, provided it was uniform throughout the whole country.

Mr. Anderson. The farmers of Nebraska, last year, when they wanted a dollar, had to send to Massachusetts and get Professor Perry to tell them what kind of money they should have, and his theory or speech was given to the Chicago and St. Louis papers and published. And those papers have been hired by capitalists to educate the people to that theory. And if those people had been alive in the days of old Belshazzar, they would have been burned, rather than bow down to the golden image.

I want to say that the reason bullion is worth as much as coin is because they charge nothing for coining bullion into coin. If our Government would undertake to manufacture woolen goods and give as many pounds of cloth as it received of wool, wool would be worth as much as cloth.

Is a mortgage less valuable because it is written on paper than if it was written on gold? It is the land that contains the value and not the paper. It is the land and real estate that is the basis of the whole wealth of this country, and has to pay for our money, and it make no difference, whether that money is gold or paper. I want to tell the Professor that we have not flourished in the West as well as he thinks for, and if we did, it is not because we had gold as a circulating medium. We had plenty of money in the olden time.

Now, gentlemen, I want you to understand that if these greenbacks are lies, we have been committing a notorious crime, we have been compelling our soldiers to stand up and be shot at and then to take lies in payment; and when they have been killed, we have compelled their widows to take lies for their pensions and losses. If so,

the party in power is the father of lies. All the true basis of money is real estate. I would have the Government loan money to the borrower at a fair rate. What right have we to charter two thousand banks for the purpose of distributing money through the country and furnishing that money at one per cent., and guaranteeing that we will redeem it if they don't? I would have the Government loan that money in ever county and town where it could be secured by double its value in lands, and I would have the money convertable into bonds at 3 per cent., and re-convertable again. If the people should be crushed, as they have been for years, they will soon come where they cannot bear the burthen any longer and will repudiate the whole thing. God forbid that such a state of affairs shall ever come to pass! We are ruined by high rates of interest.

Mr. ORLEDGE. It gives me very much pleasure to see the interest that is manifested in this question. Finance, taxation, tariff, all interest us even before the transportation question. I have found that the most difficult thing for me to do in my life was to unlearn the lessons of my youth. So the hard money men of the country have the hardest lessons to unlearn, the lessons of the past. I insist that gold is not so necessary as it was years ago. I have given some attention to this question during the last year and I must admit that I know nothing at all about it. I only see what is being done. I only know that unfortunately for our profession here, that for the ten years we have had paper-money, that just as soon as it could settle down on a basis of certainty, that just as soon as it dropped into a certain position where it would have remained steadily at that value up to to-day, that the capitalists would not let the money alone. It is most unfortunate for us that there is such difficulty in settling this question, because it tends to destroy confidence and undermine values, and every one must see that. I begin to look at this question from another stand-point from what I used to. I have learned that my father's teachings were not always correct, and as Mr. Anderson says, in too many cases we import our teachers from the East, where the hard-money people live. But if a teacher teaches us falsely, or we don't understand him, it is a part of our duty to tell him so.

This money that we have, which these professors tell us is worth nothing at all, buys us everything that we want, and we can go anywhere we please with it, and we get within ten cents as much

for it as if we had a gold dollar. I have bought many pounds of cheese during the last few years, and sent it to England, just as if I had had gold. And I do believe that if the politicians would let us alone we could get along with the money we have now as well as if we had gold, provided we are not such consummate fools as to pay interest on the money in our own pockets.

Mr. Boyd. I wish to ask Professor Bascom if, with all civilized people, the bulk of money is not paper, and among the barbarous and uncivilized nations their currency is not metallic?

President Bascom. One gentleman seems to object to sending East for teachers. Well, I am tough, I do not care for any remarks that one may make, so far as I am concerned. If Wisconsin can do any better than to send as far as it has for me, I hope it will do so. I believe thoroughly in the West while I am in the West.

In reference to the other point. It is true that in most civilized countries there is a mixed paper and metallic currency. But it is true of those civilized countries, with the exception of our own, and Austria, and the Papal dominion, that a dollar in paper is equal to a dollar in gold. All the places in which I was compelled in traveling to shave my money in exchange, were Austria, Rome and the United States, because in these countries the promise to pay was not met. It is not necessary that the promise to pay shall be met until the man who holds the promise asks payment; but when he does ask it, and cannot get it, then the note he holds begins to depreciate.

On the notes of the Austrian Government and the notes of the Pope and the notes of Uncle Sam, there is a depreciation when the pay is asked for. To make notes without any intention of paying them is a fraud. I would have a metallic currency dollar for dollar and no paper except business paper. If we had a dollar for dollar currency, a stable measure of value, the most stable that is possible, we should not have a yard-stick forty inches long at one time and thirty inches at another. The financial yard is now thirteen per cent. too long. At one time during the war it was 180 per cent. too long. If we had a dollar for dollar currency we should have a yard-stick of uniform length, and it would put us in honest commercial relations one with another.

I trust the farmers of Wisconsin will not think they can get an advantage by law over other people of equal rights in the land. I

believe that above all things we should not strive to take advantage of our neighbors by law. Certainly, if we undertake to out wit politicians by law, we do what the old saying forbids us to do, "Fight the devil with his own weapons." We should be content to stand where nature puts us. There I am willing to stand.

Mr. CARPENTER. I have a few words to say. I have always been a free-trader in money as well as everything else, and so far as interest is concerned, I believe that mankind misses it terribly in getting it up as high as ten per cent. If one-fifth part of the people had all the money and went to loaning it to the other four-fifths, in seven years, three months, and three days, or thereabouts, they would have all that money back again, and the four-fifths would owe the one-fifth the original amount. It eats itself up once in seven years, three months and three days. And that is the reason for the panics that come around as often as the rise and fall of Lake Erie, what we call the seven year's tide. Once in seven years one part of community is wiped out. Hence I am for free-trade in money. I believe it is satisfactorily demonstrated that no people can stand over three per cent. in a commercial sense. But in reference to this circulating medium, I will say only one word on that. I have always been considered considerable of a hard-money man. I don't object now to greenbacks, if I could get them. The great trouble with me is I cannot get as many as I want. But what is it that makes the value of greenbacks? We know very well that it is not in the pitch, tar, green paint or silk of which they are composed. But the value of all bills is predicted upon *faith*. Faith they say is the substance of things hoped for and not seen. But so long as you have faith in a bank-bill and it passes, you are all right. And if anybody else don't have the same faith in it, there is a run on the bank, and down it goes.

When Lycurgus ordained that gold and silver should have no value whatever, and that nothing but iron should have any value whatever, then they had no faith in gold and silver because he had ordained that gold and silver should have no value. And they certainly had no faith in iron because they could not use it and they never did.

And when Louis XVII of France, ordained that they should alloy his gold with 30 per cent. of alloy, it did not pass because they had no faith in it. Even if it is gold and silver it rests on

faith. And if you have faith in it it is as good as anything, if it is even a chip with "one dollar" written on it. Faith is the *ne plus ultra* of all things.

Mr. Clark, of Green county. There are some points not yet touched. I understood the Professor to be in favor of the substitution of a metallic currency and no legal interest at all, no restriction on interest. The Professor is trying to get us into an experiment here that has never been tried to any extent in any country. Last night he was rather against going into wild experiments, If he goes back upon our bank currency one must admit that he has a weak foundation. It would be like the Frenchman's debt, who went to the merchant that owed him $500, and said he must have it, and when the merchant paid it he looked at it and said, I wish you would take it back. Why? said the merchant. Well, said the Frenchman, you have it and me don't want it, but you not have it, me want it bad.

When the panic came in New York, the banks had to suspend or every one forfeit their charter. But their bills were just as good in the streets the next day, because the Government and the State guaranteed the payment of those bills. It was not because there was gold behind it, but because the faith of the State and the United States was behind it. In 1857, it was the hoarding of the gold. Last year it was the hoarding of the greenbacks and the bank bills. We had faith in those bills because the Government of the United States guaranteed the payment of those bills. We have a currency got up not *by* the people and *for* the people, but by the bond holders and banks for the benefit of themselves.

Now, let us have currency not redeemable in gold or United States bonds, with a low rate of interest; then every body could have just what they wanted in currency, just what the business of the country demanded. The bank of Venice for a long series of years, kept its currency superior to gold and there was no redemption about it. The effect of adopting President Bascom's theory of a metallic currency must be to reduce our currency down nearly three times and make the debtor pay the creditor three times the amount that he had agreed to pay, because you have increased the value of the dollar, so as to make it cost just as much to get one dollar then, as now to get three.

If a man is sick there is always some expense in getting well, but

you have your doctor's bill on hand. Now we are financially sick, and the question is whether we better remain sick as long as we live. Shall we allow obligations to go on steadily depreciating so that the debt we incur to-day don't stand in the same relation to things in ten years as they do now?

Mr. SANDERSON. There is evidently a great wrong somewhere, either my friend Robbins is wrong, or my other friend Field is wrong. I would like to ask Mr. Field if there is anything to prevent us all from being money-lenders, if we turn our property into money, and if we can make more out of that by lending it at ten pes cent., why don't we all do it? Are we not very stupid for not doing it, if we are all going to get rich so quick by it?

President BASCOM. If money rests only on property, why not have just as much money as our property represents? Why not put it all into money, and go to loaning the money on the market?

Mr. BOYNOR. I would like the indulgence of the convention for a few minutes. I was here at the last convention of this society and I noticed that there was a great want of sympathy and philanthropy exhibited in the papers that were produced.

I take this opportunity to refer to that spirit. I remarked it at the time, and I was anxious when Secretary Field's paper on interest was read, to rise and make a few remarks in that direction. Perhaps the chairman will recollect an individual like your humble servant, popping up frequently, desiring to speak, but who did not get a chance to. I am no professor, except to a great amount of ignorance, but I don't consider this convention a just representation of the farming-interest of our state. I am well acquainted with an individual who started with nothing but his hands. His property was deeded for him by a speculator, who gave him three to five years, at 12 per cent., and the time rolled by. He has been working, with strict economy, (for it is your humble servant), and to this day he has been paying interest on the money owed for that farm, and within the last two years this individual has been foreclosed upon because this accumulative interest rolled over like a snow-ball, and he could not make his payments, and consequently he finally lost his farm.

President BASCOM. We need to be thoroughly sympathetic one with another. But we need always to have that intelligence that will enable us, when we are in trouble through our own faults, to

lay the blame on ourselves where it belongs, instead of on other people. Contentment begets courage and makes good citizens. If a man gets restless and looks for help in some other way than by his own activity, he is likely to fail. This world is not partial to any particular party, but every man must be active and diligent.

Suppose that one-third of the farmers in Wisconsin own their farms free of debt, that another third have their farms so seriously encumbered as to require the utmost labor and economy on their part to sweat it through, and that the remaining third will loose their farms because of the encumbrance on them. Is there anything peculiarly hard about this condition of the Wisconsin farmers? It seems to me not; when you come to consider who those farmers are, where they came from, and the amount of capital they brought with them. Remember that they were gathered largely from men relatively destitute of capital in the older states and the old country; consider the amount of capital and intelligence they brought here, and I ask you where else could they have put that measure of money and knowledge to use and realize a more general prosperity from it? In no place on earth, I think. If they had gone into the city of New York and set up business side by side with Alexander Stewart the chances are that nineteen out of twenty would have sunk into irredeemable poverty. The failure of a business man of a city is much more complete than that of a farmer. It is only one in a million that shoots up like Mr. Stewart in brain power, in intelligence, and so in business.

I will venture to say that the teachers of Wisconsin, as I met them a few days ago in convention, have not had more than your average success in life, though they *are* probably equal to you in average intelligence. I don't complain of my circumstances in the world, yet your President, Mr. Stilson, I believe, can cover every dollar of my money with a five dollar bill and have money left. Money made in farming.

You cannot find anywhere else so large a body of men with so little capital who have succeeded better in life under like advantages than the farmers of Wisconsin. Most of you have succeeded, and most of you have succeeded unusually well. And you have done it under conditions which you call hard conditions; but they are not hard, as conditions go in this world. You could not have put yourselves anywhere where you could have done better, on the

earth's surface. Let us have the contentment which begets courage, makes us good citizens and does not leave us uneasy, ready to get the upper hand of somebody by law, or to take an advantage of our neighbor. Let us accept the natural conditions that nature gives us, rejoice in them and persevere in developing them.

In relation to the question of currency, one large object of money is to measure values. It takes values and holds them for a time, and then gives them up again. Money is constantly put to that use. You have an article of a certain value, you sell it for money which holds the value of the thing sold till you wish to transfer it to something else. The use of the money is to measure and to hold that value as the half-bushel-measures and holds the wheat. It is nonsense to assert that that which of itself has no value, can measure value or can permanently hold value. This cannot be done any more than you can measure twenty feet by that which has no length. Money itself must have a permanent value in order to measure value. Paper-money has no value of itself, though it may gauge value for a time because of its relation to gold. If it slips away from gold it loses its stability. Its value will then depend upon its quantity. Our yard-stick has become now long and now short, and it loses its entire power to measure anything.

President STILSON. I don't wish to occupy the time of this convention very long, but as I am occasionally made a target by learned men, it has been my rule to always paddle my own canoe. I am a farmer's son, but so far as the hardships and the pay of the teacher is concerned, I could fully realize what the president has stated, for I myself in my younger days was a middle-state schoolmaster. But the contest is not between us producers and the consumers, and it matters not whether we are producers of thought or of materials. It is between productive industry and capital. Here is where the war is. There is between those elements a combative force as between heat and cold, as to which shall have supremacy. We claim that centralized capital has got the supremacy over industry, over the farmer, the college professor, and all who are laboring men for the good of humanity. And as for my individual self, the professor has singled me out and I will reply by placing myself beside two of my intimate friends who have become capitalists, although they started out with almost the same capital that I did. And where I can put down a dollar to-day, they can put down five

or ten; and yet they were men of about the same age and probably about the same capacity.

What would the Professor have said here last fall, if he had seen the uprising of the people over the transportation question? Perhaps he would have brought the Dartmouth College case in here. But our courts have decided that it was the business of the Legislature to regulate railroads. If so, how much more, after Government has coined the money, and given it a value which it has not of itself—how much more is it the business of legislation to protect us against collective capital? Most assuredly it is the bounden duty of the Government to fix the value of that money it has coined and stamped, and that alone can be done by fixing the rate of interest. I claim that the rate of interest must be brought within range of the producing class, the farmer, the manufacturer and all classes that are industrial. Capital to-day gets more than its share of the reward. When the Government entered the market and paid more than seven per cent. the capitalists said you can't have our money unless you will repeal the law and give us the right to take ten per eent. But now, Government having gone a long way below seven per cent. do these same capitalists ask us to put the interest down correspondingly? No. Capitalists have their iron grasp upon industry to-day, by the unjust power of money, and this is one of the greatest evils that overshadow the people.

Capital is being concentrated, and Millionaires have made fortunes, while industries of every kind are languishing throughout the land. When will we, by healthy and wholesome laws, surround and control capital, by a proper rate of interest, as we have established the principle that legislators have the right to control railroads. We do not say that the Potter law is perfect, or anything except that the general fundamental principle has been established by the courts that the railroads are the creatures and subjects of law, and we ask that the same thing be established in regard to money and its power of accumulation.

Mr. ROBBINS. I claim that I am more interested in this question than any other man in this house. I think I am between these two fires myself. I came here expressly to read a paper, and I saw this convention was opposed to my reading the paper, and I have not read it.

Secretary FIELD. Dare Mr. Robbins look me in the face and say

that I did not call for his paper, and that he said he was not ready to read it?

Mr. ROBBINS. I had a paper, but not one that I dare read before this convention. I said in that paper that you could no more tell the cost of transporting a bushel of wheat from Madison to Milwaukee than you could the cost of raising a bushel of wheat. And I stand here now, and defy any man to tell me how much it costs to transport one ton of grain, or coal, or anything else, from Milwaukee to Madison. I say Mr. S. S. Merrill himself can't do it. I defy any expert to tell what it costs to transport one ton of freight from one point to another.

You pretend to say that you shall have seven per cent. interest, and no more. And if you have the right to say that, you have the right to say one per cent. If you have the right to say I shall transport a ton of grain for one cent a mile, you have the right to say I shall transport it for nothing.

I have been putting money into railroads but I haven't made anything and my note is out now for $18,000, put into a railroad since your last convention. I knew your disposition then, but still I had part of my money in it and I must go on. I don't believe that any corporation has any soul.

President STILSON. Neither has consolidated capital.

Mr. ROBBINS. I am now going to talk about interest. I cannot get a dollar of money without I pay 10 per cent. interest, and my note is out for $18,000 and I am paying 10 per cent. on it. Now the road I built, was built for $21,000 a mile, all by days work, and if money had been at seven per cent. we could have built it for $16,000 a mile. Now I am interested not to have interest come down to seven per cent., or not until I can fulfil my contract.

Secretary FIELD. The President of the University has denied that we should ever fix the rate of interest. He says the rate should be exactly what a man can obtain for his money. Now let us come right down to the bottom of this question, and start right at the foundation. What do we want money for? We want it simply to exchange with ease and facility the property of the country. That's all that it is good for. It need not, as I said yesterday, be made of a material of intrinsic value. If it is manufactured or made out of that particular material which is a commodity in and of itself when not used as money, very well, but it need not

necessarily be made out of that material which has any real intrinsic value.

I wish to say right here, that it is of just as much importance, and I deem it of more importance, that the rate of interest should be fixed, unchanging and unvarying, as that the yard-stick should remain just three feet in length, or the bushel measure of unchanging size. Now the way interest rises and lowers by the manipulations of stock gamblers and speculators, is that to-day money is worth ten per cent., to-morrow fifteen per cent., and next day six per cent. possibly, and so on; no stability, but continued fluctuation and uncertainty. President Bascom stated yesterday that a gold basis was a long established custom of all ages, and that the fixing of the rate of interest so as to be unvarying would be an innovation. I grant that is true. But we are living in an age when I want to see innovations. Was it not an innovation when we established this republican form of government? Wasn't it an innovation when we ran railroads all through this country for the benefft of all the people?

Was'nt it an innovation when we introduced machinery through all this broad land? Certainly, and blessed innovations they were. It will be an innovation, I grant, if we can have a strictly metallic currency, a dollar in paper for one of gold and silver with which to redeem, or paper money, pure and simple, based upon the faith and credit of the government, with a rate of interest fixed by congress, and as low as the increased wealth arising from the productive industries of the nation. But, sir, this would be one of the best innovations ever made in this or any other country, and a blessing such as no people in this or any other age ever witnessed. President Bascom says "the history of the world is against the gentleman's ideas." I grant it; and this fact the more clearly confirms me in the opinion heretofore expressed, that capital has always ruled the world. But this is no argument. Because wrongs have existed ever since man existed does not make them right, and because money, by unjust and wicked laws has drawn to itself, by interest, enormous accumulations, until the property is rapidly accumulating in the hands of the few, it is no reason why it will continue to do so for all coming time, when the people fully comprehend its evil and injustice.

I doubt whether it could be established to-day, or shown in a

single civilized country on the globe, that they are not using paper-money. They are using it based on gold. Our paper is based on gold, but if called on to-day to redeem our paper-money, we could not pay five cents on the dollar. Greenbacks and the national currency are good, not because of the promise to pay in gold, but because of the confidence in the Government. The president said yesterday that we were trading with other nations, hence the necessity of gold coin, the money of the world. I wish to say that governments don't trade with governments, but private individuals trade with private individuals. But what is the difference between exports and imports in this country? The balance is now probably against us, but if we had a fixed, unvarying rate of interest in this country, it would stop speculation to a large extent on all the necessities of the people, business would be wonderfully increased, and we should export more than we import. But suppose there is a difference and the imports are greater than the imports, let private individuals settle those differences in their own way. Let them purchase bills of exchange on the country where they owe, or let them pay interest thereon, or send further products there to settle the balances, or pay the difference between the currency in this country and the country with which they trade. I don't think it worth while to be bled to the tune of thousands of dollars annually simply to accommodate those who do five or six per cent. of the business of the country. I hear no complaints among those who are shipping our surplus wheat, corn, beef, pork, and cheese to Europe. They are adjusting their balances without detriment or delay. But the president says, "money will not come here unless we bring it, and pay their price." Money should not be bought by one government of another. Each should coin or manufacture its own currency, to measure and represent its own property. If like the currency or money of other countries all the better, but it is not specially essential. Money is but a tool with which to do business with more ease and facility than without it. It is not property, but a representative or measure of values. It must possess legal power, but I deny that it must be of the same intrinsic value of the property measured therewith. The yard-stick measures length, the bushel quantity, and money value; hence the latter should be a fixed and unvarying standard, or measure, the same as the yard-stick and the bushel, and I contend that this only can be done by the regulation of interest.

There are to-day at least 250,000 people in this country out of employment; and what is the reason? The reason is that the rates of interest are so high that no legitimate industry will pay; hence labor is not employed, and stagnation in business ensues. We are feeding to-day 250,000 people, and will be for three months, when if those men were to have employment they would earn $30,000,000 in that time, and we could have our wealth increased by just that sum, while now they must be fed by charity and earn nothing.

The president says further that we must come down to natural conditions. The nearer we come to natural conditions the better. I say if there is any natural, divine, or any other condition that is for the benefit of the human family, it is that they should have a medium of exchange furnished them by the Government at such rate of interest as they can afford to pay; and that should be at least no higher than for a series of years arises from the profits of the industries of the country.

General Bintliff, of Janesville. It is an established fact that the industries of this country pay about three and one-third per cent; and suppose that we pass a law making that the lawful rate: would it affect the business of the country so as to keep the interest at that rate?

Secretary Field. A fixed rate of interest by the Government, and so guarded and protected that men couldn't take more, would certainly fix it at that rate; and no man should be allowed, under heavy penalties, to take more than the legal rates. It can be carried out in that way if in no other, unless the Government will loan directly to the people, upon good security, at a fixed, low rate of interest, which would accomplish the desired result much more effectually.

President Bascom. The gentlemen have spoken here as if capitalists were some peculiarly censurable class. Every man in this room is a capitalist to the value of his property. His farm is capital just as much as a railroad is capital, unless you mean by capitalist a banker who handles money alone, then are all men of any means, capitalists?

The president of this convention is a capitalist up to the full value of his property. Any of you have the opportunity to sell your farms for cash, bring the price into market and get ten per cent. on your money. But if you were to do it, most of you would

make a mistake; for you do better on your farms than you could with the value of your farms loaned as capital at ten per cent. If you do not believe so, your proper remedy is to turn the farm into money and loan the money at ten per cent. That is your true redress and that you do not do this, shows that you do not believe in the theory which you here advocate. If you believe that you would be better off loaning money at ten per cent. why do you not do it?

If you had interest fixed at five per cent. you could not secure money unless you should also make and enforce a law that money should not be loaned for more than this any where. And what is extortion if this is not? It is extortion, as truly as if you put a pistol to my head and said "Give me your money!" You say by such a rule "yield me your property for so much!"

The flunctuation spoken of is in the price of paper and not in interest. We know that there is no price in Wisconsin more firm than the price of money. There is nothing more sure than what you must pay for it.

The gentlemen says many people are out of work. Certainly they are; but it is because of the fluctuation engendered by paper money. We cannot seeure permanent industries until we have a permanent measure of values.

Mr. ANDERSON. The reason of the stagnation of business is because of contraction and not expansion.

Mr. DWIGHT. I never knew any member of the Dwight family who was a farmer but myself. I am not a poor man at all, yet all my family relations have done better than I have in the world. I have always paid as I went and I have made something it is true, but I have not made anything like the amount of property my brothers have and some of them certainly not of greater natural ability than myself. My brothers spend more in gew gaws in a year than I spend in thirty years, and yet one of them is worth half a million, living in a city, and he made it loaning money. My children all want to come to the University to get an education, because they see the poor man has no power in the land and an educated man is a power in the land, and that is the reason why so many young people want to leave the farm and go to the cities.

Mr. J. G. Hull, of Jefferson, offered the following resolution on the subject of interest, which, after some discussion was adopted:

Resolved, That this convention do hereby memorialize the Legislature of Wisconsin to so amend the laws regulating interest on money that the rate shall not exceed seven per cent. per annum, and that excess of interest shall be forfeited, with penalties for such violation.

Mr. Flint. I came from a state where the rate of interest was six per cent., and I was in the Wisconsin Legislature when the rate was seven per cent. in Wisconsin, and I remember how the bankers came to us and argued that unless the interest was raised to ten per cent. no capital could be had in the state. But I found that the difference was a mere extortion, and the three per cent. that was added, was just so much taken right from the industries of Wisconsin and put into the pockets of the money-lenders.

Mr. Benton. Argued at some length that the government which makes the money should control the rate of interest on that money.

Mr. Borland, Thought that the cost of production, which did not pay over three and one-third per cent. was the cause of the depression in the business of the country, and not the rate of interest; that the cost of production is respoasible for the lack of the industries of the country paying better than they do; that the question of interest should be left to the natural law of supply and demand, when it would work out its own proper results.

Secretary Field. I reiterate that the question of interest lies at the bottom of all the trouble, and the fluctuations in prices are largely caused by the ever-changing value of the dollar, or rise and fall of interest.

I wish to reply here to one or two statements of President Bascom, and then I will close upon this subject. He says we talk about capitalists as though they were a "condemned class," and "curse the men who help us." Now, Mr. President, I have never harbored such a thought; and I don't think the language used by any gentleman in the discussion of the merits of this paper will warrant such inference. I desire to have it distinctly understood that I make no war on individuals; neither do I blame them for loaning money for all the law allows. I would do the same, and so will every one. It is the power of money, by high rates of legal interest, that I am talking about; it matters not in whose hands it is, and the importance to the industries of the state and nation that it be controlled and fixed at a rate as low as arises annually from the great channels of business.

The President further says, in substance, that it is extortion to say that he shall have but 5 per cent., when he can get 10, as much so as it would be to say that a farmer shall have but fifty cents per bushel for his wheat when the market price is one dollar. The fallacy in the gentleman's argument is that money is merchandise, like wheat, &c. Wheat is property, but money is not; the material of which it is made may be, but it is simply a measure by which we are to justly measure the wheat and other property. The gentleman's theory of "supply and demand" regulation of money would not allow the regulation of tariffs on railroads, or tolls on mills, bridges, or other public corporations, when in fact the control of money is of a thousand times more importance than them all, because it and labor combined are the main-springs or motive-powers for bettering the condition of mankind, and increasing the wealth of the world. It is not so much the kind of money I care about, as that the quantity shall be equal to the requirements of business, with interest so low that the industries shall be profitable, furnishing the farmer, mechanic and common laborer with all the comforts and some of the luxuries of life, thus more equally distributing the profits or net earnings of labor and capital.

One other point, and I am done. President Bascom says that under our theory money would be so plenty that every boy in the streets would have his pockets full, and empty it all out for a stick of candy; that every man could make all the paper money he wanted, get all he needed without work. Now, sir, when the learned gentleman uses such language as that, he is cornered; he is driven to the wall. No man knows better than President Bascom that no man can get a dollar of the money issued by the Government, whether it be gold or paper, without first giving to that Government labor or commodities in exchange, and he must work for it, or give something valuable which labor has produced.

THE FUTURE OUTLOOK OF THE DAIRY INTEREST IN WISCONSIN.

BY STEPHEN FAVILL,

President Wisconsin Dairymen's Association, Lake Mills.

The question before us for consideration is the future outlook of the dairy interest in Wisconsin. To enable us to arrive at correct conclusions in the matter, we must look a little at the conditions that surround the farmers of our state. To be brief, I will make this general statement (and I am confident that those at all acquainted with the fact will admit it is true,) that raising wheat will not furnish the farmers of Wisconsin money enough to enable them to meet their expenses, and that the farmers as a class have got to do one of two things. Either do something that will furnish more money or they must spend less; and I may here say, it is quite likely we shall have to do both, for I hardly think any system of agriculture will support our extravagant ways of living. Then comes the question: Will the dairy give us a solution of this question? We answer, we think it will furnish at least a partial solution of it.

Without going into details in this matter, I make two general statements and leave them to be controverted by any who think they can successfully do so. First, no community or state has ever become wealthy and remained so by grain raising, and selling in the market. Especially is this true of wheat raising. Second, the dairy has always been a sure source of wealth whenever and wherever it has been intelligently managed. If it be true that the dairy has been a success in the older states where they have been long engaged in the business, then comes the query have we in Wisconsin the soil and conditions that will insure success? In the outset, we admit that our soil and climate are not as favorable for successful dairying as in many of the eastern states, but on the other hand we have some advantages which they do not possess; and by

means of these advantages we can fully make up for the natural disadvantages under which we labor. The principal drawback to successful dairying in Wisconsin is our oft repeated and long continued drought. But even these, by a wise foresight and a little expense, may be so provided against as to be comparatively harmless.

The early planting of a few acres of corn expressly for summer feed, and a moderate stock of grain laid in to be used if needed, will bridge over a pretty severe drought with but little extra expense. The natural advantages which we enjoy over the Eastern and older states are cheapness of land, cheap, coarse grain and mill feed. In these we have so decided an advantage over the East that I am of the opinion that the same amount of money invested here in dairying will yield a much larger dividend than in any of those states. I have said that cheapness of grain is one of our advantages for dairying. Many persons are not aware that it costs only a little more to keep a cow upon grain than upon hay. It will take one acre of extra grass to furnish enough hay for winter fodder for a cow, and the same acre planted to corn, and the stalks well saved, will not only furnish winter fodder, but the corn if fed to the cow with the stalks in winter and with pasturage in summer, will enable the cow to give us a good flow of milk during the milking season, while the hay would do but little more than sustain the animal life. The difference in cost then is the difference in the expense of raising an acre of grass and an acre of corn. We have the same investment for land, and the difference in cost is but small when compared with profit from feeding the corn. The question of whether the dairy can be made profitable in Wisconsin has already been settled. Those who have had access to the balance sheet of the dairymen know that no branch of farming has paid as well for the last eight years as the dairy, and we think the question of the future dairy interest in Wisconsin will depend largely upon the amount of brains we put into it.

If we undertake to run it in a slip-shod manner as we do much of our other farming, it will prove a failure. On the other hand, if we intelligently care for and foster it, we may rely upon good, financial returns. Many are still fearful that the business is going to be overdone; that more butter and cheese is going to be made than can be sold at a paying price. Upon a careful review of the whole matter, we think these fears are groundless. When we consider the

very largely increased home consumption of cheese and the extensive and increasing foreign demand, and further, when we remember that the increase of dairy stock in the United States (large as it has been in the last fifteen years) has been only a little more than the increase of population, and when we remember further, that we cannot extend the dairy *ad libitum*, as the best dairy section is but small compared with the whole country; I say when we remember these facts, we might well enquire, where is the supply coming from, than where shall we find a market?

Mr. Wood. I wish to ask what breeds of cattle will pay best for dairying.

Mr. Favill. The breed that will "pan out" best, of course is the best breed, as the Californian said of his gold mine.

Mr. Benton. You spoke of the introduction of cheese and its becoming an article of general use and being more healthy than pork. Tell us at what price per pound one would be warranted in purchasing it to take the place of pork.

Mr. Favill. I should say that pork is not fit to eat at all and good cheese is.

Question. In regard to the keeping of cows; you meant one acre of corn was sufficient for each cow, but you failed to tell us whether that corn should be sown broadcast or planted four feet apart, or how.

Mr. Favill. I was speaking of corn planted just as we would plant it to raise a crop, four feet apart and about four grains in a hill, and then one acre will keep a cow all the year.

Question. Would it benefit your stalks much to steam them?

Mr. Favill. Yes. I have tried it and it improves them very much where you have suitable buildings and can do it. To run a steamer you must have some place where it will not freeze. Where you have suitable buildings it pays richly to steam. Your cows will eat every particle, they won't leave a scrap of it. One of my neighbors cuts his stalks and wets them and throws on a little bran or meal, but they are very much better to steam them.

Now about the plan of sowing your corn. I have experimented, about eight years, and I have got the best results when I was raising simply for the fodder, by just double-marking the ground and planting two feet each way, about four kernels to the hill, then take the wings off the cultivator and cultivate it until it begins to

break down, and then I cease to cultivate. Then it has little ears on it, and it will all get eaten up at once, and it don't hurt cattle a bit to get a few ears of corn. I like that very much better than sowing it broadcast, for if that grows thick it will fall down in the heavy storms.

Question. Have you experimented with the sugar-beets as connected with the dairy business? I mean in regard to the use of sugar-beets for cows and other farm stock. I have tried them and have thought there was nothing that afforded more profit in proportion to the amount of labor invested in their production, either in regard to the treatment of hogs, cattle, or sheep, and particularly milch cows. I make the inquiry in order to elicit attention in that direction.

Answer. I never tried it personally, but I have seen it tried with the very best results. But here is a difficulty with raising root-crops. Unless our land is so situated that we can irrigate, we cannot raise roots with success. But we can always raise some corn-stalks. But when we can raise roots, sugar-beets are very beneficial indeed. They are valuable if we can get them.

Mr. ANDERSON. I think there is a small portion of every farm on which you can raise sugar beets. One acre will raise an immense quantity planted about twenty-seven inches apart. For a number of years I have raised them on a piece of low, rich, black soil. I sub-soil it down as deep as I can, probably about fifteen inches. I never manured it, but it is close to my barnyard, and in that way it is immensely rich. I raised corn on it one year sixteen feet high. I can make more milk from beets than anything else. I have seen a statement of eighty-two tons of mangles-wurtzels per acre. I think that is immense. About every farmer can raise sugar beets, if he gets good soil. Beets should not be planted too deep, or the land, when it rains, will cover them up when small.

Mr. PORTER. So far as the cultivation of our crops is concerned we all have our own ideas about it, and each man will follow his own ideas. There is one thing connected with stock raising of every description that we all have to consult, and it is upon that I wish to ask the gentleman from Jefferson with reference to what he knows about keeping cows and hiring help to look after those cows. It is not everybody that has good boys to do all the work, and if we have to look to hired help, I think the very best

we can do is to make ourselves the head herdsman. And if milk and butter raising is to be a success in this state, and we have to rely upon our hired help to abstract that milk and make the cheese and butter, I should wish to have the experience of Mr. Favill, or any other gentleman, in reference to our hired help. For instance, twenty dollar-a-month men for the summer; have you ever found them reliable to feed your cows and treat them kindly, keep them clean, and milk them well without abusing them? I know that the greatest fault in reference to my hired men is, in the first instance, they have high tempers, using a great deal of bad language and a great deal of boot-toe, and making the cows wild and nervous.

In reference to the cultivation of either cheese or butter, we want to try to inaugurate upon our farms a more careful consideration among our hired help. I can send a boy to plow, if I only mind and give him a good pair of horses, such as he is not afraid will run away. There is something about plowing with horses, where a man can tell if he has done a good day's work, but with reference to milking and managing stock, those men will shirk it.

I have a man I call my foreman, I think I can rely upon him wondefully at times, but at other times I think he is about the worst shirk I ever saw. I think there is a great deal for a farmer to learn in managing his help. That is the worst experience I have had in my farming operations.

Mr. Favill. I would inquire if the gentleman has learned to manage himself? I don't know anything about it, but that is very likely to be the trouble. I confess, to a very serious difficulty in this matter. But you remember the remark I made just now. Any person thinking of engaging in the business must count the cost, and that cost would be personal attention. With our dairymen it has come to be understood that the men have got to milk, and to do it as they are directed, or else we don't hire them. I turned off, not long ago, as good a man as I ever had to work, just because he didn't treat the cows kindly, and if they leave me alone with the cows to milk, I will get the calves to suck them before I will have a man around that will ill-treat my cows. I say to them, "if you can't milk without swearing and scolding at the cows, let them alone and I will get somebody else." But we have got to learn to manage ourselves and do the best we can with our men, and yet we will have

trouble with our help. The more you pay a man the more you have got to be his servant, instead of his being yours.

Mr. G. E. MORROW. Circumstances have made it necessary that I should give some special attention to dairying for several years. And I want to say, it seems to me that at no time has there been nearly as much interest in the question as now. Take this state especially; I may say certainly at no time have I received as many letters of inquiry as in the last few months where people propose to engage in dairying. I agree with Mr. Favill in almost everything he said, and have frequently made this statement, that for the last eight years I believe that no body of farmers in this state, with the same amount of capital, has made as much money as have the dairymen. And I am heartily in favor of people engaging in it when they first count the cost.

Secretary Field offered the following resolution, which was unanimously adopted:

Resolved, That the thanks of this convention are due and are hereby tendered to the railroad companies of the state who have so generously given delegates reduced fare to and from this meeting.

HORSES.

BY HON. JOHN L. MITCHELL, MILWAUKEE.

I shall start off with the query: What is the most profitable kind of horse for the Wisconsin farmer to raise? Not as a special business, but as an incident to ordinary farming. My own paradoxical answer to this question would be: No horse at all. Our prolonged winters and the consequent necessity for expensive housing, costly care and much artificial food make horse-raising in the main a losing affair in this climate. That is, the average horse is not marketable for what he has cost.

Nevertheless, as nearly every farmer has "the old mare," endeared to him by association and a life's labor, having qualities he desires to see perpetuated, the question will still recur to him: What shall he breed, that the manger and the hay-rack may make a return?

In a short-sighted way let me look over the ground.

Among district breeds there is

THE THOROUGHBRED.

This animal traces in unbroken lineage to an oriental origin. He is created to run; he is bred expressly to carry a light weight in the saddle at great speed, and in this he honors his ancestry. On the turf, the racer usually begins his career at two years of age and ends it any time before six. In this struggle of precocity, our tardy climate would be behind the flag, as against the "Sunny South." For harness and every-day work he is generally too light in frame and too irritable in disposition; he will not tamely submit to drudgery until broken both in body and in spirit. The judgment hereabouts is decidedly against thoroughbreds in their purity. Within my own recollection they have gradually diminished in numbers, until to-day the horse of unmixed blood may be said to have disappeared from this vicinity. Whoever tries thorough-breeding in this region, will find his colts more rapid than his gains.

THE TROTTING-HORSE

has become within a few years almost a distinct type in America. By successive and successful selection, on a beginning of Canadian, Arab and thorough blood, the aptitude to trot is being bred with great and increasing certainty, and we are surely attaining what might be called the thoroughbred trotter; not, however, the trotting thoroughbred, which is quite a different thing. This animal is all the "go" just now, so much so that it is difficult to find anything slower than a three-minute nag. The princely prices paid for accomplished trotters have dazzled everyone, and each is blindly grabbing for a prize. Such men as Bonner will have a long score to settle sometime in the way of broken bones and broken hopes. The scientific breeding, the careful feeding, the cautious breaking, the skillful schooling to the gait, are all lost sight of in the sum total of thousands. "There is a pleasure in the pathless woods," and there may be fun, especially for the boys, in trying to raise a trotter, but I fancy for the farmer the crops will be about the same in both cases. From first to last the production of the high-priced trotter is becoming more and more a profession by itself, and it would be a saving thing for agricultural folks to so understand it.

THE DRAFT-HORSE

is gaining in popularity at the West; the entries at all our fairs show this. There are English and French, or Clydesdale and Norman, both sufficiently alike to be classed together. Great weight in the collar and sluggish action are their predominant characteristics. I cannot imagine these mammoth and much-consuming machines to be fitted to the present wants of Western agriculture. In the parts of Europe from whence they come, the roads are made hard and smooth for the drawing of heavy loads; first, markets are near by and human labor is cheap and ready; in fact, the people are thick. Here, the roads are rough and often deep, and it is sometines difficul to tell what they are made for. The selling-price is more or less remote; the farmer is his own man-of-all-work, and they do say our people are thin. Over there, the motto is, "slow, but sure;" here, it is "the devil take the hindmost." I believe that the demand for the pure draft horse, as an economical animal, will be confined, in this country, to the heavy truck-work of large cities. This will be a comparatively low market.

The question of a cross comes in here. Of course, almost all the draft importations have been stallions. They are brought here with the laudable intention of increasing the size of our horse stock by crossing on our lighter native mares. This method, according to the best authorities, is not good breeding. When there is great disparity in size the weight should be on the side of the female, where the capacity to carry, nourish and perfect the fœtus resides. If this is reversed, it is asserted that the produce will be liable to malformation, and likely to grow up unsound; the casket is too small for its contents, and this last becomes cramped in consequence. If this physiological view be correct, any cross with the draft stallion will be a failure, and breeding together the offspring will deepen the disaster.

There remains still another sort of horse—

THE CARRIAGE-HORSE.

As an individual breed it does not exist in this country. From what I have read, it has its best representative in the Cleveland Bay of England, the fruitful mother of improved breeds. Some of these animals have been imported, but I understand that they have

left no lasting hoof "prints on the sands of time." It is described as invariably bay, a little over 16 hands in height, hardy and powerful, with tendinous legs, wear and tear feet, and showy rather than speedy action. This is a fair portrait of the now-a-day carriage horse, the animal, in my opinion, the most desirable for the farmer to raise. The market for carriage horses is extensive, ill-supplied and necessarily high-priced. The promptest buyers are the wealthy of the cities. These people soon drive their horses to death or decrepitude. Perhaps morally, there might be some objection to selling a generous animal into such self-killing servitude. But morals and horse-flesh, it is said, do not work double. An animal of the carriage kind, falling below the standard of fashion, would, from his substance and activity, still be useful for the farm and road.

The above breeding recommendation of mine is like the Frenchman's flea-powder, it was warranted to kill, but you first had to catch the flea. This is the horse, but how are you going to get him? To the solution of this question I shall bring some authorities. Herbert says: "The Cleveland Bay, in its natural and unmixed form, is a tall, powerfully built, bony animal, averaging, I should say, 15 hands 3 inches in height; rarely falling short of 15½ or exceeding 16½.

"The Cleveland Bays are sound, hardy, active, powerful horses, with excellent capabilities for draft and good endurance, so long as they are not pushed beyond their speed, which may be estimated at from six to eight miles an hour on a trot.

"From these Cleveland Bays, however, though in their pure state nearly extinct, a very superior animal has descended, which, after several steps and gradations, has settled down into a family, common throughout all Yorkshire and more or less all the Midland counties, as the farm horse, and riding or driving horse of the farmers, having about two crosses, more or less, of blood on the original Cleveland stock."

Youatt: "The Cleveland mare is crossed by a three-fourths or thoroughbred horse of sufficient substance and height, and the produce is the coach horse most in repute, with his arched crest and high action."

Blaine: "The Cleveland Bays are known to owe their most valuable properties to early crosses of the race horses of those times with the best of the heavy breeds."

Walsh, better known as "Stonehenge:" "These horses are chiefly the result of a cross between the old Cleveland horse (now extinct) and the thoroughbred horse."

Low: "The true Cleveland Bay may be termed a breed, from the similitude of characteristics presented by the individuals of the stock. It has been formed by the same means as the hunter, namely, by the progressive mixture of the blood of the race-horse with the original breeds of the country. But a larger kind of horse has been used as the basis and a longer standard adopted by the breeder.

"The demand for these horses has long been very great in London and all the opulent towns of the kingdom, and the number carried abroad is large."

These extracts have been made from the writings of men *facile principes* in horse lore. They point out a clear line of breeding for the carriage horse, namely, the use of the thoroughbred on the common stock of the country. This will come, of course, from the side of the stallion. He must be no spindling, flighty beast, but a stocky, level-headed animal; in other words the concentration of a horse. If such a one is not convenient, the last alternative with us is the high-bred trotter of fine form. In his case, "two-forty" ought to be ruled out, and only size, shape and stately action insisted on.

As for "the old mare" before mentioned, she might be willing in any event, and the eyes of ownership are blind. Nevertheless, she ought to have bulk, soundness, and a constitution unimpaired by toil. Thereafter, the nearer she approaches the ideal aimed at the better.

Low, in speaking of the carriage horse, says: "To rear this class of horses the same principles of breeding should be applied as to the rearing of the race-horse himself. A class of mares, as well as of stallions, should be used having the properties sought for. It is in this way only that we can form and perpetuate a true breed in which the properties of the parents shall be reproduced in their descendants. The district of Cleveland doubtless owed the superiority which it continued to maintain in the production of this beautiful race of horses to the possession of a definite breed, formed not by accidental mixture, but by continued cultivation."

To conclude, I ask your indulgence for myself, but not for my subject. It is true, there are more taking titles for a paper than

"Horses," but there are few of greater practical importance—a touch of the epizootic proved that. It stopped the wheels of trade throughout the land; it stilled the wheels of the wagon, the steamer and the locomotive; and it brought home to man his dependence on the humbler animal.

According to Ruggles, there were in Wisconsin, in 1850, 30,000 horses; in 1860, 116.000, and in 1870, 252,000. These figures speak for the present strength and growing greatness of the horse.

Mr. Anderson. I think this is an important subject which we farmers ought to express our opinions about. I am very much in favor of farmers raising their own horses. I have advocated for years the raising of heavy draft horses, the crosses of the Clydesdale horse with our mares, for instance. I think 1,400 pounds good weight for plow-horses, rather heavy for roadsters. I think the best thing we can do is to breed horses for our own use, and the best breed I think is from the Clydesdale horse with our common mares.

Mr. Mitchell. I think the horse that I have given is the proper horse for the farmers use, sufficiently active for the road, and sufficiently heavy for the plow or wagon.

Mr. Robbins. I am in favor of a lighter horse than the heavy draft horse. In my experience of thirty years, I believe that a horse for the farm should not weigh over 1,200 pounds. I have a team eighteen years old that I raised myself. I was offered six hundred dollars for them in this market when they were eight years old. They are my carriage team. I drive them seventy-five miles a day when I want to, and do my farm work with them equally well. They are a cross with the Canadian and Bullrush, Morgan on the father's side and the Canadian mare on the mother's side. I can plow an acre more a day with those horses than I can with the heavier horses, and I can cultivate two acres of corn in a day more than I can with the heavy sluggish horses.

Mr. Whiting. I wish to ask one question. The gentleman has recommended us as farmers in the first place not to raise any horses. Now I wish to know what he would do?

Mr. Mitchell. I would import them. They come from the south and it is simply a difference in transportation, and that is much less than raising them.

President Bascom. There was one remark in the paper, that the

2:40 horse ought to be ruled out. I think that is so. I think that horse-racing is injurious to farmers. What I object to is turning a state or county fair into a horse-race in any large or considerable part. I think that the horse race will ultimately eat out everything else in the fair. It is the most attractive thing to the populace, and therefore in order to draw and get good fees at the gate, more and more attention will be paid to the horse-racing and horse-racing day. And more and more will people come to see horses race, and the prizes will be given larger and larger on the horse-racing, with a consequent reduction in other departments, and the interest in the fair itself will decrease.

The question of horses, it seems to me, ought to rest primarily on the relation of the horse to the farm, and in that relation it ought to be taken into the fairs, and it should be bred in relation to farm interests and presented on the fair-ground in that light. Racing has no more connection with agriculture than outside enjoyment and proceedings, simply because it happens to come on that day. I don't object to seeing horses at a fair. But we are educating our young men at the fairs, and they have already an undue predilection for races, and an undue failure to appreciate the good qualities of farm and carriage-horses. Now let us direct their attention to the substantial purpose of the horse and not make jockeys out of them. I cannot quite explain it, but somehow if a man attaches himself too strongly to a horse it does him a mischief. When he gets to be a jockey there is a falling off of manhood about him.

Mr. WEBSTER. I have a word to say in this matter. I don't agree exactly with my friend here, the farmer Mr. Anderson. The most of us are not situated as he is perhaps. We are poor, we are not able to keep so many horses, and my experience is that the horse that will do me on the farm must do me on the road, and that about a 1,200 pound horse will answer that purpose.

Now, if we had plenty of horses we might do as this gentleman does, but all of us can't manage that. I think we are a little too fast on this racing and have overdone the thing perhaps. I have two horses that I put on the track, thinking perhaps that I was going to beat somebody. Well, I put them on the track at a cost of about $60, and then got up to about three minutes; and of course I was beaten. So I said to my boys, now you will learn

something about fast horses. Now you take warning by me and don't think that every horse that we raise is going to beat some other man's horse. And, said I, let this thing of trying to be jockeys end here.

Mr. Young. I would inquire of Mr. Bascom if, in his remarks in regard to racing, he meant to include the heat-nag as well as other shorter forms of the race-track. It occurred to me that probably the President did not measure the entire length of its bearing upon the organism and purpose of the horse. It occurred to me that endurance was one of the main objects in the production of the farm-horse. In my idea, heat-racing is unconnected with horse growing among farmers. The President is aware that endurance comes from protracted effort.

President Bascom. There are two kinds of endurance. Endurance may show itself in different ways. I do not doubt the two-forty horse has a certain kind of endurance that does not belong to any other kind of horses. But it is a kind of endurance that will not suffice for other kinds of wants, for instance, to be able to stand a good hard day's work and plow on the farm under moderate motion. That is one kind of endurance required. But to stand very rapid motion for a few minutes on the race-track is another kind of endurance, and that is not what is wanted by farmers. And just at this point I object wholly to this boat-racing in colleges, and on that ground I have a certain charity for that as a means of pleasure. But the truth is, that the man who is hard and plucky for drawing an oar in a boat-race, is not plucky and hard for solving a difficult problem in mathematics. It is like a mill-dam, if we draw off the water from it to a mill on one side we cannot draw it off to the mill on the other side. The men who can think the most and strongest are the men who keep up their general nutritive system, and thus direct their forces in the channel in which they propose to use them.

Mr. Stewart. I think a horse of a medium size is about what a farmer wants on the average, especially where we can't support a team for the various purposes for which we want horses. For a team for all purposes, a medium-sized team is the best.

General Delaplaine. The importance of good walking in horses is generally overlooked. I understand that the premium offered in England for good walkers is larger than for any other kind of speed.

It seems to me that it is a very necessary kind of gait for farmer's horses. I have thought that this matter ought to be taken up at our fairs, and that better premiums ought to be given for good walkers.

Mr. BENTON. I want to say that the last gentleman has struck the key-note, we want the walkers. There is our success in almost every occupation as farmers, it is in the horse that can walk, and do it easily. I hope that subject will receive attention from those in the management of our fairs.

APICULTURE OR "LIGHT IN THE BEE-HIVE."

BY G. W. MARYATT, MILTON.

The Creator has stamped the seal of His infinity on all his works, so that it is impossible by searching, to find out the Almighty to perfection. On none of them, however, has He displayed Himself more clearly than in the economy of the honey-bee. No doubt He intended the bee, as truly as the domestic animals, for the comfort of man. In the early ages of the world, and even until quite modern times, honey was almost the only natural sweet and the promise of a land flowing with milk and honey had once a significance which it is difficult for us fully to realize. The honey-bee is the only insect that has been domesticated by man, and besides giving us wealth and a splendid luxury, it possesses many charms and is a study for the naturalist.

There are very few societies in this country for learning and investigating the wonders of this little insect. For ages past, organizations have been effected by our best men to develope the various agricultural resources of the land, and during the same period the most industrious workers of our continent have been consigned to the ignominy of a death by fire and brimstone.

If apiarists had given the time and attention in selecting the males and females from the largest, most industrious, prolific, and docile colonies to breed from, with the same care, shrewdness and attention that has been practiced with horses, cattle, sheep, hogs and poultry, we would have a race of bees far superior to what we now possess.

Man cannot obtain labor from any other source as cheap as from the honey-bee, as they work for nothing and find themselves, requiring only a free tenement. The census returns of 1850 show the amount of wax and honey in the United States to be 14,853,790 pounds. In 1860, 126,386,855 pounds. With the increased attention given to the pursuit, together with the increase of colonies, we have no doubt that the present returns will show a vast increase of product. Possessing, as we do, a genial climate and a fertile soil, producing plants with a due degree of skill and enterprise, capable of the production of richly varied honey and flowers, the bees can be increased to an extent that the profit arising therefrom will pay all our taxes, and furnish our tables daily with one of the choicest luxuries of life.

The honey-bee belongs to the genus apis and is of that class of insects that live in perfect societies. A full colony or swarm consists of one queen, being a perfect female, and fifteen to thirty thousand workers, and also a few hundred drones. The latter are the only perfect males and are only found during the summer or swarming season. No colony can long exist without a queen. She lays all the eggs, but does not govern her subjects or dictate their workings, but is governed by them in all her movements, being fed by them to control the number of eggs required according to the season and capacity of the hive. When she becomes old she is superceded by a young queen, raised by the workers, who kill the old one. The same egg that will produce a queen can also produce a drone or worker, depending on the skill of the latter in forming the cell and kind of food furnished. If a queen is required, three cells are converted into one, and the young grub on being removed to it must not be more than five days old, and then fed for eleven days on what is called payal jelly. Hence, a queen is produced in sixteen days, while it requires twenty-one to develop workers.

Within from three to six days after the queen leaves her cell, she flies abroad to mate with the drones in the air, and returns to make the hive populous. Her natural life is four years, but is sometimes superceded in the first year. A prolific queen will lay two or three thousand eggs per day. The workers are smaller than the queen or drone and are in fact non-sexual, though really imperfect females; yet they nurse the young, gather the honey, obtain the pollen, propolis-glue and other substances requisite for honey-preserving pur-

poses in the hive, and are armed with stings to defend the community. The drones are like some of the human family, eating much and doing little; hence, when the drone season is over, the workers kill the drones or drive them out to starve. If the workers make a mistake and form too many drone-cells, the drones will sometimes be so numerous as to eat the honey as fast as the workers can procure it; but by the improved method of bee-keeping, in the use of movable frames, the drone can be removed, and comb for raising workers inserted in its place. In fact the whole breeding department can be regulated in the same manner. The wax is produced for building comb in which to store the honey and pollen and for the deposit of eggs.

The workers which produce the wax do nothing else. The wax exudes from their bodies in scales; is a costly matter in the way of time for the bees, as only in the honey-season can they make one pound of wax, while they can procure twenty pounds of honey. Dr. Kirtland says they consume twenty-five pounds of honey to producing one pound of comb. Pollen, or bee-bread, is gathered from, and is the fertilizing dust of flowers. The color and quality varies with the different plants. It is never stored in drone-cells but used to feed the young in early spring before flowers appear. If flour of rye is placed near the hives, the bees will obtain from it a similar substance, and are stimulated to brood early in the spring. Each swarm will profitably use two pounds of flour before vegetation is in bloom.

Bee-keeping has been so simplified, the science has been reduced to such an art, that any one who chooses can keep bees and manage them well, and the land described as flowing with milk and honey can be realized in Wisconsin, and honey become abundant for home use and profit in the market.

Honey in clear white comb, still commands the highest price, but is not the most profit to the producer or consumer. By a cheap aparatus the honey is driven from the comb by centrifugal force without injuring the comb, and the entire comb restored to the hive to be refilled, and in the best of the honey-season can be successfully done every third or fourth day. Those who eat honey in the comb also eat the wax which is indigestable and unwholsome, which is not the case in the use of extracted honey. By this process we can have clover, linden, or buckwheat honey as we choose;

and all who use the Melipulte testify that three pounds can be obtained where only one can be had in the ordinary way. If the bee had not such a formidable weapon, both of offense and defense, multitudes who now fear it might easily be induced to enter upon its cultivation; but the science teaches us laws by which all necessary operations may be performed without incurring any risk of exciting its anger while removing comb covered with bees, forming new swarms, exhibiting the queen, transferring them and their stores to other hives and extracting the honey, and thus enjoying the pleasure and profit of a pursuit which has been appropriately styled the poetry of rural economy. The laws are only three:

First. The honey-bee, when filled with honey, never volunteers an attack, but only acts on the defensive.

Second. They cannot under any circumstances resist the temptation to fill themselves with liquid sweets.

Third. When frightened, they immediately begin to fill themselves with honey from their combs. By blowing upon them smoke, it will always frighten them so that the largest and most fiery colony may at once be brought into complete subjection.

In this consists all the secrets, charms, and receipts for taming bees with which unprincipled venders have long humbugged a too credulous public. The soul of this system is a complete control of the combs. With gentle movements and a thorough knowledge of the science, any one, male or female, can superintend a large apiary, performing every operation necessary for pleasure and profit with as little risk of stings as must be incurred in managing a single hive in the ordinary way. The eggs of the queen are deposited equally on each side of the comb, to economize heat for developing the brood, seventy degrees of Farenheit being required. It requires twenty-four days to perfect the drones, twenty-one days to perfect workers, thirty-six hours of which it occupies in spinning its cocoon; and sixteen days to perfect a queen, twenty-four hours of which time it occupies in spinning its cocoon. Such is the enmity of young queens to each other that the one that first emerges from the cell rushes to those of its sisters and tears to pieces even the imperfect larvæ. There are five peculiarities of queens:

1st. She arrives at maturity almost one-third sooner than a drone, and just one-third sooner than a worker.

2d. Her organs of reproduction are completely developed.

3d. Her size, shape and color are greatly changed, her lower jaws are shorter, head rounder, abdomen without the receptacles for secreting wax, legs have neither brushes or baskets, and sting is more curved and one-third longer than a worker's.

4th. Her instincts are entirely changed. As a worker she would have thrust out her sting at the least provocation; now she may be pulled limb from limb without attempting to sting. As a worker she would have treated a queen with the greatest consideration; now she destroys her as a rival. As a worker she would frequently have left the hive to labor; as a queen she never leaves after fertilization except with a new swarm.

5th. Her term of life is remarkably lengthened. As a worker she would not have lived more than from three to seven or eight months; as a queen she lives four years or more.

All these wonders may now be demonstrated to any one who prefers an acquaintance with facts, to caviling at the labor of others. The workers, the smallest in size, are alike our wonder and admiration, whether we consider their unvarying God-implanted instinct in hoarding rich stores of honey for future use, or in their matchless architectural skill in building comb, or in their entire devotion to the queen's welfare, and to that of her numerous maturing progeny. We must regard them as the most wonderful class of the insect family.

Is it credible that these little insects can unite so many requisites in the contruction of their cells either by chance or because they are profoundly versed in the most intricate mathematics? Let it be required to find what shape a given quantity of matter must take in order to have the greatest capacity and strength; occupying at the same time the least space, consuming the least labor in its construction. When this problem is solved by the most refined mathematical process, the answer is the hexigon or six sided cell of the honey-bee, with its three, four sided figures at the base, the shape of which figures cannot be altered ever so little except for the worse. To an intelligent and candid mind the smallest piece of honey-comb is a perfect demonstration that there is a great first cause.

Dr. Evans says:

> "On books, deep poring ye pale sons of toil,
> Who waste in studious trance the midnight oil;
> Say, can ye simulate with all your rules?
> Drawn, or from Grecian or Gothic schools?
> This artless frame, instinct her simple guide,
> A heaven-taught insect baffles all your pride;
> Not all your marshaled orbs that ride so high,
> Proclaim more loud a present Deity,
> Than the nice symmetry of these small cells,
> Where on each angle genuine science dwells."

As bees carry on their bodies the pollen or fertilizing dust, they aid wonderfully in the impregnation of plants while prying into blossoms in search of honey or bee-bread. In genial seasons, fruit will often set abundantly, but many springs are so unpropitious that during the critical period of blossoming, the sun shines only for a few hours, so that those only can reasonably expect a remunerating crop, whose trees are all murmuring with the pleasant hum of bees.

Extensive fruit-growers report that many times fruit was a very uncertain crop, a cold storm frequently prevailing when the trees were in blossom, and they have observed that if the sun shone only for a few hours, the trees secured a crop. Then all gentlemen, and ladies too, should learn the science and improved art of agriculture, and keep bees to gather the delicious nectar which would else be lost on the desert air, and also to mingle the pollen of flowers, for fruit will flourish all the more, when flowers mate by rifled store. And they who with health would live at ease, should cultivate both fruit and bees. The creator has admirably adapted these insect societies to all classes of mankind, and this adaptation speaks eloquently of his wisdom, goodness and care for the welfare of his creatures. In bee-keeping, as in all other pursuits, we must first understand our business and then proceed upon the good old maxim that " the hand of the diligent maketh rich." Artificial swarming, colonizing, and dividing, so fascinating in theory, would always be practiced if successful. I will give only one of many modes of forced swarming which is a success and depends on three conditions.

First. Time.

Second. Condition of the colony.

Third. Conformity to the laws that govern the economy of the hive.

All modifications of artificial swarming are based upon the fact of the bees being able to bear themselves a queen from any worker egg or larva which under ordinary treatment would have produced a worker, and is so changed by the peculiar food which the bees supply the young grub, that instead of twenty-one days being required to perfect the insect it takes but sixteen, while its life is prolonged to four years instead of three months. Why this is so, is one of the unexplained mysteries of the physiology of the honey-bee. Remove the queen from any colony and they will immediately commence repairing their loss by building queen cells. On the ninth day, for as many cells as can be removed without injury, form a nucleus. On the tenth day cut out the cells by cutting around them far enough not to injure them; cut a like place in the comb of each nucleus to receive the cell and hold it in place, put the cell in the same position it was before removed. The nucleus will protect and hatch the cell as well as the whole swarm. By this process the working force of the swarm is not reduced by raising queens. The cell will hatch on the sixteenth day, and in about eight days after the queen leaves her cell she will commence laying, when the nucleus may be strengthened to a full swarm by giving them capped brood and adhering bees from any hive, or by removing a strong colony and placing the nucleus on its stand. A prolific queen is worth as much as all the workers of any hive. Bees often refusing to swarm at all, many going to the woods, sometimes becoming queenless, the time and expense of watching in swarming time, and many other perplexities have directed the attention of cultivtors to devising some more reliable method than natural swarming for increasing their colonies. In natural swarming the bee-keeper is entirely dependent on the caprice of his bees or rather on the natural laws which control their swarming. It is one of the laws of the hive that bees which have no matured queen never build any but drone-cells for storing honey, and are too large for raising workers. A want of a proper understanding of this law has in every instance proved an entire failure on the part of experienced as well as inexperienced Apiarians in attempting to increase colonies by artificial means. The above method of artificial swarming is superior to natural swarming, being less trouble.

All I want to say about hives is that we want a plain, simple hive, that any ingenious man can make, or, in other words, a Langstroth hive. The grand secret of the whole thing is, that with the movable comb and a little smoke, we have peaceable, complete, and unlimited control of bees, so that by centrifugal force we obtain the honey, clear, pure, unadulterated nectar, and return the comb to the hive to be refilled, at a saving of three hundred per cent.

Bee-keeping, though pursued by some as a special business, and by others as a pleasant pastime, is essentially one of the economies of the farm. In the old world, a farm would hardly be thought to be completely stocked without a few hives. In this country, bee-keeping is the exception rather than the rule. A few years ago, the mania was for wheat-growing, because wheat was the great cash article in the produce market.

When merino sheep were bringing fancy prices, everybody was crazy to go into raising sheep. Not long since the rural passion was for hops and tobacco; now, perhaps, the inclination sets towards stock-raising and dairying, but we contend that the wiser plan is to try all expedients to increase our gains, and avoid as much as possible putting all into a single venture. Bee-keeping well deserves a place among the lesser industries. As it is wise to keep poultry to pick up the waste grain and stray seeds; so it is more wise to keep bees to gather the nectar of clover, orchard-blossoms and wild-flowers that would otherwise go to waste. Bee-keeping used to be a very crude affair. It was carried on with gums or straw-hives, inside of which everything was firmly fixed and all a realm of mystery. The bees were left to themselves until the close of the season, when they were brutally smothered with brimstone fumes, and the colony being thus exterminated, its stores were appropriated to the use and luxury of the owner. Now, we have the movable frame hive, which gives the bee-keeper access to the interior of the colony, perfect control over it, and liberty to take the surplus honey without injuring the bees. With this form of hive the loss of swarms by their going to the woods can be prevented. Queens can be given to swarms that become queenless, and weak swarms can be strengthened by giving them combs, bees, and honey.

The invention of the honey extractor, or melipulte, is another great step in advance, as by its use the yield of honey can be trebled in a single season. Bees often refuse to labor and will not

put a drop of honey into a surplus box, though there be plenty of it in the field; but they will replace the honey of which the melipulte has deprived them. They have not only a craving instinct, but an instinct of satisfaction. The well-filled hive appeals to this latter instinct. They know how to rest and be thankful. Take away a portion of their stores, and the craving instinct comes into play again and drives them forth as busy workers into the fields for fresh supplies.

Another modern improvement is the importation and breeding of superior bees. There are inferior and superior breeds of bees just as there are of poultry, swine, sheep, cattle, and horses; and though it may seem an extravagant thing to give five or ten dollars for a queen bee—a little insect about an inch long—it is no more so than to give one or two hundred dollars for a superior calf or lamb. The Italian cross has greatly improved common black bees by giving them a dash of fresh blood, as stock-breeders would express it, and by imparting to them desirable qualities under the crude appliances of old-time bee-keeping. It was a fair remunerating business from time immemorial. Much more, then, is it worthy of attention with the aid of modern improvements. It is, therefore, only natural to expect that before many years, apiculture will take a much higher rank than it now does among other industries.

Honey and beeswax are marketable articles, for which there is a well nigh limitless demand, which, like that of fruit, increases with the supply. Honey forage is abundant everywhere. In wooded localities, the maple furnishes honey in its early blossoms, and in swamp regions there are various plants which supply bee-food with the first opening of spring. Our early wild flowers and fruit-blossoms give the bees something to do, and when white clover spangles the fields and roadsides, the honey harvest is in all its glory. The late bass-wood blossoms, asters, golden rod and buckwheat protract the honey season into the fall.

Bees are the best laborers we can have. The chief difficulty with beginners in bee-keeping is that they will not be to the slight expense and trouble necessary to be informed on the subject. They buy a hive of bees about which they know nothing except that bees can sting and their honey is nice, and then leave it to take care of itself. What wonder that only failure and loss are the results. It would be the same in stock-raising, dairying or any other business. While

we advise every one to make bee-keeping one of the many lines of industrial pursuits, by no means enter into it without gaining the needed information. This can easily be obtained from the "Hive and Honey Bee," by Rev. Mr. Langstroth, and other books on apiculture, and from bee Journals.

One county in Wisconsin has, this past year, produced seventy thousand pounds of honey. If each county produced a like amount, the product of the state would be four millions two hundred thousand pounds of honey besides the increase of colonies. Now, there is not a single county in the state that lacks the means, the flowers or the brains, but only a little knowledge and enterprise to produce even a greater amount. Then let us put the means in reach of every school-boy and girl in our flourishing state and educate them in the science and art of apiculture, and nothing will prevent the multiplication of swarms until the tons of wasting sweets, now lost in the cells of the flora of our state, will be gathered up to sweeten and gladden the life of man.

In response to a question by some member of the convention, as to how much honey one swarm of bees would make in one day, Mr. Maryatt said:

I have had them bring me eight pounds a day. It is stated that one good swarm will produce, in the basswood season, 15 pounds.

Question. What do bees make comb from, and how much honey does a new swarm carry off when they leave the old swarm?

Mr. Maryatt. I am asked two questions: Bees fill themselves with honey at the natural swarming, and a good swarm carries away about 8 or 10 pounds to start in their new home with. The honey is secreted in the abdomen and forms comb there, and they consume 25 pounds of honey in making one pound of comb. Up in the northern part of this state this year a man had forty swarms and he sold twenty of them to his neighbor, and he took them to another locality. The neighbor extracted the honey they made and got 2,000 pounds, and the former owner undertook to raise honey in boxes, from the twenty swarms kept, and he didn't get 200 pounds in the same time the other man got 2,000, using an extractor.

Now, in relation to wintering. You will find that the honey-bee is a native of a warm climate, and though we have a cold one, if

we put them in a warm place we can winter them every time, just as we can horses or sheep. I keep my bees in my cellar, and keep it warmed with a stove. Last winter I kept my bees on the average at 51½ degrees.

Question. How low do you allow the temperature to get?

Answer. About 40 degrees. Mr. Grimm has 850 swarms and he puts stoves in his cellar to keep them warm.

Question. How do you keep them from stinging?

Answer. When they are filled with honey, they are just like yourself when you have a load on your back and can't stop to fight. Then they are peaceable and pleasant and they could not fight if they would. And by inducing them to partake of liquid sweets they are always peaceable. The Italian bee is not so irascible as any other kind of bees.

Question. Will bees extract honey from red clover?

Answer. Yes, if there is no other honey for them to get.

Question. Do the millers trouble Italian bees as much as the common bees?

Answer. The Italian bees are almost miller-proof. They hardly ever have any millers in their hives. There is no such thing as a miller-proof hive. But the Italian bee will not tolerate millers. Bees consume from 15 to 20 pounds of honey more per hive if kept out doors than if kept inside.

Again, most all bee-keepers, when their bees in winter make a noise, reduce the temperature from 40 to 32 degrees. Now a bee in 32 degrees is very still, making little noise. At 40 degrees they will begin to make a little more noise, and from 35 to 40 they make a very unpleasant noise, but when you raise the temperature to about 50 degrees they get on a joyful hum as in June and they feel just as though they were at home. I prefer to keep bees in the light and give them pure air and pure food. Most of our bee-writers tell us that they consume an unusual amount of honey and beat with their wings when they are cold, to generate heat and that the outside of the cluster are always exercising their wings to keep warm, and thus they keep up continual physical exercise that requires a larger consumption of food. When you keep bees in a cellar four or five months, they miss their food and in a warm day they want to fly. Well, one man says he puts them in a hot-bed and

lets them fly there for exercise and then puts them back again. But my philosophy is, that by keeping the fæces cleared away they don't care to fly about much; 50 degrees temperature evaporates the fæces.

Question. What kind of hive is best and cheapest and most easily made?

Answer. I use the Langstroth hive. The men who have used the Langstroth hive have made the most money out of it. The average life of a working bee is only fifty days in the working season.

NATURES' METHOD OF SOIL FORMATION, AND THE PROCESS OF CULTURE WHICH THESE METHODS SUGGEST.

BY PROF. JOHN MURRISH, MAZOMANIE.

Let the water under the heavens be gathered together unto one place, and let the dry land appear; is the language of inspiration when calling our attention to one of the great changes that took place in the early history of our earth. This translated into scientific language would read as follows: Let the vail that separates the inorganic from the organic departments of nature be drawn back, that the crystalline and sedimentery material of the mineral kingdom may be lifted up into the preparatory department of the vegetable kingdom, and let the work of organization begin.

If we stood then upon the surface of the rock, as the waters of the ocean were receding and could have studied the forces and watched the processes by which those beautiful forms of matter in the mineral kingdom were first taken to pieces and then moulded into those forms of matter we call vegetable and animal; or what perhaps will amount to the same thing, if we stand now upon the surface of some new made island just raising above the water of our modern seas, we may even now, study and watch these things, for the forces and powers of nature then and now were the same. A more important, or interesting subject for the agriculturalist cannot be found: For in these mineral compounds, formed with so much care, we find wrapped up the elements, the very material that

is to enter into vegetable and animal life. Indeed we find also, imprisoned in these compounds, some of the forces that are to play an important part in reducing them to soil, and then elevating this matter into organized forms.

Beautiful indeed, we are ready to say, as we stand upon the surface of this newly-risen rock, this crystalline aggregate of finely finished minerals, and watch the bright rays of the sun as they fall for the first time upon its light-reflecting crystals. At this point let us dwell for a moment, for it is here where our study of minerology ends, and where we must begin with the elements of organography.

The surface of this rock is now clear above the waters, and fully up in the region of atmospheric air, sunlight and other physical conditions unknown in the mineral kingdom. These new forces commence at once to play upon its crystalline structure, and changes are already visible. The crystalline faces of the minerals composing this rock, once bright and beautiful, are growing dim. The work of disintegration has begun. The elements and atoms forming those beautiful crystals in the mineral kingdom, under the influence of her laws, are now freed from their bond of union, and upon this once hard crystalline rock they lie mechanically mixed in common dust. This little film of dust, so thin that we can remove it with our finger, is soil in its first stages of formation.

Slowly, but effectually, these forces work; and slowly but gradually this little film of dust thickens on the surface of the rock. If here we watch this process carefully, we notice that not only upon the hard crystalline rock, but upon the dust itself are these forces at work, reducing it to states of finer division, until particle by particle it passes beyond the range of vision, and is held in solution by the water imprisoned in this disintegrated rock, this new-made earth.

By this process, those beautiful compounds, the work of the mineral kingdom are destroyed, completely destroyed, as though they were made in vain. The material, however, is not lost, but removed —as men of science tell us—to the region of molecular forces, where it will undergo molecular changes, and may be returned to us in new forms.

In this stage in "Nature's Methods" let us pause and consider for a moment some of the facts brought to light by modern science. It has been known to the world for many years that matter is

indestructable; that is, its forms may change, and by certain processes be rendered invisible. But it is matter still, and subject to the forces and laws of the material world. This is true not only in one department of nature, but in all those crystalline compounds that we have just been considering, passing as they are into decay and dust, and returning again in new forms somewhere; it may be in new mineral compounds, or it may be in vegetable forms, and subsequently in animal forms. Then forms of matter will always depend upon the nature of the forces, and physical conditions under which matter is placed.

Modern science has just given to the world the fact, that what is true of matter in this respect, is true also of natural forces. Now, if this doctrine of the conservation and correlation of natural forces is true, we must have the following facts in connection with the formation and disentegration of the rocks under consideration:

1. The chemical forces employed in the mineral kingdom in building these compounds and holding them in the massive rock were not destroyod but imprisoned for the time being in the minerals and rocks which they were instrumental in building up and withdrawn from the active forces of the world only while these minerals and rocks maintained their forms.

2. In the disintegration of these rocks and decomposition of these minerals, these imprisoned forces are to be released and restored to the active forces of the world, as the work of disintegration and decomposition goes on.

With this view of the subject, this little film of dust or soil rises before us as a question of great interest; for it is not only the ashes of decaying minerals, but the abode of forces just freed from their prisons, restored fresh to the world to play an important part in the transformation of this dissolving matter into new material forms. Nor is this all; the forces employed in disintegrating this rock and decomposing these minerals, atmospheric air, for instance and water, with what other forces and matter they may contain, are also employed in building up this soil-formation, consequently are improved in the work which they are instrumental in building up, until released again in other forms as plant-food and plant-forces to be used in building up vegetable forms of matter. The soil, then, like the plant and the animal, is a department in nature's work-shop where the transformation of matter and forces is carried on, not by

accident, but by natural methods and natural laws. The material for this department is obtained partly from the mineral kingdom, but mostly from the atmosphere. This department, too, like all others in this great factory, is furnished with all the powers and appliances uecessary for its work. Hence the soil is endowed with powers of absorption by which it takes up gaseous matter rising through the rocks from beneath, draws in what atmospheric air is necessary, and absorbs from the atmosphere resting on it, as well as from what is passing through it, what moisture and gaseous matter it may contain. The soil thus prepared by natural methods is not an aggregation of raw material merely, drawn from these differeut sources, but a bundle of forces by which this raw material is worked up into a form of matter out of which vegetable life starts and from which vegetable matter is drawn. What is the nature and form of this matter out of which vegetable life starts, and what are the forces employed in starting it? It will pay us to spend a few moments here with scientific men.

In tracing back the history of a plant through its organism to the material of which it is composed, it is discovered that all plants originate in the same kind of matter. This matter is composed of what is called the four organic elements, namely: Oxygen, carbon, hydrogen, and nitrogen. These elements are formed in the following compounds, namely: Water, carbonic acid and ammonia. These compounds, when brought together under certain conditions, give rise to a still more complex body of matter, from which arises the phenomena of life. This complex body of matter, formed of water, carbonic acid and ammonia, is called by Huxley—one of ths deepest thinkers of the day—Protoplasm, or the Physical Basis of Life. By Haeckel, who is not any behind him as an analyzer of natural phenomena, it is called Germinal matter, that is, that kind of matter in which the germs of vegetable life are formed. Others still more emphatic, call it the "Matter of Life." We find this same kind of matter treasured up in the seeds of all plants to be deposited in the soil again as germinal matter. But from the fact that all plants rise out of this kind of matter, and that we find plants growing now where no seed has been sown, and where it is hardly possible they could have found their way, we are forced to this conclusion, that under proper conditions this 'matter of life' is formed in the soil by natural processes, and that in the early for-

mation of soil, and even in the present day, where no seeds are furnished, plants have their origin in this way.

But on this particular point, Moses, rather than Huxley or Haeckel, is the best authority. On this part of the work of creation we have in his own language the following: "And God said, let the earth bring forth grass; the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself upon the earth." Mark the language. Let the *earth* bring forth. In this beautiful sketch of the divine plan of creation, we have brought out in plain language the fact which science is trying to explain, namely: To the earth—that is the soil—under certain physical conditions, is given the power to give birth to vegetable life. From this we may infer that the treasuring up of a portion of this germinal matter in the seeds of plants, was a subsequent provision, adapting it to the wants of the human race, inasmuch as it allows more to select from for cultivation among the natural products of the soil and such plants as are best adapted to man's wants.

Now let us return again to our little film of dust, forming as we now know it is, not only from the dust of decaying minerals, but from gaseous matter gathered from the atmosphere, and other sources by the power of absorption with which it is peculiarly endowed, and by which it is enabled to build itself up, and restore its wasted powers from the common matter of the universe. It is interesting to remember also, as we come back again to watch and study those "Natural Methods," that here too are concentrated the natural forces of the vegetable kingdom. Like laborers in a factory, the Physical, Chemical, and Vital forces are each in their own department. Some taking this raw material to pieces, others putting it together again in other forms, while still others with a more refined process, appear to be infusing into this dead matter, the principles of life. Our investigations must be carried on with caution here, for we are on the verge of the vegetable kingdom, and almost in the presence of its phenomena and forces. Indeed, with more extended vision, and a keener sense of hearing, we should no doubt witness the activity of force here set up, and listen with delight to the clashing of atoms as matter is being prepared and transferred from the mineral and gaseous condition into the vegetable forms of life. But while these forces and their modes of operation are beyond the range of our senses, we infer their exis-

tence and activities from the changes going on in matters before our eyes.

If now we take our stand squarely on scientific ground, and pursue our investigations with scientific appliances, the first tangible form of reconstructed matter that we find in the soil will be a small speck or granule of matter, microscopic at first, but by rapid growth soon within the range of vision. This little speck of matter, scientific men would call a structureless bit of Protoplasm, or Germinal matter; but to the casual observer it looks like the product of the mineral kingdom, a little crystal for instance such as we often find forming from mineral solutions. A little farther developed, however, and we notice its cellular structure; then we know it is not a mineral, not the work of chemical forces, for it is assuming the form of living matter. If, however, we analyze this speck of matter, it will, we are told, separate into water, carbonic acid and ammonia. These compounds are the work of chemical forces, but to bring them together into this more complex form of matter, is the work of a higher class. Here we find ourselves on the line that separates the inorganic from the organic, and to follow this speck of matter further, we must step into the vegetable kingdom. Here it assumes a Germinal form, and under the influence of moisture and heat, we notice a little root starting down into this thin layer of soil-forming material. From this root starts out in every direction little rootlets or numberless little thread-like fibers, traversing the soil in all directions in search of plant-forming matter, which it conveys to the plant for its support. At the same time, or nearly so, starts a little blade upward through the soil into the air and sunlight. It is now to all intents and purposes a little plant with its roots fastened in the soil in the presence of solvents and compounds, and its blade and branches bathed in an atmosphere of moisture and sunlight. This plant is endowed with wonderful powers or forces by which the plant-forming matter of the soil, and the plant forming matter of the air is drawn towards it, by an elective attraction possessed alike by the roots and the blade, and it absorbs from both sources the material necessary for its growth and development.

Here we have one of the most refined processes of "Natural Methods." The plant is an instrument by which this widly-diffused matter is brought together, mixed in given proportions and then un-

der the sun-light is converted into vegetable organism, only that it may be taken to pieces again to furnish prepared matter and force or forces, to be used again in some other department of nature. This matter and force, however, before it is fit for use again, must be taken to pieces and otherwise prepared. Hence we are called upon here in the vegetable kingdom to witness what we have always witnessed in the mineral kingdom, namely, the disintegration and consequent distribution of one form of matter, to furnish material and force for building up other and higher forms. That is, we are called upon here to witness the disintegration and decay of those beautiful forms of vegetable matter, to furnish matter and force to be used in building up animal forms.

But while a part of this decomposing vegetable matter, and I may add a part of the forces imprisoned in the plant is transferred to this higher department of organization, the remainder, and perhaps the larger portion, is returned to the soil as soil-forming material. And even that which is transferred to the animal kingdom and transformed into animal forms, is, when the purposes of life are served, returned again to the soil to be worked up into new vegetable forms. Not only then, of those mineral forms in the mineral kingdom, but of those vegetable forms in the vegetable kingdom, and of those animal forms in the animal kingdom, it may be said, as it was said of man when he first rose from the matter of life, "Dust thou art and unto dust thou shalt return."

It is from this *dust,* with what gaseous matter it absorbs directly or indirectly from the atmosphere, that nature forms our soil. But this heterogeneous layer of dirt is not of itself plant-food, but the material out of which plant-food is prepared. Nor is it so much upon the kind of matter forming the soil, as it is upon its condition, that the fertility of the soil depends.

If we watch the process of plant formation, we find that nearly nine-tenths of the matter entering into its composition, enter it as water and carbonic acid, the remainder as ammonia, potassa, soda, lime, magnesia, alumina, oxide of iron, oxide of manganese, silica, sulphuric acid, phosphoric acid and chlorine, and it may be one or two other compounds of minor importance. The first two—and as I have said, nearly nine-tenths of the whole—namely, water and carbonic acid and perhaps ammonia, are derived mostly from the atmosphere, partly through the stalk and leaves of the plant, and

partly through the soil and roots. The remainder is dissolved out of mineral matter furnished by the rocks, either in its compound condition, or subsequently formed in the soil out of its free elements. In the relation here established between the soil and the plant, nature furnishes us with the following facts that we should remember in all our processes of culture.

1. No plant can live upon the uncompounded elements of nature. These elements must be formed into certain definite compounds by chemical forces, before they can be used as plant-food.

2. No plant can live upon solid matter. These compounds must be dissolved in a fluid before they are in a condition to be taken up by the thread like fibers of the root, and to enter the cellular structure of the plant. These absolute conditions of matter in the soil necessitates certain forms of force there; as do also the germination and growth of plants. In confirmation of this, let us look for a moment at a growing plant. Here we notice not only form but force; that is, we notice not only matter entering into its composition, but a manipulation of force by which it grows and developes. Now inasmuch as a plant cannot create a particle of the matter of which it is formed, neither can it create a particle of the force by which it grows. We have just seen where the matter comes from. Whence the force? Let us turn our attention in this direction for a moment.

At the beginning of this paper I noticed the fact that, no sooner is new-made rock lifted up into the atmosphere than the work of disentegration commences. That these disintegrating and dissolving forces are of atmospheric origin, I think there can be no doubt. And in the fully developed soil, it is to the free circulation of atmospheric air more than to any other cause that we are indebted for those physical and chemical forces, without which soil and plant formation cannot be carried on. It acts not only upon the rocks, the mineral matter upon which the soil rests, and of which it is partly formed, but upon the decaying animal and vegetable remains with which it is continually replenished.

I have stated that near nine-tenths of the matter entering into plant-formation, enters as carbonic acid and water. But before taking their places in the structure of the plant, these compounds are decomposed in the leaves by the action of sunlight, the carbon of the acid and the hydrogen of the water only are used in building

up the plant; the oxygen is set free in the atmosphere. Nature, in returning this vegetable matter to the soil, returns this carbon and hydrogen in their elementary, uncombined states, and consequently of no earthly use as plant-food, or plant-force, until again converted into carbonic acid and water. How is this to be done? Nature's method is by the free circulation of atmospheric air in the soil. Let us watch, for a moment, this beautiful process.

For every pound of hydrogen obtained by the plant in the decomposition of water in its leaves, eight pounds of oxygen are thrown off into the atmosphere. The affinity of the atoms of oxygen and hydrogen overcome by the sunlight in this process are not destroyed, but wrought up into what we sometimes call chemical tension, to be returned again as force, under proper conditions. These several elements, according to natural methods, are to brought together in the soil, and here the union is to take place. In the union of these elements to form water, we must have for every pound of hydrogen returned to the soil, eight pounds of oxygen from the atmosphere. To what extent the health and vigor of plants depend upon this beautiful process of forming water in the presence of their roots, we may never know. Not any less important, however, is the formation of carbonic acid by a similar process.

It is said by good authority, that every acre of strong vegetation, takes from the atmosphere, and will—unless man interposes—return to the soil annually not less than one-half ton of carbon; or at this rate fifty tons in a century. For what purpose is this carbon returned to the soil? Suppose we take this vegetable carbon —charcoal for instance—and put it into the boiler of a locomotive-engine, or a steamboat; and then allow the atmosphere free access to it, what will be the result? The affinity between the atoms of oxygen and carbon, overcome by the action of sunlight in the process of vegetation, is here restored, and they rush together to form carbonic acid. In their combination heat is produced and by a very simple process converted into force or motion. Hence the train moves, and the boat is urged across the ocean. Or suppose we take a portion of this vegetable carbon and feed it to our animals, what is the result? This carbonaceous matter is taken into the stomach and digested, and when the atmospheric air inhaled by the animal is brought in contact with it, it is oxidized, that is, carbonic acid is formed, and as a result, heat is generated, which is converted

into animal force. Hence the animal moves, grows and works, and all this the result of the union of-the oxygen of the air with the carbon of the food. And now what about this carbonaceous matter which nature deposits in the soil, as a part of the soil? Suppose we allow the atmosphere free access to it, what will be the result?

It will oxidize; we cannot prevent it. That is, the atoms of oxygen and carbon severed in the growing plant, will combine, carbonic acid is formed, heat must be produced. This union of air and carbon is plant-food. Is the heat produced by this union converted into plant *force?* For every atom of carbon used in the formation of carbonic acid, whether in the boiler, the animal or the soil, we must have two atoms of oxygen from the atmosphere.

This will give us some idea, faint though it be, of how and to what extent nature uses organized matter—manure, if you please—and atmospheric air in her "methods" of forming and transforming soil. But in this brief paper, already too long, however, for the present occasion, we have taken but one step, as it were, in the study of these methods. Are these studies of any practical value? Do they suggest processes of culture that will improve our present systems? These are questions that I must leave for this meeting to consider; or for another paper at some future day.

Secretary FIELD. A single word upon some ideas brought forth in this practical paper of the Professor's. I always listen with a great deal of interest to the Professor's productions for I consider him a very practical kind of a man. I consider his papers of practical importance, and this is one which we can all comprehend. It contains a great deal of common sense; I have always thought the nearer we follow nature in our farming operations, the nearer we will come to bringing agriculture to that perfection which we are all aiming at. There are thoughts in that paper worthy the consideration of every one of us, and if we can apply them to the daily work on the farm we shall find them of great benefit.

Mr. WHITING. I have listened to the reading of that paper with a very intense degree of interest. It seems to be very fittingly adapted to follow some of those that have preceded it. It seems to throw light on the subject of deep and thorough tilth about which we heard yesterday. On the tilling of the ground I have received some new light from this essay. Here we see the origin of the forces

which distinguish plants from inorganic matter. There is a life force; but how that life force is introduced I presume is not thoroughly understood by any human being. It seems to approximate to the explanation which perhaps may sometime come and lead to a better and more perfect understanding of the laws by which plant life is governed. How beautiful is that theory by which the oxygen of the atmosphere decomposes the carbonic acid gas, the plant omitting the oxygen and absorbing the nitrogen, and again, that oxygen working itself away down to the roots, and there combining with the carbon and thus evolving and producing a life force. This is the point which was so beautifully in harmony with the remarks of the Professor yesterday in regard to the stirring of the soil. How important that that soil should be pulverized so that the air and gases may unite! I have come a good ways to attend this convention and been very much gratified at the results which I have witnessed.

SOILS OF EASTERN WISCONSIN.

BY PROF. T. C. CHAMBERLIN, BELOIT COLLEGE.

It is extremely difficult to present anything on the subject of soils in such a way as to be clearly understood by those not familiar with chemistry, mineralogy, molecular physics and allied sciences on the one hand, and with the actual culture of the soil on the other, and at the same time to be thoroughly accurate. This difficulty arises partly from the nature of the case, and partly from the vagueness of the terms used in speaking of soils. These terms have a different signification as used by different persons, and often they are not well defined in the individual's own mind, and this something of vagueness in his own ideas leads to obscurity when he attempts to communicate his ideas to others. We speak of "light soils" and "heavy soils;" and, perhaps without thinking, we suppose that these terms refer to actual weight, or in the terms of science, to specific gravity. But such is not usually the fact. Thus we say, "a heavy clay soil," and "a light sandy soil," but in fact the clay soil will only weigh about three-quarters of the weight of

the sandy soil, measure for measure. These terms, as commonly used, really refer to adhesiveness, degree of comminution or power of holding water, or more properly, perhaps, to the way in which the soil "works." Again, the term "sandy soils" is supposed, even by persons somewhat versed in the sciences, to mean those that are made up of grains of quartz, or in other words are silicious, and hence are more or less barren. But this is not always true. Some sandy soils are composed of grains of limestone, and are very fertile, an instance of which will be described presently. So a clay soil is supposed by many somewhat intelligent in chemistry, to be composed of aluminous material, but this is far from always being the case as the term is commonly used. Many other terms have a similar vagueness. So you will pardon me if I attempt to make myself understood as to these points before I proceed to describe the soils found in eastern Wisconsin.

The soils that I shall hereafter describe, were all, with a single exception, formed by the powdering or decomposition of rocks of various kinds. This remark of course does not apply to the vegetable matter that is mingled with the soil. The rocks were either ground down to a powder by mechanical means, or decomposed by the action of the elements. We need then to consider two things. 1st. the degree of fineness to which the material was reduced, and 2d. the chemical nature of the material. If the rock was simply reduced to small grains, we call it sand, and we do this without regard to its chemical nature. If the rock was quartz, we call it a quartz or silicious sand; if it was limestone, we call it a calcareous or lime sand; if it was an iron ore, we call it an iron sand and so on. We have all these three kinds of sand in eastern Wisconsin, and the difference between them is world-wide. If a man's farm is sandy, it makes two or three hundred per cent. diffierence, whether it is silicious or calcareous sand. But more about this farther on. If the rock is reduced to a very fine inpalpable powder, it forms what would be termed a clay, although such use of the term is unfortunate. But here again the chemical nature might be quite different in any two given cases. It might be silicious, calcareous, aluminous, or otherwise. The term true clay is only properly applied to this kind of material, when it is aluminal.

To make this matter more clear, I have artificially manipulated these substances.

Here are some pieces of quartz rock. I broke off pieces from these and ground them in a mortar until they were reduced to small grains, and here you see we have a silicious sand. But I continued to grind a portion until it became a fine powder and this when wet gave this clay-like mass, this of course is silicious like the other.

Here is a piece of limestone which was subjected to the same process, and here we have a sand again, but of course a calcareous one. A portion ground still finer, gave this clay-like mass, very similar to the former, but calcareous.

Here again is a rock containing feldspar, a common mineral which contains a large proportion of alumina, and by appropriate processes common alum could be made from it; hence, we speak of its products as aluminous sand, as you see, and by reducing it still further we have a true aluminous clay. If we had stopped the grinding process in any of these cases midway between the sand and the very fine powder, we should have obtained a loamy material, but in the one case it would have been silicious, in another calcareous, and in a third aluminous. It is evident then, that to say that a soil is sandy, loamy, or clayey, is saying very little as to its chemical nature or its fertility. Let us now apply to these a very simple test.

Here is some hydrochloric or as it is commonly termed muriatic acid. Let us drop into it the sand we manufactured from the quartz rock, and which we called silicious, and you see no evidence of chemical action. Let us now add some of the aluminous sand, made from the feldspar, and still we see no action. But now as we pour in some of the calcareous sand, made from the lime stone, you see a brisk effervescence.

We will repeat the test with the clay-like masses and we have similar results, so that, so far as these three substances are concerned, we may distinguish the calcareous material from the others by this simple test. By similar appropriate means, we may distinguish all the substances that enter into the composition of the soil; but these three substances are, by far, the most common ingredients in our soil, and so have been dwelt upon. But I ought to say that this limestone, and that throughout the eastern part of the state, contains a large portion of magnesia.

If you have been kind enough to follow me through this explanation, made necessary by the looseness of common terms, we shall

be able to proceed understandingly in the description of the eight classes of soils that occupy the eastern portion of the state. By this term I mean those counties that border on Lake Michigan, and the eastern half of those that adjoin these on the west, this being the region that has come under my inspection during the past summer in connection with the geological survey.

But I must further explain that the following descriptions relate rather to the permanent subsoil, than the mere surface-soil, or in other words, to the real soundness of the bank and not merely to the cash that may lie on the counter.

1. PRAIRIE LOAM.

The first class to which our attention is invited, is that commonly called prairie loam. This is too well known to require much description. It sometimes arises from the decomposition of the underlying limestone, sometimes from the disintegration of limestone gravel, and sometimes it is the deposit of an ancient lake. There are several varieties of this class, but all possess at least a moderate degree of fineness, but are still light and porous, in chemical composition silica is the chief element, with a much less proportion of aluminous, and a small quantity of calcareous and magnesian material. This at first seems strange, since it is chiefly derived from magnesia-limestone, but it becomes clear enough when we consider that the soil was formed by the dissolving out of the lime and magnesia, leaving the residue.

Vegetable matter, in the form of humus, constitutes an important element of this soil, and penetrates to greater depths than most of the following classes.

It usually works with the greatest ease and is highly fertile, but is less enduring than some of the following:

Within the region under consideration, it is chiefly confined to Racine, Kenosha, and Walworth counties, but elsewhere in the state it occupies extensive areas. This map of soils, constructed to accompany my Geological report, shows more definitely the extent of this class.

2. THE LIGHTER MARLY CLAY SOILS OR CLAYEY LOAMS.

This is a drift soil, having been derived chiefly from a calcareous bowlder clay, which in turn was formed by the powdering of vari-

ous kinds of rocks, but chiefly magnesian limestones, by glacial agencies. It therefore contained originally a large proportion of calcareous and magnesian material and a less amount of silicious and aluminous, but the leaching action of water and the growth of vegetation has removed a much larger amount proportionably of the lime and magnesia than of the other ingredients, so as to leave these the chief constituents at the surface. But the deeper subsoil, is highly marly in its nature. There is just enough of sandy material in it to make it loamy. The dark vegetable matter does not penetrate as deeply as in the prairie loam, so that the plow frequently turns up the reddish or yellowish sub-soil containing very little humus. This soil works with the utmost facility, indeed is unsurpassed in this respect. It stands both wet and drought well, and is a very durable and fertile soil. It is the prevailing soil in those portions of Racine, Kenosha, Walworth and Waukesha counties, that are not occupied by prairie or heavy timber. The extent is shown more definitely on this map. There are also small areas occupying portions of Sheboygan and Fond du Lac counties.

3. THE HEAVIER MARLY CLAY SOILS, OR HEAVIER CLAYEY LOAMS.

This class is similar to the preceding, both in origin and character. But the drift from which it was derived contained more material of the nature of our "hard-heads," especially those containing much feldspar, by the disintegration of which a large amount of clay proper was derived, mingled, however, with the quartzose material of the same rocks, and with much calcareous and magnesian limestones that abound in the drift. This is not then a true clay soil, but is a marly clay. The surface soil rarely gives any effervescance when tested with acid, while that from greater depths usually responds with vigorous action. We find here again what I have found true everywhere, that the surface soil is almost entirely exhausted of the carbonates of lime and magnesia even when they exist in great abundance in the subsoil. And it is for this reason that the origin and nature of the comparatively unmodified subsoil must be studied if we would arrive at any reliable conclusions as to the permanent resources of our soils. A considerable proportion of iron is present which gives it a yellowish or reddish color. A magnet drawn through the pulverized soil, frequently brings forth a bristling edge of magnetic iron ore.

The surface is usually strewn with bowlders, while cobble-stones and gravel mingle with the soil, though not to an extent that would justify the term gravelly.

This soil works with somewhat more dificulty than the last, but is strong and enduring, and will improve rather than otherwise with cultivation. It becomes lighter and warmer as it is stirred and is gradually becoming fitted for crops that at first did not flourish upon it. It ranks among the very best of soil. It prevails in those portions of Racine, Milwaukee, Waukesha, Ozaukee, Washington, Sheboygan, Manitowoc and Calumet counties that are heavily timbered, and that are not occupied by the following classes, chiefly the red clay. The map gives the area more definitely.

4. THE RED MARLY CLAY SOIL.

The term "red clay" is popularly applied to a very extensive formation in the northeastern portion of the state and to the soil derived from it. It is very properly denominated a clay, if we use that term in a simple physical sense. It is finely comminuted, close, compact, adhesive and almost impervious. It washes, cracks and otherwise deports itself as a clay. It, however, never posesses that extensive tenacity when wet, or that obdurate hardness when dry, that characterizes the typical aluminous clay. It contains, moreover, fragments of limestone, and occasionally of other rocks, that modify these qualities. Chemically, however, it is not a true clay. There is a very notable proportion of silica, lime and magnesia. The application of acid to the deeper sub-soil, almost always gives brisk action. It must then be regarded as highly marly in character. This large ingredient of lime and magnesia is very fortunate, as it adds much to the value of the soil. It also contains considerable iron in the form of hematite and magnetite. The former gives the soil its deep, pinkish or purplish color. On the surface, however, it weathers to an ashy hue. The magnetic iron-ore is almost everywhere present, as may be seen by drawing a magnet through a handful of pulverized soil. On the lake shore this washes out and forms the "black sand" which may prove of some value in the manufacture of iron or steel.

This soil needs thorough working, which is not so easily done as in the more loamy and sandy soils, but it yields excellent returns. It is an exceedingly strong, fertile, durable soil. Its strength lies

in its mineral constitution, and not in a superficial layer of vegetable mold, soon to be exhausted. Cultivation improves it, and it will still continue to yield bountiful harvests when many other soils will need the constant stimulant of fertilizers. The stirring, washing out of the finer material and exposure to the air incident to cultivation, give it a lighter and warmer character, so that after a few years, crops that were at first unsuccessful may profitably be introduced. It occupies a belt along Lake Michigan, from Milwaukee north to Sturgeon Bay, widening to the northward until it possesses the summit and occupies the basin of the Fox River and Lake Winnebago, and extends onward to the northwest.

5. THE LIMESTONE LOAM.

This is not a very distinct class, being closely allied to the marly clays. It appears to have its origin in the decomposition of the magnesian limestone upon which it rests. It thus differs from either of the marly clays in not being a drift soil. It is usually yellowish or reddish in color, rather plastic and adhesive, moderately fine in texture, and medium porosity. Chemically it is chiefly silicious and aluminous, or in the language of its origin, the insoluble portion of the limestone, the lime and magnesia having been removed by water, the name given it, Limestone Loam, refers to its origin, and not to the amount of lime in it. The depth of the soil, except in the valleys, is not great, and the rock itself is really to be regarded as the permanent sub-soil. It can be reached even by the roots of cereals over much of the area occupied by this soil.

Notwithstanding this, it is a fertile soil and supports a dense growth of native vegetation. It occupies the greater portion of Door county north of Sturgeon Bay and a smaller area south of it.

6. THE SILICIOUS SANDY SOILS.

This class needs little attention here, because in the first place it is too well known to require much description, and in the second place, fortunately, it covers so little ground that it possesses no great importance in considering the region, as a whole. As found in this region it had its origin in beach deposits made by the lake in former times. As it occurs in narrow strips, surrounded or bounded by clay soils, it may not on the whole prove a disadvantage, although it is of itself a sterile soil, for where it mingles with

the adjoining clays, it produces a rich fertile loam, better adapted to some crops than the clays themselves. It is confined chiefly to the vicinity of the lake shore.

7. THE CALCAREOUS SANDY SOILS.

My attention was first called to this class by a growth of maple and associated trees upon a sandy soil. This was so contrary to previous observations that it led to an examination of the sand. That on the surface proved to be of the common silicious kind, but that deeper down contained many minute crystals of magnesian lime-stone, forming a calcareous sand. This fact makes a vast difference in the fertility of the soil. A hundred per cent. is altogether too low an estimate. A general knowledge of this fact on the part of the owners, ought not only to add to the appreciation in which their land is held, but enhance their returns by guiding them in selecting those crops for which their soil is peculiarly adapted. This also presents a rich field for the study of agricultural problems relating to calcareous and silicious soils. I commend it to the attention of progressive agriculturalists. This is not, however, the sole occupant of any considerable area, but is freely intermingled in patches with marly clay, gravelly soils and intermediate grades. It is a drift-soil, but the material originally came from the granular lime-stones of the Niagara group, such as are found near Saukville, Grafton, Cedarburg and elsewhere.

This soil is found in the north-eastern part of Washington county, extending somewhat into the adjoining counties.

8. THE HUMUS SOILS.

Under this head we will group those soils in which humus in some of its forms, chiefly peat and swamp muck, is the predominant element, and in which the ingredients are largely concealed by it. The peaty soils are the type of the class. In these, not only the surface but the sub-soil is chiefly of vegetable origin. Soils simply covered by a thin layer of vegetable mould are not here included. Almost all the swampy and a large portion of the bottom lands are covered by this soil.

But it is not so easy to define the adaptabilities of this class, or measure its fertility. Some portions, with simple draining, will produce the most luxuriant growth of grass or grain. Others are

impregnated with organic acids, derived from the humus, and are known as "sour soils," and are unfit for the growth of the cereals or the better class of grasses until this property is corrected. Others still are so largely composed of vegetable matter, that they do not possess the requsite amount of mineral matter. The best indication of the nature of the soil is the vegetation that naturally grows upon it.

It is eminently worthy of notice, that our soils are magnesian. This, I believe, in the future upholdings of agricultural science, will be found to be a very important fact. Magnesia has been a much-abused element. It was formerly supposed that magnesian limestone made an inferior quick-lime, and it long lay under disfavor. But experience has finally shown that precisely the opposite is true. It is far superior to pure limestone for mortar. This is one thing that gives to Wisconsin its superiority. Our magnesian limestones rank among the very purest known, and will be more esteemed the more they are known. It was long supposed to be a useless ingredient as a flux for iron, but it is now becoming apparent that a certain proportion of magnesia is an advantage. Quick-lime, burned from magnesian limestone was formerly prohibited as a fertilizer, but the ban has recently been removed. That some such revolution of opinion must take place in reference to its utility as an ingredient of the soil, is more than probable. If you will examine all the analyses of grains, fruits, etc., given by Professor Johnson in his excellent work, "How Crops Grow," you will find that in the grains, magnesia largely predominates over lime, being sometimes five times as much. In the woody portion of the plant, however, the reverse is the case, the lime is usually double, or more than the magnesia. These are very significant facts, and seem to show that magnesia has more to do with forming the grain, and lime with forming the fibre of the plant. And this suggests forcibly the question, is not the well-known superiority of Wisconsin wheat due to this element of the soil?

With the exception of the silicious sandy soil, it would be difficult to find seven classes of soils more durable and fertile, and more easily cultivated than the foregoing. I have said little as to vegetable mould, because rich as it is in all this region, it is only of temporary value. It will soon be exhausted by cropping. I have only called attention to those features in the constitution of our

soils that show their permanent character. When the surface strength of the soils of the great west shall have been exhausted, as it will be speedily, then those soils that have a solid constitution will be in demand, and among those preeminently, will be found the soils of eastern Wisconsin.

To complete the subject, I ought to dwell upon the relations of these classes to the native vegetation, geological formations, topography, drainage, lake influences, etc., but time forbids. This, with a more complete description of its foregoing evils, is included in the geological report for the present year.

Mr. BENTON. Could you give us information and help us to determine on which class of soils the sulphate of lime produces the best grain and by what process it assists vegetation, and what soils require its application most?

Profesor CHAMBERLIN. That is a matter that does not lie in my line of observation; my examination has been of the physical characteristics of those soils and not in the line you refer to.

LIVE-STOCK ON WISCONSIN FARMS.

BY G. E. MORROW, OF THE WESTERN RURAL, CHICAGO.

[This address was delivered from notes, and the author has kindly furnished the following brief abstract.]

The condition of farming in the West, and in Wisconsin and the Northwest as fully as in any other part of the country, for the past few years, as is well known, has been far from satisfactory. There has been a general feeling that too exclusive attention has been given to grain growing, and connected with this has been a general increased interest in relation to stock raising and feeding. For this, Wisconsin and the Northwest has some disadvantages, chief of which are the facts that the winters are long and cold, and there is more liability to droughts than in some other sections. There are, however, some advantages. The soil is fertile and grass and other forage grows with great rapidity. The difference in length of Wisconsin summers and those two hundred miles south, is less

than is generally supposed. The climate is healthful and the dry bracing air of winter, although cold, is better than the damp cheerless weather of some supposed to be more favored spots.

The rearing and feeding of live stock, gives work on the farm throughout the year, and thus enables the farmer to more steadily employ an important part of his capital. The growing of small grain exclusively, gives hurrying work during a part of the year and leaves the farmer comparatively idle during the remainder. Live stock use up profitably much of the coarser products of the farm, largely wasted in exclusive grain growing. The animals can get a good living from land which would otherwise give little or no profitable return. Keeping live stock greatly increases the quantity of manure made on the farm, and enables the farmer to better adopt a system of rotation of crops. Being able to ship live stock or animal products, greatly helps western farmers in meeting the great transportation question. Breeding, rearing and feeding animals tends to higher intelligence and better farming. Few things will tend more to give boys a love for farming than interesting them in breeding.

As nothing succeeds like success, a stronger argument in favor of giving increased attention to live stock than a feeling that this ought to be done or arguments to show that it would be profitable, is found in the abundantly proven fact that stock raising has paid well in Wisconsin and other parts of the northwest.

But if money is to be made, the stock must be good stock. By good stock is meant that which is well adapted for the purpose designed. In the market reports we read that one steer sold for seven cents, another for three cents a pound. One is better adapted for the designed purpose than the other. The purposes for which we desire animals are best accomplished when they are far removed from their "natural" condition. No natural or wild animal is so well fitted for meat, milk or wool production as when it has been subjected to the influence of man. "Like produces like," but with exceptions and modifications, and so by selection and careful treatment we develope the characteristics we wish and repress those we do not desire, bearing in mind that no animal can be perfect, and that special development in one direction is usnally accompanied by lack of development in other directions, and that a characteristic which has descended through several generations is much more

likely to be reproduced than one in which the animal differs from its ancestors.

Thus we see why the pedigrees of animals are valued. These are partial histories of families and furnish evidence, more or less conclusive, that for generations past the ancestors have or have not had the same general character as has the individual in question. The character of the more immediate ancestors is more important than those more remote; so if we know certainly the character of the sires and dams for a half dozen generations back, we need not be anxious about those more remote. Pedigree is not all that is important. A poor animal may have a good pedigree; a good animal may have a poor pedigree. If both pedigree and individual be good, and then good care be given, we have assurance of success.

Admitting the desirability of making live-stock prominent in our farming system, it is a pertinent question with many farmers, "how are we to change? Our farms have been devoted to grain culture; we have not the means with which to buy improved stock, nor have we the feed, had we the stock." In this, as in all such matters, time is required. A sudden change cannot be made. Grass should be sown as far as land can be spared for it. It is fortunate that the Northwest is especially adapted to the growth of crops which partially take the place of grass, and help us when the grass fails. Chief of these is corn.

By careful selection and skillful management, a farmer may, in a series of generations, so improve his stock that the first and last specimens would hardly be recognized as of the same breed, but this is a slow process, and hence the average farmer will do wisely to avail himself of the work done by others in this direction. Most farmers cannot afford to purchase full flocks or herds of the improved breeds. They can afford, however, to make use of superior and well-bred males, and thus in a comparatively few years have animals almost or quite equal for practical purposes to those pure-bred. If, in addition to this, even one or two full-blood females can be secured and bred from, a great additional help will be had, and it is surprising how soon a good-sized flock or herd of full-blood animals can thus be secured.

It is a fallacious and unwise objection that farmers cannot afford to pay the high prices asked and received for some specimens of imported stock, for there is no need that they should. Of any well

established breed very creditable specimens can be obtained at prices which farmers can afford to pay

In the selections of breeds it should be borne in mind that no one is perfect, no one adapted for all uses and climates; that the breed best for one man may be very illy suited to the wants of another. It is unwise to have so strong prejudices as to be unable to see any merit in but one breed. On the other hand it is well to have well established convictions, for in stock raising, frequent or aimless crossing of breeds is always an evil.

For the professional stock-breeder it is often advisable to give attention to but one class of animals, and but one breed of this class. For the general farmer it is often advisable to keep horses, cattle, sheep, swine and poultry, selecting some one breed of each. Exclusive attention to any one class is rarely advisable and sudden changes to meet the fluctuations in market prices are nearly always inadvisable.

The address closed with a statement of some of the leading characteristics of different classes of animals and their adaptations.

Mr. Smith, of Green Bay. While I may not agree with Mr. Morrow in all his points, yet he strikes a cord where I think we must all agree with him, and that is in the encouragement and enthusiasm in the matter of improvement. He wants improvement in stock and everything. One of the most important points in my estimation is his remarks in regard to keeping stock for manure. That is a point, gentlemen, where we all make a mistake; I don't know of a farmer who makes as much manure as he ought to or can. It has been said here that I have been successful as a gardner. But gardening, as it is usually carried on, is very poor business, not better than general farming. Market gardening is not better business than farming conducted in the same way. If I had gone on to the same piece of land where I am and had raised the same crops that I have raised, or did raise when I first went on to it, and had kept right on from that time to this, I should not have been here to-day. I bought it and paid 10 per cent. interest on it, and in spite of such high interest made it pay. I have kept increasing the crop until this year the crop on that ground sells for about $6,000, and the crop of the same piece sold six years ago for $1,800. I am cultivating about 13 acres; but I made it what it is by improving and cultivating it. I have no particular advantage over any of

my neighbors, only I cultivate better than they do. Judicious improvement pays, I have spent money in going to conventions and fairs, and seeing men and hearing them talk and getting ideas from them and carrying them home for practical use. And I have paid a good deal of money for papers for that very same purpose, and I know that money has not been thrown away. I have faith in my land and in my neighbors land if it is properly cultivated and improved. I have not overdrawn the picture. I think our farmers work too hard; I think they could make more money by giving more time to thinking and studying, and doing better what they do and making greater and better crops. These things can be done and shonld be.

Mr. ANDERSON. This is a subject that should interest all of the farmers in Wisconsin. I think in the improving of stock there is very much advantage to be gained. In regard to improving land, I will agree with my friend Smith, but I have raised good pork and sold it for three cents a pound live weight, but I could not afford to do that on good profitable land. We cannot afford to raise feed and fatten cattle here and compete with Texas. They can send good fat cattle from Texas up to Chicago for less than we can afford to sell them. And we cannot compete in raising wheat with the cheap lands of Minnesota and the northwest. So we must improve our lands and raise other crops.

Mr. Isaac Clark offered the following resolution, which was unanimously adopted:

Resolved, That the members of this convention tender to the president and secretary of the Wisconsin State Agricultural Society, a vote of thanks for the very able, impartial and efficient manner in which they have conducted the deliberations of this convention, and also to other gentlemen, who by their papers and participations in the discussions have contributed so largely to the interest and profit of this gathering.

Secretary FIELD. I am proud of this convention and believe it has done something for the good of ourselves and our state. Our society two years ago called this convention under its auspices. It proved a success; but gentlemen, I can say that this is the best convention in my judgment we have ever held in the state. It has brought together practical men, men who are of recognized ability, men who are thinkers not only about their own business, but about business connected with other individuals and other interests. I

took particular pains in writing to the different clubs, granges &c., in the state to have them interest themselves, to send members who should represent their interests and have at heart the great interests of the state at large, and they have in many respects responded nobly. If I was ever proud of having anything to do with any enterprise in my life, this is it. Few enterprises collect together so large a class of intelligent, earnest, active, energetic, industrial workers, as have come up here to take part in this convention. I will tell you gentlemen, these conventions, these meetings where men come together with different opinions on these great industrial and social questions, are the means of harmony and unity, and can but result in great good to each of us, and ultimately for the good of society and the state.

There being no more papers to read, it was decided to have a general interchange of views on whatever subjects might be deemed most important, until the time of adjournment.

HOW SHALL FARMERS IMPROVE THEIR CONDITION?

Mr. Benton. On this subject, I think the farmer should first improve himself, that he should first inform his mind, and get a knowledge of what can be done to improve his surroundings. The man who plants and cultivates according to the phases of the moon, as set forth in the almanacs, will never succeed in improving himself or his farm. The man who believes that wheat turns into chess, will probably never improve. There is a law of betterment under which we live, and if we take advantage of that law we may be benefited by it. Knowledge is power. Men must first have a desire for improvement before they will take any steps toward it, and therefore there must be methods of teaching men that there is something better for them to live for than to follow in the old ruts of by-gone days.

J. M. Smith. One improvement that occurs to me is a compost-heap. In my experience I am convinced that it would be well for farmers to emulate some shrewd men in that particular. I have often been surprised that farmers did not make more of the compost-heap. I have got one in my garden that is worth $1,000. That assertion may seem strange, and yet if one of you should offer me $1000 for it, on condition that I should cultivate next season without it, I should not take it. It is composed of about sixty cords

of barn-yard manure, such as I could get in the city and haul home; and then everything I could gather up in my garden, tomato and potato-tops, cabbage-stumps, &c., fifty wagon-loads. Then there was a bed of muck near me. From that I got fifty more wagon-loads. Most of that heap has been worked over from one to three times during the season, and next year it will yield me a handsome return for the cost and trouble of making it. I shall mix some of it into the soil and use the finest of it for top-dressing. I think every farmer or gardener should have a compost-heap.

H. W. ROBY, of Milwaukee. Gentlemen, during the three days this convention has been in session I have listened attentively to the papers and discussions without saying anything; but, as there seems to be a lull in discussions and no more papers to read, I want to make a few suggestions on a topic not yet touched upon.

THE GARDEN AND LAWN.

I believe that an orderly, well-regulated, well-cultivated kitchen garden is one of the indispensable adjuncts to good living and well-being on the farm, as well as in the village, town and city. A complete garden with its seasonable fruits and vegetables has a far greater influence upon the health and comfort of a family than a majority of people are willing to concede.

The Creator intended us to have our "fruit in due season," and without that, as all the philosophy and medical science on the subject declare, we but invite and court disease, disorder and death. The person who indulges the same kind of diet the year through has a lease of no more than half a life. Far too many farmers' families are restricted to strictly farm products for food, the effect of which is too often plainly observable in the face and physique of many farmers' sons and daughters. Good or bad diet has a wonderful effect on the physical and mental coustitution, as was so forcibly demonstrated in the army during the late war. Where the sixty odd chemical elements of the human system are not supplied as natural waste occurs, depletion, debility and enervation are the sure results.

The well-ordered kitchen garden will afford a wide way of escape from most of these evils. I was born and brought up on a farm and I still take delight in farm operations. I am yet farming, though on a small scale, in a great city, yet I derive many benefits

from it. In March I make hot-beds and grow early salad, radishes, cucumbers, etc.; also start many plants from seeds so as to transplant when the ground is warm enough, thus gaining a month or six weeks in time, and thus by succession, lengthening the season for many of the best garden luxuries. After the hot-bed has served its purpose in spring-time, it yields a fine lot of compost for fall use on the garden. In the bottom of it can be placed all the leaves, vines and vegetable refuse of the last season, which will become thoroughly decomposed and be out of the way.

I believe in deep tillage. My garden is thoroughly manured and spaded to a depth of three feet, and when I want beets, parsnips, carrots, etc., I have to go down into the earth for them, and I get no stinted, dwarf, fibrous, tasteless, make-believes, but something to make dyspeptics laugh and grow fat.

I believe, also, in small fruits, grapes, berries, &c. In any well-cultivated garden can be grown, with little cost, all the grapes, raspberries, gooseberries, currants, etc., that any family can use. Last fall I picked fifty pounds of grapes from two five-year-old vines, it being the second crop, and I expect twice as large a crop next fall. If people will plant and care for a few good grape-vines along their garden fences, where they are so often put to shame by rank weeds, the result will be very gratifying.

Another suggestion I wish to make is the improvement of farmer's door-yards and lawns. I think it safe to say that a majority of them are shabby, unsightly affairs, repugnant to all good taste. I don't wonder that farmers' sons who are brought up in some of the loathesome pens that I have seen should break away from home for the more cheerful and inviting homes of the city, with much the same alacrity that prisoners escaped from loathesome jails at the first possible opportunity.

We all, in some degree, have a taste for the beautiful and harmonious in life, and when that faculty is brought into harsh antagonism, and face to face with repulsive elements and conditions, it is no wonder that we rebel against so uncomfortable an alliance.

I well remember the absolute enchantment that possessed me when for the first time I walked abroad in a great city and beheld what to me seemed so many thousands of paradises on earth; so many fine lawns and gardens and partarres of flowers and shubbery. From that day I ceased to be contented with the disgraceful and

unhallowed surroundings of a majority of rural homes. You may say that money makes the difference. Well, I am prepared from experimental knowledge to contradict the major part of the proposition. I know that taste and energy does more than money to make home-surroundings charming. The spirit of shabby, lazy indifference is rampant in the country, and one reason for it seems to be, the lack of proximity of homes. Jaxtaposition of homes begets a spirit of emulation and each family strives to have at least as nice surroundings as the family alongside of them, and thus more care and attention is bestowed on the place.

The spread of farmers' homes over the country seems to be about midway between nomadic life and the higher life of great culture and refinement; about half way between the barbarity of the Indian and æsthetic life of the higher grades of intelligence. Added to all this, shiftlessness, thriftlessness and abject laziness are largely chargeable with the untidy surroundings of the farmer's domicil. I have been there and know it. I think the farmer who keeps pigs, poultry, &c., around his door, who has no lawn or garden, or cheerful playground for his children to be interested in and enjoy, has no business to complain if his sons should happen to develop a grade of taste that rises above that shameful condition of life and gravitate to the city where greater congeniality allures and invites them.

But aside from these considerations, when farmers' sons develop into unusual brain-power and force as they so often do in spite of poor encouragement, you might as well try to eclipse the sun with a fig leaf or restrain the eagles flight with a spider's thread as to try to bind them to the dull clods of the valley with the leash of present agricultural charms and allurements.

Secretary FIELD. The time for final adjournment has now arrived, and I hope you will all go home full of enthusiasm in relation to what has transpired here. I hope and believe you will go to the clubs and the different societies you represent, and tell them what a good time we have had, and thus stimulate them to come here another year or send you here again, and in that way we shall be able to assist a great deal in the good work of advancing the industrial interests of the state.

The papers read, have been of more than ordinary interest, and the discussions spirited, entertaining and instructive, making the convention more profitable than ever held in the state.

I hope there will be a convention held every year in this city. I think we all feel that we are doing much good in a good cause; and I am happy to say to you that the report of this convention will be more full and complete than that of any convention previously held. We have had a short-hand reporter, who has taken notes very largely and we shall put all we can of these valuable discussions into the next volume of Transactions.

The convention will now adjourn *sine die.*

EXHIBITION OF 1874.

OPENING ADDRESS.

BY ELI STILSON, PRESIDENT.

Members of the State Agricultural Society and Fellow-Citizens:

We are convened here to-day for the purpose of preparing for, and formally opening the twenty-first general exhibition of the Wisconsin State Agricultural Society. The object and aim of the State Agricultural Society, and of these general exhibitions, will require but little explanation from me at this time. Their influence has been felt in every locality of the state. Every city, village, farm and hamlet have felt more or less of the salutary lessons that these exhibitions have taught. Look at the stalls filled with noble and powerful horses, some adapted for the road and for speed, others for draft, and yet others for general purposes. The stalls are filled to overflowing with improved breeds of cattle.

The breeding and raising of thorough-bred cattle has become an important branch of agriculture in this as well as several adjoining states, or, in fact, nearly all the Western states. And when we consider the immense cattle product of the West, this improvement must add millions of dollars yearly to the wealth of the country. Nor have the bleating flocks been overlooked in this grand march of improvement. The sheep pens filled to their utmost capacity with the finest breeds of sheep, so well adapted to the varied purposes for which they were bred, are convincing proof of the success that has attended this branch of our live stock department.

The swine-department has kept pace with the other departments of live-stock. The importance of this department will be fully realized when we remember what an important part this product holds in the sales of live-stock in the city of Chicago. Even the chicken-department has assumed an importance and shown a measure of im-

provement truly wonderful. The same skill has been brought to bear upon this branch that has been applied with such success to the other branches of the live-stock department. Every department of live-stock shows the results of the breeders, who, by judicious management, have moulded, fashioned and perfected them, until they are objects of beauty, symmetry and usefulness.

In manufactures the society has been equally successful. The application of machinery to agriculture challenges our highest admiration. It has lightened the burden and expedited the business of every department of agricultural labor; it has entered almost every house, and the wife and daughter have realized the benefit of the sewing-machine over the tiresome needle.

The ladies have contributed nobly to the success of these exhibitions, by their products of both the useful and the beautiful in all their appropriate departments. We owe a debt of gratitude to those ladies who are ever foremost in every good work to aid and cheer us on, in all that is noble, good, and useful.

The horticulturists, by continued perseverance have surmounted obstacles which were almost total barriers to the growth of fruits in the state, while they have gladdened our eyes and adorned our houses with the most beautiful plants and flowers of every variety and color.

The artist has also contributed much to the success of these exhibitions. Our hall of fine arts has often born testimony to his skillful productions.

In operative machinery we have been very successful for the last four years. The hum of its machinery has been music to our ears, while the hall has been thronged day by day with eager multitudes to witness its varied operations.

These annual exhibitions which represent the crowning success of agriculture and its kindred arts, have each added vast improvements to all the others that have gone before it, until Wisconsin has risen from a sparsely settled territory, and that nearly within the life of this society, until to-dayit is contending warmly for a position in the front rank of this noble galaxy of states. On the north and east, the waters of Lake Superior and Lake Michigan lave its shores, and waft its products to other states and nations, while on the south lies the garden state of Illinois, and on the east rolls the great Mississippi River with its commerce. Blessed with a salubrious and

healthy climate, a rich and productive soil, and containing immense water-powers and vast mines of lead, copper and iron, and broad forests of pine, and inhabited by an intelligent, energetic and persevering people, the state of Wisconsin is noted among her sister states for her rapid progress and development.

Her noble cities and beautiful villages are but the indices of her vast resources, intelligence and energy, aided by a system of universal education. With all these surroundings, and all these incentives to action, beckoning us on to still greater success and progress in all that pertains to the development of the state and particularly to that of agriculture and its kindred arts, let us move on to still greater success, and as we yearly bring to these annual fairs a part of the result of our labors, let us note carefully each improvement that our progress may be still greater.

The question of cheap transportation has become the great absorbing question of the day. The water routes to the seaboard have always presented the cheapest transportation at all seasons of the year when they could be used, and it is of great interest to agriculture that these avenues of transportation be improved.

The consolidation of the railroads have resulted in such immense combinations of capital that the people have become alarmed at the centralization of such immense wealth. The railroads by several acts of bad faith and by listening to unwise counsels have done much to provoke and bring on the present difficulty that could and should have been avoided, yet we are not unmindful of the aid they have rendered the state in its development. While the people should ever be tenacious of their rights, yet they should ever be just. All we should ask is the fair line, as between the producer, the consumer and the carrier, and let us endeavor to solve this question of cheap transportation wisely, dispassionately and in strict justice to all.

Manufactures should command a share of our attention. Let me urge upon the farmers of the state the importance of building up manufactures among us. The rapid growth of industries in the state will do much to aid cheap transportation, and we as farmers will be false to our interests if we do not encourage their development. A purely agricultural state is always a dependent state and subject to great vicissitudes. The wealth of their products is wasted away in getting them to the consumer, but not so with the far-

mer who has a home market for most of his varied products. The trials and tribulations of a purely agricultural people have been pictured in somber colors in the experiences of our guild in Iowa and Minnesota, where entire communities are poverty-stricken by an army of grasshoppers.

To the officers and employees of the State Agricultural Society let me say, your duties will many times be arduous and trying, but patience, with a strict sense of justice to all, and a close adherence to the printed rules and regulations, will do much to make your position pleasant and the fair a success. The long association that I have had with most of you in this work, and your former success, give us the highest assurances that we shall receive your most able co-operation in every department of the fair.

To the exhibitors, let me say you have done nobly, and the fair in every department proclaims your progress and success. You are engaged in a noble work, the improvement of agriculture and its kindred arts. The production and preparation of your products have cost you great labor and skill, and an intelligent people will award you a high degree of merit.

To the public—the exhibition is yours to enjoy. This exhibition gotten up at such a cost of skill and labor from all parts of the state, is now arranged and presented for your inspection, pleasure and profit. You will find much to interest you in every department of the fair. There will be many here that will remember the state fair at Milwaukee twenty years ago, and by them the growth of the institution will be fully realized. Milwaukeeans may well be proud of the progress of their noble city, and many of us who are here to-day will remember when she numbered but a few thousand inhabitants, or less, while to-day she boasts of being a great commercial emporium with a population of 100,000; but let her remember that for many years agriculture has poured into her lap much of the wealth of one of the finest states on the continent.

To the farmers of Wisconsin let me say, that there is no apparent reason why our progress should not be as great, or even greater in the future than in the past. We have as yet scarcely entered upon the application of science to agriculture. We must go forward and unlock natures's laws with science, experience and experiments. The man who adds to the productive power of the state is a public benefactor, and thus while you are working for your in-

dividual good, you are working for the public good. One of the greatest necessities of the farmer is more intellectual culture.

There is another feature to this fair to which let me call your attention, and that is the absence of gambling and games of chance. It is a grave error that an evil must be licensed upon the fair grounds to obtain money with which to do good. Agriculture should set the example, that she is able to rise by her own intrinsic worth, without licensing such pernicious practices.

Speed on the day when our agricultural fairs shall be the highest and purest of our public entertainments.

With these few thoughts for your reflection, we close by proclaiming the exhibition of 1874 now open to the public.

ANNUAL ADDRESSES

Delivered on the Fair Grounds, September 8, 1874, by W. W. DANIELLS, M. S., Professor of Agriculture and Analytical Chemistry, in the University of Wisconsin, and His Excellency, WILLIAM R. TAYLOR, Governor of Wisconsin.

HARD TIMES—A CAUSE AND A REMEDY.

BY W. W. DANIELLS, M. S.

This is the state's great festal day. The promised seed-time and harvest are past, and here are shown for our delight the fairest fruits of the land. Here have come from all parts of the commonwealth, men of every trade and profession, to exhibit the fruits of their own labor, and to see that of their fellow-workmen. It is a day of good cheer of all, of hearty hand-shaking, of the renewal of acquaintances, and of the giving and receiving of mutual congratulations and well-wishes. Hence, this may well be called the "Feast of the Harvest."

But let us make it more than a day of rejoicing. More than any other of the year this day should be the one upon which most is learned that will be useful in teaching us to so direct our efforts, that in the years to come we may more successfully battle with the obstacles that beset our way, and reap richer returns as the fruits of our labor.

There is no other day of the year when we can meet the best farmers of the state with their choicest productions, the most successful breeders with their excellent herds, (and Wisconsin may well be proud of their very high excellence,) and the fruit-grower with the fairest of specimens that are not only his joy and pride, but are also in themselves evidence of that skill and wise culture that are here essential to success. I say again, then, that to-day when we meet those men who are most successful in their various branches of farming, having with them products of their toil as proof of their

success, is the day of all the year, when by questioning and conversation, we may gain that knowledge which will enable us to share in the future their more profitable harvests.

A fair degree of prosperity has been given the farmer during the year just closing, and about us on every hand are to be seen proofs of a generous harvest. Yet the air has been vocal with sounds of murmuring, and one need only listen to realize that all is not well. Railroads, monopolies and "middlemen!" How constant, and general, and bitter has been the cry against these. I have thought it best, in discussing the outlook for farmers to-day, to see if there is not some cause for the general discontent and uneasiness of the agricultural community, that cannot legitimately be laid at the door of either of these several agents. All wrongs that have been inflicted by them upon the people, should be summarily righted, and for all illegal acts they should be punished. But are they wholly responsible for the "hard times," and for the want of general prosperity now said to prevail among farmers?

I believe middle-men and railroad managers are humanly weak, and that they have demanded and will again demand, if left to themselves, exorbitant rates of commission and charges for freight; but their evil-doings have been thoroughly discussed by others; so that I shall pass them by and look for another cause than those mentioned, to which, at least, a portion of the existing evil not only may, but ought to be attributed.

The feeling of discontent of which I speak is not confined to our own state, but with her cries are mingled those of all the Northwestern states. Hence there must be some common cause or train of causes reaching over this large extent of territory, as wide and general as the effect to which the want of usual prosperity may be attributed.

By the census statistics of 1870, the nine northwestern states, (Indiana, Illinois, Iowa, Kansas, Michigan, Minnesota, Nebraska, Ohio and Wisconsin), contain 29.1 per cent. (11,245,635) of the population of all the states and territories. We may consequently assume that they demand for consumption about three-tenths of all the food and manufactures consumed throughout the country.

Corn and wheat are the leading farm-productions of these states, constituting in 1872, according to the report of the Commissioner of Agriculture, 65.8 per cent., or nearly two-thirds the value of all

their farm products. The wheat grown by them amounted to 59 per cent. of that grown in the Union, while of corn they raised 53 per cent.

The relative amount of these staples produced to the population, was in different parts of the country in 1870, as follows:

New England produced to each inhabitant	quarts..	9 1-5
Middle States produced to each inhabitant	bushels..	4 1-5
Western States produced to each inhabitant	do....	16 04.

The product of corn to each inhabitant at the same time was for

New England	bushels...	2.1
Middle States	do....	7.7
Western States	do....	*33.1
Western States, 1872	do....	52.2

A comparison of the production of these cereals in all the states and territories, with that of the Western States during the last twenty years shows a much more rapid increase in the production of the west, than in the whole country taken together. There were raised of wheat to each inhabitant in the

		1850.	1860.	1870
United States	bushels..	4.3	5.5	7.4
Western States	do....	8.6	11.7	16.0

Showing that while production in the whole country iucreased but 75 per cent. to each inhabitant, that of the Western States increased 86 per cent., or 11 per cent. more rapidly. During this same period the quantity raised to each inhabitant decreased in both the New England and Middle States.

The product of corn to each inhabitant during the same time and including the yield of 1872, was in the

		1850.	1860.	1870.	1872
United States	bushels..	26 1-8	26	19.7	28.3
Western States	do....	39.4	42.1	33.1	52.2

This is an average gain of 8.4 per cent. to each inhabitant for the United States, and for the Western States 32.5 per cent. Or the increase in the amount of corn raised to each inhabitant, was in the latter, nearly four times greater than that of the whole country, notwithstanding the fact that this was also the period of the

* The corn crop af 1869—census of 1870—was an unusually poor crop.

very rapid settlement of the West. The Middle States scarcely changed their production during this time, while the yield of New England decreased.

These statistics show that there is in the West a large over-production of corn and wheat, and that this over-production is so great that when the requirements of the other states are supplied, there is still on hand a large surplus for which a market must be sought abroad. This is exceedingly gratifying as showing the great capabilities of the West to furnish bread for the world, and as an index of the rapid progress and development of its agricultural resources. But when regarded with the full bearing that they have upon the permanent prosperity and happiness of a great portion of the country, they become serious questions, demanding careful and thoughtful consideration, not from a single standpoint merely, but in all the relations, both near and remote, which they bear to the industry and wealth of the nation. Already have they brought upon the West the great problem of "Transportation," that will require for its proper solution, not only time, but careful and wise action as well, and they are to-day pointing to more intricate problems, and to harder times for the Western farmer if the lesson of the hour is not well heeded.

It has been quite the custom for farmers to regard theirs the most independent of all professions. Fifty years ago, when the wants of all men were fewer than they now are, when the farmer threshed his grain with a flail, when he mended and often made the shoes for the family, when the wife spun the flax and wool, wove the fabric and made their clothing, when reapers and mowers, gang-plows and horse-hoes, seed-drills and corn-planters, hay-tedders and horse-forks were unknown, farmers were in a high degree independent. But the farmer of to-day is living in quite another age. He is now but the producer of the raw material, and is just as dependent upon men following the other various pursuits of life as they are upon him.

The tendency to a minute division of labor which has come, with the advancement of civilization, while it has greatly increased the prosperity of the farmer, has at the same time taken from him whatever independence he once possessed, and made him but one of many equally important agents in society. At the present time the western farmer finds himself a producer of two commodities, corn

and wheat, which he must exchange for clothing, coffee, tea, sugar and other household articles, for the machinery without which he cannot successfully compete with other farmers, for school books, newspapers and magazines and for those articles of "luxury" that are now found in every farmer's home. As long as there was a demand for all his corn and wheat, prosperity prevailed. But he has now produced more of these grains than the country needs, and hence finds it impossible to dispose of his products at remunerative prices. He is in the same situation that a wagon maker would be, who without having regard for the fifty wagons needed in a community each year, should enlarge his factory and turn out a hundred. When the market was fully supplied, fifty wagons would remain unsold, and if working on limited capital, the manufacturer would be unable to pay either his workmen, or for the material he had consumed. Bankruptcy would be the inevitable result of such a course.

Wheat, it is true, can be exported to foreign countries when there is a demand, but foreign demand is fitful, and in no degree sufficient for the dependence of an interest possessing the magnitude of the one under consideration. If any crop is to be grown as a staple product, over a given extent of territory, there must be a certain and continued demand for an average yield upon that territory, in order to make the raising of such crop, a safe venture. Such a demand does not exist for the immense wheat crop of the western states. Hence the farmers' craft has been continually threatened with wrecking upon the Scylla of an over production on the one hand or upon the Charybdis of a poor crop on the other. The dilemma was this; he could not expect high prices if his yield was a good one, while if the prices were high, they were so because of the drouth, the chinch-bug, or the grass-hopper. So that whether or not his acres yielded abundantly, hard times perpetually stared him in the face.

To the man who fully comprehended his position, the future must have presented a cheerless, desolate aspect. The violent and bitter attacks of the past two years upon railroads and commission men, by the farming community, were the result of the desperation to which they had been driven by their apparently hopeless condition. At the close of a year's hard labor, they were in no better, often not in as good circumstances as at its beginning. Creditors

were calling for money, when corn and wheat were all the farmer possessed with which to raise it, and they were selling for less than the cost of production. An evil existed somewhere. The charges of railroads and commission men appeared exorbitant when compared with the price of grain, and so it became easy to attribute to these agents, evils for which they were but partially or in no wise responsible.

This feeling of bitterness has grown until very many farmers now believe that the "railroad crusade" is a righteous war against all the evils by which they are threatened. But I am confident, that when the ground is thoroughly looked over, when every cause for the existing condition of things is fairly and carefully considered, and given its due weight,—and there is no doubt that farmers as a class, desire that this shall be done—the most active cause in producing the hard times among western farmers, is a great over-production of their staples, wheat and corn.

What is the cause of this over-production, and why is it but now being found out?

In 1850, the population of that territory now embraced in the nine States under consideration, was 4,721,551, while in 1870 it was 11,245,635, showing an increase in twenty years of 138 per cent. Notwithstanding this unparalleled increase in population, the number of acres of land in actual cultivation increased still more rapidly, being in round numbers 23,000,000 acres in 1850, and in 1870 69,000,000, an increase of nearly 200 per cent.

The broad and fertile prairies of these states, sold by the Government at a very low price, and since 1863 given to the actual settler, offered farms that were easily brought into cultivation, and that promised an abundant yield. Every man who had enough energy and prudence to save a few hundred dollars could become a landowner. Thousands of men who had formerly been in the service of others, were converted into farmers with estates of their own, sowing and reaping for themselves. Thus the west was rapidly settled by a thrifty and industrious class of men, many of whom were young, and just starting a home for themselves. They came without monied capital, but they were rich with determination to make their own fortunes.

The only possible thing for a community of such men to do, was to ask, regardless of the future, "What will bring the best immedi-

ate returns for our labor?" The answer came in the immense crops of wheat and corn, that yearly sought a market from these new farms. The quantity of these grains not only increased as rapidly as the population and amount of land brought into cultivation, but as already stated much faster, as there were raised in 1850, forty-eight bushels of corn and wheat to each inhabitant, and sixty-eight bushels in 1872, an increase greater by 40 per cent. than that of the population. This condition of things extended over so large a territory that for several years there has been, neither at home nor abroad, a market sufficient for the greatly increased production.

The evil effect of glutting the market with these two cereals, began to show itself before the war. But the greatly increased consumption by our armies in the field, combined with the fact that a large number of men were taken from the farms for military service, so changed the relative amount of production and consumption, that there was again a demand for all the wheat and corn the whole country could produce. This new demand acted as a great stimulus upon production. The amount of wheat sown and corn planted, was only limited by the land and labor at the command of the farmers, for a ready market at remunerative prices awaited the harvest. But this market was not a permanent one. The close of the war both destroyed the market and increased the production, by returning thousands of soldiers to their farms.—Gradually since then, farmers who were largely grain-growers have seen their means of support pass from them. Years have come and gone with these men, years of hard toil and rigid economy, without increasing their wealth, and often they have found, at the close of the season, that the yield of the farm would not pay for the labor expended upon it and interest on the money invested.

The resulting hard times then are largely the effect of a persistent violation, on an unusual scale, of a law of political economy as unchangeable as the laws of the Medes and Persians, that the demand for any commodity must regulate the supply. The present condition of western farmers was long ago predicted, if they continued to depend upon the production of corn and wheat for their revenue.

In 1864, the superintendent of the census said, (Agriculture of the U. S., census 1860, p- 42) "For some time before the war our Western farmers were beginning to complain that wheat-growing was

not profitable, that the cost of transportation left them barely enough to meet the cost of production—and it was argued wisely, as we think, that it would be more profitable to grow less wheat, and raise more cattle, pork, and wool, etc., the cost of transporting which, in proportion to value, is much less than that of a more bulky produce. When things return to their natural channel there can be but little doubt that the West will find it more profitable to produce meat and wool, than to grow wheat. It was so for some years previous to the war, and will be so again when the war ends."

Again he says, "The western farmer for a year or two has been receiving high prices for his produce. *He would do well fully to understand the causes which have led to this result.* They are by no means permanent."

Speaking of the increased demand for wheat then existing he says "it will for some years probably keep prices high enough to make wheat-growing in the west exceedingly profitable. The time must be expected, however, when the western farmer will again find the cost of sending wheat to the eastern cities and to Europe, so high as to leave him barely margin enough to pay the cost of production."

These were timely words of wisdom. No one could to-day tell more surely what has become a sad reality in the West, than these words written ten years ago, foretold would come to pass, should the course then pursued by farmers be presisted in.

What is the remedy for this unfortunate condition of affairs? Primarily, it may be stated in a few words. Let the produce of every farm be raised with a view to some sufficient market. Six years ago, Wisconsin took a costly lesson in over-production in her hop-raising. Practically she is now paying for another lesson of the same kind. There is only this difference; then there was an absolute over-production of hops, while to-day the over production of bread stuffs only relates to an available market. The effect, however, upon the producer is the same.

There must then be a radical change in western agriculture before there can be permanent prosperity here. The products of the West must be changed to those that will meet with constant and ready demand. They must be as varied in their nature as are the wants of the market, that when one commodity fails to remunerate him, the producer's only support will not be taken away.

As the West is now situated, having few men and little capital engaged in manufacturing and hence little home demand for her produce, it is absolutely necessary for the greatest profit, that her products be marketed in the most concentrated form, that the cost of transportation may be but a small per cent. of their value. Corn can be raised with profit for one cent a pound, hence transportation that costs five cents a bushel, adds nearly ten per cent. to the cost of the corn. But it takes no more grain to make a pound of meat, cheese, or wool in the West than in the East, while the cost of transportation when converted into these products, is much less than that of the raw material. This is one reason why there is greater prosperity among stock raisers, wool growers and dairymen, than among the grain growers of the West, and why they are less bitter in their denunciations of railroads and other agents that join the producer and consumer. They have a constant and ready market and their products are of a kind that cost little to transport. The successful solution of the transportation problem by the farmer, is not necessarily in securing the minimum price per pound for carrying his goods to market, but in marketing them in such a form, that the freight and commission shall be a minimum per cent. of their value.

I am well aware that a change from grain-growing to stock or dairy farming cannot readily be made over a large tract of country, neither would it be desirable could it be done. The change needs to be a gradual one that shall continue until there is a balance in the proportion of all farm products to the demands of the market. To sustain this balance will often require more of a certain commodity one year than another, to meet the fluctuations in demand that result from various causes. On this account, a judicious system of mixed farming will generally be safer for the ordinary farmer, who may not be able to anticipate the wants of the market.

It would be a most desirable thing to do, could the West, as is so often urged upon it, share the manufacturing of the country with the East, and thus bring the producers and consumers of both farm and manufactured products more nearly together. But no rapid change in this direction can be hoped for. The West is young, not more than half a century old. It was settled mostly by young men without money, and so is now, notwithstanding her great resources, comparatively poor. There is no surplus capital to engage in man-

ufacturing. Money has been borrowed from the East for the purchase of farms and for building railroads, and high interest and taxes must be paid in consequence. And convenient water-power is not abundant. While New England with factories already established, with wealth and abundant water power, has every advantage over western competition. These are some of the reasons why we cannot expect to see the manufacturing interests of the West grow rapidly. They will doubtless increase, but it is upon a wise system of agriculture that our great dependence lies.

It behooves us, then, to look about us with scrutinizing eye, that we may see where the sources of the evil of our present system lie, and to give every cause its due weight in the production of that evil. Whenever any given course is recognized to be opposed to success, it will soon enough be abandoned. But the relations of cause and effect are often intricate, and the danger lies in the difficulty there is in tracing out these relations.

As I have before shown, the independence of the farmer has been taken away. He is now like a manufacturer, the producer of a certain class of commodities, not for his own use, but for sale in the markets of the world, that, with the means so obtained, he may purchase the supplies needed by himself and family. He is thus brought into competition with other producers, and needs to familiarize himself with the fundamental laws that govern commerce. He cannot safely ignore these laws and satisfy himself by decrying political economy. If he shuts his eyes to the wants of the world and plants a hundred thousand acres of hops, he will live to regret his unfortunate blindness, as doubtless many present to-day can testify. But how many western wheat-growers have ever asked themselves, "Where shall a market be found for the surplus produce of my farm, and what will be the demands of that market?" Have they not grown wheat because ten years ago it found a ready sale at a high price, instead of studying the present and prospective demands for that article? a course for which they are now paying the penalty.

Like every other class of producers, farmers are brought into contact with the world through the exchange of their products. If they fail to inform themselves upon those commercial questions that are of especial importance to them in buying and selling, they

in so doing neglect their own welfare and others will benefit by their ignorance.

Again, the farmer of to-day differs from the farmer of half a century ago in another important particular. Then farm-machinery, as it now exists, was unknown. Now the western states have one dollar invested in machinery for every twenty-eight dollars in farms. It requires some intimate knowledge of machinery to keep in repair and manage these improved farm-implements economically and successfully. So that in addition to his knowledge of the principles of tillage, the farmer must be something of a machinist, and in so far as he masters his implements, he is a wiser man than were his ancestors.

The cloud that overhangs the western farmer's firmament, to which I have alluded, is well recognized by them. They have endeavored to ward off the threatening storm by organization for advice, for improvement and for mutual protection. This is certainly a most worthy movement. There is nothing better adapted to advance the welfare of any class of society having the same interests at stake, than wise and judicious association. All hail then to the rapid growth of those organizations through which so many thousands are seeking aid. But that they may be the source of good that they can, and should be throughout the land, they must be most wisely and carefully managed. The end for which they were created must never be lost sight of. To gain this end will require good judgment, careful, honest and deliberate action, intelligent and passionless discussion, a recognition of the equal rights of property however invested and a broad comprehension of all the causes at work for, as well as against the farmers' true interest. These are rather words of caution than accusation; yet you cannot fail to have recognized during the past two years, a somewhat monotonous cry against railroads and commission men, while scarcely a word of counsel or advice, so far as my reading has extended, has been uttered to prevent the constant violation of the law of supply and demand that has been undermining the foundations of a prosperous agriculture.

As we are gathered here then, after reaping the year's harvest, it behooves us as rational men to take our bearings anew, and to change our course if there are dangers ahead, rather than blindly close our eyes while the wind and the tide are carrying us on to certain

destruction. What is the outlook to-day for the farmers of the western states? What are the dangers they need to avoid and what means are necessary to shun them?

I have endeavored to point out one great reason why farmers are not now enjoying as great prosperity as they were ten years ago. Besides over-production, there are other causes more or less remote, and among these I may mention the unfortunate condition of our currency and the extremely rapid settlement of a wide extent of territory. For, paradoxical as it may seem, this rapidity of settlement has been a hinderance to its own prosperity, by keeping the West overwhelmed with debt and weighed down by exorbitant taxes for buildings, improvements and railroads; in short for much of that which is at the same time the cause of the rapid development, and the thing itself.

For the many hardships that are now oppressing the farmers of the West, no one class of men is wholly responsible. But, unless Congress is held accountable for them, because the public lands were sold so cheaply, or given to the actual seller, farmers must themselvs bear the burden of the blame.

But the case is not a hopeless one. When one is lost in the wilderness, it is wiser to look for a way out, than to waste time in attempting to find the man who directed him in. The way out of the present trouble, is for farmers to make themselves masters of the situation. This mastery can only be gained by an intelligent knowledge, not only of the daily routine of their business, but also of all their relations in life as producers and citizens. I have often thought that of all professions the farmer's is the one in which there is most need of that thorough mental training which gives a man the most vigorous use of all his faculties. His calling stands upon a broader foundation than any other. He not only has to deal with the laws of trade in his commercial transactions, but he has also to contend with the manifold uncertainties of soil and climate. To look in all these different ways and correctly comprehend the situation, that advantage may be taken of every favorable opportunity, requires the judgment of a carefully trained and well-balanced mind. Such an education is out of the reach of this generation of farmers, but there are many ways by which knowledge may be gained by them if it is sought after, for like everything possessing value, it can only be had by paying the price.

Next to the agricultural press, farmers' clubs and granges should be the most active sources for the dissemination of knowledge. It is your right to expect them to fulfil their mission, and your duty to aid them in doing it. But do not forget that they are farmers' organizations, and that consequently the most of their discussion should be of the farmers' business. There is greater hope of the man who asks how he can best improve his stock, than of the one who offers a resolution condemning the patent laws. Those laws may want amending, but the first thing for every one to do is to pluck the mote of unsuccessful cultivation out of his own eye. When he has done this, the beam of monopoly by patent, will appear to him of smaller size. Let your own immediate interests receive the first attention. Let it not for one moment be forgotten that you are farmers, working together to advance the farmer's calling.

Again, it will be well for you to remember that the history of "Unions" shows them to have been as often sources of evil as of good, to those for whose special advantage they were created. Let it not be so in the farmers' Unions that have so wide a field of usefulness before them. Be jealous of your rights as farmers and as men. Guard them well; but let no hasty or ill-considered action, no passionate judgment, no selfish desire of aspiring ambition betray you into showing that you have not equally high regard for the rights of others. Let these organizations bear steadily, manfully forward, toward the "mark of the prize of their high calling," and their career shall be a great and grand one for the good they shall accomplish.

Finally, I would say that intelligent farming has always been a profitable occupation. It is to-day, and it will always be so. By their fruits you shall know who are the intelligent farmers. They are successful, not because they work harder than other men, nor because their lands are more fertile, nor because wool grows finer upon their sheep, nor because their milk makes more butter and cheese, but because their labor is more wisely directed.

The best general is not necessarily the one who is most fearless in leading a charge upon the enemy's work. But he is the one who, remembering there are blows to take, as well as to give, carefully surveys his situation and skillfully attacks the enemy at their weakest point. In the farmer's battle of life there are forces at work

both for and against him. He will be the most successful who most skillfully combines to overcome opposing forces. We must not be satisfied with saying that farmers to-day are more intelligent than were those of fifty years ago. Every man may measure his intelligence in his business, by his success, and just in the proportion in which his intelligence increases, will his success increase.

INDUSTRIAL DEVELOPMENT OF THE STATE.

BY GOVERNOR W. R. TAYLOR.

FELLOW CITIZENS:—It is with more than ordinary pleasure that I have responded to the invitation of this society and am here to-day to exchange congratulations with you on this interesting occasion, and to greet the friends of industrial progress with whom I have labored so pleasantly these many years.

We look from here with pride upon a beautiful and growing metropolis, with steadily increasing population, commerce and manufacturing industries, the largest primary wheat market in the world, in quantity and quality, and the center of a grand system of railway enterprise, reaching in its influence beyond the boundaries of our state—causes surely destined to give her a prosperity in the future which she has not hitherto anticipated.

Reflecting upon all this, and upon the condition of this city and state and people, when our society was founded, and looking upon these grounds thronged with the enterprising representatives and choice productions of every section of this grand commonwealth, I have been forcibly reminded of the small beginnings from which all these results have sprung. Twenty-one times in twenty-four years of its corporate existence, this society has brought together the various products of Wisconsin industry and sought to make the lessons taught by these occasions fruitful to new progress and of large attainments on the part of our industrial population.

Those of you here present, who were either workers or spectators at the exhibition in 1851, will need no reminder of the contrast between the first and twenty-first.

About one-fifth of the whole intervening period felt the drain

and strain of a terrible war, such as the industry of most nations could have recovered from only after a quarter or half a century. Nevertheless, stimulated by the variety and vastness of her resources, and moved by the resistless energy of an intelligent and resolute people, Wisconsin has advanced by steady and almost unequal strides. In 1851, the population of our state was 305,391; to-day it is scarcely less than 1,250,000. The area of our improved lands was 1,055,499 acres; now it is about 4,000,000. The total value of the annual product of our agricultural industry was about $25,000,000; now it is about $100,000,000. There was then scarcely a single herd of blooded stock within the state, and stock of any sort was comparatively scarce. To-day our herds and flocks abound in all quarters, and our horses, cattle, sheep and swine have rank among the very best in the Union.

The cash valuation of the products of our manufactures was then little over $20,000,000; this year it will probably reach the sum of $100,000,000 and the product of Milwaukee alone more than equals the state in 1850. Nor is this rapid increase a full index of our progress in manufactures. The figures of 1851 almost entirely represented small enterprises which have grown to be of immense magnitude, some of them hardly surpassed by any like enterprises in the world. Moreover, new branches of manufacture have been established and are now contributing largely to give Wisconsin honorable rank among the manufacturing states of the Union. Of these last, the magnificent iron mills now in successful operation near this city and the mills for the manufacture of merchant iron now in the way of establishment, are notable examples.

Our mining was confined to superficial diggings in the lead regions. Now, without abandoning the mining of lead, which is carried on more systematically and scientifically, we have commenced the working of inexhaustible deposits of iron which is destined to yield untold wealth.

In 1851 we were beginning the very doubtful experiment of producing some of the hardiest fruits; to-day our orchards are seen on every hand and our annual collection in the Horticultural Hall are unsurpassed for either variety, beauty, or excellence, by any similar displays I have ever seen in any of the states.

I need not hesitate to say that the State Agricultural Society has kept pace with, and constantly and fairly represented this wonder-

ful progress. This it has done with faithfulness and exactness, being, in fact a fair index or exponent of the material progress, wealth, taste, culture and general prosperity of our people.

It is natural that we should feel a glow of pride when we compare the Wisconsin of to-day with the Wisconsin of 1851. But it does not become us to lose sight of the immense advantage we have had over some of the older states. First of all, the area of Wisconsin is about equal to nearly all of New England. Our climate is at once favorable to both physical and intellectual vigor and a safeguard against those diseases which prey upon the inhabitants of many other sections of the country. Our mineral resources are vast and varied. Our forests of timber are a source of supply almost inexhaustible, not only to our own, but to many other states. Our agricultural districts were mostly ready for the hand of the husbandman, without the laborious work of felling forests and removing stumps; and our soil has been productive of large returns with but little labor. Our manufacturing industry has had the advantage of numerous water powers, some of them unsurpassed by any on the American continent, and an extraordinary variety of the best materials on every hand. Our commerce has had the help of direct water communication with the great Mississippi valley, with all the states bordering on the chain of lakes, and even with foreign lands. And, finally, all these attractions combined have given us a hardy, vigorous, energetic and intelligent population, and has invited an amout of capital sufficient to enable us to develop our resources, to build a multitude of prosperous cities and villages, and to cover our state with a net-work of railways built and contemplated, capable of greatly helping us to achieve yet more rapid progress in the future.

But, gentlemen of the society and fellow-citizens, we must not forget that this representative exhibition is only a trophy set up by an enterprising people on the grand highway of progress—that it only represents what *is*, not what *ought to be.*

"Of him to whom much is given much shall be required." It is well for us to compare our attainments with our possibilities. Doing this, our pride is duly moderated, our resolution is quickened and our ambition is ever fixing itself upon a yet higher mark.

The farmer's pursuits tend to isolate him from other men, and hence to make the agricultural class less potential in directing the

policy of the state. It is, therefore, in my opinion, well that the members of this class have come to learn, first. that "in a multitude of counselors there is wisdom;" and secondly, that "in union there is strength." Now that they have come to a realization of their rights, their needs and also their strength when united, we may anticipate an industrial and social progress, in this and all other communities, that will give to the individual farmer a higher degree of intelligence, to the whole class of farmers worthier results, as well as larger returns for their labor, and to agriculture its rightful place as the central figure among the industries of mankind.

Let me assure you, however, that the efforts in behalf of productive labor, threaten no danger to other departments of honest industry, and much less to the safety and profit of honestly invested capital. The varied interests of the community are mutually dependent, and are subject to mutual prosperity and depression. To enhance the rewards of the field and the workshop, is but to build broader and stronger the foundation of all honorable enterprise, and to multiply the demand for all those grand agencies of civilization, on which the majestic growth of cities and the progress of great public improvements necessarily depend. Not to destroy any, but to protect all, is the rightful study of the statesman; not to tear down, but to build up, bringing all under the order of just and equal laws, is the duty of government. To these ends I invoke the associated, systematic and persistent effort of all who would elevate our noble calling, promote the best good of society, and raise the standard of our common humanity.

In conclusion, permit me to add, that during my long and intimate connection with the various departments of your society, covering a period of about seventeen years, I have endeavored to discharge the various duties assigned me with fidelity to the interests of the society; and now when called to other fields of care and duty, I cannot forbear expressing to you my personal obligations, to each and all of those who so long and so generously gave me their confidence, nor can I ever feel a less interest hereafter than heretofore, in your permanent prosperity and success.

HORSE DEPARTMENT.

BY JOHN L. MITCHELL, SUPERINTENDENT.

The number of horses at the Wisconsin State Fair of 1874, held in Milwaukee, was larger than that of any preceding year, filling two hundred and thirty stalls. Many inferior horses obtained stall-room with no intention of competing for premiums, to the dislodging of more worthy animals. I think a charge for each stall would prevent this abuse. The average quality was up to the standard of former years.

The prominent feature of the horse-department was the draft-class, including Clydesdales and Normans. It was, undoubtedly, the largest and best collection of horses ever together in this state, and shows the tendency towards avoirdupois among breeders. H. B, Sherman and William Worden, of Burnett, were large exhibitors of Normans, and R. Ogilvie, of Madison, T. Irving, of Mukwanago, and William Storey, of Waupun, of Clydesdales, Last but not least, unless twenty-three hundred pounds in weight may be so considered, came George Murray, of Racine, with his Clyde horse Donald Dinnie. This large animal was the great attraction of the fair.

A reasonable opinion prevailed on the ground that the two breeds (Clydesdale and Norman) ought, from their dissimilar characteristics, to have been judged separately.

Of thoroughbreds, there were but two, both belonging to John Corrigan, of Cedarburg. This, with the failure to fill up the running races, proves the lack of thoroughbreds in Wisconsin,—in fact they can be counted on one's fingers.

The roadster-class was strong, as is usual in this country of whirling wheels. Conspicuous were the stables of George D. Doubleday, of Whitewater, and Richard Richards, of Racine. The latter gentleman's display in "best stallion and five of his get," of his horse "Swigert," produce, was a grand and fitting finale to the exhibitors in the ring.

The trials of speed were, with one exception, of no interest, owing probably to small purses and their mal-arrangement.

Notwithstanding the well-meant opposition of some to racing, to see the horses go, is what draws the mass of people to a fair-ground, and gratifies them after they are there. On this account, I suggest a judicious increase in speed-premiums, founded on the experience of our most successful sister societies.

CATTLE DEPARTMENT.

BY GEO. E. BRYANT, SUPERINTENDENT.

Major Chas. H. Williams, of Baraboo, Sauk county, has for so many years superintended the cattle department, that his name has become as a household word to the exhibitors of neat cattle at the annual exhibitions of the society. Aside from being a veteran breeder of thoroughbreds himself, his urbanity of manner and general fairness towards exhibitors, has made him a great favorite in the ring, and it is much regretted that years and failing health should compel him to withdraw from active service as an officer of the society. But if any one thinks his interest has waned in bovine flesh let him visit the Major's beautiful farm beyond the Devils Lake and he'll find he still admires the noble Short Horn though he may not dote on the diminutive Jersey.

Our exhibition equaled in numbers and probably excelled in character any of its predecessors. There has been constant progress in this department from year to year. Some of the finest animals in the world were in our ring of 1874. Although 25 additional stalls had been built they were all filled. Many valuable animals found new owners. Good feeling prevailed among exhibitors, and your superintendent here bows his thanks for their promptness and courtesy towards him and each other.

SHEEP AND SWINE DEPARTMENTS.

BY T. C. DOUSEMAN, SUPERINTENDENT.

When I left the fair grounds on Tuesday morning (sick) most of the pens in the sheep-department were filled or engaged. The sheep I saw (both fine and long wools) were the best I have ever seen at any fair in our state. I consider myself a good judge on the progress and improvement made in sheep-breeding, having been an early breeder and importer of sheep from Vermont, and a good premium taker, both at state and county fairs and sheep shearing festivals. Then, a twelve pound buck or a six pound ewe were the winning sheep, now, double that amount of wool must be shorn from a sheep or they are kept at home, not being worthy to enter the ring. Then, a farmer's flock that averaged 3½ pounds was the banner flock, now, 6 pounds is only an average. We have in Waukesha county a farmer whose flock of breeding ewes, eighty in number, sheared 800 pounds of washed wool the past season.

This change is wholly due to the gentlemen engaged in sheep breeding, and who are the prominent exhibitors at our fair. They merit the thanks of our society and of all that portion of the community engaged in sheep husbandry, for the progress and improvement made by them. He who makes two blades of grass grow where only one did before, they say should be thrice blessed, and I know not, why he who makes two ponnds of wool grow now, where only one did before, should not be equally blessed.

The money for the wool-crop comes in just before harvest and comes in just at the right time to bridge over that span, "until after harvest." Western New York has taken the lead from Vermont in sheep-breeding, and I think the time is soon coming, when the star will travel west and our state will be the center of this great interest. We have the climate, food and breeders, with the taste, judgment and ability to make our state the attractive point for all who wish to buy good sheep and improve their flocks—we must help the breeders where we can, and we must also hold them

back (if they progress too fast) when the fleece becomes too heavy in everything else but wool. We must make cleansing the test, by offering special and large premiums for the sheep producing the most cleansed wool. The long wools are getting to be an important element in sheep-husbandry in some localities, and are productive of more profit to the farmer than fine wools. This class of sheep are improving so much, that now imported sheep do not take all the premiums, and breeders inform me that it is no longer necessary to say, my sheep are imported from Canada, to make a sale; and may the time soon come when our state will be an exporter of long wools as she now is of fine wools.

The exhibitors of sheep were much gratified with the improvements made by the society in the pens, and now think they can take as good care of their sheep on exhibition, as they can of their flocks at home, and that the progress made in sheep-husbandry is now beginning to be appreciated. I have no means at hand to ascertain the value of the wool crop of the state, but we all know that those having flocks of sheep to shear, have more money in June, than those who only raise wheat.

Having lost the sense of smell, it made no difference to the superintendent where he placed the goats, but consideration for the visitors who might not be (in this case) so fortunate, I placed them at the east end of the pens; do not know whether it was on the right or left side. If the society continue to offer premiums for goats, I would advise a change, and offer it for the man who would state that he ever received one dollar for the clip of one of them.

There were not so many pens filled this year in the swine department as last, I think the reason for which, was the mistake made by the society (in my judgment) in not offering premiums for the small breed of swine. The small breed in their place are as valuable as the large ones, and should be as well encouraged. The weather was so extremly hot, that the exhibitors were sorely troubled in getting their stock on the ground and suffered on that account more than any other class of exhibitors at the fair and the losses of one or two of the exhibitors, I am informed were very large.

Of the quality of the stock I can say nothing, having had no opportunity to see them after they were in the pens, but the report of the judges will show who had the best. I was told after the fair, that Mr. Lysaght sold some Berkshire pigs to breeders for pretty

long prices. This shows progress and improvement at home, as the purchasers were good breeders as well as judges.

From the annual report made by the Chamber of Commerce in Milwaukee, I see that the sales of swine from the yard, of dressed hogs received by rail, amounted in 1874, to over $4,000,000, while the sales of wheat "in the greatest primary wheat market in the world" was $30,000,000, the largest portion of which came from Minnesota and Iowa. Of the $4,000,000 received by farmers for hogs from Milwaukee alone, how much is clear profit. I think fully one-third cost nothing, but was picked up by the hog, from what otherwise would have been lost. This made pork and pork made the money. I think the product from sheep, swine and the dairy have this season, owing to the short crop and low price of wheat, saved our state from bankruptcy, and every season are the source of adding more wealth to our state than all other products combined.

The question arises, are these branches of agriculture as much encouraged and appreciated as the breeding of horses, short-horns, &c. I fear not, but hope they will be more in the future then they have been in the past.

POULTRY DEPARTMENT.

BY E. J. COOPER, ASSISTANT SUPERINTENDENT.

In response to the very liberal provision made for the poultry department, the exhibition in this class was much larger than before. The building erected last year would have given ample accommodation for the display of previous years, but was wholly inadequate to the requirements of this, and owing to the early season in which the fair is now held, was found to be faulty in construction. There being no ventilation at the top, it became necessary to remove the windows which caused a draft directly across the coops, thereby endangering the health of the fowls. Ventilation is very essential to the comfort of the birds, but a draft is always to be avoided.

I would recommend to the committee who have in charge the

construction of such buildings, that the center platform be reduced to one-half its present width, leaving only room for one row of coops, the room thus gained to be thrown into the passage-ways where it is very much needed to avoid the jam of the last year. The building should be twice its present length, and should have a factory roof with windows on both sides the entire length, which can be opened at pleasure. I believe that the growing interest in this department will keep pace with these improvements if carried out. The premium list does not meet the requirements of the exhibitors, it is too restricted in the varieties in the different breeds. A premium for the best trio of Hamburgs, best trio of Chochins &c., is only a little more definite than best trio of Brahmas, or Asiatics, &c. I am sure that it is only necessary to call the attention of the executive committee to the facts, to have all the faults corrected in the usual liberal manner.

Most of the fowls shown were of a good quality, the details of which will be found in the committee's report and awards.

Perhaps the light and dark Brahmas showed more care in breeding and selection than any other class, and they were well represented in number. The coop, of white and buff Cochins, although but few in number, were very fine and attracted the attention they deserved.

White Leghorns were good, and some almost perfect, but not numerous, to the disappointment of many who are lovers of this particular breed, showing that they are by no means out of date.

Hamburgs were shown in goodly number and of all varieties, the Silver Spangled rather taking the lead, with Golden Spangled a close second.

The display of Polands was not as large as might have been expected, but the quality was good.

Of Bantams there was no lack, all kinds including the different varieties of games were on hand and as plucky as could be wished.

One coop of Pile Games attracted the attention of the young gents, who made several efforts to relieve the owner of the further care of them, but without success.

The center of attraction was a large collection of fancy pigeons, which embraced almost every kind known to the pigeon world.

The cage of Lop-eared rabbits attracted much attention.

One feature was noticeable in the exhibition. There were only two coops of turkeys, and these were not remarkable for their high stand-

ard. Many visitors expressed disappointment at this lack. We have the promise of more next year.

Water fowls were very fine, and some of rare excellence and received merited attention.

It must be borne in mind that none of the birds were in good feather, the season being too early, consequently the difficulty of securing good looking birds is very greatly enhanced.

I am happy to say that there was not the slightest discontent manifested at the awards of the committee, nor was there any attempt to influence their decisions.

AGRICULTURAL DEPARTMENT.

BY DR. C. L. MARTIN, SUPERINTENDENT.

I regret to say that the exhibition in this department was not quite up to former years. In cereals we had a fine display. Messrs. P. Putnam and D. T. Pilgrim, as usual, were there competing for everything, from excellent wheat to a magnificent pumpkin. This is as it should be. Such men deserve success and they usually attain it.

With pleasure we noticed our old friends G. S. Haskell of Rockford, Ill., and John Ferry, Superintendent of the University Experimental Farm at Madison, each showing most excellent field and garden seeds. Such fine exhibits give tone and credit to this department. This fine display of seeds reminds me that farmers and gardeners as well, do not take sufficient pains to improve their crops by judicious selections of the purest and best seed. One should always remember that the tendency in all seeds is to deteriorate and return to their wild state. Only by good cultivation and selecting the best each year, can they be improved. Few appreciate the fact that the quality of the seed has much to do with the amount, quality, and value of the crop.

The dryness and extreme heat of the last season seriously injured the vegetables, yet the exhibition was good. The show of vegetables was not as good from the farm as from the market-garden, showing that where a crop is made a speciality, better products and

larger returns are the result. I would recommend that premiums be given to professionals as well as non-professionals in this department so that exhibitors in each class may compete against each other, and not against those of the other class. The exhibition of butter and cheese was a great improvement compared with the display of these articles at any former State Fair. The quality was the very best. I am informed that the number of cheese factories in the state is between sixty and seventy, with an annual product of two million pounds. Go on gentlemen of the great dairy interest, enrich yourselves and your noble state; exporting more than you import. Mr. E. Elliot made a creditable display of watermelons, and having had the pleasure of eating *at* one—for they were so large no *one* could eat a whole one—I can testify to their delicious flavor.

HORTICULTURAL DEPARTMENT.

O. S. WILLEY, SUPERINTENDENT.

The number of entries, and the large space occupied by the exhibitors in the Fruit and Floral Department at the annual exhibition in 1874, evidenced to the regular fair-visitor that there was no lack of interest in this field of labor throughout the state. Old contributors, the "regulars," of the horticultural army, were present with the fruits of their labors, while many volunteer recruits came with joy and gladness upon their faces, and placed at Pomona's feet their first fruit-offerings. This was gratifying, and gave general cheer to all.

The anxious lookers-on, as the hall was thronged with visitors from "early morn to dewy eve," told how earnestly the people watch the horticulture of Wisconsin. Shall we say; can we say that Wisconsin is not a fruit state? Experience forbids. All climes are alike, in that none are exempt from severe drawbacks. Michigan has the yellows and curculios to contend with; Illinois is but little better, and both are very subject to Greenland's frost. Even old Michigan is to-day planting more crab-apple trees than ever before; and though they may boast of their luscious peach and the melting pear, yet they are not happy, and long for the transcen-

dants, hyslops, &c. What shall we say, then, but good cheer to all, the faithful, the resolute?

Prominent among the non-professional cultivators who carried off the first prizes in the list competed for, were Wm. Reid, North Prairie; Mrs. M. A. Lewis, Lake Mills; James Ozanne, Somers; B. B. Olds, Clinton; D. Huntley, Appleton; F. C. Curtis, Rocky Run; Luther Rawson, Oak Creek; D. T. Pilgrim, West Granville; Daniel Gelser, Oakwood; E. B. Thomas, Dodge Corners; Geo. Jefferey, Five-Mile-House; Jas. C. Howard, Milwaukee; F. S. Lawrence, Janesville; Myers & Son, East Troy; Geo. W. Ringrose, Wauwatosa.

Among the professional cultivators, these were in their usual places, also taking first premiums: A. G. Tuttle, Baraboo; G. P. Peffer, Pewaukee; Gould's Nursery, Beaver Dam; J. C. Plumb, Milton; Geo. Wolff, Dansville; E. W. Daniels, Auroraville; C. H. Greenman, Milton; Mrs. Alexander Mitchell, Milwaukee; Geo. J. Kellogg, Janesville; Stickney, Baumbach and Gilbert, Wauwatosa.

It would be a matter of special interest to know and to record the varieties of each fruit exhibited where a premium was awarded. If for the best ten varieties of apples, what they were; also pears or grapes, but I have no record at hand from which to write.

The best ten grapes were shown by C. H. Greenman, and were Delaware, Janesville, Salem, Diana, Lindley, Concord, Worden, Agawam, Massasoit, Rogers No. 43. The second premium was taken by Mr. Kellogg; the varieties exhibited were the Delaware, Worden, Concord, Agawam, Iona, Eumelan, Hartford, Diana, Martha, and Creveling. Best single variety was the Deleware, and I believe that it was a part of every collection; thus showing its acquired popularity.

The Floral Department drew all eyes. The weary husbandman, who seldom sees aught but toil and care from his daily routine of sowing and reaping; the wife from the cottage by the way-side, and the child, unused to such delights and sweet perfume, thought these really the

> "Bright gems of earth in which perchance we see,
> What Eden was, what Paradise may be,"

And said in their silent heart-language, bring flowers:

> "They speak of hope to the fainting heart,
> With a voice of promise they come and part;
> They sleep in dust through the winter hours,
> They break forth in glory! Bring flowers, bright flowers."

And so every passer-by studied and admired each flower, leaf, and growth. None could doubt the beneficial influence, for as plant-culture is becoming more and more a custom in every household, though not yet universal, as it is destined to be, still the window-garden is fast gaining a hold upon the hearts of the people, and is becoming an unfailing source of pleasure during the long months of snow and ice, only to be satisfied, as the warm sun revives the spring-dress of green leaves, and early flowers, with a larger field of operations—the extended window—the lawn.

The professional cultivators who drew first prizes, were Wm. Kitzrow, Milwaukee; A. Middlemas, Milwaukee; H. G. Roberts Janesville; Mrs. Alex. Mitchell, Milwaukee. There is but little credit due the Milwaukee gardeners. Why they refuse or fail to bring out their plants and flowers I have been unable to conjecture, hence we are dependent upon the non-professionals to brighten our pathways. Here we find Miss Kate Peffer, Pewaukee; Emily S. Smith, Green Bay; Mrs. P. Yale, Milwaukee; Theresa Karzke, Milwaukee; S. B. Smith, Dodge's Corners; John Dearsley, Wauwatosa; Mrs. J. W. Park, Dodge's Corners; H. W. Roby, Milwaukee.

These collections were universally large, so that with the collections which took second, third, and fourth prizes the space was well filled.

Mrs. Alex. Mitchell, who is not classed with either non or professional cultivators, yet includes both, and James Vick, of Rochester, New York, who has so very generously contributed to the welfare of the society by his premiums, were present with beautiful and very attractive collections of cut-flowers, which added in a very marked manner to the hall's appearance.

The exhibition as a whole can be called a success. There might be mentioned some decided marks of progress; enough to know that it is not on the backward track. I am under great obligations to G. J. Kellogg for valuable assistance; and to H. W. Roby is due the chief merit of the Floral Department; and to one and all of my horticultural friends I extend a hearty and cordial good-will for their efforts in making the exhibition a success of which all may feel proud, marking an epoch in life's checkered way, saying, come,

> "'I'll teach thee miracles! Walk on this heath,
> And say to the neglected flower, 'Look up,
> And be thou beautiful!' If thou hast faith,
> It will obey thy word.

FLORAL DEPARTMENT.

BY H. W. ROBY, SUPERINTENDENT.

As year after year rolls by, as wealth and prosperity in the state make their higher marks upon the scale of progress, as fair after fair is held where the people assemble, each to see what his neighbor and fellow-denizen of the state has done or is doing, and to display the results of his own enterprise and culture, the Floral Department of the fair is more and more patronized; is more and more visited by increasing crowds of intelligent and refined people. Never in the history of Wisconsin was this fact so forcibly apparent as at our last State Fair. Notwithstanding the fact that two years ago, several of the professional florists of the state took umbrage at not receiving first premiums on everything they exhibited, and since then, they have kept aloof from the fair, except to see what others were doing, yet the number of people who frequent that department from year to year is rapidly increasing. This is very natural in any country where the people have opportunities for æsthetic culture. Semi-barbarians in every state scout at flowers as but "mere weeds and trash." Cultivated people love them as they love the sunshine and all the other beauties and grandeurs of nature.

The writer, during the fair, took occasion on Thursday, the great day, to make some observations on the drift, so to speak, of Wisconsin sentiment and taste as to its gratification. While each department had its devotees, the Fruit and Flower Department by far outnumbered them all in the throngs of the people that surged through the hall. Early in the morning the hall was filled with pleasure seekers. Before anything like a crowd was observable elsewhere on the grounds, Floral Hall was full. Before the crowds in other departments became uncomfortably dense, a special police force had to be organized in the Horticultural Hall to turn the throng into the tread-mill channel of going "all to the right;" and before noon, the crowd that surged through the hall was like the flood-tide of a great river through straits or dells. The superintendent, with six assistants, had a heavy task to keep all in order,

to prevent blockades in the crowd. Though not up to the high standard of excellence of some other and older states, yet Wisconsin has reason to be proud of her "fruitfulness." Five hundred feet in length and five or six shelves in height or breadth was Horticultural Hall ladened with the rich fruits of the state; and many were the pleasing comments of fruit cultivators from other states as they inspected the display.

But, what may we truthfully say of the floral exhibit? Surely it was grand. Surely it was beautiful, captivating. One who has visited and exhibited at the fairs of nearly all the states, said while surveying the grand display, "I am amazed that so new a state, one whose resources of wealth are but beginning to be developed, should so excel most of the older states in her floral display."

That Floral Hall should have been a place of enchantment, no one need wonder, when it is borne in mind that the wealth and glory of the tropics, and the radiant beauty of all lands was there displayed in a most charming aggregation. The umbrageous forests of Australia, India, South America, and the "Isles of the Sea" were laid under contribution to please and instruct the cultivated and beauty-loving assemblage. From the inter-space from Palestine to the Golden Gate, treasures had been gathered into Floral Hall, and there the people of Wisconsin, many of them for the first time, saw a miniature of the herba and flora of the great outlying world around them. And deep was the study, and many the questions asked concerning the foreign plants and flowers on exhibition.

While the public taste is thus from year to year being cultivated and improved as surely and beneficially as is the quality of stock and farm products of the state, there is still need of greater effort on the part of those who can contribute to that department of our annual fairs, to make it still more a triumphaut success than it has hitherto been. Several new features of entry and exhibition need to be introduced before the exhibition can be thoroughly harmonious; and a greater spirit of philanthrophy and zeal for the public good must be inculcated in those exhibiting, so that less of petty rivalry and jealousy shall prevail than has heretofore been the case. Also, a better class of premiums should be offered, to induce a higher grade of competition. The present premium list signally fails to bring out anything like the best display that the state florists could and would make, if better premiums were offered.

MACHINERY DEPARTMENT.

BY RUFUS CHENEY, SUPERINTENDENT.

As general superintendent of machinery department, it is made my duty to submit a report of the operations of said department; a duty hereby briefly discharged.

The department of machinery in our annual fairs forms a link in the chain of annual exhibitions that ought not to be weakened, but rather, strengthened; and cannot be broken without eminent peril to the future success of our society.

After a service of some eight years as superintendent of this department, it is no breach of propriety to assure you that I have endeavored faithfully to do my duty. It is, therefore, some consolation, and forms no inconsiderable portion of my compensation to be able to say that I am aware of no just complaint being lodged against the management of my department. Aided as I have been by kind and efficient brother officers, we have reason to feel a pride in the general success which has attended our efforts, as well as the interest many of our best men have felt and exhibited in its success, which has been highly gratifying and satisfactory to those having charge of it.

Though feeling a just pride in the results achieved, I am free to confess they might be made more advantageous to the society as well as to the exhibitors, by offering limited premiums, as recommended in the report of the judges in classes 37 and 38. While I do not doubt the wisdom of our society in withholding premiums for machinery not in active operation, still a liberal use of diplomas might be made, which would greatly stimulate competition and encourage exhibitors.

The establishment of Power Hall, a feature in our fairs introduced since the withdrawal of premiums in this department, and forming so important a part, is attended with so much expense and labor to the exhibitor, obviating the objection to the giving of premiums to machinery not operated at our fairs, that it demands our careful

consideration. Limited premiums to all classes of machines in actual operation would, it is believed, stimulate rivalry and largely augment the receipts of the society.

There is no good reason why the show of labor-saving machinery at our annual fairs should not equal if not excel that of any other of the states, since Wisconsin is the great focal center for all kinds of productive machinery; besides, many manufacturing centers are springing into life and usefulness in various parts of the state, and these should receive our encouragement. Our citizen inventors and mechanics, after expending years of toil and large sums of money in developing labor-saving machinery and operating the same for the benefit and gratification of all who attend our fairs, ought to receive greater encouragement at the hands of our society.

To find that a pound of butter, a cheese, a bushel of beans, a bushel of pease, an ear of corn, a bunch of flowers and hundreds of other articles which might be mentioned, that cost no genius and but a few shillings, leave the fair grounds covered with blue ribbons, and the owners pockets filled with prize money, while the creators of labor-saving articles, leave it with possibly an honorable mention in the report of some committee, never to be read, and finds in many instances that his invention is practically but the cat's-paw to pull some one's else chestnuts out of the fire.

Premiums, though small, would entail more than a cash value to those who receive them, and would be contended for with spirit.

Contest or strife, is the touch-stone of human energy. Strife and rivalry on which some valuable thing depends, begets their kind, and contending forces augment as waves before the gale. You advertize a trotting match or race without a horse or judge to decide upon and proclaim the victor, and you might as well sow your track to thistles. Without a contest of elements, nature hereself is dull; without strife between human minds, mens' actions become insipid and spiritless. The best results will come from stimulating a fair rivalry in all departments.

I therefore recommend that the society offer a liberal list of premiums in this department of our fair, not only because I believe it will redound to its financial benefit, but because I believe no invidious distinction ought to exist between equally meritorious classes.

Confident that these points merit serious attention of the society, I respectfully urge them on the earliest attention of the Executive

Board, in the assured hope that the resultant good will outweigh any possible evils, real or imaginary.

I heartily endorse the recommendations of the aforesaid committee, that still closer division of labor be inaugurated. This will be imperatively necessary, should premiums be offered as suggested, enabling the committees to give more time to the thorough examination of all machinery, and by placing each competing machine in kind in juxtaposition, that their relative merits may be more easily determined.

REPORT OF SPECIAL COMMITTEE.

To the Executive Board of the Wisconsin State Agricultural Society:

The undersigned, the judges appointed to examine numerous articles and machines, entered in Classes 37 and 38, in Division C, hereby submit the following report so far in their judgment as "special premiums" or "honorable mention" are deserved, intending hereafter to submit a more formal report on general merits and qualities of the various articles exhibited:

Your judges respectfully recommend the following awards by the Society as a seal of its appreciation for merit:

The special premium offered by Pierce & Whaling for "Best steel crossing-plow," $25.00, the judges have awarded to E. J. and William Lindsay, of Milwaukee, for the Deere Moline-plow, and to W. F. Whitney, for the Moline-plow Company's plow, second premium, $10.00.

The following are recommended:

W. F. Whitney, Milwaukee—For thresher and separator, diploma. For the Liddell horse-power, for its extreme lightness and efficiency, a silver medal.

Lanton Bros., Racine—For excellent straw-cutter, diploma.

J. B. Bennett, Watertown—Separator and horse-power, with valuable features, diploma.

A. P. Dickey, Racine—For large display of meritorious fanning-mills, diploma.

W. G. Raynor, South Bend, Ind.—Breaking and cross plows, with chilled coulters and shear combined, and other valuable elements, diploma.

B. B. Downs, Eau Claire—Bag-holder, diploma.

John O. Frenzel, Sauk City—Sausage-cutter, honorable mention.

N. E. Wood & Co., Elgin, Ill.—Lever clothes-wringer, diploma.

E. J. & Wm. Lindsay, Milwaukee—Garden and field-hand tools, extra finish and excellent quality, diploma. Also, Way's lever clothes-wringer, diploma.

J. L. O'Conor, Oshkosh—Pruning-knife, diploma.

Badger & Blood, Kenosha—Rubber-scrubbers, honorable mention.

U. L. Ward, Racine—Washing machine and table combined, honorable mention.

E. B. Heinship, Racine—Twelve wooden pumps, with vitrified iron valve-tubes, honorable mention.

O. D. Hudson, Waupun—Hydrostatic scale, diploma.

E. E. Park, Darien—Washing-machine, honorable mention.

Willard Van Brunt, Horicon—Seeder, for valuable device in force-feed, &c., diploma.

Lockhart Bros. & Co., Waterloo, Ind.—For pivoted three-section land-roller; also, valuable device for weighing, diploma.

Furst & Bradley Manufacturing Company, Chicago—For variety splendid plows, cultivator and sulky-rake, diploma.

J. I. Case & Co., Racine—For their excellent thresher and steamer-power, of their own make, diploma.

P. K. Dederick, Albany, N. Y.—For hay-press, of rare merit, diploma.

C. F. Durall, Milwaukee—For thresher with turn-table connected for power, honorable mention.

J. M. Stryker, Kenosha—For combined corn marker, planter, seeder and cultivator, diploma.

Althouse, Wheeler & Co., Waupun—For best wind-mill, being self-regulating by means of centrifugal action on the fans, diploma.

A. P. Dickey, Racine—For hand-shears for cutting iron, steel, &c., very meritorious, diploma.

W. E. Waterhaus, Milwaukee—Blacksmith-bellows, large size, diploma.

Emerson & Co., Rockford, Illinois—For fire-setting, fire-contracting and fire-expanding machine, diploma.

S. L. Sheldon, Madison—Grain-drill and broadcast-seeder, for special device in force-feed, excellent make, &c., honorable mention.

Harris Manufacturing Company, Janesville—For broadcast-seeder, with special lift-arrangement, &c., honorable mention.

E. J. and Wm. Lindsay, Milwaukee—For potato-planter, diploma. Also, Rowell's seeder, with special improvements, honorable mention. Also, for best display agricultural implements, diploma.

James Little, Sheboygan Falls—Diamond mower; for novel and valuable device in sickle-movement, diploma.

W. F. Whitney, Milwaukee—Clover-huller, honorable mention.

D. N. Fairman, Wilmington, Ohio—For best feed-cutter, the special device being a bearing each side of the knife, insuring easy and certain cut, diploma.

Chester Hazen, Ladoga—Wind-mill, diploma.

We further respectfully submit the following observations:

Without intending in the least to encourage financial exhaustion, the judges are constrained to remark that the premiums offered do not seem to fully meet the "eternal fitness of things" and the view we take of it is better illustrated by referring to

the fact that the society offers near $150, in premiums for garden flowers, boquets, &c., and over $100 in premiums on poultry, while not a farthing is offered to that large, meritorious class who devote their lives and their fortunes to the creation and production of labor-saving machinery.

A man spends from $100 to $10,000 and the best years of his life in the production of labor-saving machinery, and the only recognition the society greets him with, is the privilege of exhibition and a committee of judges to look over his invention, and if found worthy, to honor him with favorable mention in the almost secret archives of the society; while to him who feeds a peck of corn to some brahma or shanghai chickens, or to her who sows the seeds and culls the flowers that nature produces "ready-made" in her garden—requiring no genius, little expense and very little care —the society lavishes its cash premiums.

Now, while we offer not the least objection to this encouragement to poultry-raising, flower-picking, &c.,—believing it proper to encourage any laudable enterprise that serves to cheapen the cost of subsistence or ennoble the human faculties, we nevertheless submit that in the line of merit, regard should be had to the true value of results and the relative cost of their production.

Take away the machinery-feature of our fairs and they would soon dwarf into horse-races, and we cannot too highly appreciate the valuable assistance that are rendered to our annual fairs by inventors and artisans.

It may be said, as is not unfrequently claimed, that the exhibition of machinery, as an advertising medium, is worth the cost and trouble of exhibition. This is true to a certain extent as to machines already in the market. It is equally true of stock and poultry raising, and why not give the same practical encouragement to the one as the other? We are aware that the financial part of the argument is in some cases formidable against too liberal offer of premiums, but as an encouragement to those from whose brains spring labor-saving machinery, as Jove sprang from the brain of Minerva, the judges would suggest that moderate premiums be offered for all novel and meritorious improvements on machines already in use, or the production of serviceable new machines, our main object being to so distribute our tokens of appreciation, that the mechanic, inventor and artisan, shall not be overlooked and thereby discouraged.

This display of machinery, though good, was by no means what it ought to have been to keep pace with our general per cent. of improvement, and we cannot but charge the fact, in part, at least, to a general want of interest as a too natural result from the seeming want of appreciation by the society.

The grounds and the general arrangement of machinery seems to have been all that could be desired, and the superintendent, Major Rufus Cheney, deserves just credit for his faithful and indefatigable exertions to render his department a success.

The division of labor suggested in our last annual report, has been partly consummated with very beneficial results, making it possible for the committees to end their labors in tolerable season, and yet another subdivision would be still better, and would be more beneficial to the judges as well as exhibitors, since more time could relatively be devoted to the various meritorious articles on exhibition.

The following shows the exhibitors and the number and kind of articles exhibited:

A. J. Hays, Milwaukee—Two Kirby reapers and mowers; Eagle reaper and mower; two crossing-plows.

Van Brunt and Davis, Horicon—One seeder.

A. J. Hays, Milwaukee—Three cider-presses; four corn-shellers; Kirby-reaper, with new Baltimore-rake, (in operation;) five feed-cutters; one horse-rake; one combined horse-rake and plaster-sower; one seeding-cultivator.

J. L. Bush, Milwaukee—One thresher; two feed-cutters; one corn-sheller; one sulkey-plow; one clipper-plow; one section land-roller; Russell's combined reaper, sulky-rake, and Meadow-King Mower.

Emerson & Co., Rockford, Ill.—Reaper and mower; one double-hand corn-planter; one double-shovel corn-plow; one seeder; one tire-setting machine.

Keystone Manufacturing Company, Sterling, Ill.—One cider-mill; one corn-sheller; one corn-planter; one horse-rake.

Worthington & Meek, Milwaukee—One corn-planter; one sulkey horse-rake; one drill; one broadcast-seeder.

W. C. Reynor, Milwaukee—One horse-rake; Wilson's mower, with dropper combined, also a self-raker; three breaking or cross plows.

S. L. Sheldon, Madison—One grain-drill; one broadcast-seeder; one Meadow-King Mower.

Harris Manufacturing Company, Janesville—One broadcast-seeder; Little Champion, with mower-attachment.

M. P. Jerdee, Madison—Beloit-reaper.

Dorsch Bros., Milwaukee—Dodge-reaper, combined.

Philip Mayers, Mapleton, Wis.—Wheel-cultivator.

O. P. Clinton, Menasha—Farm-gate.

Johnston Harvester Company—Johnston reaper with combined mower.

D. S. Morgan & Co., Milwaukee—Empire State reaper and mower.

E. J. & Wm. Lindsay, Milwaukee—Steamer, (in operation;) one feed-mill, (in operation;) one thresher, (in operation;) Cayuga Chief reaper, (in operation;) two sizes Cayuga Chief, combined with mower; one sulky hay-rake; one potato-planter; one Rowell's seeder; one McSherry's broadcast-seeder; thirteen different styles feed-cutters; one hay-tedder; one corn-sheller; one root-cutter; six cider-mills; four revolving-rakes; one clover-huller; six plows and one cultivator.

Gibbs & Sterrett Manufacturing Company, Chicago, Ill.—Hand-roller.

F. Meacham, Madison—Farm-gate.

C. H. Tryon, Richmond, Ill.—One mower.

George Esterly, Whitewater—One reaper and raker; one seeder.

James Little, Sheboygan Falls—One mower.

W. F. Whitney, Milwaukee—One walking-cultivator; four plows; one vegetable-cutter; one dog-power; one cider-mill; one sulky-rake: one separator and thresher; two horse-powers, (Liddell's;) one Birdsall's clover-huller; one broadcast-seeder, and one horse hay-fork.

M. E. Fuller & Co., Madison—One reaper; one harvester, with binder-attachment.

S. Bush, Milwaukee—Six feed-cutters.

D. N. Fairman, Wilmington, Ohio—One feed-cutter.

Althouse, Wheeler & Co., Waupun—One wind-mill; two pumps.

Hazen Bros. & Judd, Ripon—One wind-mill.

Gormley, Watson & Co., Delevan—One wind-mill.

G. A. Ventledge, Milwaukee—Two crossing-plows.

Furst & Bradley Manufacturing Company, Chicago—Four plows; one cultivator: one sulky-plow; one wheelbarrow; one scraper; one sulky hay-rake.

W. G. & W. Barnes, Freeport, Ill.—One separator and horse-power; one combined self-raking reaper, same combined with dropper.

Lanton Bros., Racine—Straw-cutter.

J. B. Bennett, Watertown—One thresher; one horse-power; one drag-saw; one circular-saw.

Gibbs & Sterritt Manufacturing Company, Corry, Pa.—One climax mower and dropper combined.

J. E. Baker, Madison—One Garnhart-harvester.

J. D. Easter, Chicago, Ill.—One Marsh-harvester.

P. K. Dederick, Albany, N. Y. One hay-rake.

J. S. Sheldon, Wauwatosa—One horse hay-fork.

J. I. Case & Co., Racine—One separator, (in operation;) one steamer, (in operation.)

C. F. Durrill, Milwaukee—One thresher.

B. B. Downs, Eau Claire—One bag-holder.

John O. Frenzel, Sauk city—Sausage-cutter.

N. E. Wood & Co., Elgin, Ill.—Lever clothes-wringer.

E. J. & Wm. Lindsay, Milwaukee—Large display of field-hand tools, very fine in quality and finish. Also, Way's clothes-wringer; three hand corn-planters; one wagon-jack; one corn-sheller.

J. L. O'Conor, Oshkosh—Two pruning-knives.

Badger & Blood, Kenosha—Lot of rubber-scrubbers.

M. L. Ward, Racine—Washing machine and table combined; one clothes-rack.

H. C. Herrick, Eau Claire—Washing-machine.

O. D. Hudson, Waupun—Hydrostatic scale.

N. Ehle, Kenosha—Bench-vice.

E. E. Park, Darien—Washing-machine.

E. B. Weinship, Racine—Twelve wood-pumps, with vitrified iron-plunger barrels. Also, hand corn-planter.

Willard Van Brunt, Horicon—One seeder.

Lockhart Bros. & Co., Waterloo, Ind.—Land-roller, three sections.

Warden & Mitchell, Chicago, Ill.—One mower; two reapers and mowers combined.

J. M. Stryker, Kenosha—Combined seeder, corn marker, planter. and cultivator.

Van Brunt, Barber & Co., Horicon—One seeder.

J. Dunck. Milwaukee—Two force-pumps.

A. P. Dickey, Racine—One double-section land-roller; five fanning-mills; three plows; one hand-shears, for iron, steel, &c.

L. J. Bush, Milwaukee—Two breaking-plows.

W. E. Waterhaus, Milwaukee—Ten assorted sizes blacksmiths' bellows.

All of which is respectfully submitted.

S. D. CARPENTER, *Ch'n.*
W. H. WASHBURN.
WM. R. WARREN.

MANUFACTURERS' DEPARTMENT.

BY SATTERLEE CLARK, SUPERINTENDENT.

This society holds its annual fairs open to the competition of the world, furnishing opportunity to manufacturers to exhibit their wares, and is the best conceivable advertisement to be obtained. During these fairs fully seventy-five thousand people visit the grounds, and every article of merit is examined and discussed.

It is therefore singular that so few persons engaged in manufacturing avail themselves of this opportunity to display their products when it can be done at so little trouble and expense. In addition to the benefits arising directly to the manufacturer, the more general the department the more attractive the exhibition, and this to the manufacturers where the fair is held is indirectly of great advantage.

If these fairs become so attractive that the people who are able to do so, shall generally attend, they will carry with them a large amount of trade, and will be a source of increase to any place where the fair may be located for the time being.

While nearly every article in this department had more or less merit, there were some articles of modern invention especially worthy of commendation.

The Milwaukee Manufacturing Co., exhibited a case of augers and bitts, that attracted a great deal of attention, and it seems impossible to manufacture any tools more perfect.

Otto Zweitusch, of Milwaukee, is entitled to great credit for his exertions in behalf of the exhibition of his soda and mineral water fountains, as they not only attracted attention for their beauty, but during some of the hot days of the week contributed much to the comfort of the crowd that continually thronged his stand.

The exhibition of carriages and wagons was generally so good, and each article possessed so much merit, that it seems hardly fair to mention any one especially.

The manufacturers of furniture in Milwaukee have always con-

tributed largely to our success, for which they are entitled to the thanks of the society.

George H. Page's exhibition of cooperage exceeded anything of the kind ever shown in this state, and was all manufactured of Wisconsin timber.

Romadka Bros., Milwaukee, have for several years shown an elegant assortment of trunks, satchels, &c., of their own manufacture, showing much enterprise in their business and entitling them to the best wishes of the society.

The display of cloths and cassimeres by the Waukesha Manufactuaing Co., would have been creditable in any country.

Messrs. Goldsmith & Co., desiring to make the fair a success, and at the same time to advertise their goods to the world, have for several years last past exhibited an elegant assortment of carpets, rugs, robes, mats and decorative wood-flooring, also lace curtains and cornices.

I regret to say that in domestic manufactures our state fairs are not a success The display at the northern agricultural fair greatly exceeds ours, and indeed at very many county fairs the display is infinitely superior.

Hoping for a continuation of favors from those who have before favored the society, and also that those who have heretofore neglected our interest as well as their own, will see their error and do better in the future.

FINE-ART DEPARTMENT.

BY J. O. EATON, SUPERINTENDENT.

This department was so much better than heretofore that I have concluded to report favorably, although it was not what it ought to have been.

The leading feature of the year was the competition by exhibitors in the display of twenty-five or more oil-paintings, each, for the fifty and twenty-five dollar premiums.

The highest premium was awarded to B. Frodsham, Milwaukee, for his collection of thirty-seven paintings, many of which were of

superior merit. C. Hall, Milwaukee, was awarded the second premium, although the judges had great difficulty in deciding between his collections and that of Mr. Frodsham's. The collections were so equally meritorious, that I am certain the judges were not positive that justice had been done in the awards made. Theodore Heiss, Milwaukee, attempted to compete for the above premium, but lacking two of the required number, his collection could not be considered in making the award.

C. Hall, Mrs. J. T. Kavenough, A. E. Foote, S. Nathan and Theodore Heiss, all of Milwaukee, vied with each other in exhibiting paintings of various kinds. There was awarded to Messrs. Hall and Heiss, each three first premiums, to Nathan two, and Foote and Mrs. Kavenaugh one each, besides each received several second premiums

Miss Addie T. Ricker, of Milwaukee, a girl thirteen years of age, exhibited a very fine historical painting in competition with one of the oldest and best painters in Milwaukee, and came very near carrying off the prize. There being but one premium the committee recommended a special mention. Frank Link, Milwaukee, a boy thirteen years of age, exhibited a water color photograph (stipple) which come under like competition and received a like recommendation.

John Marr, Milwaukee, as usual had a fine collection of steel engravings, and as no one dared to compete with him he was awarded both first and second premiums.

Harry Lewis, Milwaukee, and Cook & Ely, Racine, each made a fine display of photographs, the former receiving the first, and the latter the second premium. Here again the judges were very uncertain which should receive the highest honor. Had not Lewis exhibited some first premium landscape photographs, Cook & Ely might have borne off the honors.

A very fine specimen of gilding on glass by Frank Lewald, Milwaukee was so perfect that no doubt existed in the minds of the judges and he was readily awarded the first premium. The same may be said of imitation of stone, by L. C. Bourse, Milwaukee, and of oil-photagraphs, by Hawkins & Kruger, Milwaukee.

Porposky and Van Horn, Milwaukee, showed a large and beautiful collection of steel engravings and picture frames, with the usual

honors. Those who failed to visit the fine-art hall will be well repaid by calling at their gallery on Spring street.

I cannot close this part of my report without expressing my thanks to Hon. Benj. Bagnall and Mrs. Abby, for their kindness in contributing their valuable paintings to this department. "Florinda," owned by Mr. Bagnall and valued at three thousand dollars, and the "trial of Red Jacket," painted and owned by Mrs. Abby, were the two central points of attraction. Could the donors have witnessed the satisfaction expressed by the visitors as they gazed upon these paintings, I have no doubt they would have considered themselves fully compensated for the trouble and risk in placing these celebrated works of art on exhibition.

Millinery and dress-making were placed in this department. There were no entries in the former and but two in the latter, and these the judges deemed unworthy of premiums. I can account for this lack of entries and interest only on the supposition that Milwaukee dealers have nothing worthy of exhibition in these classes.

Needle, shell and wax-work class was also placed in this department. The executive committee when making up the premium-list named all the articles to be found in other premium-lists, and by their united wisdom added many more, but the entries embraced more than a score of articles not named. To enumerate the articles and give the premiums would occupy too much space. I shall content myself with saying that every variety, both useful and ornamental, which the mind could conceive and the hands of the fair sex execute was displayed. Even the sore-headed reporters could take no exceptions to this part of the exhibition.

Rev. E. A. Wanless, formerly a missionary in Turkey, again favored us with a large collection of curiosities from that far-off country.

Asking pardon of the exhibitors for any omission or injustice in this report, I take pleasure in saying that future reports from this department will come from abler hands.

PREMIUMS AWARDED.

HORSE DEPARTMENT.

CLASS 1.—*Thoroughbreds.*

Best brood mare, 4 years old and over, J. Corrigan, Cedarburg.....$30 00
Best filly, 1 year old and under 2, J. Corrigan, Cedarburg..... 10 00

(H. C. CRANDALL,
E. D. ROOD,
W. M. ORMOND,
Committee.)

CLASS 2.—*Roadsters.*

Best stallion, 4 years old and over, G. D. Doubleday, Whitewater.....$50 00
Second best, M. Carpenter, Milwaukee..... 25 00
Best stallion, 3 years old and under 4, Wm. M. Ormond, Milwaukee 30 00
Second best, J. M. Alcott, Milwaukee 15 00
Best stallion, 2 years old and under 3, Richard Richards, Racine..... 15 00
Second best, F. F. Adams & Co., Milwaukee..... 10 00
Best stallion, 1 year old and under 2, Chas. Holborn, Racine. 10 00
Second best, S. A. Randles, Waukesha..... 5 00
Best sucking stallion foal, C. T. Bradley, Milwaukee..... 10 00
Second best, S. A. Randles, Waukesha 5 00
Best brood mare, 4 years and over, C. T. Bradley, Milwaukee..... 30 00
Second best, H. N. Greenman, Whitewater 15 00
Best filly, 3 years old and under 4, Richard Richards, Racine..... 15 00
Second best, Henry Phillips, Merton..... 10 00
Best filly, 2 years old and under 3, Richard Richards, Racine 10 00
Best filley, 1 year old and under 2, A. F. Pratt, Waukesha..... 10 00
Second best, Richard Richards, Racine 5 00
Best sucking filly foal, G. D. Doubleday, Whitewater 10 00
Second best, J. Corrigan. Cedarburg 5 00

(A. BURNHAM,
ISAAC STEPHENSON,
E. S. HIGGINS,
Committee.)

CLASS 3.—*Horses for general purposes.*

Best stallion, 4 years old and over, L. W. Smith, Mukwanago $30 00
Second best, D. H. Donnan, East Troy..... 15 00
Best stallion, 3 years old and under 4, H. B. Sherman, Burnett..... 20 00
Second best, T. B. Rowland, Genesee..... ..... 10 00

Second best stallion, 2 years old and under 3, H. B. Sherman, Burnett.....$ 5 00
Best stallion, 1 year old and under 2, H. B. Sherman, Burnett..... 8 00
Second best, H. O. Bailey, Caldwell's Prairie..... 4 00
Best sucking-stallion foal, A. Humbert, Caldwell's Prairie..... 5 00
Second best, P. Humbert, Caldwell's Prairie..... 3 00
Best brood mare, Chas. Holburn, Racine 20 00
Second best, J. P. Chafin, East Troy..... 10 00
Best filly, 3 years old and under 4, R. Hughes, Watertown..... 15 00
Best filly, 2 years old and under 3, J. Pilgrim, West Granville..... 10 00
Best filly, 1 year old and under 2, E. Agnes, Granville..... 6 00
Second best, E. M. DePuy, East Troy..... 3 00
Best sucking-filly foal, A, Rorick, Wauwatosa..... 5 00
Second best, J. P. Chafin, East Troy..... 3 00

(J. C. CORRIGAN,
H. C. CRANDALL,
S. B. DAVIS,
Committee.)

CLASS 4.—*Draft-horses.*

Best stallion, 4 years old and over, Geo. Murray, Racine.....$30 00
Second best, R. Ogilvie, Madison..... 15 00
Best stallion, 3 years old and under 4, Wm. Warden, Minnesota Junction.. 20 00
Second best, Wm. Lysaght, Bellville..... 10 00
Best stallion, 2 years old and under 3, Wm. Storey, Waupun 10 00
Second best, Jno. M. Roberts..... 5 00
Best stallion, 1 year old and under 2, Robert Ogilvie, Madison..... 8 00
Second best, G. Richards, Cambria..... 4 00
Best brood mare, A. Ficbrantz, Milwaukee..... 20 00
Best filly, 3 years old and under 4, Geo. Murray, Racine..... 15 00
Second best, Wm Warden, Minnesota Junction..... 10 00
Best filly, 2 years old and under 3, H. B. Sherman, Burnett..... 10 00
Best filly, 1 year old and under 2, H. B. Sherman, Burnett..... 6 00

(S. HOYT,
GEO. D. DOUBLEDAY,
BENJ. MACK,
Committee.)

CLASS 5.—*Jacks and mules.*

Best jack, J. Campbell, Menomonee.....$ 20 00
Best jenny, F. C. Bell, Wauwatoso..... 20 00
Second best, A. F. Pratt, Waukesha 10 00
Best pair working-mules, William Rhodes, Salem..... 10 00
Second best, A. B. Bailey, Menomonee..... 5 00

(FRED MCQUIVEY,
J. C. CORRIGAN,
T. D. LUND,
Committee.)

CLASS 6.—*Matched horses and mares.*

Best pair carriage horses or mares, B. Phelps, Racine.....$30 00
Second best, H. B. Roberts, Franksville..... 15 00
Best pair roadsters, A. H. Swan, Wauwatosa..... 30 00
Second best, Orlando Secor, Racine..... 15 00
Best pair farm horses or mares, H. B. Sherman, Burnett 20 00
Second best, Allen Porter, Dodge's Corners 10 00
Best pair draft horses or mares, William Warden, Minnesota Junction..... 20 00

(A. BURNHAM,
ISAAC STEPHENSON,
E. S. HIGGINS,
Committee.)

CLASS 7.—*Geldings or mares for single harness.*

Best gelding or mare for single harness, H. B. Sherman, Burnett.....$30 00
Second best, H. F. Jennings, Oconomowoc..... 15 00

H. C. CRANDALL,
J. C. CORRIGAN,
E. S. HIGGINS,
Committee.

CLASS 8—*Trotters.*

Best and fastest trotting-stallion, J. C. Corrigan, Cedarburg, "Jackson" time 2:31..... $100 00
Second best, A. Aldrich, Milwaukee, "Hero"..... 50 00
Best and fastest trotting-mare, W. D. Edgerton, Beaver Dam, "Darkness," time 2:38 3-4..... 60 00
Second best, P. Brooks, Hartford, "Hartford Maid."..... 30 00
Best and fastest trotting-gelding, H. T. Jennings, Oconomowoc, "Bay Charley," time 2:50..... 60 00
Second best, M. Loomis, Milwaukee, "Lee."..... 30 00
Best and fastest trotting-span, M. Carpenter, Milwaukee, "Hero and Flora," time 3:03..... 60 00

SPECIAL PREMIUM $500.

First premium, J. S. Rowell, Beaver Dam, "Badger Girl," time 2:27 3-4 $300 00
Second premium, C. M. Brown, "Phil Sheridan"..... 150 00
Third premium, J. C. Corrigan, Cedarburg, "Jackson."..... 50 00

WM. HOBKIRK,
S. B. DAVIS,
C. J. SIMMONS,
Committee.

CLASS 9.—*Running-horses.*

Special running-race against time.
First premium, Jno. H. La Pointe, Milwaukee, "Kitty Stacy." time 1:50..$40 00

S. B. DAVIS,
C. J. SIMMONS,
WM. HOBKIRK,
Committee.

CLASS 10.—*Sweepstakes on horses.*

Best stallion and five colts, Richard Richards, Racine, Grand silver medal,$100 00
Best brood mare with foal, J. Corrigan, Cedarburg.....Silver medal, 50 00

S. HOYT,
S. B. DAVIS,
E. S. WADSWORTH,
Committee.

CATTLE DEPARTMENT.

CLASS 11.—*Short-horns.*

Best bull, 4 years old and over, Geo. Murray, Racine.....$30 00

Best bull, 3 years old and over, Wm. Rhodes & Son, Salem	$30 00
Second best, Eli Stilson, Oshkosh	15 00
Best bull, 2 years old and under 3, H. Ludington, Milwaukee	30 00
Second best, Eli Stilson, Oshkosh	15 00
Best bull, 1 year old and under 2, Eli Stilson, Oshkosh	30 00
Second best, H. Ludington, Milwaukee	15 00
Best bull calf, over 6 and under 12 months, Geo. Murray, Racine	15 00
Second best, H. Ludington, Milwaukee	10 00
Best bull calf, under 6 months, E. & J. Smith, Rochester	15 00
Second best, Wm. Rhodes & Son, Salem	10 00
Best cow, 4 years old and over, H. Ludington, Milwaukee	25 00
Second best, Geo. Murray, Racine	15 00
Best cow, 3 years old and over, Geo. Murray, Racine	25 00
Second best, Geo. Murray, Racine	15 00
Best heifer, 2 years old and under 3, Geo. Murray, Racine	25 00
Second best, H. Ludington, Milwaukee	15 00
Best heifer, 1 year old and under 2, Geo. Murray, Racine	25 00
Second best, Geo. Murray, Racine	15 00
Best heifer calf, 6 and under 12 months, Eli Stilson, Oshkosh	10 00
Second best, Geo. Murray, Racine	5 00
Best heifer calf, under 6 months, E. & J. Smith, Rochester	10 00
Second best, J. C. Mitchem, Genesee	5 00

(ROBERT OGILVIE,
WM. STOREY,
J. C. KISER,
Committee.)

CLASS 12.—*Devons.*

Second best bull, 4 years old and over, C. B. Fowler, Wauwatosa	$10 00
Best bull, 3 years old and over, Luther Rawson, Oak Creek	20 00
Second best bull, 2 years old and under 3, G. V. D. Brand, Waupun	10 00
Best bull, 1 year old and under 2, W. T. Smith, Elkhorn	20 00
Second best, Luther Rawson	10 00
Second best bull calf, over 6 and under 12 months, Luther Rawson	5 00
Best bull calf, under 6 months, W. T. Smith, Elkhorn	10 00
Second best, Luther Rawson	5 00
Best cow, 4 years old and over, Luther Rawson	15 00
Second best, C. B. Fowler, Wauwatosa	10 00
Best cow, 3 years old and over, Luther Rawson	15 00
Second best, W. T. Smith	10 00
Best heifer, 2 years old and under 3, Luther Rawson	15 00
Second best, Luther Rawson	10 00
Best heifer, 1 year old and under 2, Luther Rawson	15 00
Second best, Luther Rawson	10 00
Best heifer calf, over 6 and under 12 months, Luther Rawson	6 00
Best heifer calf, under 6 months, W. T. Smith, Elkhorn	6 00
Second best, Luther Rawson	3 00

CLASS 13.—*Ayrshires.*

Second best bull, 4 years old and over, Grand Chute Farmers' Club, Appleton	10 00
Best bull, 2 years old and under 3, Chester Hazen, Ladoga	20 00
Second best, D. Huntley, Appleton	10 00
Best bull, 1 year old and under 2, Joseph Johnson, Hartland	20 00
Second best, Jonathan Stoddard, Greenbush	10 00
Best bull calf, over 6 and under 12 months, James McNee, Emerald Grove	10 00
Best bull calf, under 6 months, Jonathan Stoddard, Greenbush	10 00
Second best, Jonathan Stoddard, Greenbush	5 00
Best cow, 4 years old and over, Joseph Johnson, Hartland	15 00
Second best, Jonathan Stoddard, Greenbush	10 00
Best cow, 3 years old and over, Chester Hazen, Ladoga	15 00
Second best, Jonathan Stoddard, Greenbush	10 00

Best heifer, 2 years old and under 3, Jonathan Stoddard, Greenbush $15 00
Second best, D. Huntley, Appleton..... 10 00
Best heifer, 1 year old and under 2, Joseph Johnson, Hartland..... 15 00
Second best, Jonathan Stoddard, Greenbush..... 10 00
Best Heifer calf, over 6 and under 12 months, Jonathan Stoddard, Greenbush 6 00
Second best, D. Huntley, Appleton..... 3 00
Best heifer calf, under 6 months, D. Huntley, Appleton..... 6 00
Second best, Jonathan Stoddard, Greenbush 3 00

(JOEL PRUYN,
M. J. BUTTERFIELD,
E. R. EVANS,
Committee.)

CLASS 14.—*Jerseys.*

Best bull, 4 years old and over, George E. Bryant, Madison..... $20 00
Best bull, 2 years old and under 3, Chester Hazen, Ladoga..... 20 00
Best bull, 1 year old and under 2, George E. Bryant, Madison..... 20 00
Best bull calf, under 6 months, Geo. E. Bryant, Madison..... 10 00
Best cow, 4 years old and over, John L. Mitchell, Milwaukee,..... 15 00
Best heifer, 2 years old and under 3, Geo. E. Bryant, Madison..... 15 00
Best heifer, 1 year old and under 2, John L. Mitchell, Milwaukee..... 15 00

(WM. LARKIN,
M. J. BUTTERFIELD,
F. SHULTIS,
Committee,)

CLASS 15.—*Galloways.*

Best exhibition, not less than 6 head, Peter Davy, Monteray..... $60 00

(C. M. CLARK,
WM. M. GAY,
M. L. BUTTERFIELD,
Committee.)

CLASS 16.—*Grade-cattle and working-oxen.*

Best grade cow, 3 years old and over, E. & J. Smith, Rochester $15 00
Second best, E. & J. Smith, Rochester 10 00
Best heifer 2 years old and under 3, E. & J. Smith, Rochester..... 15 00
Second best, E. & J. Smith, Rochester..... 10 00
Best yearling heifer, E. & J. Smith, Rochester 15 00
Second best, E. & J. Smith, Rochester..... 10 00
Best heifer calf, E. & J. Smith, Rochester 6 00
Best yoke working oxen, Luther Rawson, Oak Creek 20 00
Second best, Luther Rawson, Oak Creek..... 10 00
Best yoke 3 year old steers, Luther Rawson, Oak Creek 15 00
Best 2 year old steers, Luther Rawson, Oak Creek 10 00

(JOEL PRUYN,
C. M. CLARK,
C. HAZEN.
Committee.)

CLASS 17.—*Milch-cows.*

Best milch-cow, any breed, 4 years old and over, E. & J. Smith, Rochester $30 00
Second best, M. L. Butterfield, Waukesha..... 15 00

Best milch-cow, any breed, 3 years old and under 4, M. L. Butterfield, Waukesha, ... Silver medal and $20 00

C. M. CLARK,
WM. M. GAY,
ALLEN BRAZEN,
Committee.

CLASS 19.—*Herds—open to all breeds.*

Best bull and 4 cows or heifers over 2 years old, Geo. Murray, Racine	$100 00
Second best, H. Ludington, Milwaukee	60 00
Third best, Eli Stilson, Oshkosh	40 00
Best bull and 4 heifers under 2 years old, Geo. Murray, Racine	60 00
Second best, Eli Stilson, Oshkosh	40 00
Third best, E. & J. Smith, Rochester	20 00
Best four calves, one bull and three heifers, E. & J. Smith, Rochester	40 00
Second best, Jonathan Stoddard, Greenbush	30 00

Open to all breeds except short-horns.

Best bull and four cows or heifers over 2 years old Luther, Rawson Oak Creek	60 00
Second best, Chester Hazen, Ladoga	40 00
Third best, Peter Davy, Monterey	20 00

SWEEPSTAKES.

Best bull of any age, Geo. Murray, Racine	50 00
Second best, Wm. Rhodes & Son, Salem	25 00
Best cow or heifer of any age, Geo. Murray, Racine	40 00
Second best, Geo. Murray, Racine	20 00

C. M. CLARK,
JOHN ZENILL,
ROBERT OGILVIE,
Committee.

SHEEP DEPARTMENT.

CLASS 20.—*American merinos.*

Best buck, 2 years old and over, John H. Paul, Genesee	$20 00
Second best, G. Lawrence, Waukesha	10 00
Best buck, 1 year old and under 2, John H. Paul, Genesee	15 00
Second best, John G. Putnam, Neosho	10 00
Best pen 3 buck lambs, G. Lawrence, Waukesha	10 00
Second best, A. & P. Humbert, Caldwell's Prairie	5 00
Best pen 10 ewes, 2 years old and over, G. Lawrence, Waukesha	30 00
Second best, John H. Paul, Genesee	15 00
Best pen 3 ewes, 2 years old and over, A. & P. Humbert, Caldwell's Prairie	20 00
Second best, John H. Paul, Genessee	10 60
Best pen 10 ewes, 1 year old and under 2, John H. Paul, Genesee	20 00
Second best, Perry Craig, Caldwell's Prairie	15 00
Best pen 3 ewes, 1 year old and under 2, A. & P. Humbert, Caldwell's Prairie	15 00
Second best, G. Lawrence, Waukesha	10 00
Best pen 10 ewe lambs, John H. Paul, Genesee	20 00
Second best, Perry Craig, Caldwell's Prairie	10 00

Best pen 3 ewe lambs, J. J. & I. N. Clapp, Kenosha $10 00
Second best, A. & P. Humbert, Caldwell's Prairie..... 5 00

(GEO. C. PRATT,
C. F. RIDER,
E. MILLROY,
Committee.)

CLASS 21.—*Long-wool.*

Best buck 2 years and over, Robert Ogilvie, Madison..... $20 00
Second best, Geo. Murray, Racine..... 10 00
Best buck, 1 year old and under 2, Wm. Rhodes & Son, Salem..... 15 00
Second best, Wm. Lysaght, Bellville..... 10 00
Best pen 3 buck-lambs, Wm. Rhodes & Son, Salem..... 10 00
Second best, Geo. Harding, Waukesha..... 5 00
Best pen 10 ewes, 2 years and over, S. A. Fox, Waukesha..... 30 00
Best pen 3 ewes, 2 years old and over, Wm. Lysaght, Bellville..... 20 00
Second best, Geo. Murray, Racine..... 10 00
Best pen 10 ewes, 1 year and under 2, Wm. Lysaght, Bellville..... 20 00
Second best, S. A. Fox, Waukesha..... 10 00
Best pen 3 ewes, 1 year and under 2, Wm. Rhodes & Son, Salem..... 15 00
Second best, Geo. Harding, Waukesha..... 10 00
Best pen 10 ewe lambs, S. A. Fox, Waukesha..... 20 00
Best pen 3 ewe lambs, Geo. Harding, Waukesha..... 10 00
Second best, Wm. Lysaght, Bellville..... 5 00

(GEO. KEYS,
WM. J. JENNINGS,
JOHN GAYLOR,
Committee.)

CLASS 22.—*Southdowns.*

Best buck, 2 years old and over, Luther Rawson, Oak Creek..... $20 00
Second best, Evan O. Jones, Racine 10 00
Best buck, 1 year old and under 2, Howard & Towers, Omro..... 15 00
Second best, S. J. Daubner, Brookfield Center..... 10 00
Best pen 3 buck lambs, Luther Rawson, Oak Creek..... 10 00
Second best, Howard & Towers, Omro..... 5 00
Best pen 10 ewes, 2 years old and over, G. H. Daubner, Brookfield Center.. 30 00
Best pen 3 ewes, 2 years old and over, Howard & Towers, Omro..... 20 00
Second best, Luther Rawson, Oak Creek..... 10 00
Best pen 3 ewes, 1 year old and under 2, Howard & Towers, Omro..... 15 00
Second best, G. H. Daubner, Brookfield Center..... 10 00
Best pen 3 ewe lambs, Luther Rawson, Oak Creek..... 10 00
Second best, G. H. Daubner, Brookfield Center 5 00

(JOHN TAYLOR,
WM. J. JENNINGS,
Committee.)

CLASS 23.—*Fat sheep.*

Best fat sheep, not less than 3, S. A. Fox, Waukesha $10 00
Best cashmere buck, John Becker, Milwaukee..... 15 00
Best cashmere ewe, Geo. E. Bryant, Madison..... 10 00
Best cashmere kid, Geo E. Bryant, Madison..... 5 00

JOHN TAYLOR,
WM. J. JENNINGS,
Committee.

SWINE DEPARTMENT.

CLASS 24.—*Berkshires.*

Best boar, 2 years old and over, James Magson, Walworth	$15 00
Best boar, 1 year old and under 2, Allen Stetson, Honey Creek	10 00
Second best, Howard & Towers, Omro	5 00
Best breeding-sow, 2 years old and over, Allen Stetson, Honey Creek	15 00
Bes breeding-sow, 1 year old and under 2, James Magson, Walworth	10 00
Second best, Howard & Towers, Omro	5 00
Best breeding-sow, with litter of pigs not less than four, James Magson, Walworth	15 00
Second best, Wm. Lysaght, Bellville	10 00
Best boar-pig, over 6 months and under 1 year old, Wm. Lysaght, Bellville	8 00
Second best, Wm. Lysaght, Bellville	4 00
Best sow-pig, over 6 months and under 1 year old, James Magson, Walworth	8 00
Second best, Howard & Towers, Omro	4 00
Best boar-pig, under 6 months, James Magson, Walworth	8 00
Second best, Wm. Lysaght, Bellville	4 00
Best sow-pig, under 6 months, Wm. Lysaght, Bellville	8 00
Second best, James Magson, Walworth	4 00

(R. W. BROWN,
GEO. KEYS,
L. B. POTTER,
Committee.)

CLASS 24.—*Poland-china.*

Best boar, 2 years old and over, W. W. Ellsworth, Woodstock, Ills	$15 00
Second best, A. F. Pratt, Waukesha	10 00
Best boar, 1 year old and under 2, Jno. Jeffers, Darien	10 00
Best breeding-sow, 2 years old and over, W. W. Ellsworth, Woodstock, Ills.	15 00
Second best, W. W. Ellsworth, Woodstock, Ills	10 00
Best breeding-sow, 1 year old and under 2, W. W. Ellsworth, Woodstock, Ills	10 00
Best breeding-sow with litter of pigs, not less than 4, W. W. Ellsworth, Woodstock, Ills	15 00
Best boar-pig under 6 months, W. W. Ellsworth, Woodstock, Ills	8 00
Second best, W. W. Ellsworth, Woodstock, Ills	4 00
Best sow-pig under 6 months, W. W. Ellsworth, Woodstock, Ills	8 00
Second best, W. W. Ellsworth, Woodstock Ills	4 00

(ROBERT OGILVIE,
L. B. POTTER,
GEO. KEYS,
Committee.)

CLASS 24.—*Chester-whites.*

Best boar, 1 year old and under 2, R. Seaver, Darien	$10 00
Best breeding-sow, 2 years old and over, R. Seaver, Darien	15 00
Best breeding-sow, 1 year old and under 2, R. Seaver, Darien	10 00
Second best, Henry Lamb, Brookfield	5 00
Best breeding-sow, with litter of pigs, not less than 4, R. Seaver, Darien	15 00
Second best, R. Seaver, Darien	10 00
Best boar-pig, over 6 months and under 1 year, R Seaver, Darien	8 00
Second best, R. Seaver, Darien	4 00
Best sow-pig, over 6 months and under 1 year old, R. Seaver, Darien	8 00
Second best, R. Seaver, Darien	4 00

Best boar-pig, under 6 months old, R. Seaver, Darien.....$ 8 00
Second best, R. Seaver, Darien..... 4 00
Best sow-pig, under 6 months old, R, Seaver, Darien 8 00
Second best, R Seaver, Darien..... 4 00

R. W. BROWN,
L. B. POTTER,
GEO. KEYS,
Committee

CLASS 24.—*Essex and Suffolks.*

Fine exhibition Essex and Suffolks, John Jeffers, Darien.....$25 00
Awarded by the executive board.

W. W. FIELD,
Secretary.

CLASS 24.—*Special premiums offered by Messrs. Plankinton & Armour and Layton & Co., pork-packers, Milwaukee.*

Best boar of any age, W. W. Ellsworth, Woodstock, Ill.....$25 00
Best sow of any age, W. W. Ellsworth, Woodstock, Ill..... 25 00
Best 6 pigs under 8 months, W. W. Ellsworth, Woodstock, Ill..... 10 00
Best boar and sow of any age or breed, with 5 pigs not over 8 months old, W. W. Ellsworth, Woodstock, Ill..... 40 00

R. W. BROWN,
L. B. POTTER,
GEB. KEYS,
Committee.

CLASS 25.—*Poultry.*

Best trio gray dorkings, S. H. Seamans, Wauwatosa..... $3 00
Best trio white dorkings, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best trio black spanish, S. H. Seamans, Wauwatosa..... 3 00
Second best, H. D. Gardner, Milwaukee..... 2 00
Best trio polands, H. N. Maxham, Diamond Lake..... 3 00
Second best, Leon Howard, Milwaukee..... 2 00
Best trio hamburgs, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. A. Philbrook, Brookfield..... 2 00
Best trio game fowls, E. P. Richardson, Milwaukee..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best trio white leghorns, S. H. Seamans, Wauwatosa..... 3 00
Second best, Leon Howard, Milwaukee..... 2 00
Best trio buff cochins, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best trio partridge cochins, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. A. Philbrook, Brookfield..... 2 00
Best trio light brahmas, S. A. Philbrook, Brookfield..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best trio dark brahmas, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best trio houdans, S. H. Seamans, Wauwatosa..... 3 00
Second best, Leon Howard, Milwaukee..... 2 00
Best trio bantams, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00
Best pair bronze turkeys, S. H. Seamans, Wauwatosa..... 3 00
Best pair common turkeys, John Dearsley, Wauwatosa..... 3 00
Best pair Muscovy ducks, S. H. Seamans, Wauwatosa..... 3 00
Second best, S. H. Seamans, Wauwatosa..... 2 00

Best pair Aylesbury ducks, S. H. Seamans, Wauwatosa	$ 3 00
Second best, S. H. Seamans, Wauwatosa	2 00
Best pair Rouen ducks, S. H. Seamans, Wauwatosa	3 00
Second best, S. H. Seamans, Wauwatosa	2 00
Best pair Bremen geese, S. H. Seamans, Wauwatosa	3 00
Second best, S. H. Seamans, Wauwatosa	2 00
Best pair China geese, Joseph Johnson, Hartland	2 00
Best and greatest variety of poultry (choice breeds) shown by one person, S. H. Seamans, Wauwatosa	Silver medal and 15 00

D. W. FERNANDEZ,
A. H. HOWARD,
WM. B. WARREN,
Committee.

In all the recommendations of the judges I fully concur.

E. J. COOPER,
Actimg Supt.

AGRICULTURAL DEPARTMENT.

CLASS 26.—*Field-products.*

Best sample spring-wheat, (Rio Grande or China Tea), C. C. Hatchard, Kingston	$7 00
Best sample spring-wheat (Fife), H. Boorse, Granville	7 00
Second best, D. T. Pilgrim, West Granville	4 00
Best white winter-wheat, J. W. Wood, Baraboo	7 00
Second best, Frank McVean, Oconomowoc	4 00
Best rye, H. Boorse, Granville	5 00
Second best, William Reid, North Prairie	3 00
Best oats, B. B. Olds, Clinton	5 00
Second best, H. Boorse, Granville	3 00
Best barley, John Zimmerman, Butler	5 00
Second best, D. T. Pilgrim, West Granville	3 00
Best buckwheat, W. H. Davis, Algoma	5 00
Best flax-seed, W. H. Davis, Algoma	5 00
Second best, D. T. Pilgrim, West Granville	3 00
Best hops (sack), Jacob Hill, Summit	5 00
Second best, Joseph Johnson, Hartland	3 00
Best timothy seed, George S. Haskell & Co., Rockford, Illinois	5 00
Second best, W. H. Davis, Algoma	3 00
Best clover seed, D. T. Pilgrim, West Granville	5 00
Second best, H. M. Jones, Appleton	3 00
Best peas, Lyman Wheeler, Wauwatosa	5 00
Second best, D. T. Pilgrim, West Granville	3 00
Best beans, W. H. Davis, Algoma	5 00
Second best, F. S. Capron, Oconomowoc	3 00
Best dent corn, A. & P. Humbert, Caldwell's Prairie	5 00
Second best, J. DeGraff Brookfield	3 00
Best flint corn, D. T. Pilgrim, West Granville	5 00
Second best, E. J. Grover, Wauwatosa	3 00
Best bushel of early potatoes, Aug. Wolff, Milwaukee	5 00
Second best, H. McAffrey, Butler	3 00
Best bushel of late potatoes, D. T. Pilgrim, West Granville	5 00
Second best, Mrs. Fannie M. Vilas, Madison	3 00
Best bushel carrots, Jas. C. Howard, Milwaukee	3 00
Second best, James Eager, Milwaukee	3 00
Best bushel turnips, Geo. W. Ringrose, Wauwatosa	3 00
Second best, William Reid, North Prairie	2 00
Best bushel onions, A. & P. Humbert, Caldwell's Prairie	5 00
Second best, Geo. W. Ringrose, Wauwatosa	3 00

Best ten pounds tobacco, William Reid, North Prairie.....$ 5 00
Best six squashes, W. H. Davis, Algoma..... 5 00
Second best, Geo. S. Haskell & Co., Rockford, Ill..... 3 00
Best six pumpkins, D. T. Pilgrim, West Granville..... 5 00
Second best, P. Putnam, Dodge's Corners..... 3 00
Best twelve water melons, E. Elliot, Lone Rock..... 5 00
Best exhibition field products, Geo. S. Haskell & Co., Rockford, Ill..... 25 00
Second best, D. T. Pilgrim, West Granville..... 15 00

Special premiums by Milwaukee Chamber of Commerce.

Best bushel of winter-wheat, J. W. Wood, Baraboo..... 25 00
Best bushel spring-wheat, H. Boorse, Granville..... 25 00

The judges on field-products have been much pleased with the display of specimens from the University-farm and find many of them choice samples, both cereals and garden products, and would recommend that a diploma be awarded for the splendid exhibition. We would also recommend that premiums should be offered on different varieties of potatoes and other field and garden produce.

GEO. G. SWAIN,
C. HOLLAND,
ADELMONN SHERMAN,
Committee.

CLASS 27.—*Garden-vegetables.*

Best 12 stalks celery, James Eager, Milwaukee.....$ 2 00
Second best, C. D. Richards, Milwaukee..... Western Farmer.
Best six heads cauliflowers, S. B. Smith, Dodge's Corners..... 2 00
Best 12 beets, D. Huntley, Appleton..... 2 00
Second best, John Zimmerman Milwaukee..... Western Farmer.
Best 12 parsnips, James Eager, Milwaukee..... 2 00
Best 2 heads cabbage, L. Zeimer, Milwaukee..... 2 00
Second best, James Eager, Milwaukee..... Western Farmer.
Best 12 tomatoes, E. Cornwall, Greenfield..... 2 00
Second best, Geo. W. Ringrose, Wauwatosa,..... Western Farmer.
Best 12 purple egg-plants, L. Zeimer, Milwaukee..... 2 00
Best 12 sweet-potatoes, J. C. Plumb, Milton..... 2 00
Best half-peck Lima beans, D. T. Pilgrim, West Granville..... 2 00
Second best, R. Henry Sabin, Milwaukee.....Western Farmer.
Best half-peck Windsor beans, Geo. S. Haskell & Co., Rockford, Ills..... 2 00
Best show garden-products, (not less than ten varieties), Geo. S. Haskell & Co., Rockford, Ills..... 10 00

AMAZIAH SHERMAN,
GEO. D. LATHROP,
Committee.

CLASS 28.—*Products of the flouring-mill, dairy, and apiary.*

Best barrel winter-wheat flour, Park, Smith & Co., Waterford..Silver medal and $10 00
Best barrel spring wheat flour, Medbury, Stevens & Co., Milwaukee...Silver medal and 10 00
Second best, S. H. Seamans, Wauwatosa..... 10 00
Best 25 pounds June-butter, F. C. Curtis, Rocky Run .....Silver medal and 10 00
Second best, Mrs. P. Putnam, Dodge's Corners 10 00
Best three cheeses, farm-made, Z. G. Simmons, Kenosha...Silver medal and 10 00
Second best, Mrs. P. Putnam, Dodge's Corners 10 00

Best two cheeses, factory-made, F. Jones, Milwaukee.....Silver medal and $10 00
Second best, Geo. W. Conn, Hebron, Ill..... 10 00
Best 10 pounds honey, A. H. Hart, Appleton..... 10 00
Second best, I. B. Cross, Milwaukee..... 5 00
Best extracted honey, D. Huntley, Appleton..... 5 00
Best method handling bees, A. H. Hart, Appleton..... 10 00
Best 10 pounds maple sugar, Frank McVean, Oconomowoc..... 5 00
Best gallon maple-syrup, Frank McVean, Oconomowoc..... 5 00

Special premiums on butter by Messrs. Cottrill & Antisdel.

Best firkin June made butter, R. S. Houston, Kenosha.....$40 00
Second best, F. C. Curtis, Rocky Run..... 35 00
Third best, F. S. Capron, Oconomowoc..... 25 00

F. A. ZANTKE,
A. V. BISHOP,
H. D. GREENMAN,
Committee.

CLASS 29.—*Household products.*

Best 2 loaves graham bread, M. Robinson, Wauwatosa..... $3 00
Best 2 loaves white bread, (hop-yeast,) Miss Birdie Day..... 3 00
Best 2 loaves white bread, milk-raising, Mrs. James Heth, Milwaukee..... 3 00
Best 5 pounds soda-crackers, Augustus Riddell, Milwaukee..... 2 00
Best 5 pounds picnic-crackers, Augustus Riddell, Milwaukee..... 2 00
Best 5 pounds Boston-crackers, Augustus Riddell, Milwaukee..... 2 00
Best 2 loaves Indian bread, M. Robinson, Wauwatosa..... 3 00
Best sponge-cake, Mrs. S. H. Seamans, Wauwatosa..... 2 00
Best pound-cake, Miss Jennie L. Heth, Milwaukee..... 2 00
Best jelly-cake, Miss Libbia Tenney, Durham Hill..... 2 00
Best silver-cake, Mrs. S. H. Seamans, Wauwatosa..... 2 00
Best fruit cake, Miss Jennie L. Heth, Milwaukee..... 2 00
Best exhibition bread and cake, Miss Jennie L. Heth, Milwaukee.....Silver medal.
Best 2 bottles wine-vinegar, A. F. W. Boden, Milwaukee.....Diploma.
Best canned peaches, M. Robinson, Wauwatosa..... 2 00
Best canned plums, Mrs. A. H. Cutting, Racine..... 2 00
Best canned currants, M. Robinson, Wauwatosa..... 2 00
Best canned tomatoes, Mrs. Fannie Wilson, Milwaukee..... 2 00
Best canned raspberries, Mrs. Fannie Wilson, Milwaukee..... 2 00
Best preserved peaches, D. Huntley, Appleton..... 2 00
Best raspberry jam, C. D. Richards, Milwaukee..... 2 00
Best blackberry jam, D. Huntley, Appleton..... 2 00
Best sour-pickled cucumbers, Mrs. Henry Hickman, Milwaukee..... 2 00
Best pickled peaches, C. D. Richards, Milwaukee..... 2 00
Best pickled pears, Mrs. Henry Hickman, Milwaukee..... 2 00
Best pickled watermelons, Mrs. H. M. Jones, Milwaukee..... 2 00
Best tomato-catsup, Mrs. H. M. Jones, Milwaukee..... 2 00

MRS. E. J. ELSON,
MRS. A. H. CUTTING,
GEO. G. SWAIN,
Committee.

CLASS 30.—*Fruits by professional cultivators.*

APPLES.

Greatest variety, A. G. Tuttle, Baraboo.....$10 00
Second best, G. P. Peffer, Pewaukee..... 7 50
Third best, Gould's Nursery, Beaver Dam..... 5 00
Fourth best, Geo. Wolff, Thiensville..... 3 00

Best ten varieties adapted to the northwest, G. P. Peffer, Pewaukee	$10 00
Second best, Gould's Nursery	7 50
Third best, A. G. Tuttle, Baraboo	5 00
Fourth best, Geo. J. Kellogg, Janesville	3 00
Best five varieties adapted to the northwest, Gould's Nursery	5 00
Second best, Geo. J. Kellogg	3 00
Third best, G. P. Peffer	2 00
Largest variety winter, A. G. Tuttle	10 00
Second best, G. P. Peffer	7 50
Third best, George J. Kellogg	5 00
Fourth best, Gould's Nursery	3 00
Best five varieties, winter, A. G. Tuttle	5 00
Second best, C. H. Greenman, Milton	3 00
Third best, Gould's Nursery	2 00
Best ten varieties without regard to adaptation, A. G. Tuttle	5 00
Second best, George Wolff	3 00
Third best, E. W. Daniels, Auroraville	2 00
Best plate Red Astrachan, A. G. Tuttle	2 00
Second best, E. W. Daniels	1 00
Best plate Duchess of Oldenburg, A. G. Tuttle	2 00
Second best, Gould's Nursery	1 00
Best plate St. Lawrence, A. G. Tuttle	2 00
Second best, E. W. Daniels	1 00
Best plate Fameuse, G. P. Peffer	2 00
Second best, George Wolff	1 00
Best plate Utters, J. C. Plumb, Milton	2 00
Second best, G. P. Peffer	1 00
Best plate Plumb's Cider, A. G. Tuttle	2 00
Second best, G. P. Peffer	1 00
Best plate Seek-no-Further, George Wolff	2 00
Second best, G. P. Peffer	1 00
Best plate Willow Twig, G. P. Peffer	2 00
Second best, George J. Kellogg	1 00
Best plate Tallman Sweet, E. W. Daniels	2 00
Second best, Gould's Nursery	1 00
Best plate Golden Russet, George Wolff	2 00
Second best, Gould's Nursery	1 00
Largest apple, A. G. Tuttle	2 00
Second largest, G. P. Peffer	1 00
Heaviest apple, A. G. Tuttle	2 00
Second heaviest, G. P. Peffer	1 00

PEARS.

Best and greatest variety, G. P. Peffer	7 50
Second best, Geo. Wolff	4 00
Third best, Gould's Nursery	2 50
Fourth best, Geo. J. Kellogg	1 00
Best five varieties, Geo. Wolff	3 00
Second best, G. P. Peffer	2 00
Third best, Gould's Nursery	1 00
Best three varieties, G. P. Peffer	3 00
Second best, Gould's Nursery	2 00
Best Flemish Beauty, Gould's Nursery	3 00
Second best, A. G. Tuttle	2 00

PLUMS.

Best and greatest variety, G. P. Peffer	5 00
Second best, A. G. Tuttle	3 00
Third best, Geo. Wolff	2 00
Best Miner Plum, C. H. Greenman	2 00
Second best, G. P. Peffer	1 00
Best native or wild plum, G. P. Peffer	2 00
Second best, C. H. Greenman	1 00

PEACHES.

Best show peaches, named fruit, Mrs. Alexander Mitchell	$2 00
Second best, G. P. Peffer	1 00

J. W. PARKS,
B. B. OLDS,
F. C. CURTIS,
Committee.

GRAPES.

Best and greatest variety, G. J. Kellogg, 19 varieties	$10 00
Second best, A. G. Tuttle, 17 varieties	7 50
Third best, C. H. Greenman, 20 varieties	5 00
Fourth best, G. P. Peffer, 20 varieties	3 00
Best ten varieties, C. H. Greenman	7 50
Second best, George J. Kellogg	5 00
Third best, G. P. Peffer	3 00
Best five varieties, A. G. Tuttle	5 00
Second best, C. H. Greenman	3 00
Third best, Geo. J. Kellogg	2 00
Best three varieties, Geo. J. Kellogg	3 00
Second best, C. H. Greenman	2 00
Third best, A. G. Tuttle	1 00
Best two varieties, C. H. Greenman	2 00
Second best, A. G. Tuttle	1 00
Best single variety, Geo. J. Kellogg	3 00
Second best, C. H. Greenman	2 00
Best three bunches Concord, C. H. Greenman	2 00
Second best, George J. Kellogg	1 00
Best three bunches Delaware, George J. Kellogg	2 00
Second best, C. H. Greenman	1 00
Best single variety, quality to rule, C. H. Greenman	5 00
Second best, George J. Kellogg	3 00
Best show foreign grapes, Mrs. Alexander Mitchell	3 00
Second best, G. P. Peffer	2 00

CRABS.

Best and greatest variety, named, Gould's Nursery, ten varieties	3 00
Second best, A. G. Tuttle, seven varieties	2 00
Third best, George J. Kellogg, five varieties	1 00
Best plate Hyslop, A. G. Tuttle	1 00

E. S. LAWRENCE,
J. M. SMITH,
H. M. THOMPSON,
Committee.

SWEEPSTAKES ON FRUIT.

Best collection fruit of all kinds, G. P. Peffer	$7 50
Second best, George J. Kellogg	5 00
Third best, Gould's Nursery	3 00

J. M. SMITH,
F. C. CURTIS,
Committee.

CLASS 31.—*Fruits by non-professional cultivators.*

APPLES.

Best and greatest variety, William Reid, North Prairie	$10 00
Second best, B. B. Olds, Clinton	7 50
Third best, Geo. Jeffery, Five-Mile-House	5 00
Fourth best, James Barr, Jefferson	3 00
Best ten varieties adapted to the northwest, Mrs. M. A. Lewis, Lake Mills	10 00
Second best, Geo. Jeffery	7 50
Third best, B. B. Olds	5 00
Best show ten varieties without regard to adaptation, J. Ozanne, Somers	5 00
Second best, William Reid	3 00
Third best, C. H. Jacobs, Wauwatosa	2 00
Best five varieties adapted to the northwest, William Reid	5 00
Second best, Mrs. M. A. Lewis	3 00
Third best, F. C. Curtis, Rocky Run	2 00
Best and largest variety winter, B. B. Olds	10 00
Second best, William Reid	7 50
Third best, J. Ozanne	5 00
Fourth best, Geo. Jeffery	3 00
Best five varieties winter, William Reid	5 00
Second best, F. C. Curtis	3 00
Third best, Daniel Gelser, Oakwood	2 00
Best plate Red Astrachan, D. Huntley, Appleton	2 00
Second best, James Barr	1 00
Best plate Duchess of Oldenburg, William Reid	2 00
Second best, D. Huntley	1 00
Best plate Fameuse, D. Huntley	2 00
Second best, D. T. Pilgrim, West Granville	1 00
Best plate St. Lawrence, B. B. Olds	2 00
Second best, D. Huntley	1 00
Best plate Utter, F. C. Curtis	2 00
Second best, James Barr	1 00
Best plate Plumb's Cider, F. C. Curtis	2 00
Second best, James Barr	1 00
Best plate Seek-no-Further, Luther Rawson, Oak Creek	2 00
Second best, D. Huntley	1 00
Best plate Tallman Sweet, D. Huntley	2 00
Second best, D. T. Pilgrim	1 00
Best plate Golden Russet, Luther Rawson	2 00
Second best, D. T. Pilgrim	1 00
Best plate Willow Twig, Mrs. M. A. Lewis	2 00
Second best, James Barr	1 00
Best plate Ben Davis, F. C. Curtis	2 00
Second best, B. B. Olds	1 00
Largest apple, Daniel Gelser	2 00
Second best, George Jeffrey	1 00
Heaviest apple, Daniel Gelser	2 00
Second best, F. C. Curtis	1 00

PEARS.

Best and greatest variety, E. B. Thomas, Dodge's Corners	7 50
Second best, J. Ozanne, Somers	4 00
Third best, Geo. Jeffery, Five-Mile-House	2 50
Best five varieties, J. Ozanne, Somers	3 00
Second best, E. B. Thomas, Dodge's Corners	2 00
Third best, James Barr, Jefferson	1 00
Best three varieties, E. B. Thomas, Dodge's Corners	3 00
Second best, J. Ozanne, Somers	2 00
Best Flemish Beauty, E. B. Thomas, Dodge's Corners	3 00
Second best, James Barr, Jefferson	2 00

PLUMS.

Best and greatest variety, Geo. Jeffrey, Five-Mile-House	$ 5 00
Best Miner, Mrs. M. A. Lewis, Lake Mills	2 00
Best native or wild, William Reid, North Prairie	2 00
Second best, Mrs. M. A. Lewis, Lake Mills	1 00

PEACHES.

Best show, named, Jas. C. Howard, Milwaukee	2 00
Second best, J. Ozanne, Somers	1 00

A. G. TUTTLE,
E. H. BENTON,
C. PERRY,
Committee.

GRAPES.

Best and greatest variety, F. S. Lawrence, Janesville	$ 7 50
Second best, William Reid, North Prairie	5 00
Third best, Mrs. M. A. Lewis, Lake Mills	3 00
Best ten varieties, F. S. Lawrence, Janesville	7 50
Second best, William Reid, North Prairie	5 00
Third best, Mrs. M. A. Lewis, Lake Mills	3 00
Best five varieties, William Reid, North Prairie	5 00
Second best, F. S. Lawrence, Janesville	3 00
Third best, E. B. Thomas, Dodge's Corners	2 00
Best three varieties, William Reid, North Prairie	3 00
Second best, F. S. Lawrence, Janesville	2 00
Third best, E. B. Thomas, Dodge's Corners	1 00
Best two varieties, William Reid, North Prairie	3 00
Second best, Mrs. M. A. Lewis, Lake Mills	1 00
Best single variety, Myers & Son, East Troy	1 00
Best 3 bunches Concord on one cane, William Reid, North Prairie	1 00
Best 3 bunches Delaware on one cane, E. B. Thomas, Dodge's Corners	1 00
Best single variety, quality to rule, E. B. Thomas, Dodge's Corners	5 00

CRABS.

Best and greatest variety, named, William Reid, North Prairie	3 00
Second best, David Morgan, Wauwatosa	2 00
Third best, Geo. Jeffrey, Five-Mile-House	1 00
Best plate Hyslop, Geo. W. Ringrose, Wauwatosa	1 00
Best plate Transcendent, Geo. W. Ringrose, Wauwatosa	1 00

SWEEPSTAKES ON FRUIT.

Best collection fruits of all kinds, William Reid, North Prairie	7 50
Second best, J. Ozanne, Somers	5 00
Third best, Geo. Jeffrey, Five-Mile-House	3 00

GEO. P. PEFFER,
GEO. J. KELLOGG,
C. H. GREENMAN,
A. G. TUTTLE,
Committee.

CLASS 33.—*Summer-fruits.*

Best collection deciduous, nursery-grown trees—quality to rule — Gould's Nursery, Beaver Dam	$10 00
Second best, Stickney, Baumbach & Gilbert, Wauwatosa	5 00
Best collection evergreens, Geo. J. Kellogg, Janesville	10 00
Second best, Stickney, Baumbach & Gilbert, Wauwatosa	5 00

Best collection fruit-trees, Gould's Nursery, Beaver Dam $10 00
Second best, Greenman, McGraw & Day, Whitewater 5 00
Best collection hardy flowering-shrubs, Gould's Nursery, Beaver Dam 3 00
Second best, Stickney, Baumbach & Gilbert, Wauwatosa 2 00
Best collection hardy, ornamental hedge, Stickney, Baumbach & Gilbert, Wauwatosa 3 00

WILLIAM REID,
D. HUNTLEY,
JAMES BARR,
Committee.

CLASS 34.—*Flowers by professional cultivators.*

Best floral design, Wm. Kitzrow, Milwaukee $10 00
Second best, A. Middlemass, Milwaukee 5 00
Best collection of cut flowers, Wm. Kitzrow, Milwaukee 5 00
Best basket of flowers, A. Middlemass, Milwaukee 3 00
Second best, Wm. Kitzrow 2 00
Best pyramidal bouquet, Wm. Kitzrow, Milwaukee 3 00
Best pair round bouquets, Wm. Kitzrow, Milwaukee 3 00
Second best, A. Middlemass, Milwaukee 2 00
Best pair flat bouquets, Wm. Kitzrow, Milwaukee 2 00
Best bouquet everlasting flowers, Wm. Kitzrow, Milwaukee 3 00
Best display dahlias, not more than twenty varieties, Wm. Kitzrow, Milwaukee 3 00
Best ten named dahlias, William Kitzrow, Milwaukee 2 00
Best display roses, William Kitzrow, Milwaukee 5 00
Best five named varieties of roses, William Kitzrow, Milwaukee 3 00
Best display verbenas, William Kitzrow, Milwaukee 3 00
Best ten named verbenas, William Kitzrow, Milwaukee 2 00
Best show asters, in quality and variety, William Kitzrow, Milwaukee 2 00
Best show petunias, William Kitzrow, Milwaukee 1 00
Best show gladiolas, H. G. Roberts, Janesville 1 00
Best show phlox drummondii, William Kitzrow, Milwaukee 1 00
Best show stocks, William Kitzrow, Milwaukee 1 00
Best show balsams, William Kitzrow, Milwaukee 1 00
Best show green-house plants (not more than 100), William Kitzrow, Milwaukee 10 00
Best 20 varieties green-house plants in bloom, William Kitzrow, Milwaukee. 6 00
Best ten geraniums, William Kitzrow, Milwaukee 3 00
Best six fuchsias, William Kitzrow, Milwaukee 2 00
Best six carnations, William Kitzrow, Milwaukee 2 00
Best display of flowers raised by exhibitor, William Kitzrow, Milwaukee 10 00
Best display ornamental foliage plants (not over 15 varieties), William Kitzrow, Milwaukee 5 00

MRS. F. S. LAWRENCE,
DR. RISCH,
KATE PEFFER,
Committee.

CLASS 35.—*Flowers by non-professional cultivators.*

Best floral design, Kate Peffer, Pewaukee $10 00
Best collection of cut-flowers, Emily T. Smith, Green Bay 5 00
Second best, Mrs. J. W. Park, Dodge's Corners 3 00
Third best, Theresa Karzke, Milwaukee 2 00
Best basket of flowers, Mrs. P. Yale, Milwaukee 3 00
Second best, Mrs. J. W. Park, Dodge's Corners 2 00
Best pyramidal bouquet, Mrs. P. Yale, Milwaukee 3 00
Second best, Kate Peffer, Pewaukee 2 00

Best pair round bouquets, Kate Peffer, Pewaukee	$ 3 00
Second best, Theresa Karzke, Milwaukee	2 00
Best pair flat bouquets, Theresa Karzke, Milwaukee	2 00
Second best, Kate Peffer, Pewaukee	1 00
Best bouquet of everlasting flowers, S. B. Smith, Dodge's Corners	3 00
Best display dahlias, not more than 20 varieties, Kate Peffer, Pewaukee	3 00
Second best, Mrs. J. W. Park, Dodge's Corners	2 00
Best ten named dahlias, Kate Peffer, Pewaukee	3 00
Second best, Mrs. J. W. Parks, Dodge's Corners	2 00
Best ten named verbenas, Kate Peffer, Pewaukee	2 00
Best show seedling verbenas, Theresa Karzke, Milwaukee	2 00
Second best, Emily T. Smith, Green Bay	1 00
Best show asters, in quality and variety, John Dearsley, Wauwatosa	2 00
Second best, Emily T. Smith, Green Bay	1 00
Best perennial phlox, S. B. Smith, Dodge's Corners	1 00
Second best, Mrs. J. W. Park, Dodge's Corners	50
Best show pansies, Kate Peffer, Pewaukee	1 00
Second best, Mrs. C. C. Kingsley, Milwaukee	50
Best show petunias, Emily T. Smith, Green Bay	1 00
Second best, Mrs. J. W. Park, Dodge's Corners	50
Best show dianthuses (pink), Kate Peffer, Pewaukee	1 00
Second best, Mrs. C. C. Kingsley, Milwaukee	50
Best show gladiolas, Kate Peffer, Pewaukee	1 00
Second best, Mrs. C. C. Kingsley, Milwaukee	50
Best show stocks, Mrs. J. W. Park, Dodge's Corners	1 00
Best show balsams, Theresa Karzke, Milwaukee	1 00
Second best, Mrs. C. C. Kingsley, Milwaukee	50
Best show green-house-plants (not over 100) H. W. Roby, Milwaukee	10 00
Best twenty varieties green-house plants in bloom, H. W. Roby, Milwaukee	6 00
Best six fuchsias, H. W. Roby, Milwaukee	2 00
Best display of flowers raised by exhibitor, Kate Peffer, Pewaukee	10 00
Second best, Mrs. J. W. Park, Dodge's Corners	5 00
Best show of ornamental foliage plants (not over 15 varieties), H. W. Roby, Milwaukee	3 00

VICK'S SPECIAL PREMIUMS ON CUT-FLOWERS.

First premium, Emily T. Smith, Green Bay	$20 00
Second premium, Kate Peffer, Pewaukee	15 00
Third premium, Theresa Karzke, Milwaukee	10 00
Fourth premium, Mrs. J. W. Park, Dodge's Corners	5 00

DR. R. A. KOSS,
H. G. ROBERTS,
O. S. WILLEY,
Committee.

To the President, Secretary, and Officers of the Wisconsin State Agricultural Society:

GENTLEMEN: Having had charge of the floral division of the fruit and flower department of the last State Fair, I respectfully and earnestly recommend and request that James Vick, esq., of Rochester, N. Y., be awarded a suitable medal and diploma, in recognition of his liberality and generosity in contributing so largely and munificently toward the success of the fair, florally as well as pecuniarily.

I also recommend, that a diploma be awarded to Messrs. C. Heniecke & Co., of Milwaukee, for an unrivaled display of lawn, garden and house ornaments, in bronze, for use in floral decoration.

Respectfully,

H. W. ROBY,
Supt. floral division.

CLASS 36.—*Flowers by professional non-commercial cultivators.*

Best floral design, Mrs. Alexander Mitchell, Milwaukee.....$10 00
Best collection cut-flowers, Mrs. Alexander Mitchell, Milwaukee..... 5 00
Best show green-house plants (not more than 100), Mrs. Alexander Mitchell, Milwaukee..... 10 00
Best twenty varieties green-house plants, in bloom, Mrs. Alexander Mitchell, Milwaukee..... 10 00
Best ten geraniums, Mrs. Alexander Mitchell, Milwaukee..... 5 00
Best display of lawn, garden and house ornaments in bronze, for use in floral decorations, C. Heinecke & Co.....diploma.

O. S. WILLEY,
H. G. ROBERTS.
H. W. ROBY,
Committee.

CLASS 38.—*Implements and articles for agricultural and domestic purposes.*

[Special premiums offered by Pierce & Whaling, Milwaukee.]

Best steel crossing plow, E. J. Lindsay, Milwaukee.....$25 00
Second best, W. F. Whitney, Milwaukee..... 10 00

S. V. CARPENTER,
WM. WASHBURN,
W. R. WARREN,
Committee.

CLASS 39.—*Machinery, &c., for manufacturing purposes.*

Best and largest display wood and iron working machinery in actual operation in Power Hall, O. L. Packard, Milwaukee.....$50 00
Second best, Filer, Stowell & Co., Milwaukee..... 25 00
Forty-horse power engine, Filer, Stowell & Co., Milwaukee..... Diploma.
Lathe, gang-bolter, climax saw-gummer, gang-lathe machines and mill-dog, Filer, Stowell & Co., Milwaukee.... Each Honorable Mention.
Propeller wheel, James Sheriff, Milwaukee..... Honorable Mention.
Steam-engine—new principle—James Sheriff, Milwaukee..... Diploma.
Double slide-valve horizontal engine, Wm. Harttert Mil..... Honorable Mention.
Small engine with superior finish, Ernst Kahler, Milwaukee.. Honorable Mention.
Craig's grain-screener, polisher and duster, Ernst Kahler Milwaukee ..... Diploma.
Nonpariel printing press, Ernst Kahler, Milwaukee..... Diploma
Lubricating oil, C. A. Folsom & Son, Milwaukee..... Diploma.
100-horse power engine, P. Weisel, Milwaukee..... Honorable Mention.

W. A. VAN BRUNT,
GEORGE J. ROGERS,
S. D. CARPENTER,
Committee.

CLASS 40.—*Stone-cutters work, brick and other building materials.*

Lifting-machines, P. R. Stearns, Milwaukee.....Commended
Best specimen drain tile, H. Berthelet..... $3 00

E. J. COOPER,
H. J. DICKENSON,
DARWIN CLARK,
Committee.

CLASS 41.—*Metallurgic products.*

Fine show pig-iron and coal, R. P. Elmore, Milwaukee.....Commended.
Show castings, Geo. A. Abert, Milwaukee.....Commended.
Fine display brier hill and other coal, Elmore & Phelps, Milwaukee..Commended.
Samples unique and attractive scrap-iron, C. A. Hendee, Milwaukee.....Honorable Mention.

J. R. RICHARDSON,
JAMES SEVILLE,
Committee.

CLASS 42.—*Stoves, furnaces, hollow-ware, and hardware.*

Best cooking-stove, for wood, Buchholz & Wergin, Milwaukee..... $3 00
Best cooking-range, for families, in operation, C. A. Buttles, Milwaukee.....Diploma.
Shining-light, ornamental parlor stove, Buchholz & Wergin, Milwaukee...Diploma.
Best refrigerators, Cornellie Bros., Milwaukee..... 3 00
Exhibition copper-ware, Daniel Lehman, Milwaukee.....Diploma.
Best fire-proof safe, Arnold, Yale & Co. Milwaukee..... 5 00
Case of augur and augur bits, Milwaukee Manufacturing Company, Milwaukee.....Diploma.
Little-gem seive, Oliver Bond, Milwaukee.....Diploma.
Best display safes, Arnold, Yale & Co. Milwaukee..... 25 00
Queen steamer, H. Van Altena, Milwaukee.....Diploma.
Heating-stoves, for wood, Seefeld & Schleisinger, Milwaukee.....Commended.
Soda draught-apparatus, generator, fountain and patent beer-preserver, Otto Sweitnsch Milwaukee.....Diploma.
Bronze door-trimmings, Peterman, Stredy & Co., Milwaukee.....Diploma.
Rubber weather-strips, Chas. A. Judd, Milwaukee.....Diploma.
Champion fire-extinguisher, A. E. Foote, Milwaukee.....Diploma.
Show stove-furniture, Alex. Anderson, Chicago, Illinois.....Diploma.
Lightning-rods, Daniel Munson, Indianapolis, Indiana.....Diploma.

JAMES SEVILLE,
WM. M. JONES,
Committee.

CLASS 43.—*Silver and britannia ware.*

Elegant exhibition silver-ware, Andrew Robinson & Co. Milwaukee.....Honorable mention.
Silver-plated ware, fine display, O. S. Rosenkrans, Milwaukee. Highly commended.
Electric-plating, very fine, Blair & Persons, Milwaukee.....Honorable mention.
Glass and china ware, &c., very elaborate display, Blair & Persons, Milwaukee.....Highly commended.

J. R. RICHARDSON,
JAMES SEVILLE,
Committee.

CLASS 44.—*Surgical, dental, mathematical, and philosophical instruments*

Best display dentistry, Smith & Dartt, Milwaukee.....Diploma.
Best skill in dentist-work, Smith & Dartt, Milwaukee.....Diploma.
Best display practical dentistry, Smith & Dartt, Milwaukee.....Diploma.
Best display mathematical and philosophical instruments, Hendley & Co., Milwaukee.....Diploma.
Display abdominal supporters for ladies, riding-belts for gents, and orthopedic instruments and assortment trusses, Hendley & Co., Milwaukee..Diploma.
Display optical and philosophical instruments, Julius Sands, Milwaukee...Diploma.

Case artificial limbs and apparatus, Robert Baty, Milwaukee.....Diploma.
Church and tower clock, M. Schwalbach, Milwaukee.....Commended.

SATTERLEE CLARK,
Superintendent.

CLASS 45.—*Chemical manufactures.*

Best sample bar-soap, Steam Refined Soap Company, Milwaukee..... $2 00
Best sample fancy soap, Steam Refined Soap Company..... 2 00
Bar-soap, Johnson and Jones, Milwaukee.....Commended.
Bar-soap, James Pyle, New York city.....Commended.
Best bicarbonate of potash, James Pyle, New York city..... 2 00
Best sample candles, Johnson and Jones, Milwaukee..... 2 00
Best caddy lucifer matches, Kirby & Jones, Milwaukee..... 3 00
Copying ink, bluing and mucilage, H. H. Hall & Co., Racine.....Diploma.
Liquid slating, J. Grant, Milwaukee.....Diploma.
Frasiers axle-grease, C. A. Folsom and Son, Milwaukee.....Commended.
Patent oil-cans, C. A. Folsom and Son, Milwaukee.....Diploma.
Samples of machinery and burning oils, C. A. Folsom and Son, Milwaukee. Commended,
Fine exhibition of candy, James Heth, Milwaukee.....Diploma.

W. W. DANIELLS,
JOHN H. TESCH,
Committee.

CLASS 46.—*Carriages, wagon-work, &c.*

Best double carriage, T. W. Rice, Milwaukee.....Diploma.
Best single top-buggy, Wm. Servis, Sheboygan Falls.....Western Farmer.
Best trotting-wagon, T. W. Rice, Milwaukee.....Diploma.
Best pleasure-wagon, T. W. Rice, Milwaukee.....Western Farmer.
Best single sleigh, Wm. Servis, Sheboygan Falls.....Western Farmer.
Best lumber-wagon, Winchester & Partridge Manufacturing Co., Whitewater.....Diploma.
Best three-spring and three-seated wagon, Fish Bros. & Co., Racine, Western Farmer.
Best display hubs, spokes, &c., Suelflohm & Seefeld, Milwaukee.....Diploma.
Horse-detacher, Phillip & Meyer, Milwaukee.....Commended.

Special premium offered by Pierce & Whaling, iron-merchants, Milwaukee.

Best farm-wagon, Winchester & Partridge Manufacturing Co., Whitewater. $75 00

J. W. BAKER,
Z. C. WILSON,
J. E. WOOD,
Committee.

CLASS 47.—*Cabinet-ware, cooperage, willow-ware &c.*

Best parlor-set, A. D. Seaman, Milwaukee.....Silver Medal
Best chamber-set, A. D. Seaman, Milwaukee.....Diploma
Chamber-set, J. S. Farrington & Son, Milwaukee.....Commended
Best extension-table, J. F. Birchard, Milwaukee..... $5 00
Best book-case, J. S. Farrington & Sons, Milwaukee..... 5 00
Best writing table and desk, J. F. Birchard, Milwaukee..... 5 00
Writing table on desk, C. F. White & Sons, Kenosha.....Commended
Card or centre stand, J. F. Birchard, Milwaukee.....Commended
Best spring-bed bottom, J. L. Farrington, Milwaukee..... 2 00
Best 6 dining chairs, J. S. Farrington & Sons, Milwaukee..... 5 00
Flour barrels, G. H. Page, Milwaukee.....Diploma

Paper half barrels, G. W. Davis & Co. Beloit.....Diploma.
Best barrel for liquors and meats, G. H. Page, Milwaukee.....Western Farmer.
Display barrels, Benj. Garside, Hingham.....Honorable Mention.
Best butter-firkins (oak), G. H. Page, Milwaukee.....Western Farmer.
Best display of cooperage and wood-ware by manufacturer, G. H. Page, Milwaukee.....Diploma.
Best window blinds or screens, Waukegan Screen Company, Waukegan Ill. 5 00
Display school and hall furniture, R. B. Smith & Co. Portland, Mich. Commended.
Display paper hangings and decoration, ornamental sign work and samples of graining and marbling, J. P. Collingbourne & Co. Milwaukee....Diploma.
Gold bronzed door trimmings, J. Knoerschild, Milwaukee.....Diploma,
Exhibition ladies' toilet ware, M. J. Pease, Concord, Ohio.....Diploma.
Office chair, H. M. Hutchson, Milwaukee.....Commended.
No. 1, churn, August Peyer, Port Washington.....Commended.
Colby's little washer and wringer, G. Jennings, Sherman, New York Commended.
Red Jacket churn, also washing machine, Bucholz and Wergin, Milwaukee.....Commended.
Show-case, William Struder, Milwaukee.....Commended.
Torrey's weather-strips, G. Fielding, Milwaukee.....Commended.
Patent blackboard, Jonathan Bowers, Milwaukee.....Commended.
Sofa-bed, mantle and mirror, J. F. Birchard.....Diploma.

E. J. COOPER,
H. J. RICHARDSON,
DARWIN CLARK,
Committee.

CLASS 48.—*Leather and leather manufactures.*

Best display colored leather, P. Beninghausen, Milwaukee.....Silver medal.
Best carriage-harness, W. K. Wilson, Milwaukee.....Diploma.
Best single harness, W. K. Wilson, Milwaukee.....Diploma.
Best gent's saddle, W. K. Wilson, Milwaukee..... $5 00
Best lady's saddle, W. K. Wilson, Milwaukee..... 5 00
Best three trunks, Romadka Bros., Milwaukee.....Diploma.
Best and largest exhibition of pegged boots and shoes, one pair each style for retail trade, Mann, Beals & Co., Milwaukee.....Diploma.
Best and largest exhibition of sewed boots and shoes, one pair each style for retail trade, Goodwin & Hanchett, Milwaukee.....Diploma.
Second best, Foster & Fowler, Beloit..... 5 00

A. ANDREWS,
J. W. GEIB,
LEWIS RYDER,
Committee.

CLASS 50.—*Textile fabrics, clothing, &c.*

Exhibition cloths, Waukesha Manufacturing Co., Waukesha....Honorable mention
Show blankets, Shawls, &c. Blake & Co., Racine.....Highly commended
Display carpets, rugs, robes, mats, decorative wool flooring, lace curtains and cornices, Goldsmith & Co., Milwaukee.....Highly commended.

CHAS. F. DUTTON,
D. D. FORUCH,
Committee.

CLASS 51.—*Domestic manufactures.*

Best woolen kersey-blankets, Mrs. Sallie Bell, Greenfield..... $4 00
Best 15 yards wool-carpet, Mrs. Sallie Bell, Greenfield..... 4 00
Best rug of any material, Mrs. De Graff, Brookfield..... 4 00
Best 15 yards rag-carpet, Mrs. A. A. Bull, Rocky Run..... 4 00

Best woolen-stockings, H. M. Jones, Appleton..... $ 2 00
Best wool-mittens, Mrs. Thomas Irving, Mukwanago 2 00
Best silk quilt, Mrs. Z. Wilson, Palmyra..... 3 00
Best double carpet-coverlet, H. Bourse, Granville 3 00
Best worsted scarf, Miss E. Newcomb, Whitewater..... 4 00
Best knit counterpane, Mrs. H. M. Jones, Milwaukee..... 3 00
Best wrought counterpane, Mrs. L. Newbauer, Milwaukee..... 3 00
Best wrought shawl, Mrs. A. H. Cutting, Racine..... 3 00
Best white wove counterpane, F. Wager, Rock Falls, Illinois..... 3 00
Best exhibition of taste and skill in cutting and making ladies dresses by other than professional manufacturers, Mrs. A. H. Cutting, Racine..... 5 00
Fine specimen laundry-work, Mrs. M. Hughes, Milwaukee.....Diploma.
Patchwork quilt, Mrs. J. S. Lamb, Milwaukee.....Commended.
Display full cloth and check flannel, Mrs. Sallie Bell, Greenfield.....Commended.

LUCIUS S. BLAKE,
MRS. A. H. CUTTING,
MRS. H. M. CAINE,
Committee.

CLASS 53.—*Works of art.*

Best portrait in oil, from nature, C. Hall, Milwaukee.....Diploma and $10 00
Second best, Mrs. J. T. Cavanaugh 10 00
Best original landscape in oil, from nature, C. Hall, Milwaukee, Diploma and 10 00
Second best, Theodore Heiss, Milwaukee..... 10 00
Landscape in oil, from nature, Miss Mary Newhall, Milwaukee.....Commended.
Landscape in oil, from nature, Lizzie Hyland, Butler.....Commended.
Best historical landscape in oil, from history, Theodore Heiss, Milwaukee, Diploma and..... 10 00
Best historical landscape in oil, from history, Miss Addie T. Tucker, Milwaukee .....Commended.
Best animal-painting in oil, from nature, C. Hall, Milwaukee .....Diploma.
Best specimen bird-painting, in water-colors, A. E. Foote, Milwaukee ..Diploma.
Best specimen flower-painting, in water-colors, S. Nathan, Milwaukee...Diploma.
Best portrait in crayon, from nature, Theodore Heiss, Milwaukee.....Diploma.
Best portrait in crayon, from photograph, Theodore Heiss, Milwaukee...Diploma.
Best India-ink photograph, S. Nathan, Milwaukee $10 00
Best water-color (stipple) photograph, Mrs. J. T. Cavanaugh, Milwaukee .. 10 00
Water-color portrait, Frank Link, Milwaukee.....Commended.
Best oil photograph, Hawkins & Kruger, Milwaukee..... 10 00
Best specimen seal-engraving, John Marr, Milwaukee.....Diploma.
Best specimen pencil-drawing from nature, Theodore Heiss, Milwaukee..Diploma.
Second best, Miss Mary Newnham, Oconomowoc 5 00
Best specimen photographs and other sun-pictures, made by exhibitor, Harry Lewis, Milwaukee .....Diploma.
Second best, Cook & Ely, Racine..... 5 00
Best landscape photograph, Harry Lewis, Milwaukee.....Diploma.
Best gilding on glass, by exhibitor, Frank Lewald Mil.....Diploma.
Best immitation of wood, marble and stone, L. C. Bourse, Granville.....Diploma.
Best collection of oil-paintings not less than 25, whether painted by the exhibitor or not, B. Frodsham, Milwaukee 50 00
Second best, C. Hall, Milwaukee.....25 00
Collection oil-paintings, T. Heiss, Milwaukee .....Commended.
Portrait in India-ink, Mrs J. T. Cavanaugh, Milwaukee .....Commended.
Portrait in India-ink, S. Nathan, Milwaukee .....Commended.
Collection of engravings, Poposkey & Van Horn, Milwaukee .....Commended.
Specimen picture frames, Poposkey & Van Horn, Milwaukee.....Commended.

The committee in awarding premiums in this class, found no little difficulty in deciding between many of the competitions, and do not expect to escape criticism both just and unjust. The competition for $50 and $25 prizes, for the best collection

of oil-paintings, made our duty not a light one. The two collections exhibited contained many fine paintings and the gentlemen who placed them are entitled to many thanks from the visitors who were thus enabled to feast their eyes upon some exceedingly choice landscape and historical paintings, The usual errors in making entries led to the usual difficulty in solving knotty problems, and the usual amount of scolding on the part of exhibitors. The committee would recommend to the society the employment of an artist, or some one more than ordinarily familiar with paintings and works of art, to superintend the entries in this department. Much credit is due to Benjamin Bagnell, esq., and Mrs. Abbey, of Milwaukee, for placing on exhibition paintings wholly for the gratification of the public. The elegant and valuable painting "Florinde," owned by Mr. Bagnell and valued at $3,000, attracted much attention. The two large pictures contributed by Mrs. Abbey were painted by her, and the "Trial of Red Jacket" attracted much attention and was much admired. Mr. Lydston had on exhibition a recently painted portrait of Hon. Geo. Reed that reflected much credid upon the artistic skill of Mr. Lydston. This picture came in too late for competition. There was a strong desire on the part of the committee to attach a blue card to it.

A collection of curiosities from Turkey, kindly furnished for exhibition by Rev. E. A. Wanless, formerly a missionary to that far off land, was a very interesting feature, and drew a large share of attention. The committee regret the absence of the fine collection of Oleographs that graced the hall in 1873.

The Great Western Moulding Manufacturing Company made a very fine display in picture-framing.

We herewith submit this report with thanks to the superintendent for his constant courtesy and attention.

JOHN E. THOMAS,
Chairman.

CLASS 55.—*Needle, shell, and wax work.*

Best sample plain sewing, embracing the different stitches used in household sewing and repairing, Mrs. James McAlpine, Milwaukee	$4 00
Best crochet or fancy knitting work, Mrs. E. Forman, New York	4 00
Second best, Miss Lillie Webster, Mukwanago	2 00
Best tidy, Mrs. Thomas Irving, Mukwanago	3 00
Second best, Mrs. R. Davis, Milwaukee	2 00
Best worked collar, Mrs. James McAlpine, Milwaukee	3 00
Best specimen landscape embroidery, Miss Mary Mahony, Milwaukee	4 00
Best worsted embroidery, Mrs. R. Davis, Milwaukee	4 00
Best embroidered hadkerchief, Mrs. James McAlpine, Milwaukee	3 00
Best embroidered chemise, with yoke and sleeves, Mrs. James McAlpine, Milwaukee	3 00
Best raised worsted embroidery, Mrs. Mary Stransky, Milwaukee	3 00
Best needle-work or floss embroidery, Mrs. James McAlpine, Milwaukee	4 00
Second best, Miss E. Newcomb, Whitewater	2 00
Best silk embroidery, Mrs. C. J. Lynde, Milwaukee	4 00
Second best, Mrs. James McAlpine	2 00
Best sample work in wax, Mrs. L. M. Hendee, Milwaukee	2 00
Second best, H. G. Roberts, Janesville	1 00
Best sample work in feathers, Isabella Leith, Columbus	2 00
Best sample shell-work, Sidney Squires, Wauwatosa	2 00
Best sample leather-work, Mrs. R. Davis, Milwaukee	2 00

Best samples bead-work, Mrs. Mary Stransky, Milwaukee..... $2 00
Second best, Mrs. H. Russell, Milwaukee..... 1 00
Case shirts, collars, cuffs, &c., Pierce and Van Shaick, Milwaukee....Commended.
Fine exhibition embroidery, Dora M. F. Snyder, Milwaukee.....Diploma.
Gold embroidery, Mrs. Mary Stransky, Milwaukee..... .....Commended.
Fancy basket, Miss Birdie Day, Milwaukee .....Commended.
Hair-wreath, Mrs. A. A. Haskins, Milwaukee.....Commended.
Work in wool, silk and worsted, Katie Sharel, Milwaukee.....Highly Commended.

MRS. CURTIS MANN,
MRS. E. S. STONE,
MISS MARY E. THOMAS,
Committee.

CLASS 56.—*Natural history.*

Exhibition of very fine and valuable collection of minerals, Dr. T. J. Freeman, Milwaukee.....Diploma.

I. A. LAPHAM,
Superintendent.

Abstract of county

COUNTIES.	OFFICERS OF SOCIETY.		
	Presidents.	Secretaries.	Treasurers.
Adams	J. M. Higbee	David Scofield	A. F. Hill
Boscobel Ag'l and Driving Park Association	B. M. Coates	T. J. Brooks	John Pepper
Buffalo	Geo. Schnœbel	J. W. DeGraff	J. J. Senn
Clark	J. S. Dore	J. F. King	W. F. Hutchinson
Columbia	E. Fairbanks	L. H. Doyle	J. Q. Adams
Crawford	N. Miller	C. D. Lamport	R. Wallin
Dane	M. Anderson	George C. Russell	W. T. McConnell
Dodge	F. B. Grover	O. H. Crowl	G. R. Clapp
Door	Jesse Kimber	H. Harris	G. Bassford
Fond du Lac	George Keys	Dana C. Lamb	H. G. Haldut
Grant	L. M. O'Key	G. B. Sprague	W. W. Robe
Green	A. Ludlow	William Gray	J. H. Van Dyke
Green Lake	W. H. Powers	Joseph Yates	C. A. Peck
Iowa	J. Whitman	John Ralph	R. Carter
Jackson	M. Douglas	E. E. Leclair	O. O'Hear
Jefferson	C. Stoppenbach	George J. Clapp	James Barr
Juneau	L. Beckwith	R. A. Wilkinson	M. Temple
Kenosha	H. Blackman	H. H. Tarbell	L. M. Thayer
Kewaunee	E. Bach	R. L. Wing	
La Crosse	W. Van Zandt	C. M. Palmer	F. W. Stiles
La Fayette		W. L. D. Martin	
Lodi Union	Robert Steele	E. W. Gardner	P. S. Kingsley
Manitowoc	William Carey	W. H. Hutchinson	S. W. Newell
Marathon	A. Kickbusch	William Wilson	Geo. Silverthorn
Marquette	Robert Page	W. H. Peters	Stephen Fallis
Monroe	J. B. Northrop	W. H. Blyton	T. B. Tyler
Eastern Monroe	W. W. Jackson	H. C. Spaulding	H. Doxtader
Oconto	R. Gillett	E. F. Paramore	M. Finnegan
Outagamie	H. H. Rogan	L. L. Randall	P. S. Bennett
Ozaukee	A. M. Alling	Chas. Welke	W. Vogenitz
Pierce	J. A. Stirrat	H. A. Jay	T. J. Atwater
Portage	Jerome Nelson	J. H. Felch	W. Loing
Racine	N. D. Fratt	E. D. Perkins	W. E. Chipman
Richland	Lemuel Akey	W. H. Pier	A. W. Bickford
Rock	Seth Fisher	R. J. Richardson	C. Miner
Sauk	J. M. True	P. Cheek, jr	Henry Cowles
Shawano	R. Gillett	E. F. Paramore	M. Finnegan
Sheboygan	J. F. Moore	John E. Thomas	M. D. Hotchkiss
Sheboygan—German	George Piefer	Carl Reich	F. Stœsser
St. Croix	George Martin	M. Herrick	A. D. Richardson
South'n Wisconsin and Northern Illinois Industrial Association	J. Chamberlain	Henry F. Hobart	S. H. Moody
Trempeleau	J. Rhodes	C. E. Perkins	John R. Ogden
Vernon	Peter McIntyre	A. D. Chase	W. T. McConnell
Walworth	S. B. Edwards	S. G. West	Hollis Latham
Washington	L. Findorff	J. J. Wilmot	F. Loverty
Waukesha	T. C. Douseman	F. H. Putney	O. M. Tyler
Waupaca	J. M. Baxter	F. W. Sackett	W. A. Springer
Waupaca Ag'l and Mech'l Association	G. M. Pope	A. J. Perkins	James Thomas

agricultural societies for 1874.

PLACE AND DATE OF FAIRS.		FINANCES.			
Place.	Time.	Receipts.	Expenses.	Premiums.	Am't in treasury
	1874				
Friendship	Sept. 29, 30	$303 93	$174 56	$110 25	$19 12
Boscobel	Oct. 7–9	4,162 37	3,460 97	701 40	.....
	1875				
Lincoln	Jan. 16–18	681 05	589 61	252 50	163 52
	1874				
Pine Valley	Sept. 15–18	1,911 90	1,257 18	503 30	151 42
Portage	Sep. 29,30 Oc. 1	1,011 76	347 71	577 00	457 30
Seneca	Sept. 23–25	843 50	666 75	176 75	.....
Madison	Sept. 22–25	4,877 80	2,784 97	1,698 87	425 18
Beaver Dam	Oct. 5–7	1,010 40	228 10	679 25	.....
Sturgeon Bay	Sept. 19, 20	254 95	53 96	185 25	15 74
Fond du Lac	Sept. 22–24	3,072 05	786 74	1,995 00	290 31
Lancaster	Sept. 2– 4	1,524 93	828 73	708 25	.....
Monroe	Sept. 23–26	1,466 85	717 85	749 00	.....
Berlin	Oct. 6–8	1,336 84	261 34	972 50	103 00
Dodgeville	Sept. 23–26	1,700 99	669 99	1,029 00	2 00
Black River Falls	Sept. 24–26	1,034 70	586 15	515 75	.....
Jefferson	Sept. 23–25	2,118 00	1,175 08	862 50	70 42
Mauston	Sept. 17–19	1,126 52	361 91	692 00	72 61
Kenosha	Sept. 15–17	2,297 50	688 07	1,176 00	433 43
Kewaunee	Sept. 24–26	458 78	367 78	91 00	.....
Salem	Sept. 15–17	1,585 74	590 04	530 50	465 20
Darlington	Sept. 17–19	743 66	212 00	383 81	143 85
Lodi	Sept. 15–18	1,187 85	423 50	604 00	281 29
Clarks Mills	Sept. 24–25	313 65	70 80	242 00	85
Marathon	Sept 24–26	898 82	236 67	517 50	144 65
Montello	Oct. 1, 2	204 25	70 32	156 25	.....
Sparta	Sept. 22–24	981 30	414 38	436 50	130 42
Tomah	Sept. 15, 16	1,116 00	611 00	505 00	.....
Oconto	Sept. 29, 30	482 30	260 03	214 16	8 11
Appleton	Sept. 22–24	964 84	340 56	602 25	22 03
Cedarburg	Sept. 29, 30	308 33	92 33	210 50	5 50
Prescott	Sept. 17, 18	389 90	181 55	184 00	24 35
Amherst	Sept. 23–25	931 50	488 30	443 00	.....
Burlington	Sept. 23–25	3,548 44	1,207 33	1,789 71	551 40
Richland Center	Sept. 16–18	1,306 30	984 34	221 00	100 96
Janesville	Sept. 29 Oct. 2	6,280 01	4,690 27	1,589 74	95 85
Baraboo	Sept. 15–17	1,067 84	513 30	540 50	14 04
Shawano	Oct. 14–16	1,031 81	877 21	277 61	.....
Sheboygan Falls	Sept. 16–18	786 15	567 87	381 75	.....
Sheboygan	Sept. 29 Oct. 1	1,513 43	1,259 94	253 59	.....
New Richmond	Sept. 22, 23	1,953 40	1,376 60	387 50	189 30
Beloit	Sept. 15–17	2,688 40	2,645 39	.....	.....
Galesville	Sept. 23, 24	583 95	331 19	271 50	49 51
Viroqua	Sept. 30 Oc. 2	1,129 35	254 29	336 75	538 31
Elkhorn	Sept. 29 Oc. 2	4,247 78	2,151 63	1,488 00	608 15
West Bend	Sept. 30 Oc. 2	1,341 75	1,083 62	246 50	11 63
Waukesha	Oct. 7–9	1,948 83	577 40	818 50	552 93
Weyauwega	Oct. 15, 16	352 79	141 79	211 00	.....
Waupaca	Sept. 15–17	1,980 95	748 11	915 90	316 94

EXPERIMENTS UPON THE UNIVERSITY FARM.

[Extracts from the report of Prof. W. W. DANIELLS to the Board of Regents of the University of Wisconsin, for 1874.]

WINTER-WHEAT.

Fultz variety. This wheat was sown upon new ground; soil, clay-loam, September 5, 1873; harvested July 1, 1874. Weight of straw and grain on one acre, 6,006 pounds. Yield of grain, 35 1-20 bushels per acre, weighing 60 pounds per bushel. Percentage of grain to weight of straw and grain, 35.3.

This variety has been in cultivation upon the University farm for three years, with the following yields per acre:

	Bushels.
1872	33½
1873	20
1874	35
Mean	29½

The history of this variety is given in my report for 1871.

Diehl variety.—Sown September 8, upon ground prepared as for Fultz; harvested July 1, 1874. Weight of straw and grain, upon one acre, 5,269 pounds. Yield of grain, 31.9 bushels, weighing 56 pounds each. Percentage of grain to weight of straw and grain, 36.3. This wheat was slightly injured by chinch-bugs.

Both varieties of winter-wheat were protected upon the north and west sides by timber belts.

SPRING-WHEAT.

Red Mammoth Spring.—Sown by hand, 1¾ bushels of seed per acre, April 13. Weight of seed, per bushel, 59¾ pounds; harvested July 14. Weight of straw and grain per acre, 1,910 pounds. Weight of grain, 401 pounds or 6.7 bushels. Weight, per bushel, 56 pounds. Percentage of grain to weight of straw and grain, 21.

Odessa.—Sown as Red Mammoth. Weight of seed, per bushel, 58 pounds; harvested July 17. Weight of straw and grain, per acre, 1,754 pounds. Weight of grain, 290 pounds, or 4 5-6 bushels. Weight, per bushel, 56 pounds. Percentage of grain to weight of straw and grain, 16.5.

White Spring.—Sown as two preceding varieties. Weight of seed per bushel, 61¼ pounds; harvested July 13. Weight of straw and grain, per acre, 2,380 pounds. Weight of grain 460 pounds, or 7.7 bushels. Weight, per bushel, 60 pounds. Percentage of grain to weight of straw and grain, 19.4.

April.—Sown as preceding varieties, April 15. Weight of seed, per bushel, 58½ pounds; harvested July 13. Weight of straw and grain, per acre, 1,841 pounds. Weight of grain, 283 pounds, or 4.7 bushels. Weight, per bushel, 49 pounds. Percentage of grain to weight of straw and grain, 15.4.

The following varieties, of which we had but a small quantity of seed, were also in cultivation: Oran, Bismark, Ornautka, Chamberlin's and Eureka. The quantity was to small to make a comparison of their merits.

The spring wheat, and all small spring grain, looked unusually promising, until about June 10, after which the combined effect of drouth and chinch-bugs ruined them.

BARLEY.

The following varieties were sown April 15, at the rate of two bushels of seed to the acre.

Manshury.—Weight of seed, per bushel, 46 pounds; harvested July 6. Weight of straw and grain, per acre, 2,543 pounds. Weight of grain, 975 pounds, or 20.3 bushels. Weight, per bushel, 34½ pounds. Percentage of grain to weight of straw and grain, 38.3.

Common barley.—Weight of seed, per bushel, 46¼ pounds; harvested July 10. Weight of straw and grain, per acre, 1,881 pounds. Weight of grain, 643 pounds, or 13.4 bushels. Weight, per bushel, 36 pounds. Percentage of grain to weight of straw and grain, 35.4.

Chevalier.—Weight of seed, per bushel, 43¾ pounds; harvested July 10. Weight of straw and grain, per acre, 2,144 pounds.

Weight of grain, 490 pounds, or 10 1-5 bushels. Weight, per bushel, 37 pounds. Percentage of grain to weight of straw and grain, 22.8.

Saxonian.—Weight of seed, per bushel, 46½ pounds; harvested July 10. Weight of straw and grain, per acre, 1,785 pounds. Weight of grain 507 pounds, or 10½ bushels; weight, per bushel, 40 pounds. Percentage of grain to weight of straw and grain, 25.5.

OATS.

The following varieties were sown April 15, 2½ bushels of seed per acre.

Bohemian.—A variety without hulls. One bushel seed weighed 39¾ pounds; harvested July 10. Weight of straw and grain, per acre, 2,976 pounds. Weight of grain, 256 pounds, or 8 bushels. Weight, per bushel, 32 pounds. Percentage of grain to weight of straw and grain, 8.6.

Probstier.—Weight of seed, per bushel, 29½ pounds; harvested July 18. Weight of straw and grain, per acre, 3,476 pounds. Weight of grain, 677 pounds, or 21⅛ bushels. Weight, per bushel, 26½ pounds. Percentage of grain to weight of straw and grain 19.4.

A mixture of equal parts of White Norway, Black Norway, Surprise and common oats was made, and sowed in 1871, and the resulting grain has been since sown each year. Seed weighed 28¼ pounds per bushel; harvested July 18. Weight of straw and grain, per acre, 3,414 pounds. Yield of grain, 678 pounds, or 21 1-5 bushels. Weight, per bushel, 28½ pounds. Percentage of grain to weight of straw and grain, 19.8.

Whith Schonen.—Weight of seed, per bushel, 27 pounds; harvested July 20. Weight of straw and grain, per acre, 3,060 pounds. Yield of grain, 733 pounds, or 23 bushels. Weight of one bushel, 30 pounds. Percentage of grain to weight of straw and grain, 24.

White Norway.—Weight of seed, per bushel, 29¼ pounds; harvested July 16. Weight of straw and grain, 3,081 pounds. Yield of grain, 606 pounds, or 19 bushels. Percentage of grain to weight of straw and grain, 19.6.

Black Norway.—Weight of seed, per bushel, 26 pounds; harvested July 20. Weight of straw and grain, 3,108 pounds. Yield of

grain, 837 pounds, or 26.1 bushels. Weight of one bushel, 31 pounds. Percentage of grain to weight of straw and grain, 26.9.

The following varieties have been in cultivation, but with too small amounts of seed to make quantitative comparisons, viz., Somerset, Houghton and Early-Fellow.

CORN.

Comparison of varieties.

The following varieties were cultivated upon adjacent plats, received the same treatment, excepting that the White Australian, being a smaller variety, was in hills 3½x4 feet, and those of the other varieties 4x4 feet—4 kernels to a hill.

White Australian.—Planted May 9; harvested August 24. Yield, per acre, 4,488 pounds, ears, 59.2 bushels of 75 pounds each.

This plat was adjoining oats, and was badly injured by chinch-bugs, after the removal of the oats.

Cherokee.—Planted May 9; harvested September 5. Yield, per acre, 4,735 pounds, ears, 63.1 bushels of 75 pounds each.

Yellow Dent.—Planted May 11; harvested September 2. Yield, 4,378 pounds, ears, 58.4 bushels of 75 pounds each.

Early Yellow Dent.—Planted May 11; harvested September 2. Yield, 4·454 pounds, ears, 59.4 bushels of 75 pounds each.

The table below gives the yield of these varieties, in bushels of ears of 75 pounds each, since they have been in cultivation upon the University-Farm:

Varieties.	1871.	1872.	1873.	1874.
Early Yellow Dent	46.6	52.1	58.6	59.4
White Australian	72.5	60.7	63.2	*59.2
Cherokee	56.6	51.9	52.7	63.1
Yellow Dent	.....	.....	49.4	58.4

Seed from tips, middle, and butts of ears.

In 1870, corn from the tips, butts, and middle of the same ears, was planted, and each year since, the tips, butts, and middle of that raised from like seed the previous year, have been again planted.

*Injured by chinch-bug.

The yield upon adjacent plats of equal size this season, was as follows:

Tips, 466 pounds.
Middle, 414 pounds.
Butts, 422 pounds

No difference was visible in the quality of the corn. The result of five years experiment is, that it makes no difference from what portion of the ear seed is taken.

Fertilizers.

The Milwaukee Drying Company sent the University, samples of three fertilizers manufactured by them, viz: "tanking," "mixture of tanking and blood," and "dried blood." These, and a compost of 1 part gas-lime and 3 parts well decomposed swamp-muck, composted in March, 1873, and well mixed, were each applied as a top-dressing to corn, at the time of its first hoeing, June 3. The following is the yield of equal sized plats treated respectively as described:

"A"

	Pounds.
1. ⅓ pint "tanking" to a hill	356
2. ¼ pint "mixture" to a hill	330
3. No fertilizer. Standard of comparison	336
4. Two tablespoonfuls "dried blood" to a hill	365
5. Pint gas-lime compost to a hill	338

"B"

	Pounds.
1. ⅓ pint "tanking" to a hill	418
2. ¼ pint "mixture" to a hill	428
3. Nothing	392
4. Pint gas-lime compost to a hill	407
5. Quart gas-lime compost to a hill	382

A severe drought set in soon after the application of these fertilizers, which may have prevented their benefiting the corn as much as they otherwise would have done. The plants upon which the gas-lime compost was applied soon turned yellow, and, for a time, appeared like dying, and late in the summer its injurious effects were distinctly visible.

POTATOES.

The Snow-Flake and Brownell's Beauty, two new varieties, have been in cultivation for the first time.

One pound of Snow-Flake, planted in single eyes, yielded 59½ ounds. Its season is stated to be the same as that of the Early ose. With us it ripened one week later. The quality is excellent.

Brownell's Beauty is a late variety of excellent quality. Three ounds seed, cut to single eyes, yielded 123 pounds; ripened September 16. All varieties planted May 9.

Other varieties yielded as follows:

Varieties.	Time of ripening.	Bushels per acre.	Quality.
xtra Early Vermont	August 24	180	Excellent.
arly Rose	August 23	131	Excellent.
arly Favorite	August 25	169	Excellent.
arly Goodrich	August 20	133	Medium.
mpton's Surprise	Sept. 10	113	Medium.
arly Rose	Sept. 4	86	Good.
hite Rose	Sept. 10	122	Poor.

The number of varieties in cultivation has been greatly diminished by discarding those not worthy of cultivation.

IMPROVEMENT OF SOILS BY MECHANICAL MEANS.

This experiment was begun in 1871, upon four adjacent plats of 1 acre each, to be cultivated as follows:

Plat 1, to be plowed to a depth of five inches only.

Plat 2, to be plowed twelve inches deep.

Plat 3, to be plowed twenty inches deep by trench plowing.

Plat 4, to be plowed twenty inches deep by subsoiling.

Plats 1 and 2 have been cultivated in the prescribed manner from ie beginning.

Plat 3, in 1871, was plowed twelve inches deep only; in 1872 and 873, seventeen inches, and in 1874, eighteen inches, which is as eep as it has been found practicable to plow.

Plat 4 was subsoiled sixteen inches deep in 1871; seventeen ches in 1872 and 1873, and eighteen inches in 1874.

The cultivation of these plats has been the same in all other reects than those mentioned.

The soil is clay, with heavy clay subsoil; the land is level and ather low. In the fall of 1873, an underground drain was laid

through each of the plats, to carry away water that formerly flowed over them all, after heavy rains.

These plats have been in cultivation to corn during the entire four years. The following table gives the yield of each, in bushels of ears, weighing 75 pounds:

Method of cultivation.	1871.	1872.	1873.	1874.
Plowed 5 inches deep	55.4	43.5	53.4	53.0
Plowed 12 inches deep	50.6	50.3	52.8	58.1
Trench-plowed 18 inches deep	44.9	54.7	51,3	65.3
Subsoiled 18 inches deep	42.2	56.8	51.1	60.8

The yield this year shows the benefit of deep cultivation in dry seasons, while the smaller yield last year, on the deeply plowed plats, illustrates the injurious results, in a wet season, of deeply plowed plats in a retentive subsoil, with no outlet for the superfluous water.

GRAPES.

The vineyard belonging to the University Farm has about 900 Concord vines in the third year of bearing. From these vines, there were harvested this year 4,500 pounds of grapes, some vines yielding 28 pounds.

ORCHARD.

The orchard of 500 trees of a few standard varieties, has made a fair season's growth, but few of the trees have borne.

My thanks are due John Ferry, esq., Superintendent of the University Experimental-Farm, for his aid and attention in conducting these experiments.

WEATHER-RECORD FOR TWENTY YEARS.

BY G. J. KELLOGG, JANESVILLE.

The following record of the weather, kept at my place for the
l t twenty years, has many points of interest and may be useful.
r ıe thermometer used, hung in the same position for twenty yaers,
i a spirit-gauge, self-registering, giving the coldest degree reached
(ring each twenty-four hours, usually the coldest at about sunrise.
r ıe aggregates given are obtained by adding the coldest tempera-
t re each day when the spirit had passed below zero. Example—5
(ys at 20 below zero would aggregate 100:

1855—January, thaw with rain; 5th to 7th February, good sleigh-
i ɜ; March 5, a thaw; a backward spring; wheat sowed April 17, 20;
l ıy 9 and 10, ice; June 3, frost; October 5 and 6, ice; December
ɜ , 28 degrees below zero.

1856—January 9, 32 degrees below zero, below 13 days; Febru-
a ɾ 3, 30 below, below 12 days; December 7, 19 below, below 15
(ys; total number days below, 40; aggregate, 546.

1857—January, one of the coldest ever known, 30 to 32 below.
. mean temperature of 1¼ degrees with 4 observations daily, at 8
a d 10 a. m., 12 m., and 2 p. m.; February 5, rain, with heavy freshet;
l ırch 10, below zero; April 22, sowing wheat; May 12, ice; Novem-
l r 19, snow six inches; December, plowing all the month.

1858—January, the warmest ever known, 4 observations daily
ɜ ve a mean temperature of 29½, extremes 2 to 55; February 10,
ɜ below, below for 10 days; March 2, zero; November 19, 3 below,
l low for 2 days; December 9, 18 below, below for 3 days; total
(ys below, 16; aggregate, 144.

1859—January 22, 16 below, below for 6 days; February 10, 8
l low, below for 4 days; December 31, 20 below, below for 6 days;
t al days below 16; aggregate, 136.

1860—January 2, 22 below, below for 6 days; February 1, 12 be-
l v; December 23, 14 below, below for 4 days; total days below, 11;
a gregate, 108.

1861—January 31, 25 below, below for 5 days; February 8, 18 below, below 6 days; November 30, 15 below, below 2 days; December 1, 15 below, below 2 days; total days below, 15; aggregate, 203.

1862—January 12, 28 below, below 8 days ; February 2 and 14, 25 below, below 4 days; December 6 and 7, 12 below; total days below, 14; aggregate, 258.

1863—January 7, 4 below; February 3, 16 below, below 3 days; December 31, 25 below, below 2 days; total days below, 6; aggregate, 75.

1864—January 1, 35 below, below 11 days; February 17, 23 below, below 4 days; December 8, 25 below, below 12 days; total days below, 27; aggregate, 430.

1865—January 18, 16 below, below 10 days; December 23, 19 below, below 7 days; total days below, 17; aggregate, 144.

1866—January 20, 15 below, below for 7 days; February 16, 23 below, below for 8 days; December 30, 7 below, below for 3 days; total days below, 18; aggregate, 173.

1867—January 17, 21 below, below for 7 days; February 9, 10 below, below for 1 day; March 13 and 14, 15 below, below for 5 days; November 30, 3 below, below for 1 day; December 23, 2 below, below for two days; total days below, 16; aggregate, 135.

1868—January 13, 12 below, below for 13 days; February 10, 28 below, below for 9 days; March 3, 16 below, below for 3 days; April 5, 5 below, below for 1 day; December 12, 21 below, below for 11 days; total days below, 37; aggregate, 303.

1869—January 25, 5 below, below for 4 days; February 27, 4 below, below for 5 days; March 6, 8 below, below for 5 days; November 21, 5 below, below for 2 days; December 20 and 21, 7 below, below for 2 days; total days below, 18; aggregate, 67.

1870—January 18, 11 below, below for 6 days; February 20, 16 below, below for 3 days; March 16, 9 below, below for 2 days; December 23, 18 below, below for 11 days; total days below, 22; aggregate, 169.

1871—January 18, 3 below, below for 2 days; February 10, 12 below, below for 6 days; November 23, 5 below, below for 3 days; December 5, 21 below, below for 11 days; total days below, 22; aggregate 166.

1872—January 29 and 30, 21 below, below for 8 days; February 1, 19 below, below for 10 days; March 12, 9 below, below for 4 days;

N vember 27, 28, and 29, 9 below, below for 6 days; December 24, 3:)elow, below for 17 days; total days below, 45; aggregate, 439.

873—January 29, 18 below, below for 12 days; February 23, 20 b( )w, below for 8 days; March 4, 6 below, below for 2 days; total d: s below, 24; aggregate, 170.

874—January 15, 14, below, below 8 days; February 24, 5 b( )w, below for 1 day; November 30, below for 1 day; December 2(12 below, below for 2 days; total days below, 12; aggregate, 85 d(rees.

875—January 9, 28 below, below for 18 days; aggregate, 212. F)ruary 7, 33 below, below 20 days; aggregate, 322; aggregate for tl two months, 534; 4 days in March, at zero and below; aggre- g: e, 8.

'he foregoing record shows each month and the day of the month w)n the thermometer marked the coldest at or below zero. My al tude is 75 feet above the river, 240 feet above Lake Michigan, a: 823 feet above the sea.

'he following will show the five coldest months:

'ebruary, 1875, 20 days below zero, aggregating 322 degrees.

anuary, 1864, 11 days below zero, aggregating 223 degrees.

)ecember, 1872, 17 days below zero, aggregating 221 degrees.

anuary, 1856, 13 days below zero, aggregating 219 degrees.

anuary, 1875, 18 days below zero, aggregating 212 degrees.

'he coldest year (not taking into account the present year, whose r( )rd is not yet complete,) 1856, 40 days below zero, aggregating 5(degrees.

'he warmest year, 1869, 18 days below zero, aggregating 67 de- g: es.

'he warmest winter-month, January, 1858, when the coldest day w 2 above zero.

anuary and February, 1875, the greatest number of days in any m)th, touching zero and below in the 20 years.

anuary and February, 1875, the coldest consecutive months dur- in the 20 years, 38 days below, aggregating 534 degrees; being 1: degrees colder than the corresponding months of 1856.

'he aggregate of the coldest year of the 20 years, (1856,) is 546 d(rees, while that of 1875, with record not complete, is already 5(degrees.

FIRST ANNUAL REPORT OF THE COMMISSIONERS OF FISHERIES OF THE STATE OF WISCONSIN.

To His Excellency, Governor Wm. R. Taylor:

The Commissioners of Fisheries, appointed by the Governor under chapter 253, of the session-laws of 1874, are not required to make a report of their action under such appointment, but the importance to the state of the interests committed to their supervision, is of such character that we feel it our duty to make a statement of what has been accomplished by us, and also to make certain suggestions and recommendations for the consideration of the state law-making power.

By the provisions of chapter 211, of the session-laws of 1873, five hundred dollars were appropriated, to be expended under the direction of Professor Spencer F. Baird, United States Commissioner of Fisheries, in promoting the artificial propagation and the introduction into this state of the better kinds of fish. A statement of the expenditure of that money furnished us by Prof. Baird, shows that the entire sum was expended for that purpose, the details of which are in the hands of the State Treasurer. Of the fry of the spawn of that year, several thousand were placed in the lakes at Madison, and also several thousand in Geneva Lake. As near as we can estimate, 20,000 salmon were distributed in these waters. They were hatched at the private hatching-house of H. S. Dousman, Esq., at Waterville, in Waukesha county.

Under the act authorizing the appointment of commissioners, the sum of $360 was appropriated for the purpose contemplated in the law, and was to be expended under the direction of the commissioners thereafter to be appointed by the Governor. With the funds placed at our disposal, we have been able to do but little.

We received, through Mr. Baird, 100,000 spawn of the California salmon. These were sent direct from San Francisco to Boscobel, in this state, and came unattended as express matter. Mr. Palmer,

on of the commissioners, and who owns a private hatching-house at Boscobel, undertook the hatching and distributing process. Fr n these spawn he hatched some 61,000 fry, in excellent conditic , unusually strong and healthy. At the date of preparing this re rt, 19,000 had been distributed in the waters of Grant, Crawfo and Lafayette Counties. The residue were to be distributed in th northeastern counties and among the lakes and rivers of Sheboygan, Fond du Lac, and Winnebago.

he following itemized account shows the expenses thus far incu ed :

Ex ess-charges	$41 00
Ex ange	50
Tw trips to Madison	11 30
Tr to Oshkosh	21 50
Ex nse of distribution of fry, (19,000)	40 45
Ex nse of hatching	200 00
Making, together	314 75

ıe above is Mr. Palmer's account for cash expenditures and ser ces, and we have drawn upon the appropriation for that sum. Fo y-six dollars yet remain in the treasury, and will not fully pay th necessary expenses of distributing the remainder of the fry. It ıs been our wish to have the cost of distribution paid by the cit s and towns located on public waters, and we hope in time to cre e such an interest in the matter of fish-culture that this will be one. It may be proper to add that the common council, of th city of Madison, appropriated the money necessary to pay expe es of taking the fry from Waterville to Madison, and the same ma have been the case with Geneva.

ıe General Government has systematized the matter of fishcul ıre, appropriating for that purpose upwards of $30,000 annuall and placed at its head Professor Baird. Under his efficient ma agement immense quantities of the spawn of the better varieties of fish are secured, and are distributed gratis to states provid with commissioners. They are only expected to pay expre sage, which is very trifling in amount. We were very much gra fied in receiving from Mr. Baird his congratulations on the cre ion of a commission in Wisconsin. Under date of March 26, 18 , he says:

' am very much pleased to learn that Wisconsin has joined the

ranks of the states provided with fish-commissioners, and I have no doubt that by a careful consideration of the questions connected with the interior fisheries, measures will be adopted by which the food-resources of your state can be materially improved."

Thirteen states are already provided with commissioners, named respectively, as follows: Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Alabama, California, Michigan, and Wisconsin.

Maine is the pioneer, having entered upon her ninth year. The seventh annual report of the commissioners of New York will soon be due. The other states followed in rapid succession, and before many years we have no doubt that the matter of fish-culture will engage the attention of every state in the Union.

Many and various experiments have been made in New York in respect to acclimating to their waters different varieties of valuable fish. Under the skillful management of Hon. Seth Green, superintendent, success has generally attended these experiments. In his labors he has received the encouragement and aid of Horatio Seymour, Geo. G. Cooper, and Robert B. Roosevelt, from the start, we believe, fish-commissioners of New York. These gentlemen enjoy national reputations, and their endorsement of fish-culture is worthy of consideration. In closing their fourth annual report, these gentlemen say:

"We point with pride to what has been done during the past few years, and with the small sum at our disposal, we rely with confidence on a greater measure of success in the future."

Without enlarging, we may add that in all the reports of the commissioners of fish before us, they speak but one language, and that is of the most encouraging character. The fisheries of New York, Maine, Connecticut, and Pennsylvania are being largely increased, barren waters are becoming productive, and the people are beginning to reap the harvest of success in an increased supply of wholesome diet and at a greatly reduced cost. Considering that fish-culture by artificial means is not a dozen years old in this country, with the success already attained, the future is full of promise. We have passed the day of experiment, and with the experience of the states named, we have only to go to work with the certainty of a highly remunerative return for our labor and expenditure. But to do this we must have money.

ı the first place we ask the state to make a suitable appropria-
ti of money, to enable the Fish Commissioners to prepare a proper
si and erect a state hatching-house. These sites are not abundant
in he state. We must have a fair scope of land near some railway
ce er, living water of proper temperature, and a full sufficiency
fo he accommodation of hatching troughs and ponds. To give a
fa conception of what kind of hatchery we want, we copy the
fo owing outside description of that in New York:

The hatching-house is situate at Caledonia, N. Y. It is built on
gı ınd leased from the well-known fish-breeder, Mr. A. S. Collins,
w) owns the streams and ponds formerly belonging to Seth Green.
T s site is the finest by far in the United States for such a pur-
pc . An estimated flow of sixty barrels of water per second is
fu ıished by springs within the distance of half a mile. The stream
va es much less than is usual, with such waters in volume and
te perature; is full of the finest flavored speckled trout, and the
gı ınd around the hatching-house is especially favorable for con-
st cting ponds and for the various purposes of fish-breeding.

The hatching-house is so constructed that a fall of three feet of
w er can be used. It is built of hemlock-timber, is fifty feet long
by wenty feet wide, one and a half stories high, and the commis-
si ers claim is the cheapest hatching-house, and yet, so arranged
to ırn out the greatest number of fish of any in the United
St es."

he interior is supplied with troughs, feed-pipes,—in which fil-
te are inserted before the faucets, which admits the water into the
tr ghs—waste-pipes, &c. The work is rough in the main and in-
ex ensive. The principal cost of such an establishment would at-
ta ı to the ground. We should not want near the current of water
al ve named, but care should be taken to secure an abundance for
al ime and for all purposes of such an institution. A large dis-
cr ion should be given to the commissioners in the selection of a
si assuming that the best interests of the state would be kept in
vi v.

or the purposes above indicated and to carry on the operations
of atching spawn and distributing the fry, for 1875, we ask for an
aı ropriation of eight or ten thousand dollars. With this sum we
fe confident that in a few months we could perfect the work nec-
es ry for all hatching purposes. It might be necessary to erect a

cheap tenement, at or near the hatching-house, in which the superintendent could reside, as some one must have charge of the property and superintend the hatching of spawn.

In this connection, we desire to state that, as soon as arrangements for hatching are perfected, responsible parties can be had who will take charge of the property and hatch all the spawn which the state is likely to want, free of cost for the labor of hatching and delivering the fry at the hatching-house. The consideration for these services will consist in allowing the party to use the water which would otherwise run to waste in the artificial propagation of trout. This matter, however, will form the subject for future consideration. At present, it looks to us feasible, as it is not contemplated that the state will engage in brook-trout culture. Trout streams are too local in their character to warrant the labor and expense of stocking them.

But we should expect that the example of the state in stocking public waters with other varieties, would encourage private parties to cultivate the speckled trout. Farmers who have springs or cold streams on their farms can best do this. With a little capital, and the time which they can well spare and which will be mostly in winter, they can grow trout-food cheaper than they can grow beef or pork. The amusement, too, in angling, is of great moment, and employs many spare hours of both boys and girls.

We have before us the codified game-laws of the state of New York, prepared under the direction of the Secretary of State. In looking over our own laws on this subject and comparing them with those of New York, we are of the opinion that they ought to be arranged and printed in convenient form for distribution, and in some respects altered and enlarged. We have a state association for the preservation of game, and which is doing much good in that direction. R. M. Strong, esq., of Baraboo, is president, and Messrs. M. T. Bailey, of Madison, and A. J. Turner, of Portage, are secretaries. There are also local clubs organized in many of our cities, having in view the same purpose. In 1870, the American Fish-Culturist's Association was formed, and now numbers in its organization, many of the most scientific gentlemen in the country. Hon. Wm. Clift, of Connecticut, is president, and among the honorary members are Prof. Baird, and also Hon. Samuel Wilmot, commissioners of fisheries for the Dominion of Canada. Great in-

te st is manifested by these bodies in the matter of preserving and
pı ɔagating fish, and in enforcing the laws for their preservation.
Ve have not been able to gather much specific information in
re ect to the fisheries of the state. By another year, in case the
cc mission is continued, we shall be able to collect much useful in-
fo ıation. We may assume as a safe proposition, that no state in
th Union, disconnected from the sea-board, is better suited for fish-
cu ure than Wisconsin.

here are two hundred and twenty-five lakes in the following
siz ɔen counties: Kenosha, Racine, Walworth, Waukesha, Jeffer-
so Dane, Washington, Dodge, Columbia, Sheboygan, Fond du
La Green Lake, Marquette, Waushara, Waupaca, and Winnebago.
Tl se lakes cover 388 square miles, or 248,320 acres of water, which
laı ɔ surface is now comparatively unproductive. These beautiful
lal s that adorn our state, could and ought to produce as much
foc for man as an equal amount of rich land. In most of these
lal s valuable fish would thrive. Not until the inhabitants of
thc ɔ counties can catch trout, carp, grayling, &c., will they fully
ap eciate the importance of fish-culture. Thus they will be more
ser ble of the great good that will surely flow from the judicious use of
a f r thousand dollars annually. These benefits should not be con-
fin to the lesser lakes, for it is in the larger ones—Michigan and Su-
pe ɔr—where the greatest interest should concentrate. The white-
fisl ınd trout are, by the use of improved (?) modes of taking fish,
bec ming rapidly diminished in number.

e have taken pains to ascertain how fast the supply of fish is
bec ming exhausted by the use of pound and gill nets as now ex-
ter vely used.

Racine alone there are four boats in constant use putting out
anc aking up not less than twenty-five miles of gill nets. During
the ummer their nets are set from eighteen to twenty miles from
shc ; where the water is from sixty-five to seventy fathoms deep.
We ıre told by Jacob Schenkenbarger, one of our oldest and most
int igent fishermen, that "with an equal number of nets only one-
fou h as many fish are caught now as were taken four years ago."

I further says: "We always have the best success late in the
fall ɔy placing our nets over the spawning-grounds of the white-
fish nd trout. Late in October, in 1870, I took with a set of thirty
net at one time, 1,980 pounds of dressed trout by putting the gang

over the spawning-beds. Four years ago it was common to take from 1,000 to 1,500 pounds of fish at each trip. Now we never go over 500 and not unfrequently go less than 200 pounds. The lake is filled with nets and the fish can hardly escape."

The fishermen all admit that it is wrong to take fish when they are engaged in spawning, and if there was a law prohibiting the setting up of nets from the 15th of October to the 1st of April, they would be glad, and would most cheerfully obey it, so that the fish could repair to their breeding-grounds unmolested by the destructive gill-nets. Such a law would do much good if rigidly enforced.

With a hatching-house close by the lake, millions of young white-fish and salmon-trout could be put in Lake Michigan at a trifling expense to the state. It is time that this work should be jointly undertaken by those states bordering on the great lakes; that is, Illinois, Michigan, Indiana, and Wisconsin should unite to stock Lake Michigan, and Minnesota, Michigan, and Wisconsin, Lake Superior.

However, it is now fully proven that fish do not ordinarily go many miles from the spot where they are hatched, so that if Wisconsin were to put 5,000,000 of young fry into Lake Michigan, within the limits of the state, it is quite certain that she would reap the greater part of the harvest. This is a matter of the greatest importance, for the lake-fisheries involve a considerable amount of capital, which is employed in furnishing a large stock of a healthful and nutritious article of diet, easily digested and rich in phosphates.

We have great hopes of success in introducing some of the varieties of salmon into the larger inland lakes. H. F. Dousman has just communicated to us the interesting fact that two years ago he hatched for the state a lot of salmon-eggs furnished by the United States Fish-Commissioner, Prof. Baird. A few of the young salmon escaped being captured, and have since remained with their little cousins, the speckled trout. The last of the past November, on examination, he found a female salmon that gave ripe spawn; these eggs were fecundated by the melt of a male. So we shall have the remarkable instance of salmon being hatched from spawn taken from fish that were hatched and grown in Wisconsin. However unfavorable this experiment may possibly prove, we still have

er ugh of good fish that we know will thrive and abundantly re-
pa a hundred fold the expense of a state hatching-house, which
w ld be conducted to the best interest of the state. The salmon-
tr t, carps, white and black bass, white-fish, and grayling could
be urned into the lakes in great numbers.

' members of the legislature were to visit the establishment of
A. Palmer, of Boscobel, and H. F. Dousman, of North Prairie, they
w ld be delighted to witness the successful artificial propagation
of ish. Mr. Dousman has now nearly 250,000 young trout that
wi be ready for market when they are two years old. Mr. Palmer
an Mr. Dousman hatch about 80 per cent. of all eggs put into their
ha hing-troughs—a success never surpassed.

a account of a considerable mortality among a part of his fish,
M Dousman lately applied to a member of the state fish commis-
sio Mr. Hoy, who visited his fish-ponds. Science was sufficient
fo he occasion, and the cause and remedy found.

a private party raising fish for market can make money by
pa ng liberally for such advice, how much more should the state
sec e the time and services of its fish commissioners, to superin-
ter the fish interests of the state.

e submit this hasty and ill-digested report for consideration.
W sk that it be referred to the proper committee, and we hold
ou lves in readiness to give all the information and aid in our
po r in furtherance of the objects embraced therein.

I spectfully submitted.

WILLIAM WELCH,
A. PALMER,
P. R. HOY,
Fish Commissioners.

M DISON, *December, 1874.*

PRACTICAL PAPERS.

THE CURRENCY.

VIEWS OF HON. WENDELL PHILLIPS.

[A paper read before the Financial Department of the Social Science Association, at Boston, March 3, 1875.]

I was surprised, gentlemen, when it was proposed that I should make any suggestion of plans and methods on this subject. You are most of you experts—have passed your lives in business and have studied these questions for many years. Of course, your opinions are entitled to great weight. I offer my suggestions with sincere deference to your more mature judgment. Nevertheless, you must allow me to say that political economy is a science—if, indeed, it yet deserves that name—whose doctors so uniformly disagree that no one sage's opinion is entitled to any very great weight. In these matters, the world is, to a great extent, still afloat on the sea of experiment. Our late war-experience scattered half the cob-web theories that political economists had been spinning for a hundred years.

Further, many men of practical business experience agree in the views I offer you. Were it not so, I should hesitate to submit them. These are men who have made fortunes in regular business, and what is far rarer and more difficult in this country, have known how to keep what they have made.

I have talked often on these matters with John Nesmith, lieutenant-governor under Andrew; a man who made a million in manufactures, and kept it. He printed some portions of his conclusions on these topics,—a valuable contribution to the literature of the subject. He substantially agreed with me. Governor Buckingham, of Connecticut, a republican, a successful business man, advocated almost exactly what I mean to offer you, in an able speech in the United States Senate. I have in my mind a business man who

ha worked his way from nothing to three hundred thousand dol-
lar worth of real estate in the city of his residence, and was for
tw ıty years a director of the best bank there. He approves such
a l ın as mine. In other cities I meet bankers, merchants. manu-
fac ırers, in active and successful business, who, spite of interest
on he other side, say amen to us reformers. If rumor speaks truth,
an ng the presidents of the best money institutions of New York
we ıave some staunch friends.

ıe thing I wish to say by way of preface. I give little or no
we ht to the statement that what I propose has never been tried
in mes past, or, if attempted, has not succeeded. Our chairman
sai my theory had been exploded two hundred years ago. Very
lik y. Most of the accepted opinions of to-day were "exploded
tw hundred years ago," and more than half of our inventions were
as ıoroughly ridiculed then as Stephenson's locomotive was sixty
ye s ago. If we had not tried again, experiments which had failed
tw hundred years ago, there would have been little progress in the
wc d. Our chairman quoted some quaint words from a worthy
an sensible man, Sir Josiah Child. Very wise words for England
in 368, from a man who also advocated fixing the rate of interest
an keeping it low by law. At that time they held many opinions
wl h later experience has disproved, and believed many things im-
po ible which their children have succeeded in accomplishing.
Tl y believed that a nation which exported more than it imported
wa on the high road to bankruptcy. It required a long argument
to ıtisfy many of them that a person who spent a hundred thou-
sa dollars in one night in fire-works did not benefit the country
as ıuch as he who used it in draining marshes or manufacturing
wc l. They thought

A church without a bishop,
A state without a king,

to e a mad dream; fit only for Plato and More's Utopia. And
th were right *then* and *there*. In Europe at that day a republic
wa as impossible as it is to-day in Spain or Louisiana, unless out-
sid 's help. That baby needs a go-cart to learn to walk. Our vast
rej blic would be impossible without two hundred years of common
scl ols behind it, and steam and the telegraph to help. Times
ch ıge. Improvements and inventions are made. What was im-
po ible in 1700 is easily done in 1850. With settled habits, and

stable institutions, and men trained to cooperate, the world can do things now which it would have been madness to attempt a century earlier.

The Jews have but four punishments—maiming, whipping, fines and death. The middle ages in Europe had no more. Government was not stable enough for imprisonment. Now we can dispense with the gibbet and the lash, because, as in France, six dynasties may rise and fall, but the convict, sentenced to four walls for life, never sees the sun. A secret, says Emerson, guarded by a bit of wafer, goes safely round the globe. When Montaigue wrote his essays, a Frenchman would have been mad to trust his mansion-house without drawbridge and sentinel. To-day the county palaces of England, crowded with wealth, are safe with a superannuated housekeeper and a butler who cannot walk; for the day of the *pistol* is over, and

> Sovereign Law, the state's collected *will*,
> Sits empress, crowning good, repressing ill.

My friend, Colonel Montgomery of Kansas, told me he never lighted a candle in his log-hut, lest they should aim successfully at him through the gaps. The same is the case to-day with the hunted republicans of Mississippi. Such a community can hardly believe in a social state like that of Vermont, where one rarely locks his front door. and where the great barn stands all night open with half a dozen 2:40 horses inside. Once books in libraries were chained for safety to the shelf. When a king borrowed them he left jewels in pawn, or gave bond to return the volumes. Now we lend 20,000 volumes a month, and are sure a dozen will cover all the losses. I think we can trust the people to-day as much in currency matters as we can in lending books.

When Pope's father retired from business, he put all his property (£20,000) into a box, and took out each day enough for his expenses. If, as Macaulay thinks, this was not a solitary instance, then the joint-stock banks of England, and the Scotch banks would have been impossible at that time; as Bagehot says, they are now in France, for this very reason. Different habits prevail among the British race to-day, and the best system of banking in the world has become possible wherever that blood flows.

Railways could not have been built in Elizabeth's day had any one invented them. "The capital could not have been collected," says

B ehot—the place *where,* the time *when,* decide the success of m t of man's efforts.

he Sandwich glass-stock is equal to any in New England; its su ess marvellous; its dividends most exhilarating. But the at- te pt to make glass where Edinburgh street now runs made bank- ru s of two generations. Waltham and Lowell stand on the bro- ke fortunes of men who tried, *out of season,* to make cotton cloth in Hi gham.

y idea is that the time has come when we can introduce the De aration of Independence into finance and be republican all th ugh. Surely *here,* where our only justification for meeting, is th the world *has been mistaken* and needs to grow wiser—here is no lace to object to a theory because it was once somewhere ex- pl ed—that will do for matters of right and wrong which are al- wa the same whether at Rome or in Jerusalem, now and in the da ages. But it is wholly out of place for the subjects we here dis ss, viz.: *methods and expedients,* things which circumstances an times, and the state of public intelligence, make possible or im- po ble.

fact, most of the improvements in finance have not come from ph sophic investigation; but are devices struck out by necessity, at st unnoticed or decried—then continued—then found indis- pe able. To substitute paper for gold, is only a step in the direc- tio all progress has uniformly moved. First barter—then money —t en bills of exchange—then bank bills—then deposits and ch cs—then government paper-money—all expedients of which no ne perceived at first either the value or the full effects. Our wa scared us into the best currency we have ever had. The peo- pl f wise, will hold on to it.

u asked me, gentlemen, to state my finance plan for bettering the tate of affairs. I have no preference for any particular plan. An ng the half-dozen proposed, either will suit me if it secures thr things.

1 . Take from the national banks all right to issue bills.

2 Let the nation itself supply a currency ample for all our nee .

3 Reduce the rate of interest.

T ere is only one thing I object to in all plans; that is, any at- tem t to secure a specie basis—impossible, no matter how hard we

try for it; and injurious if possible. I have no fear that we shall ever seriously attempt it. Time and circumstances will make greenbacks equal to gold—yes, better than gold. But this country will never, I think, seriously set about restoring a specie basis as a distinct object of effort. Specie basis was a very good method when trade was small and interchange of produce was slack. A hundred and fifty years ago a relative of mine was able to get from Boston to Albany in his own vehicle in three weeks. It would not answer at all now to give up the Boston and Albany Railway and confine ourselves to such carriages and roads. There is not gold enough in the world, or at any rate not enough available for currency, to support the business of this generation. You might as well expect to move the wheat crop of the West in ox-carts. Our fathers banked advantageously enough with gold and silver only as a basis. The vast needs of to-day require that we should avail ourselves of every other secure and unchanging species of property.

Evidently, if any nation could hold to a specie basis, England could; since she is the treasury where all the world deposits its wealth. Yet, after deliberately arranging her whole system only thirty years ago (in 1844), she has been obliged to violate her money laws three times since,—three times in thirty years,—otherwise, as Bagehot allows, the banking (that is, the discount) department of the Bank of England "would have failed." If the latest and best writer on Lombard street can be trusted, the Bank of England itself could not keep to a specie basis and live, if the commercial world did not believe the British government would always save it from any and all dangers, at all costs. It is hardly sarcasm to say that in this country a merchant could always get specie of the banks when he did not want it, and seldom, if ever, when he did. This vaunted theory of specie basis may be described as a thing which continues to exist, only because men desert it whenever it is tried, and go back to it when there is no trouble. I mean no disrespect certainly to the worthy gentlemen who advocate this specie basis. I will not call it as an able New Jersey man does, "bankruptcy organized," or as western indignation stamps it, a "fraud." I will not style it as John Earl Williams, one of the ablest of New York bank presidents, does, "sewing new cloth into old garments." I will not say, as he does, that the attempts of banks of issue and deposit to keep to specie paying "always have been, and in the na-

t e of things always must be, a failure." But you will let me say
t t, in view of its constant and habitual failure, at all times and
u ler all circumstances, I should think the friends of this theory
v uld, like Cicero's soothsayers, laugh when they look each other
i the face. We may at least be pardoned for doubting until its
a ocates can show us some nation which has tried it and not been
o iged to suspend specie payment, or to save specie payment by
b aking its own laws at least three times in every fifty years.

After we have established gold as money, it still continues of
c irse, to fluctuate as a commodity, and further, it fluctuates, be-
s es and especially, as money. As Bagehot reminds us (Lombard
S 120) "the fluctuations in the value of money are greater than
t ose in the value of most other commodities. At times there is
a excessive pressure to borrow it and at times an excessive
I essure to lend it and so the price is forced up and down."
I uring our late rebellion, gold fluctuated more than any
c ier commodity except cotton, and yet we insist on making
g ld our *standard*, and tying ourselves to this floating mass as our
s eet anchor, like Sinbad, who anchored on a whale. Our govern-
I nt committed a great folly, one that deranged the prices of all
c r products, when it compelled the payment of all debts due to it
i gold. That act raised the price of gold—gave it an artificial
s mulus, and of course raised the real price of every article in the
c untry. If government should order twenty millions worth of
i n, that demand would stimulate every trade in the country and
I se prices in all of them. Coal, corn, boots, hats, meat, would all go
I , and even newspapers would make money advertising for the
c owds of new laborers needed. But that would be a healthy and
I eful stimulus. At the end of the year government would have
I enty million dollars' worth of iron, for rails or ironclads. So if
g vernment should order every man to put a pound of butter on
e top of his house, and when it grew rancid, or melted, replace it
th a fresh one, that order would stimulate and raise prices in ev-
c y branch of business, but it would be a useless and wasteful
I imulus. The nation at the end of the year would have, in return
r this great expense, only a lot of comparatively worthless grease.
t making the useless arrangement of demanding its debts in gold,
vernment gave a useless and harmful stimulus to gold, and con-
quently to all other products. Only evil and waste have resulted.

Government has to-day nothing to show for it, while the people have been unnecessarily burdened.

The greatest folly of our government was issuing gold bonds while our currency was paper. Gold attracted the trade of Europe and so developed her industry and supported her laborers. If our bonds had been payable in paper only, their issue would have developed our industry, supported our working-men and helped us bear the expenses of our war.

Unless it can be proved that gold *is absolutely necessary as a basis for the currency,* every attempt to maks it so, to attract it and keep it in the country, unnessarily raises its price and that of all other goods in consequence; and is a useless burden on the world's labor. If it be *possible* to arrange a safe currency without gold, it is the first and highest duty of political economy to find out the way. Even Ricardo, the high priest of the bullionists, the father of the present British system, allows this. He says:

"A regulated paper currency is so great an improvement in commerce that I should greatly regret if prejudice should induce us to return to a system of less utility. The introduction of the precious metals, for the purposes of money, may with truth be considered as one of the most important steps toward the improvement of commerce and the arts of civilized life. But it is no less true that, with the advancement of knowledge and science, we discover that it would be *another improvement to banish them again from the employment to which, during the less enlightened period, they had been so advantageously applied.*"

The plan I have to offer has no claim to originality. Increasing thousands have already urged almost every item of it. No man studies this subject without feeling his obligations to Mr. Kellogg. So much, gentlemen who doubted some of his propositions must allow me to say.

Let me take my first item from the bullionists, [Bowen, Bowlby, Wilson, John Earl Williams, and many others.]

1st. Take from national banks all right to issue bills and oblige them to return what bills they have within a reasonable time.

To this I add, receive the present greenbacks at first for one-half of all debts due the government, and, in time, for all debts so due.

This course would put greenbacks on a par with gold very soon. It would secure the government enough gold to meet its obliga-

t ns until that happened. If, in the interval, there should be any
s ght deficiency, we could afford to buy gold. The gain from
c ıer parts of the plan would abundantly cover such expense.

[know the nation's pledge to its creditors touching this revenue,
t be claimed in gold. We must arrange with them to have this
c ıtract altered. The gain to us is worth the effort and cost.

2d. Allow any person to do what banks are now allowed to do—
t ıt is, deposit national bonds and receive from the nation greenbacks
i exchange; with this difference, however, that such depositor shall
r eive the full amount of the bond, and pay for the use of such
g enbacks three or four (3 or 4) per cent. per annum, whichever
r e is thought best. Why should not an individual be allowed to
b row greenbacks on a bond as well as banks be allowed to do so?
Y ıy should either of them be allowed this privilege without pay-
ir for it? Even Mr. Secretary Chase, in his report of 1861, doubt-
e(the rightfulness of this enormous "loan to banks without inter-
e: " By it the people lose more than fifteen millions annually.

n my opinion, our present system is a one-sided device—not to
s , trick— by which capital gets uniform advantage over business
a labor. Capitalist journals clamor about "inflation," and im-
p(iously demand contraction. They frighten men to death with
p: ıures of ruin if the present currency, (i. e., 800 million green-
b: ks) is allowed to exist. At the same time, capital adds to or
ta es from this bank-bill currency 1000 millions of dollars at its
o ı mere will and pleasure. The New York clearing house uses
cl cks to the amount of 100 millions a day—*a currency they create*
w hout asking any one's leave. Further, by a system of balances,
th y make less than four dollars do the work of 100 dollars; that
is s isolated men need to use dollars. Mr. Baird's argument on this
p(ıt has never been answered. Our present system is only a tool
of apitalists, and acts in their hands on the familiar principle of
" ads I win, tails you lose." They can inflate, they can contract,
as uits their interest. Business waits until they allow Congress to
le slate some scanty morsel of relief.

make no complaint, therefore, that we have not currency enough,
su *as it is.* My complaint is, that a money clique, interested in
hi ı rates of interest, makes and unmakes, lessens or enlarges our
cu ency as it pleases. I want the business men of the nation to
hc [this helm.

3d. Perhaps not at first, but as soon as it seems best, allow landholders the same privileges as bond-holders. Let them borrow one-half of the value of their improved land in greenbacks at the same rate of interest; the value set on the land to be the average of what it has been appraised for taxes during the last ten years; the interest to be discounted at the time of the loan.

Of course I know all the cheap and easy sarcasm of the press. But paper pellets never killed anything. I know, too, the words you are ready to fling at me,—"John Law's bank," and French assignats.

But the world can now actually do many things sanguine John Law never even dreamed of proposing. And that this stable, law-abiding and settled nation must not attempt a certain thing one way because revolutionary France—a maniac standing on a volcano—failed when she tried it in another way, seems to me anything but logic. Even Bowen allows, quoting Laing, "that every country has a political economy of its own, suited to its physical circumstances and to the character, habits, and institutions of its people."

4th. Allow these borrowers to return such greenbacks at any time and have their land or bonds released to them. Any other holder of greenbacks to be allowed to surrender them and have in their stead a national bond bearing the same interest before mentioned. The principal of such bonds to be paid in gold, say thirty, fifty, or a hundred years hence.

This interchangeability of notes and bonds was a method originally suggested by Edward Kellogg, of New York. It has been since approved by Spinner, Carey, Williams, Greeley, a score of bank presidents, and many Bullionists. The method closely resembles the British Ex-chequer Bills, which the trial of a century has approved.

This convertibility has been well called by Mr. Williams "a machine acting automatically, taking up or letting out currency, according to supply and demand." It has been correctly styled by Groom "a subtle principle that will regulate the movements of finance and commerce as accurately as the motion of the steam engine is regulated by its governor."

5th. These new greenbacks should read simply, "The United States of America. One dollar. Or, "The United States of America promise to pay—dollars in bonds," etc., etc.

The result of such a system would be:—

First—to redeem and destroy the present greenbacks, and thus lence the complaint that government does not keep faith in the natter of their redemption; and also to reduce the interest on our ational debt to about 3 per cent. Suppose the nation thus issues ends) $1,200,000,000 of currency, then it will receive over $40,-00,000 interest. The annual interest on our debt is now, in round umbers, $100,000,000. Subtract $40,000,000 from this and it aves us to pay $60,000,000 annually, which is less than 4 per cent. n the whole debt. Twelve hundred millions of currency would be o extravagant estimate. We have more than this amount of what s really currency now, since bills of exchange and checks are real-y currency in their nature and effects as much as greenbacks are.

The bank loans are, in round numbers, $1,000,000,000. Green-acks and national bank currency are about $800,000,000—$1,800,-00,000 in all.

Under my plan we should have fewer checks and bills of exchange nd more greenbacks. But if we had these $1,200,000,000 of green-acks, and besides the same amount of bills and checks as now, it vould be no ill and no wonder. France, an old rich nation, thor-ughly developed, has now twice the amount of national currency er head that we have. A new and undeveloped nation like our-elves ought to have twice the amount per head that France has. Hence if our greenbacks were trebled it would be well.

For every dollar of them issued there would be a dollar's value leposited with or pledged to the nation.

Do you say, we should be flooded with paper? I ask who would eep it unless it was worth to him more than 4 per cent.? The noment it ceased to do him that good he would exchange for bonds. Do you say this power to increase the currency is too dangerous to e trusted to the business men of the country? I ask, in reply, is t any safer to trust it, as it is trusted now, to bank directors? A undred men in New York can contract or inflate at pleasure. The New York city banks alone increased the currency about 3,000,000 $2,957,200) in one month, September, 1874! I object to trusting his great power to capitalists and money dealers exclusively. I prefer to associate the traders and manufacturers of the nation in hat partnership. They surely know how much money they need etter than any guardians can tell them. That is democratic loctrine.

Bonamy Price says:—

"How many hats are wanted in the nation? Count the heads. Hatters do not make hats on the principle of ten apiece. How many ships are wanted between England and America? Count the passengers. How many pairs of shoes? Count the pairs of feet. It is just so with bank-notes; more will not circulate than are wanted."

Are banks any more competent to count the heads, the passengers or the feet, than the men who own the heads and the feet and are the passengers?

Over the well-known and deservedly trusted initials of J. S. R., we read in J. M. Forbes' Financial Record for June, 1874: "If money is to be the real medium of exchange and measure of value, you can no more determine by legislation how much money a community needs, or can have, than how many horses, or coaches, or cars, or railroads, or yard-sticks. Whoever wants it will, of course, have it, if he can afford to pay for it,—otherwise he must do without it."

Good sound democratic doctrine that—from a bullionist, too. Who can settle about horses, coaches, cars and yard-sticks better than the makers and users of them ?

There is a curious oversight in this cry of inflation. We forget that the nation doubles its population in thirty years; that it adds, therefore, something like a million to its population annually. Of course the sufficient currency of 1870 must be too small for 1876; yet because we have more currency now than in 1860, men hold up hands of horror and cry "Inflation." What mother ever tries to force on a boy of twelve years the jacket made for him when he was six? If he should resist the cramping and demand ampler measures, would there be any reason for his brothers and sisters, and aunts, to clamor him down with the cry of "Inflation?"

Do you say prices would rise? Agreed. Not in proportion, however, to the loans; that is a fallacy which Tooke's History of Prices and Gibbons' Table of Prices disprove. Wages would rise; so would raw products. All manufactured articles would finally fall.

As to this matter of prices and currency, every one knows that the price of an article here is fixed by its price in the central markets of the world,—in Liverpool and London. If flour is cheaper in

verpool than in New York, we import it till prices become equal. flour is dearer in Liverpool than in New York, we export it until ices grow equal. The same rule applies to iron, coal, wool, gold. ' course we put tariffs out of the question. I am speaking of the ndamental laws of trade. Tariffs are artificial arrangements. t it be remembered, then, that the price in Liverpool fixes our ice, and that the price in Liverpool is fixed by the state of the rld. Now look at the effect of currency. Did all the assignats ance issued affect the price of a hat in London? Did all the per the confederacy wasted in printing money affect the price of at in New York? Of course not. Does our currency now affect e price of flour in Liverpool? Only in a very remote degree. id as Liverpool prices fix ours, our currency can have but lit- permanent effect on real prices.

To show how little our note currency has to do with prices (the ice of gold primarily and other prices in consequence), look at rey's "Letters to Secretary Bristow," pp. 5, 6, 7, 8.

The currency, however, was then (during the war), as we are now nstantly assured, greatly depreciated, gold having commanded avy premiums, as certainly had been the case. How little, nev- heless, had been the connection between the supply of circula- ng notes and those premiums it is proposed now to show, as lows:

At the close of 1862 the Government circulation amounted to tle less than $300,000,000. As yet the state bank circulation re- ined undisturbed; and to obtain the actual quantity of circu- ing notes, it is needed now to add to the above the sum of 80,000,000, giving a total of $480,000,000. We have here a pro- gious and most rapid increase, and yet the gold premium had rcely passed beyond 33.

Two months later, in February, 1863, it stood at 71, with scarcely y perceptible increase in the circulating modium. In July the enbacks had largely increased, their amount having reached 00,000,000, the premium meanwhile falling to 24. At the close that year the legal-tenders in circulation had reached $500,000,000, hibiting an increase of $200,000,000, attended with a decline of mium to the extent of 20 per cent.; the February premium of having been replaced by the December one of 51.

The following year, 1864, exhibits in June an emission of com-

pound interest legal-tender notes attended with a rise in the price of gold from 190 in May to 257 in August, and a decline to 218 in December.

Five months later, in May, the premium had fallen to 28, and this without even the slightest reduction in the quantity of circulating notes in use. In the following October, although the quantity of notes on hand, and therefore out of circulation, had become, as then stated by the comptroller of the currency, very large, the premium had risen to 46. In view of all these facts, there is, as I conceive, no possibility of exhibiting any necessary connection between the price of gold and the circulating note.

As difficult would it be to exhibit any such connection with the prices of commodities of home production, all changes in these latter having resulted from circumstances wholly apart from the supply of notes. Cotton and woolen goods were high, for the reason that a cotton and wool famine had been brought about. Labor was high because of the rapid extension of manufactures consequent upon the adoption of a protective policy, and upon the demands of the government for service in the field. Meat of every kind was higher because of the vast demand caused by millions of men in arms. Horses were higher because of army demands, and so was it with hundreds of other commodities that could be named. Real estate, however, remained unaffected; land in Pennsylvania, and houses in Philadelphia, having been purchased as cheaply as could have been the case before the greenback idea had first been started.

From that day (1865) to the present, there has been an incessant war upon the money of the many, the circulating note, leaving wholly out of view the action of money known by the name of "deposits," by means of which the few are enabled to profit at the expense of the many who need to live by exercise of their physical and mental powers. Fierce as has been the war, so slight has been its effect, that at the date of the crisis in September of last year, the circulating notes in use, with gold at 15, were greater in amount than they had been in 1864 with gold at 250, the total having been $759,000,000. Making from this, deductions similar to those made by the comptroller in 1865, the net amount may be taken at $600,000,000, or about $13 dollars per head, being but $1.51 in excess of that of 1862.

Second—The second result of this system would be, that neither

t e Bank of England nor any ring there or here could disturb our
(rrency by a corner in gold or greenbacks. We should be beyond
s ch interference.

Third—In time, capitalists will invest in such bonds, since, in
(nformity to their present theories, these bonds will at last be paid
j gold.

Fourth—We develop our new country by having money abund-
a t at 4 per cent. interest, and can thus compete with any nation
thout a protective tariff.

Why cannot we now compete with Scotland in ship-building, or
th the Welch in making rails? Not because of our rate of
ıges or our high tariff. These are not the only causes. Thomas
:assey, the largest employer of labor, perhaps, in this century,
oves (see his life) that it is cheaper to build railways in Asia and
ungary, by carrying there English workmen, at fifty cents a day,
an by employing natives on the spot at only ten cents a day. It
not the rate of wages alone that cripples our manufacturers and
ır western development. It is because our dead capital—lands,
uildings and machinery—is worth here 10 and 12 per cent.
broad it is worth on an average 4 per cent. and we work at a con-
ant disadvantage of from 6 to 7 per cent. year by year.

It is not England's cheap labor that enables her to undersell us.
is her cheap machinery begotten of cheap money.

In Holland since 1790 interest has been from 2 to 5 per cent.
our thousand million of British consols give 3 or 3½ per cent. The
ank of England divides less than 4 per cent. Four or at most five
er cent. may be fairly called the common interest in England. Bage-
says: "Interest in England is not 5 per cent. on the average."
f the nation lent money at 4 per cent. every man who owned a
ond or any improved land could get it at that rate; others would
btain it at second hand of capitalists, who, taking it of govern-
ıent, would let it out at an advance. But competition would keep
ıat advance small. Where there was no extra risk money could
e always had for less than 6 per cent. or even five probably.

Give our eastern manufacturers and our western landholders
ıoney at 4 or 5 per cent., and we can then defy the competition of
ıe world. Keep your revenue tariff to pay the debt. Abolish its
rotective element at once. I waive entirely, so far as our home
urrency is concerned, all abortive attempts to keep a gold basis.

We have never really had one. We have only pretended to have one. One dollar in gold to five or seven in paper is no real gold basis. We have pretended it was, and as a consequence it has happened inevitably that the moment confidence ceased the banks have always suspended specie payments. Just at the moment we needed specie we could not get it of the banks. It is of no use trying to keep up this sham any longer.

English economists may well clamor for gold and silver as the sole basis for banking. With them two-thirds of their national wealth is floating—only one-third fixed. They can afford to deal, in arranging currency, with only floating wealth. They have more than enough of it. Here two-thirds of our national wealth is fixed, and only one-third floating. That England was not undone by the Suez canal, she owes to the amount of her floating capital and her prompt way of using it. This is an important distinction in settling the financial policy of a nation. Evidently if we would avail ourselves to the full of all our strength we must use fixed property —land, &c.—to aid our currency and banking methods. Otherwise we enter the field of competition with our right hands chained.

Even Bullionist Bowen allows that without irredeemable paper-money, England could not have conquered Napoleon; that paper-notes fought the battle of Waterloo, kept her working-men employed, gave them ease under almost incredible taxes, and secured to trade unexampled prosperity. Our late war tells the same story. Yet there are those who seem never able to learn the lesson.

As for our international currency we must remember that a debtor nation is always the slave of his creditor. Our slavery to England is seen in the fear that the Bank of England would swamp Mr. Boutwell's syndicate if he did not conform to the wishes of the bank. In consequence of this dependence a debtor nation should separate entirely its national currency from its international currency, in order to save its home-system from foreign interference. I propose, therefore, one system of currency for home use, and another, entirely distinct, for use between ourselves and foreign nations.

We must remember that our coin is worth nothing abroad as coin. "Bullion is the 'cash' of international trade; paper currencies are of no use there, and coins pass only as they contain more or less bullion." Bagehot, p. 44. Our coin is received abroad only

as) much merchandise, according to its purity and price in the m: ket, like wheat. Still, as gold is a convenient medium of ex- ch ıge on many accounts, and at present is so received by the wc d, our government will help merchants to use it. In order to do his the government will certify by its stamp the weight and pu ty of gold bars sent to its mints, and government will keep go deposited with it by merchants, and give certificates for its an unt and value. Such certificates may be used here and abroad, th enabling the merchants to save the cost and risk of carrying go to and fro, and the expense of insurance. In this way we fur- nis the merchants with certificates which will soon be of the same us: ınd value as gold itself, whether in the form of bars or coin. If an one doubts whether the government is honest enough to be tr: ted with such power, I answer it is as honest as the national ba: ts who now wield these powers. We must trust such power sor ewhere. We can detect and punish and prevent misdoing more qu kly in the government than we can in money corporations shi ded by privacy.

ıere are doubtless some special kinds of business so profitable th: men engaged in them can afford to pay 10 and 12 per cent. Bu I am sure that business men will support me in saying that bu ıess in general—the average business of the country—cannot be arried on with profit while money is at 7 per cent. or much ab e.

ɔu must therefore lessen the rate of interest, either by attract- ing 'oreign capital here, or by inventing some new way to make fre use of *all* we have, of every kind. Only thus can the laboring an trading class prosper. Such reduction of interest would have sav l the North from present wholesale bankruptcy; by develop- ing he industry of the South it would have gone far to prevent the ɔolitical troubles there which loom so darkly over our future.

DRESS.

BY JOHN BASCOM, LL.D.

President of the University of Wisconsin.

LADIES AND GENTLEMEN: I naturally feel a certain diffidence, a fear of offence, in scattering criticisms as freely as I must among my audience in speaking on the subject of dress. My apology is, I strike an honest stroke straight before me, and can do no otherwise than mean the person I hit. But I beg leave to remind you that I am but one among a hundred; you can, at any moment, fall back on your reserved right to tear in pieces and spurn what I have written, as something set down either in ignorance or insolence or both. Let us trust, however, that the truth will suffer no damage between us; but that while, like an angel of strength it may bestow some lusty whacks on all shoulders, it will slowly drive us one and all into obedience; knight us one and all in its order of honor. That which most occupies our thoughts, we sometimes carefully keep back from our lips, suppressing in speech, as unimportant, things which the free and secret forces of the mind have pronounced of greatest moment by dwelling on them with habitual solicitude. The formal declaration is held aloof from the hidden opinions only that these may be cherished with less contradiction and disturbance, and that we need not blush at feelings which for us have no other wrong than that of publicity. We frequently deal thus with our affections, and hide them out of sight by an assumed indifference most untrue to them. So, also, we reserve from discussion the subject of dress, speaking of it as a trivial theme, scarcely to be inquired into with severity, or pursued with sober purpose; yet belie our neglect by thinking more of it, and doing more in reference to it, than in behalf of any one of all the grave, wise subjects we habitually return to in discussion. We eschew thought on this topic, not because we have practically declared it an unimportant one, but because, having wrapped about it all the petty affections and vanities of the soul, we feel instantly uncom-

fo ıble and disturbed at any prospective denunciation or modifica-
tic of our opinion. The plea of neglect involved in the triviality
of ıe subject, is one of the soul's deceits, by which it reserves to
its f without intrusion, this stalking-ground of its minor amours
an passions.

ew themes are more important than this of dress, if we are to
m(sure importance either by the labor involved, the time occupied,
th thought occasioned, or the direct or indirect effects on charac-
te In all these particulars, dress, among the concomitants of life, is
ch f; is the least simple and the most vexatious want. Food, shel-
te nd dress are the primitive necessities, and though dress comes
lat t as least urgent, it soon, in civilized communities, presents a
va ety, importunity and constancy of claims which, all the elements
of ıfluence considered, make it the most productive of the three in
pe onal characteristics and social effects.

ıe invention of christian communities—and christian commu-
nit s as opposed to barbarous and semi-civilized ones, have no more
ob ous, ostensible mark than the multiplicity, variety and odd dis-
to on of their garments—is kept at constant tension to devise
fre fabrics, modify patterns, and work changing novelties into the
we or coloring, or form of their dress. A slight success is an in-
co ; a notable success, a fortune. The terms by which these pro-
du s of our ingenious, untiring and ever-changing art are desig-
na l, constitute a dialect by themselves, and a fashionable periodi-
cal creating of materials and styles, is untelligible to the merely
Er lish scholar. Nor does the knowledge of one season answer for
the ıext. Each year takes up the problem of growing complexity as
m ı as possible in an independent way; and feels the fashion near-
est o it only as the latest and strongest repulsion.

wardrobe fairly representing the fashions of our times would
be ound to touch or gather in a vast variety of industries; to
ha drawn from all nationalities, and every grade of civilization,
an old in leash every form of extreme service; hunters in north-
ern orests and in tropical deserts, divers in the sea, Brazilian slaves,
an needle-women, in whom highest luxury and deepest poverty
tou ı each other with constant out-cry on our civilization.

I is a common plea in behalf of luxuries that they give employ-
me to the poor and so aid them. It seems strange that as a rule
the nost costly articles make the stingiest returns to labor. Wit-

ness corals, diamonds, cashmere shawls, India shawls, tapestry needle-work, lace; hold these last fabrics to the light and the skeleton hand of death will be seen to have wrought in them, tracing in their web and woof as a water-mark the curses of outraged humanity.

A ship of war, a great merchant-man making ready for a cruise around the globe, would hardly in their outfit make such claims on the market, worry so many importers, perplex so many clerks, get together such diverse, far-fetched and wonderful things as one little argosy of fashion, destined to a watering-place on a pleasure trip of a dozen days. The mammoth trunks of our stations fairly indicate what the industrial world is at, to what burdens the shoulders of porters are bending in the march of life, whose impedimenta they are that fill the baggage-wagons of the race, cutting it off from a quick, effective, victorious march in social and industrial progress. Any margin of time and labor that the world gets to itself in industry is devoted to this endless and hopeless consumption involved in the merest accidents of living, in clothing one's self, so that he can walk among his fellows and begin to look out on the world before and above him.

But the effect of dress on character is more even than that indicated by this demand on time and labor in its preparation. Some tasks, as those of the mechanic's, come as the regular allotments of the day, and have but a slight hold on the thoughts, save in their actual performunce. But the labor involved in dress, on the part of those most given to it, is not so much a stated duty, as a perpetual, personal, and teasing anxiety; something crowding into all leisure hours, pre-occupying the mind, and perpetually tasking the powers for critical observation, ingenious device, and patient execution. Hence, the plans, vexations, and victories of dress are taken into the inmost meditative life, and are liable, at any moment, and in any place, to crowd in a hope or a fear; to flush the face with a sense of success or of failure, to give rise to a new undertaking, and to call in the thoughts afresh for the petty achievements of mantua-making. Moreover, dress is the visible, habitual language of the foolish vanities, the trivial emulations and secondary distinctions of society. It must be studied by each one who enters polite circles, a competitor for position and power, as a series of signals, showing where the dangers lie, how they are to be met, and on what hinges the hopes of success are turning. Dress is a species of

di omacy, which at once betrays and conceals each new adjustment of ocial forces, and advertises us of the character and strength of th se with whom we have to deal. Dress is often far more the la guage of the tastes and passions, than language itself, and this du ıb show of colors may reveal the inner life more clearly than th chit-chat which accompanies it, and makes way for it. Indeed, th reason why speech is put to so light service in fashionable society, is because the whole substance of the heart's message has gone into he brilliant dress, has found another and more adequate utterance.

Dress, issuing thus out of the secret and hidden character of a life it most strikingly embodies and presents, offered in turn to eyes al t and sensibilities alive with sympathetic comprehension, moulds th inner nature and outward action of those who most concern th nselves with it to a degree not at once comprehended by the pl egmatic, forgetful male-mind, awakened for a moment to its effe s at remote intervals; and then only to transient observation, as of he colors of the passing landscape.

We, then, need not be debarred from the consideration of dress by ny want of importance in the subject. We have more fear of th plea that dress, though not trivial in itself, is yet made up of tr ialities, is so the product of sportive impulses, capricious feelings, an the vagaries of fashion, as to be, from the nature of the case, be ond the realm of reason, something which it is equally useless to ttack or defend with sober, serious considerations. Certainly, no ıbsurdities can plead more antiquity than those of dress, or ha e traveled through a more unending circuit. If folly can hold an kingdom by possession, surely this is that kingdom; and we fe that in bringing nothing better than reasons to the discussion of lress, we are at once ruled out of all, or almost all, the conclaves th ; now sit in deliberation on this theme. It is only to a few st ɔid male-minds, or to minds so allied to masculinity that they have ne er been touched by the electric forces that disport themselves in th brilliant, auroral fields of fashion, that we can hope to find ace . This, however, is but another phase of the common misfortu e, that we all speak and write for ourselves, and need not deter us rom uttering one honest word so long as we believe in one hones man, or one so far honest as to be like ourselves.

he first and chief utility of dress is shelter, and in reference to

this end, that dress is evidently the best which affords it in the most complete manner, with the least restraint. In the form of garments prevalent with woman, the essential features, from which fashion with all its caprice refuses to depart, disregard both of these particulars. These first utilities are set at defiance, and dress is at once excessively burdensome, and excessively inadequate. Skirts at one time kept as far as possible from the person, at another allowed to wrap themselves most inconveniently about it, and at all times with a length as great as is consistent with any motion, answer decisively the question, how can the most embarrassment and the least service be secured with the largest expense of material? From the waist downward the show of dress and the substance of dress are almost entirely distinct. Under garments sufficient to secure warmth must be worn, and to these be added a cumbersome and unwieldy weight of material devoted to the eye only, and sadly interfering with the free enjoyment of one's active powers. No wonder that the crinoline skirt, reducing this theory of garments to its smallest terms, building up the lightest and largest frame-work of appearances above the substantial garments, was universally welcomed as a great reduction of the evil. This is the fundamental fallacy in female dress, that the greater part of it furnishes but slight protection and imposes severe restrictions and unendurable burdens. How many ladies now walk our streets one hand exclusively devoted to support.

The extent of this burden, nothing but familiarity, the stupid induration of custom, hides from us. The twenty or forty pounds of a soldier, snugly packed on his shoulders, can hardly afford so serious an obstacle to a day's march as the twenty or forty yards of silks and woolens and cottons in upper and under-skirts, in the midst of which a woman habitually walks. If we consider the embarrassment of motion, and the liability of soil, we think a yard of fine fabric in the one position quite the equivalent of a pound in the other, and thus one entire sex moves amid the pleasures and duties of life as burdened and beset with difficulties as when men make a forced march for their lives, and accepts this foolish ordinance of society as if it were a decree of heaven. In the woods, in the fields, on the paved street, how much of physical buoyancy and animal spirits, and thus of healthy and highest enjoyment, are sacrificed to a fashion for which no sound reason whatever can be

gi n. That there is an incurable vein of folly in the race one is le to fear in reading medical advertisements, and in observing the se itude of dress. That woman should throw away half her birth- ri t of physical liberty and free, open-air pleasures, for reasons so ol ure and slight that no two can render them alike, is sufficient pr of that our life is yet an underground stem, rooted in the dark- ne of irrational impulses, and only here and there creeping into th light. The Chinese foot, after all, is no eccentricity; it is rath- er he typical fact of fashion.

were well if this cumbersome out-rigging of dress were noth- in more than a burden and superfluity. Some make a worse use of than this, by insisting on regarding it as serviceable, and not pr viding adequate, independent under-garments for real warmth ar shelter. Hence women, though more warmly dressed than fo nerly, are still less adequately clothed than men. The heavy so , the sturdy boot, the double-thickness of the closest woolen fa ics, find no equivalents in a woman's garments. Delicate girls, w suffer most from exposure, are habituated to it in a form that w ld be intolerable to their rugged brothers. We need not urge th constraint and burden put upon the vital organs. Those who sa ifice the outer life will hardly spare the inner life, and to crowd ar corner the one, and embarrass and perplex the other, trampling up n comfort and safety alike in the pursuit of some fanciful idea of be ity, have always been easy to those who have shared the intoxi- ca on, and felt the wild delirium of fashion. Only here and there ha been found a mind sober enough to respect its own physical lif sound enough to guard its own pleasures, sensible enough to di ne the beauty of health and strength.

fter protection and freedom, neatness, a wholesome reserve as re rds contact and soil, would seem to be a cardinal quality of dr s. Here the failure is no less conspicuous than in previous par- ti lars, and is the more painful as all tidy qualities and cleanly de- vi s take refuge from man's persecution under the sheltering hand of women. Alas for us when the Holy of Holies is less immaculate th n the court of the Gentiles. What word can we use not too foul fo language wherewith to express the condition of skirts that have sw pt up, mingled and stored away in their ample folds the filth, va ying and manifold, of the streets! Moreover, this is an unclean- ne s of long standing. Says Chaucer of our ancestors of five hun-

dred years ago: "As to the firste sinne in superfluitie of clothing whiche that maketh it so dere to the harme of the peple, not only the coste of the embrowding, the desguising, endenting, or barring, ounding, paling, winding or bending, and semblable wast of cloth in vanitee; but ther is also the costlewe furring in hir gounes, so muche pounsoning of chesel to maken holes, so moche dagging of sheres, with the superfluitee in length of the foresaide gounes, trailing in dong and in the myre, on hors and eke on foot, as well of man as of woman, that all thilke trailing is veraily (as in effect) wasted, consumed, threadbare and rotten with dong, rather than it is yeven to the poure, to gret damage of the foresayd poure folk, and that in sundry wise: this is to sayn, the more that cloth is wasted, the more must it cost to the poure peple for the scarceness; and furthermore, if so be that they wolden geve swiche pounsoned and dagged clothing to the poure peple, it is not convenient to were for hir estate, ne suffisaint to bote hir necessitee to kepe hem fro the distemperance of the firmament."

Women have been slower than men to accept the sober laws of taste falling to them as high and holy beings. It is now two hundred years since men, Englishmen, went abroad in all the colors of the rainbow. The male court butterfly was pinned up in our historic cabinet about the time of the Charleses, by the unsympathetic bayonet of the Puritan.

Not only does every European capital present more or less of this spectacle, not even the peasant may work the fields, without, as she stoops to her task, dropping her half yard of calico, or serge, or drugget into the dirt at her feet. Custom has left her none of the amenities, nothing of the gentleness, no share of the respect of her sex; it is only faithful in transmitting to her this tyranny of dress. Having lost every one of the pleasant fruits of her bondage, she yet dare not touch or alter those conventional skirts, which, with no added decency, bring only weariness and filth. Chief among the annoyances of railroad travel is dust. A bright inventor conceived the idea of dropping on either side of the car a curtain or panel that should hold the dust under the vehicle, allowing its escape only at the rear. Looking around for a name under which to christen his invention, with a happy insight into analogies, he termed it Salisbury's Petticoat Duster.

Simplicity of parts, ease of construction and adjustment, would

so seem to be secondary utilities in dress not to be overlooked. hese minor qualities of good sensible garments have shared the te of primary ones, and we have still "disguising, endenting, bar- ng, winding, and bending," as in the days of Chaucer. Burdened r this superfluity of resources, we are yet in the condition long ice announced:

> "I am an Englishman, and naked I stand here,
> Musing in my mind what raiment I shall wear;
> For now I will wear this, and now I will wear that,
> And now I will wear—I cannot tell what."

The unsympathetic poet leaves our friend at this juncture. We ow not whether he was ever able to dress himself. Notwith- anding the violence it does to our feelings, our opinion is he never as able. We look upon him, surrounded by so many and so di- rse garments, as in the position of the famous hypothetical, met- hysical donkey, placed between two bundles of hay, exactly ui-distant to the thousandth of an inch. He never could make his mind which to choose, and perished by the equilibrium of otives, a martyr to philosophy. Philosophy has its martyrs; so, ubtless, did fashion in our English kinsman.

The plea, when any is offered, under which this entire oversight the ends of dress proceeds, is that of beauty. Woman, it is said, ght to adorn herself. Through her, chiefly, the delights and high dulgences of taste find access to the race. If she were to submit r garments to the somber utilities, the work-day conveniences of e, the more brilliant light and fascination of beauty would at ce fade out of existence, and we should have made a few petty ins, gathered trifling crumbs of physical comfort, at the expense most that is enlivening, bewitching and controlling in female aracter and social intercourse. If there were any real truth in is presentation; if fashion accorded with taste, though missing ility; if it wrought with beauty in society, then we would with- aw our criticism abashed. Quite the reverse is true. Our gar- ents no more commend themselves to ingenuous, cultivated feeling an they do to plain, honest, common sense. This we shall try to ow.

In the first place, beauty, though not the same as utility, cannot secured in defiance and rejection of it. That which neglects, in nstruction, the obvious uses for which it is made, is so far mon-

strous, and can, no more than deformity or misshapen growth in the animal kingdom, commend itself to taste. The works of art and the products of nature, all recognize this dependence. The beauty of the plant and the animal, come in connection with the highest fulfillment of their own economy and functions. The cathedral and the palace owe their grandeur to their enlarged and powerful ministrations to certain wants of body and mind. Everywhere it is the useful that gives direction and restraint to art, and that utility, no matter how high or how low it is, which calls forth a production, must define its form, aptness, felicity of execution. Beauty lingers over, elaborates and brings to a delicate finish, that which utility merely would have more hastily accepted as sufficient to its purpose. Dress, then, in habitually setting aside the obvious utilities it should pursue, is as lawless under art, as untrue to the ends of beauty, as it is unfaithful to the first simple interests we commit to it. Some articles of ornament are in entire neglect of use, others are directly at war with it. Of the first class are rings, bracelets, ear-rings. These are evidently barbarous in their derivations, a remnant of that early, rude period in which no suffering was spared, nor any annoyance rejected, that lay in the line of some startling, savage effect. In the absence of garments, figures and colors were tattooed into the skin, and long welts raised upon it; the lip was distended with a ring, and ornaments hung about the person as they could find points of attachment; wristlets and anklets, ear-rings and nose-rings, alike subserved one purpose, and had one justification. The ears still furnish too facile a point of suspension to be over-looked, though the nose has lost its prerogative, and been compelled to fall back on purely physical function. The twirling of the moustache, with inward or outward, upward or downward, bend, affords however, a feeble substitute to a portion of the race.

The second class, or garments at war with all uses, we have seen to include the larger share of the female wardrobe.

Another obvious principle would seem to be that garments fulfilling a wholly secondary function, ought to be secondary in the pression they are intended to produce. Clothes, as in union with the most perfect physical form, should submit to and indicate that form. Artists have, in painting especially, met with a serious difficulty in the garments of their figures. If the fashions of the

nes are followed, a dress in itself, perhaps, extravagant and absurd, ugliness further enhanced by the divergence of later styles, pre-nts difficulties they cannot well escape; sometimes to the extent greatly reducing and marring the grand effect. An historical cture becomes a display of costumes rather than of characters, d is liable at first sight to impress the observer as an ugly col-ction of oddities, to be deciphered and translated into the language human passion, with such labor and perplexity as one might en-unter in searching for his friends in a masked ball. The difficulty s been often evaded by the substitution of classical drapery. his has the advantage that it presents in itself a form at once aceful and secondary; and the greater advantage that it gives con-ant and bold hint of the outline beneath, hanging from it, or lying e and close upon it. Thus art, placed between an anachronism d an absurdity, naturally chooses the former. Our garments, pecially those of women, are artistically objectionable in present-g a complex, independent, ungraceful and meaningless form; in en going further, and indicating distortions of form, which nature, all her slips and malfeasance, rarely knows anything of. Waists, pes of the back, attitudes, are presented, fortunately as foreign symmetrical, erect, agile life, as they are to beauty.

The camel and the dromedary have been an enigma to me. I ve been reluctant to call any living thing ugly, yet how avoid it these cases? The flabby, splay-foot; the coarse, half-bare, half-iry hide; the callous knees, the shuffling gait, and, to crown all, e unwholesome hump—yet just at this point, fashion comes in correct our crude opinion, and take to itself a model.

That fashion is utterly divorced from art, is but too plainly indi-ed in these monstrosities which it takes so much pains to con-uct, and forces into notice with such hardihood. Those savage cies reappear in them, which in some tribes establish or enhance normal developments, by way of giving distinction amid the notony of merely symmetrical, well-formed limbs. The body of n, in its pre-eminent beauty, abjures this distortion and misrep-entation, and does not easily brook the obstruction to its force, asioned by the complex forms of garments utterly alien to it, l, therefore, meaningless. The dress of men, while meeting in atisfactory manner its daily uses, is often subject in a high de-e to this objection of form. The human limbs are chalked out

and left, as it were, in the rough. The more the styles of coat and trowsers are made complex, shifting, finical, the more is this difficulty of independent and meaningless form enhanced; in this case, with the added difficulty of a measure of caricature, in the awkward approaches, at once near and far off, to the concealed limbs. A sailor's rig, of loose shirt and flowing pants, has permanent and picturesque power, simply because it does less, suggests more, and leaves itself out of the pale of observation.

The dress-coat, known to the irreverent as the swallow-tail, which the fashionable world assigns to waiters, whether as courtiers, they wait on princes, or as servants, on tables, is a surprisingly formless nondescript, that has in it no suggestion of use or honor. It may in the first instance have been stolen from his satanic majesty, and been designed in his case to keep warm the roots of his power. Yet more do the intellectual and emotional powers of manhood and womanhood scorn and resent this constant obtrusion and rivalry of dress. Society is to such a degree dependent on the tricks and artifices of dress, has so much more profound trust in silks than in the frankness of free, intelligent life, that a great entertainment is measured and chronicled by the display that is elicited, the new, various and rich goods that were exhibited; as if the occasion were an industrial fair in brilliant disguise, in which certain splendidly gotten-up lay-figures, manikins, representing the best achievements of various mercantile houses, were made to pass through the evolutions and the initial chit-chat of actual life. One is interested in the actions of such an assembly much as he would be in the coquetry, rapid motions, and proud display of an excited coterie of the birds of Paradise, with the important exception, that the one class is working at the top of its capacities, and the other has humbled its capacities to this paltry exhibition.

It is of such an assembly and of such society that Farquhar makes one of his characters say, "Pride is the life of a woman and flattery is our daily bread." The intellect and soul of man will not suffer this rivalry of dress. The higher elements are in inverse ratio to the lower. There must be and there will be subordination and if we refuse to establish it in favor of the mind and heart, it will establish itself in behalf of brilliant colors and rustling robes. Few feel the need of, or are able to secure or to use, the devices and rival effects of spiritual beauty and sensual display. Mind, when it

present, powerfully present, touches matter with a masterly hand, with one so coy and delicate as to distort nothing from its office, none of its own supremacy, turn not a single eye aside from elf, or leave one relaxed, idle thought to travel off to its garments search of interest and amusement. On the other hand, when ese are engrossing, they have a language and character quite their n, call forth peculiar emotions, and leave the mind at a long re- ove from sprightly thought and animated sentiment. There uld be a superfluity, a lack of economy in sound speech, coming m one in the wrapt presentation and handling of showy dress, ite out of keeping with nature's ordinary frugality and unity of pression, and wholly irrelevant to the wants of the parties con- ned. The moment manhood and womanhood begin to take the ns of intellectual and moral power, that love is enthroned on e regal brow of thought, there is a falling off of these irrelevant idents of life, a sinking into light and graceful government of ese passing conditions of the hour. The precept of the apostle, Whose adorning, let it not be that outward adorning of plaiting e hair, of wearing of gold, or of putting on of apparel; but let be the hidden man of the heart," is a command resting on a basis sound esthetically as ethically. There is no high human beauty which the mind and heart do not merely stand pre-eminently t, but in which they do not hold, in easy, habitual subjection, all eir physical conditions, direct and indirect. Society, as a rule, is volous, foolish, even vicious, according to the degree in which it res itself to that form of taste which finds expression in personal ornments. It therein misses the real gist of human beauty, on physical as well as spiritual side, for the beauty of the body even of that simple, high art that will not suffer itself to be over-laid th tawdry ornament. As the statue admits of no decoration, must nd by itself with its own sufficient graces, so real beauty hides t of sight the ornament that has been put upon it, and not till it s done this, do we understand how regal it is.

If it be said, most persons lack striking beauties, either of body of mind, and should be allowed, therefore, to cover the deficien- and atone for it by the attractions of dress, certainly, we answer, these are the attractions of dress thus offered. We decline so to gard costliness, things whose estimate depends on a knowledge of

their trade-mark, and which stand in no connection of fitness and wise adaptation to the persons who wear them.

There are two features in dress which are always pleasing; simplicity—a strict subordination to the uses of the wearer—and individuality, a mental flavor caught from the soul itself, a skillful adjustment to peculiarities of character or position. Any effort to secure impression by dress in neglect of these qualities is essentially vulgar, and can only be pleasing to an uncultivated taste that accepts the cheap substitute of display for the truly costly qualities of an admirable and pervasive character, touching all about it to transform and elevate it.

Garments in themselves showy and conspicious are best worn, if worn at all, by those of striking and independent personal endowments. Military dress is usually very observable, often loaded with tinsel; and nothing certain is more ridiculous than the strut and show of a military pageant when it is gotten up by peaceable, contented citizens, who, perplexed by their exercise and hampered by their arms, cannot even awe the rabble that crowd, jostle and jeer them. Something of the danger of battle, the prestige of heroic exploits, and the stern endurance and authority of real service are requisite to lift into fear, and thus respect the bearer of all this blue and crimson and gold, and prevent his becoming game even to the sharp eyes of the boys and the shallow eyes of the populace.

A woman of superior beauty, commanding carriage and sparkling endowments, may, indeed, be richly dressed, and others be scarcely aware of the fact under the much more brilliant impression of her personal qualities; but so can she be simply dressed and call that simplicity to the aid of her speech and bearing. That one should owe very much to dress, be able to command position by means of it, or in this way confer any real pleasure aside from its identification with character, is only possible in superficial society, more gratified by the senses than the taste, more occupied with the forms and conditions of life than with its intellectual insights and spiritual pleasures. We insist, then, that the love of dress in the meaning which these words now bear, springs from an essentially uncultivated, superficial, vulgar mind, and tends strongly to maintain it.

This relation of endlessly-shifting, complex, and showy garments to beauty is also indicated by what we see in nature. As we pass

om the lower to the higher, from inorganic to organic objects, d through these to more perfect animal life, we find a steady in- ease in the beauty of form, a reduction of it to a standard ever ore severe and exacting, and a corresponding falling away of gor- ous colors, changeable forms, shifting and variable effects. Thus, uds, flowers, foliage, shells, insects, are very variable in outline d yet more so in colors. They gain character by masses and mbers, give rise to a gay, sprightly, indefinite effect, and supply e under-current of our transient pleasures rather than the ob- ts which hold possession of the mind and fill it with passion. rds, higher up the scale, still retain gayety of colors, but unite it forms and motions and notes of a more definite and finished ture; while the still nobler animals owe most of the impressions ey make to pure form and distinctly expressed character. It is is which renders the features of the lion so significant that they e the occasion of some of the best effects of sculpture, as seen in e works of Thorwaldsen and Canova. In man, "the paragon of imals," the entire emphasis of construction is laid on form and tures; and the health which gives full development to the one, d the commanding endowments which fill the others with spirit- l power, and disclose them as the seat of a rational spirit, are the ying forces of this most finished product of divine art. We ow not by what principle of taste, by what canon of wise criti- m men can, in dress, fall off from these conditions of progress d disguise significant form with meaningless and even monstrous m; hide native motion and carriage, and displace character and ritual endowment with the ephemeral effects of extreme fantas- , fatuous fashion.

We have called fashion fantastic, and if the epithet be a just one, goes far to decide the question whether dress springs from a real ve of the beautiful and finds any sufficient justification in it. w losses would be greater than for us, especially in consideration the bias of American character, to sacrifice the truly beautiful en to a high degree of utility. A misfortune even greater than is would be, however, to misconceive and humble beautify itself our alleged pursuit of it.

Beauty, being an inherent quality of objects, springing out of t, constructive, and fitting relations, will, under essentially the ne conditions, remain from year to year, from century to century,

as the products of Grecian art are still enthroned in Christian art. What, therefore, can fashion, that varies under no known law, that shifts incessantly merely to escape itself, have to do with beauty, that rests on a throne as firm in its symmetry, grandeur, and enduring finish as that of virtue itself! Take any article of dress, a bonnet, for instance; let the cunning fingers of the hour shape and adorn it till all female critics exclaim upon it as "a stylish thing," "a perfect love of a thing!" Now restore it unharmed to its box, and let two years pass before it shall again see the light. What wonderful change has befallen it, that when now criticised it has become laughable and absurd, in girlish parlance, "awful;" something that cannot be given away, that would ruin the peace of mind of any votary of dress. Does beauty, then, steal away like perfume? Is it a volatile gas that escapes under the tightest corking? Ah, it never was beautiful, for it never was fitted, admirably or otherwise, to any use on earth or under the earth, save, perchance, the wretched one of tickling with vanity the modicum of brains it is able to cover. The discarded trinket has grown shabby without service and laughable without change. A remnant of yesterday's masquerade, it should have been burned when the farce was over. The taint of last year's folly is in it, as certainly and distinguishably as the smell of the debauch of the previous evening in a shut-up bar-room.

It is fortunate alone in being capable of destruction, unlike the crinoline, that dismal skeleton of fashion which tangles us in the garret, trips us behind the garden-wall, and turns up as the last thing that choked the gutter.

Fashion is a wanton, fleet of foot, casting backward on those who pursue her tantalizing, contemptuous glances; yet provoking and stimulating their futile speed by those idle badges of distinctions which she drops in the heat of the race for the foremost.

Whatever might be the gains of sober taste in the wealthier classes by an emancipation in dress, it is very sure that these would become greater, very much greater, as we pass downward in the scale of expenditure. The poor, and those of more moderate means, suffer severely from the tyrannies of fashion and gain little from its elegancies.

Whatever merit the long dress may have when it sweeps, in rich folds, a Wilton carpet, disappears when it hangs in lank, thin

its, that speak only of the scanty protection and uncompensated comforts of poverty. Nothing could look as badly, constructed principles of use, as do these shabby outlines of showy dress, depending upon those to whom they bring neither the solace of ity nor the protection of service. To these fickle, vexatious, and idapted styles of our Christian life, we oppose the sturdy sense the Turk, the Chinaman, or Malay, who, with loose pants and ring jacket, meet composedly a thousand years.

Have we not fairly made this point, much as we have improved dress, there is still room for improvement in the simplicity of its construction, the freedom it shall confer, and in its graceful aptation to the human form, to the exclusion of artificial, com-, and meaningless outline.

ociety is a system of delicate dependencies and reciprocal responlities. There are few actions, the motives and reasons of which not found in large part beyond the constitution and character hose who perform them in the character and constitution of soy. Society revolves by the meshing of many wheels into each er, and the size, form, revolution of each wheel are determined by se adjacent. The vanity of a wife and daughter is also the van- of a husband and father, and the frivolity and feebleness of one are the election of both.

would certainly seem unkind and unjust to hold the nation reisible for every folly the Grant family may perpetrate. Yet . Fred. Grant would have fewer motives to make her undercloththat astonishing thing that we are assured it is, were there papers ready to devote a column or half column to telling us bout it, what it cost, how many bones were included in her bricorset, and at what points the perfumes were stitched in. When erect a hot-house for fools we must expect to raise a few.

emale character and dress are what they are by the ordina-, the constitution of society. Their alteration will involve a revolution of ideas and cannot be accomplished directly, intly, as one puts on or off a coat. We are the more willing to cise dress, because we know that it unconsciously springs from expresses the spontaneous and wide-spread tendencies of men, indicates in its excellencies and in its defects, the emotional, rebcal, reactionary relations of the sexes. Women are extreme, istent, sensitive in dress, because they meet eyes, that with

slight intellectual discrimination, go in search of this tawdry show. If one-half of the community are to be fed through their senses, it will be laid as a duty on the remaining half to feed them; and we can only withhold the food as we arrest the appetite. We doubt whether anywhere the real relation of the sexes, the essential dependence of the one, and the courteous yet sensual tyranny of the other, find better expression than in a fashionable assembly. Many captives and rich spoils were not more necessary to the sturdy Roman general, attending him in his triumph and gracing his power, than are richly dressed women, in the wantonness of physical effect, to the libertine, or to the sober citizen who looks upon their possession as the last luxury of social life, the final symbol of wealth and position. That the real dignity, knowledge, power of woman, the free, intelligent, happy government of her life should be largely sacrificed to appearances that are in the last analysis sensual, grounded neither in utility nor in taste, finding no upward bent either in the gains of body or mind, stamp society, and that, too, in its most brilliant manifestations, among its alleged victories of elegant refinement, as essentially gross, humbling its brightest and best possessions and those who should be its redeeming spirits to an intercourse running on the low grade of sensuous impressions, and this also more profoundly in the under-current of thought than in the upper-current of language and appearance.

To alter dress, therefore, to correct the tastes which now give it law, is to profoundly alter society; to give more purity, more spiritual insight to men, a disposition to a more generous partnership in their intellectual life; and to women, a more sturdy self-respect, an opportunity more deeply to develop and freely to assert their individuality, an ability to bring in an untrammeled way their own contributions to the material and spiritual wealth of the race. Many other things are influential in the regeneration of society, but few things would call for a more thorough correction of low instinctive tendencies and stolid judgments, which men and women have brought with them out of barbarism, have been busy since the flood in confirming, as a street is trampled hard by hob-nails and gaiters, than a return of dress, in both sexes, to the simple uses of life and those adornments which these ends, taken in connection with the supremacy of character, admit of. More than equal laws, more than joint education, more than free labor, more than the

b lot, would this one change avail, by which the inner and outer
li of woman, life at home and abroad, should become her own in
it time, its thoughts, its untrammeled powers; more than any of
tl se, since through them all, through that mental independence
ar renovation which they are to secure, can it alone be reached. Su-
p(icial as we deem dress, the forces which control it lie deeper,
ar reached with more difficulty than those involved in any of these
in rmediate changes.

Dress is to social influence what language is to national inter-
cc rse. It yields only to those deep-seated tendencies that control
tl feelings from which it springs. The connection of dress and
ec cation is most immediate. Education, co-education, is to give
tl ; enlarged intelligence, that increased self-respect, which are to
fu lish forth character with new power and beauty, and enable it
ea ly to bow to itself the accidents of life expressed in dress. A
si ple dress, on the other hand, is to emancipate physical forces,
nc so wastefully consumed by it, and give the needed health and
st ngth for higher pursuits.

; may well be doubted, whether a judicious college course is as
ta ng, day by day, to physical resources, as is woman's dress with
it( )ersistent restrictions and unending worry.

', then, the dominion of fashion is so firm, if it yields neither to
re on nor ridicule, scarcely cares to notice either the philosopher
or he satirist, why strike one's head against it?

hose limited coteries, in which some outre costume has found
ac ptance, have not always answered this question wisely. Cos-
tu es, though reaching in a fair degree the physical ends of dress,
ha) met with no acceptance, and have even deepened, by making
op ı and bitter, the prejudices which they encounter. The sensi-
tiv irritable mood of society on this subject has not been sufficient-
ly egarded; nothing has been done to break the transition; no
tir) has been given for a change of feelings. Nor have the new gar-
m(ts, strange and ultra to the eye, been sufficiently softened by
th secondary devices of taste, and the associations of character.
Tl :e has not been time for the formation of counter feelings, and
oc sionally the bold, harsh nature which has made these changes
po ible to the parties that have entered on them, has added to the
off se. Dress rests for justification on the feelings, and can not at
on , therefore, be altered by a syllogism. A logical victory over

logical statement, we may follow up with a triumph, but not one won by reason over the emotions. The victor here must bear himself as the vanquished, till the new truths have wrought gradually their results on the sentiments. A discreet war, therefore, may be opened on the follies of dress without adopting a garb, serviceable and defensible in itself, but so far without the pale of custom as to be intolerable to the mass of persons. We need not provoke the rabble, nor gather the mob in our enunciation of the secondary truths of life, giving them such a form that they cannot but be scorned by the short-sighted, squint-eyed proselytes of usage. It is sufficient if we hold fast and slowly enlarge all that is beautiful and serviceable in fashion.

We can now take but little pleasure in anything sensible in dress because we know it came without reason and will depart without reason; that it is but an accidental combination of fortuitous forces, and has no real significance as indicating any return to sober thought; nay, that it is a new instance in which fashion is making ready to jilt and mock us in our credulous good-will, to buffet common sense anew, and put it to open shame.

Against irrational tendencies, we shall make easiest headway, as in a crowd. Violence thrusts aside but a few, and soon arms all against us, while a slight, presistent pressure steadily carries us in any direction. With wedged shoulder, and body bent forward, let us stand ready to part, in behalf of ease, comfort and character, that social mob which now sways here and there, where their eyes carry them.

A FARMER'S ORCHARD.

BY J. C. PLUMB, MILTON.

(Prepared for the State Agricultural Convention.)

PRESENT CONDITION.

An eastern man traveling in the West remarked two things as especially noteworthy: the broad fields and the meagre orchards, the wide area of land in fine condition for the most approved labor-saving machinery, with less waste from hem, hedgerow, rock, hil-

l k, or gulch than he sees in his eastern range. But the ragged-
e ;ed corner, with its vacant, lonesome-looking trees that we call
o hards, are in strong contrast with the general thrift and fullness
a)arent in most other things that go to make the sum of good
li ng in this land of plenty.

Every lover of progress and perfection in the art of horticulture
n st be pained to witness the evidences of our very imperfect knowl-
e :e of the wants of the fruit-tree, and the apathy of the farmers
w h respect to the condition of their orchards. Thoughts like
tl se come to me always in my travels around the state, and I con-
fe to a feeling of humiliation that these things are so within the
c(nties where most of the thirty years of my toil and study in the
fi l of horticulture have been spent, and that so little of certainty
a permanency has been attained by the fruit-growing interests of
tl t region.

am aware that our first notions of fruit-culture were largely
u] n a false basis, and we have had to grow out of them by the slow
te hing of painful and costly experience. But is it not now time
tc ıwake from the lethargy and discouragements of the past, and
bı ıg up our fruit-growing interest to the status its importance in
dc ıestic economy demands?

he causes which have led to this condition of our orchards are
va ous, and not within the province of this paper to enumerate and
de ribe in detail. I will only refer to some of the more prominent
of hem. If I were to ask the farmers present for their reasons for
th condition of their orchards, they would answer about in the
fo)wing order:

CAUSES.

Some of my trees were dead when received; or their vitality
m h impaired by long exposure.

They started well, but succumbed to the mid-summer drouth.

Were winter-killed.

Were spring-killed.

Destroyed by insects or vermin.

Injured by farm-stock.

Over-fed, or starved.

there be any other cause, it may be exhaustion or old age,
wh h I think is about as rare as Methuselah's nowadays.

Any one of these causes is enough to decimate an orchard, and with all combined, no wonder the present unhealthy condition. But even this array of evils should not discourage us, for while common to all they do not, fortunately, all appear at the same time, and the means are in our hands of resisting them all successfully.

REVIEW AND REMEDIES.

I will review them briefly in the order named.

Procure your trees as near home as is consistent and of parties that you can trust in three particulars, viz.: Their honesty, their judgment, and their promptness to execute your orders; or in a word, *reliable*. There is often a culpable want of care in the handling of trees before packing, but not less to blame is the farmer who will needlessly expose his trees to the sun, wind, and frost for hours after receiving them from the nursery or tree-box. Every buyer should be prepared to thoroughly protect his trees, root and branch, from injury after he receives them, and never forget that it was the "last straw that broke the camels back."

The inevitable exposure of digging, packing, and transportation are matters of great solicitude to the nurseryman, and the farmer should do his part well, and with as much care.

I speak from long experience when I say that we exercise more care for the stock we send out than for that we retain for our own planting.

MULCH FOR DROUGHT.

A tree should never be planted out until it is in *growing condition*. If not fresh and sappy, they should be restored by burying in fresh soil, root and branch, for a week, or with root in moist soil and tops heavily shaded and ocasionally showered, they will be much more likely to grow when planted out, especially if planted during a moist spell. A heavy mulch immediately after planting will do much to restore trees, and will if retained through the summer dispose of the second-named cause, *midsummer drought*.

If applied early it will retain abundant moisture for the driest time. Thousands of trees, every other way right, are allowed to dry out after they have made a fair start, for the want of this early spring mulch. This is now so generally understood and appreciated, that no sympathy is felt for the planter who fails to comply with this simple requirement.

WINTER-KILLING.

Winter-killing is particularly a western affection—like the ague. chnically, it is a rupture of the cellular structure of the plant the expansion of its fluids from extreme and sudden cold. Prac- ally, it results from four causes, namely: Too much and prolonged owth in autumn; soil too rich in plant-food; want of constitu- nal hardiness to resist the fourth—undue freezing. The remedy plain. We must adapt the growth of the tree to its internal and ternal conditions. We must secure a growth of wood so well tured and of such constitutional make, that it will endure the ock of winter changes.

SPRING-KILLING.

Spring-killing is generally confined to the root. A severe shock frost after the sap flows in spring, may destroy the young shoots, even the whole tree, but such cases are very rare, for the tree it can endure the first shock of winter will generally go through changes of spring safely. The frosts of May and June may nip young shoots, but there are plenty of dormant buds to repro- ce the foliage destroyed, hence such frosts do not cause death, less from previous injury or loss of roots the reproducing power exhausted.

ROOT-KILLING.

Root-killing in early spring is one of the most common forms of ury to which our trees are subject. It arises from the lack of isture in the soil during the winter or at the time of the spring ws. Roots in such surroundings will not endure successive ezing and thawing as if they were in a moist soil. Hence it uld be a fixed rule, *that all trees should have an abundance of isture in their soil at the beginning of winter.*

During the months of October and November, the surface should made loose and open to all the rain-falls. No animals should be owed to compact the soil by herding or pasturing in the orchard ing these months. Here is one of the most common errors of farmer orchardist. For the few dollars worth of fodder you s secure, you pay the price of a weakened root-power or a total s of some trees, which were every other way full of promise for g usefulness.

WINTER MULCH.

If from a short rain-fall in autumn, the tree soil is not well saturated, then you surely need this natural mulch of vegetation to insure your trees against this root-killing. A heavy winter mulch is the only absolute safety in this matter. This will retain the frost until it is removed by the warm spring showers.—This is especially necessary in southern Wisconsin, as we are below the uniform snow-lines, and yet we have the extreme and prolonged cold of winter, the frost remaining a solid mass, at ten to twenty inches depth, while the surface may be dried out by the warm sun and south winds of March. This snow-line spoken of is the point where the snow falls early, and remains through the winter until the spring rains. It varies with the seasons, sometimes extending below the south line of the state, and almost uniformally to the latitude of Portage, and the lines of the Wisconsin River below that point. Hence, *root-killing* is the most prevailing effect of winter below that line, while it may be almost unknown above that line, but *top-killing* will be the more common, especially on the richer soils which produce a late growth of wood.

INSECTS AND VERMIN.

Here opens a wide and inexhaustible field of observation and research, and one well traversed by but few of the most studious and observing. It is one to which lives of toil have been given, and on which volumes have been written, and to any, whose task and time will admit, I commend these works as worthy of careful study, and the field as one rich in good to our race. But its paths are intricate, often very obscure, and no especial halo of glory lightens the plodding way of the entomologist.

But as the name Agassiz inspires enthusiasm in the student of zoology, so may the memory of a Walsh, and the labors of Fitch, Riley and Le Baron be better appreciated and similar laudable efforts be encouraged by substantial aid from the state. We need to know more of the habits of the insects that prey upon our fruits and other products of the farm. Entomology is to-day one of the substantial departments of natural history, but its study is a labor which requires the time and careful investigation of the best minds, and we trust the time is not far distant when the farmers of the West will see it for their interest to encourage such efforts by rewards in some way commensurate with the value of this labor.

Science applied to agriculture is overcoming the influences of
e cessive rain-fall and drouth. But the products of the farm are
t day, for all that science has done, as bare of remedies and as
l pless from insect foes, as were the Egyptians under their scourge
c lice. We know of the existence of natural foes of our insect
d redators, and of the use of poisonous applications for them, and
t y doubtless knew as much. But as with electricity and heat,
t y must be measured and harnessed before they can be said to
t ly be our servants.

Thirty years ago, when the announcement was first made in
I ance of the artificial propagation of fish, who would have be-
li ved that in 1875 our state would appropriate a sum of money
f this new but no longer doubtful source of increase of whole-
s ne food.

ENCOURAGE THE ENTOMOLOGIST.

Then why not expect that within a less period we may see libe-
r appropriations from public and private resources to encourage
e eriments in this most hopeful field of good to the producers of
t s country? The importance of this subject will be apparent
w en we consider that all other influences combined do not work
a inst the success of agriculture so much as the destruction by
ir ect life.

t is now well established that the most hopeful means of com-
b ing our insect foes is through their natural enemies. This is
e: mplified by the position which the domestic cat holds in our
e nomy of the farm. The same principle of action runs down
tl ough all the race of insect life. The glory of man as a physical
b ng, is to direct the forces of nature for his good. When we
c sider what has been accomplished in reducing agriculture to a
sc nce, governed by rules founded upon a knowledge of the func-
ti s and habits of the honey-bee, why may we not expect in due
ti e to fathom other and more obscure insect life so as to recog-
ni our friends from our enemies among them, and promote the
ex nsion of the former for our good. It is well, at least, for us
n to look diligently for the advent of some natural foe of every
sp ies of insects that devour our substance.

few years since the oyster shell bark louse was thought the
w st foe of the orchard, and the world of specifics was ransacked

for a remedy, and just as we felt triumphant in our alkaline wash, a little chalcis fly made its appearance, the larva of which has taken the work out of our hands by effectually destroying almost the entire race of bark lice. This insect has been designated by Dr. Wm. LeBarron, state entomologist of Illinois, as the "*Chalcideous parasite of the oyster shell-bark-louse.*"

These parasitic insects are most of them very small, many so small as to require the microscope to detect their presence. The late Dr. Walsh, says they form about one-fourth of the species of insect life, but the number of individuals of the species are comparatively few.

I have in a measure digressed from my special topic to show the unity of all natural science, and that the wider our range of investigation the more will we comprehend and avail ourselves of the abundant helps nature has in reserve for our day of greatest need. I may also say that the same general principles of destruction apply to all the insect foes of our farms and orchards.

NATURES HELPS.

The bare mention of these parasitic insects that are known to be the farmer's friends would require more volume than the limits of this paper; but I trust our self interest will induce more study of them. Great practical good to the agriculturists is to come from a more intimate knowledge of this phase of entomology. I will only add, that insect life is largely dependent upon the weather; thus a summer drouth favors the chich-bug and the aphis or plant-louse, while violent and long rains will almost entirely destroy the year's crop.

POISONS—CANKER-WORM.

Next to these, their natural enemies, we have applications of various kinds of poisonous washes.

The insiduous and slow but sure canker-worm, is as easily destroyed by a wash of paris-green, as is the Colorado beetle, or potato-bug. A strong decoction of tobacco-stems used as a wash in winter, will prevent mice and rabbits from gnawing a tree. These are also easily destroyed by distributing small bits of apple, carrot, and turnip, for the latter, and drops of tallow for the former, in which small particles of strychnine have been inserted.

CODLING MOTH.

When we have a specific for the codling moth, it will be a happy time for the apple-grower. For this little insect, the queen of our

uit-destroyers, now almost baffles all our art. It is thought by me, that the "green-wash," as recommended for the canker-worm, ll greatly help dispose of this pest by poisoning the moth. Oths recommend the use of various clap-traps, in which to catch the rva as it issues from the fruit. Careful experiments made by Dr Baron, show that six-inch-wide strips of old carpet, or other old oth of considerable thickness and pliability, long enough to go ice around the body of the tree, immediately below the branches, d tied or tacked loosely, so that the worm may find a lodging, are ry efficient traps for the codling. These bands must be apied within a month of the first setting of the young fruit, and exnined as often as every two weeks from their application, until the st brood of larva have left the fruit, or say about the middle of ugust. They can then remain on the trees until the fruit is thered in the fall. The worm seeks out such a retreat in which pass through the transformation process. The second brood of orms do not complete their transformation until spring, and therere need be destroyed only at the end of the season.

These bands are to be dipped in hot water, or run through a ringer to destroy the worms in their different stages. These nds may be made of thick, cheap, brown paper, which would go rough one season if carefully handled. It is found that a second nd nearer the ground is a gain, as nearly as many worms pass up om below as come down from above. It is also found that very w "windfalls" have the worm in them soon after they have fallen, that the old way of picking and destroying the windfalls, is of ttle avail.

These seemingly slow and laborious processes will well repay the chardist, by the enhanced value of the crop in quantity and qualy. If our state alone could be exempt from the codling moth for is year 1875, it would be worth, say one million of dollars to the roducers. Severe and extensive drouths produce famine, but while egetation waits, the soil rests and recuperates.

But while the moth does some good by thinning out an over crop f apples in early summer, the outlay of bloom, and the prematurity of uit, are a heavy drain on the vital powers of the tree, with no reirn to the producer.

INJURY FROM FARM STOCK.

The sixth named cause is one that never should find a place on any fruit growers list. But alas it is one of the most fruitful sources of the destruction of our orchards.

I will not count the accidental injuries from an occasional unruly animal, but the results of deliberate commonizing of the orchard to the hog or cattle pasture. "It is so handy." "Can't let so nice a bit of feed go to waste." "I guess they will stand it," &c. Such replies I often get when remonstrating with a farmer for pasturing his orchard. In October last I visited an old orchard that had been famous for its fine fruit, and in visiting which I anticipated much pleasure. Driving into the yard, I said as usual, "good day, sir; how's your orchard?"

My greeting was kindly returned, but the answer to my query, "our orchard ain't much good any more," was itself a confession of its treatment. I found the orchard had been a hog-pasture for three years past. It originally contained fifty trees; had been refilled twice and increased to nearly one hundred. Of the original first planting there remained seven; one St. Lawrence, two Rambo, two Tallman Sweet, one Spitzenburg, and one Greening, only two of the seven will probably survive another summer. Of these, three were girdled and peeled by the swine enough to kill them last fall, and yet these seven with several more leafless stubs and trunks were four years ago worth fifty dollars each by any fair estimate of values. When I rebuked the owner for this waste, he did not seem to think himself at fault. I soon convinced him that his hog-crop was made at tenfold market rates.

EFFECT OF PASTURING.

The effect of herding swine in this orchard and many others I have seen, is more than the peeling and barking of the trees. I have already pointed to the injury done to orchards by compacting the soil to the exclusion of the rain-falls of autumn, and I have come to believe that most of the orchard trees we call *winter-killed*, are so from this cause, primarily; especially now after this thorough sifting of our lists and purging out all tender varieties.

When we count this direct injury from gnawing, rubbing, starving and transferring of farm-stock, we conclude it will not pay to pasture the orchard.

TOO RICH SOILS.

The time was when we thought no soil too good for an apple
t e, and that a little manure did help the wilderness of the new
l id. But we learned by dear experience that a tree could be
c er-fed, and that the effect was to induce a late autumn growth;
v od unripened and unfit for the winter. We are also well satis-
f l that the much dreaded "*fire-blight*" is the result of an excessive
f w of sap beyond the capacity of elaborations. The tissues are
r ptured, stagnation and death ensue. The farmer should exercise
a good judgment in feeding his trees as his horse.

ORCHARD SITE AND CULTURE.

Choose for an orchard site, a soil of medium native richness, or
v at would be considered rather lean soil, if it be a firm clay, or
c careous clay, all the better. The western soil is all rich in ele-
r nts of tree growth, except it be the clean sand and gravel drift.
T e yellow or red clay, or the oak soils are best suited, and of them
t e rolling lands are best. These medium soils are generally of
r tural drainage, with porous subsoil and under good culture will
g ow the apple to perfection. If there is no choice but a very rich
s l, then set on dry ridges, either natural or artificial drainage and
v h clover and timothy sod hold the trees to a moderate growth.

In the brief review I have only referred to the subject of varieties
i their adaptation to the soil and climate. Have given the best and
c ly choice of these natural conditions, and we must know what
v rieties are adapted to them. This is learned only by long experi-
e e and careful observation. The planting of varieties not adapt-
e not hardy, has been one of the most apparent and fruitful
s rces of loss to the orchard in the fertile soils of the west. Since
t winter of 1855–'56 I have carefully examined thousands of or-
c rds with reference to this matter, and have found a remarkable
u iformity in the list of those found successful. The observations
o many of our practical fruit growers confirm this, and result in
t list which our state society recommend. Any planter that
i ores this list and these united recommendations, practically starts
o twenty years behind the times. Yet they who purchase of irre-
s nsible dealers, especially from eastern or southern nurseries, are
l ble to start right here. I do not say this to the discredit of the
f eastern nurserymen who are growing stock for the western

trade, and who put all energy and skill to meet the peculiar wants of the West into their business that its importance demands, but alas for the irresponsible go-betweens, for curses follow their advent in any community. Any careful estimate will show that four-fifths to nine-tenths of the successful trees of our orchards of southern Wisconsin, or up to the fifth tier of counties, are of less than twenty varieties, and of these about one-half are not known or not generally grown in eastern and southern nurseries, which must of necessity follow the main demand of eastern and southern planters for their old favorites, in their propagation.

Up to the last twenty years, we followed implicitly the eastern recommendations. Ten years of doubting and further trial followed, and during the last ten years we have settled upon a reliable list of apples, that we can grow up to the latitude of Green Bay with entire success. This list varies somewhat of course in different localities, but the adaptation of varieties to these differences is so well established that we have every reason to expect an entire change in the aspect of the average orchard of the future planting. In this view of the case, one of the most hopeful indications of future success, is the general demand for the "hardy list" for all present planting.

The agreement of Wisconsin fruit-growers in this matter is so uniform, that every nurserymens' catalogue of hardy varieties begins with Astrachan and Tetofski, and ends with Ben Davis or Walbridge, with its filling in of seasonable varieties for every taste and season, for home use and market.

The demand for hardy varieties, has induced a careful search among the millions of new seedlings of the West, for additional worthy sorts, which have especial merit. The result will be an increase of varieties, having especial adapations to our needs. But this increase will not be as rapid as some suppose, for our present list is the result of sifting of the choicest gems of the last three hundred years of European experiment, and two hundred years of American test, resifted in over thirty years trial in Wisconsin; and the sifting goes on still, but "slow and sure" applies here, and many a fond hope must be blasted in the rejection of personal favorities from want of general adaptation.

If any locations are naturally so unfavorable as to render any of these "iron-clads" uncertain, then we have the new Siberian hy-

ds, the "steel-clads" which have enough of the crab blood in
m to give endurance and vigor. With early growth and ma-
ity to adapt them to the most adverse locations necessary to
nt, and yet with fair size and good eating qualities, from brisk
t to the condensed sweet of the Tallman, and from the earliest
the all-winter in season.

With this presentation and review I would ask every farmer,
hy not have a *complete* orchard? Why not give the orchard as
essary and reasonable attention as you do your farm-stock?
hy not study the nature of the tree and of its enemies, so that
a can "know good from evil" in all that appertains to its welfare?
hy not every fruit-grower learn the simple art of out-door graft-
g and trimming, so as to transform many a worthless crab or
dling to choice fruit? Why not every farm have an abundance
choice fruit and flowers, beautiful shade-trees, evergreens and
nd-breaks around the dwelling and farm-buildings, and so help
make the home a paradise to the children, a place of repose and
nfort to the domestic animals, and the orchard a source of health
d wealth to the family, for all these are within the reach and
ovince of every farm homestead in our state.

THE PROPER ADVANCEMENT OF WOMAN.

BY MRS. FANNIE B. DENNETT, MILTON.

[paper read before the Du Lac Grange, at Milton Junction, Rock County, Wis., October 10, 1874.]

We hear much lately of woman's rights and woman's wrongs.
r journals teem with articles advocating this one and strongly de-
uncing the other. Her friends are bravely defending her right to
e ballot-box, prophesying a millenium of peace and harmony
ien that right shall have been granted her; and many a woman
s with folded hands in happy anticipation of the glorious work
at awaits her in the future, all unheeding the good that her idle
nds might now be doing.

The ballot may or may not be a help to woman, or the world in
neral, were it granted to her. We know not; but we do know

that long before that is attained there is much for woman to do, much that will elevate and ennoble if properly sought after. Woman has a great work to do, and it seems to me her hands are too full already to ask for more duties; and the cry had better be for more time, time to improve and fit herself for the duties that are now devolving upon her; time to read, to study and think, to keep equal with man in intelligence, to be his helper and adviser as well as his housekeeper.

That woman has a great and sacred duty to perform at home is not to be disputed. That is her realm, and her chief delight should be to make home all that is bright and lovely. As wife and mother there are many duties which may not be delegated to another, and her family should not be neglected for any outside enterprises. But, are her duties all of the hand? Is it the chief end of woman's existence to feed and clothe her family? Should she have no ambition above her daily round of toil? While the labor necessary to be done should not be ignored, or looked upon as dishonorable, I claim, that aside from this there is a work of the head and heart that is just as necessary for the well-being of the family, as that the board should be daily spread, or the house kept in order. While she ministers to the physical wants of her children, should she not also be competent to advise, direct, and educate their minds? In order to do this, she must, herself, be intelligent, and spend some time in the daily improvement of her own mind.

Women, generally, and farmers' wives more particularly, have not time, or at least do not take time, to cultivate their minds as much as they should. If there is one right the working-woman should ask for, it is the right to more leisure, more time to read and rest—time to think, time to converse with her children.

The ceaseless round of work which many a farmer's wife is obliged to do, deprives her of one hour of leisure time. Even the Sabbath brings with it many duties which may not be neglected; and weariness of body and mind often keeps her from church or unfits her for useful reading at home.

Constant, arduous toil, year after year, will soon cramp the mind and dull the intellect, even if it be in a good cause.

We need intelligent housekeepers as well as industrious ones. There is not much danger that our families will go unfed or unclothed; but there is danger of our children being uncultivated and

r le unless the mother strives to be something more than a house-
h d drudge. There *is* danger that our husbands may blush for our
i: orance—even though our homes may be models of neatness and
e nomy.

Does the farmer work harder in the field than his wife in the
h ise? If he needs the evening hour to read the papers, books, or
t t he may improve his mind, does not the wife need the same
t ie to rest and read, and cultivate her mind? If he can drive to
t concert, lecture room or Grange hall, why may not she accom-
p ıy him, if she leave her children in proper care? Rest and
a usement is just as necessary in one case as in the other; and if
ir truction is to be derived from such sources, both equally need
it and should receive it together.

Woman needs relaxation from the continual sameness of her
w rk, and her mind will be stronger and her body healthier if a few
h urs are occasionally taken for rest, to say nothing of the improve-
n nt it might produce upon her temper, a consideration of which
a husbands will readily see the propriety.

Some housekeepers might have more time for rest, did they not
c sume so much in useless fancy work—in needless piecing and
p ching, in intricate work, which if beautiful when done, is neither
u ful nor commendable, and only weakens the eyesight and irri-
ta es the nerves, without adding an idea to a mind already too
v ant. Again there are some who spend much valuable time in
fa ionable follies and frivolous pursuits to the neglect of all men-
ta improvements. But among farmers' wives they are few, and we
tr st their number may speedily grow less, for such occupations are
al unworthy to be ranked with culture of the mind.

While we should delight to ornament our homes with beautiful
th ıgs in handiwork and art, it were better still to adorn the minds
of ur children with bountiful thoughts and holy aims, and spend
m e time in moulding their lives after the model of the great
M ster. If but little leisure is allowed us, let us spend it in improv-
in our own or our children's minds. Instead of confining our little
or s to the house to learn to knit and sew while they are yet mere
ba ies, let us read or talk to them, tell them stories or take them
w ı us to the beautiful fields, and while we may teach them lessons
fr ı nature, we shall also give them the air and the sunshine, and
st ngthen and cheer ourselves for renewed work in the house.

Mothers need more time to devote to their children. Lessons are not all learned from books. There are a thousand things a child should learn before he is committed to the schools, and who is more fitted to teach him than his mother? It is cruel to send our little ones to school, to sit in cramped positions, with homesick hearts and aching limbs, when a little extra expense at home would allow the mother to keep him under her own care a few years longer.

In order to interest her children properly, a mother must have more rest from hard work, more time to spend with them. Did children have more of this home training, more of the society of good mothers, and less of the company of rough, street companions, I trust we should see a gentler race of boys and girls around us. While it is woman's highest pleasure to keep the home, to make it comfortable, cheerful and happy, to adorn and beautify, to spread the board with neatness, and prepare the tempting food, she should also be careful that the beauty of her house do not surpass the beauty of the head and heart of her who presides over it; that the viands upon her table be not more tempting to her friends than the mental entertainment of the hostess.

Let us not cater to the animal appetite alone, but try amid our home duties to cultivate habits of thought that will lighten life's labors, and lead to a higher plane of being. Let us not bury the talent that is given us, lest our children grow to blush for the ignorance of their mothers. In the earlier ages there was some excuse for ignorance, and we honor the dear old mothers, ignorant though they may have been, but in this day, it seems to me that children should expect the same degree of intelligence in a mother that they do in a father. If it is necessary for men to read and think, that they may be useful citizens, is it not necessary for mothers to cultivate themselves both for home and society?

Woman armed with intelligence and strong moral principles, with gentleness and firmness moulding the principles of husbands and sons at home, is a person behind the throne that will control more votes at the ballot-box than her presence there can ever do; and her influence strongly used in society will overthrow more evil than legislation alone can do. Women may be politicians, and work with stronger power—in her quiet home influence—than she can by taking the field openly—in defense of her rights or the wrongs of the nation.

We rejoice that the Grange offers some encouragement to farm-
e ' wives, and recognizes them as equal co-workers with man in the
r ble course of truth and justice. Let us accept every opportu-
n y to make ourselves more intelligent wives and mothers, and
d ly use our influence for the promotion of every noble enterprise.
I ; us advocate the doing away of useless work, and claim for our-
s ves more time for social intercourse, reading and thinking. It
w re better to save our strength that we may live to raise our boys
a l girls, and give them good home influence, than to wear out
w h ceaseless toil, and leave them to the care of strangers. Every
h ır taken from hard work, and spent either in mental or physical
r creation is an hour added to our lives.

"There is many a rest on the road of life,
If we only would stop to take it,
And many a tone from the happy land,
If the happy heart could wake it."

let us not then, my sisters, be anxious for more work to do, but
o y ask for time to well do that which is already our duty to do.
T ; Master has given us our work, and he will presently require
a account of our labor. Let us be able to show a faithful per-
fc nance of the work entrusted to us, not forgetting that it requir-
ec he best efforts of the head and heart as well as the steady toil of
th hands. We trust the day is not far distant when farmers and
fa ners' wives shall rise from the obscure position they have so long
h l and stand the acknowledged equal of any class. If they do not
it ill be their own fault.

he way is open for improvement. Let us avail ourselves of it,
a not only strive to make our business a success, but to elevate
ou selves socially and morally. Let women as well as men enter
he ctily into the work of reform. There is nothing ignoble in it,
bu much that requires our earnest labor. As we glory in the home
an its hallowed associations, as we love the dear ones who call us
wi or mother, let us strive to elevate that home, to make it re-
sp ted in the world, and give aid to every cause tending to its
pr perity and happiness. Happy in its surroundings, rejoicing in
its rosperity. So let us ask only for more time to enjoy it, earn-
es r hoping that in the good time coming to farmers, there may
als come a rest for the farmer's wife,—a daily respite from toil, in

which she may find time to cultivate the higher and nobler attributes of her nature.

"Tis ours to guard a sacred trust,
We shape a heaven-born plan,
The noble purpose wise and just,
To aid our fellow man.

Too long have Avarice and Greed,
With coffers running o'er,
Brought sorrow and distress and need
To labor's humble door.

A royal road to plan and power
Have rank and title been,
We herald the auspicious hour
When honest Worth may win.

Let every heart and hand unite
In the benignant plan;
The noble purpose just and right,
To aid our fellow man.

From Maine to California's slope
Resound the Reaper's song,
We come to build the nation's hope
To slay the giant wrong."

THE DAIRY—A CHAT WITH THE FARMERS.

BY CHARLES SEYMOUR, LA CROSSE.

Now for a free and easy chat about butter and cheese. In my frequent journeys between the East and the West, the conviction has been forced upon me that our western farmers are working at great disadvantage as compared with farmers at the East, in respect to products for, and access to, market; and it seems the evil can be partly remedied by reducing the bulk and by increasing the value of agricultural products. A ton of good wheat in the valley of the upper Mississippi is worth nearly thirty dollars. A ton of good cheese is worth nearly two hundred and fifty dollars. A ton of good butter is worth about six hundred dollars. The wheat crop is as uncertain as the wheat market is fickle. Fluctuations in pro-

ctions or markets of wheat seldom redound to the advantage of
e producer; as the advance in price is chiefly secured by the car-
rs or speculators. The market for cheese and butter is steady
l enlarging, while the supply or production can be generally regu-
ed by the farmers, and is not likely to exceed the demand. The
l is impaired by continuous crops of grain; while the dairyman's
m can be kept in a high state of fertility. Cows convert the
ps into milk; and the farmers manufacture the milk into
ese and butter, which command the cash at remunerative prices.
e dairy almost turns the farmer into a manufacturer.

He will, perhaps, have no occasion to adopt the remark of the
ty Milesian, who, while engaged in carrying hods of brick up a
der to the sixth story of a building, congratulated himself that
mason at the top of the wall had to do all the work; but it is
rertheless true, that dairymen can boast that their cows do
important part of the farm work. Western farmers must eman-
ate themselves from the slavery in which they are bound by the
nsportation monopolies, so long as bulky grain freights exceed
capacity of facilities supplied by the carriers. Compactness in-
he smallest space, and value of the greatest degree must be the
nts aimed at by western farmers. Instead of raising farm pro-
ts that are so bulky and cheap that the carriers demand and
e every third bushel of grain for transporting them to remote
rkets of the East and Europe, it is obviously better to send pro-
ts to market that will not require more than one-twentieth of
shipment to defray transportation, provided there is any surplus
r the home markets are supplied. It is not an unusul thing to
products of eastern dairies brought West. This sort of logic
l soon have its effect upon the hard-heads who now insist upon
ding the products of the farm, so that the producers get the toll
the middle-men get the grist. Land servitude or compulsory
k in the soil with poor remuneration is what the carriers and
dle-men mean, when they say to the farmers of the West,
"] ise wheat, and let us carry it to market and exchange it for
ern or foreign merchandise." The farmer who gets the products
is farm into the greatest value and least bulk has become a free
n; and he can snap his fingers at his old masters who absorbed
earnings while he was raising bulky and cheap products, which
ded little or no real profit to the producer, if he takes in-

to consideration exhausting effects of grain-growing on land. With inferior soil the New England farmers are making greater profit than the grain-raising farmers in the most fertile districts of the West, because of nearness to markets and successful dairies.

I will here give a synopsis of the most important facts elicited in the discussion during the three-days' session of the prominent dairymen of New England and New York, held at the capital of Vermont.

MAGNITUDE OF THE DAIRY BUSINESS.

Ex-Lieutenant-Governor Hyde, of Stratford, Connecticut, the most successful breeder of Devons in America, and one of the first-class dairymen of the country, estimated the capital invested in American dairies at over one thousand millions of dollars, ($1,000,000,000). The annual cheese products exceed $30,000,000. Our annual exports of cheese are valued at about $10,000,000 for say 70,000,000 pounds. Our butter products exceed $200,000,000 in value, of which we export over 10,000,000 pounds, or $2,500,000 in value. The report of the American Dairymen's Association for 1871 gives 1,282 cheese and butter-factories in the United States, against 1,233 in 1870, and 1,066 in 1869. More than half these factories show an average of 415 cows for each establishment.

The whole consumed the milk of half a million cows. The following were the averages of the states leading in dairy manufactures in 1870: For each factory in New York, 419 cows; Ohio, 519 cows; Illinois, Massachusetts, Vermont, Michigan, collectively, 383 cows; Wisconsin, 278 cows; Pennsylvania, 182 cows. The number of dairy factories in these states are reported as follows: New York, 963; Ohio, 98; Illinois, 46; Massachusetts, 30; Vermont, 35; Michigan, 26; Wisconsin, 26; Pennsylvania, 19. In the single county of Oswego, New York, a capital of $9,000,000 is invested in dairy agriculture alone.

CHEESE AS NUTRITIOUS AND ECONOMICAL FOOD.

The inspector of milk at Providence, R. I., after thoroughly testing the matter, asserts and maintains by incontrovertible proof, that sirloin steak (adding the loss on bones) at 35 cents per pound is dearer than milk at 14 cents per quart; corned beef at 17 cents as dear as milk at 15 cents, and eggs at 30 cents per dozen as dear as milk at 20 cents per quart. Hence he concludes that milk even at 10

12 cents per quart is the cheapest animal food that can be used. ıgland has been from time immemorial a great cheese-eating untry. Her laboring and her poorer classes demand it as the eapest and most nutritious animal food within their reach; and is demand will increase as long as the article can be supplied at ısonable rates. But while the people of England are increasing about the rate of a million a year, her capacity for producing tter and chease is not increasing.

The same may be said of Germany, to which England has looked large supplies. The time is near at hand when these realms ıst be very largely supplied from abroad; and as there are no oth- sections of Europe making butter and cheese to export in any nsiderable quantity, the want will have to be supplied as a mat- of necessity by the dairy of the United States. It is estimated at the demand for cheese in England alone will increase at the e of ten million pounds per year, while the annual increase in r home demand is about six million pounds. But high above at of cheese, rises the butter interest. We export as yet compar- vely little butter; we consume nearly four fold as much as do of cheese—or in other words, about 15 pounds of the one, d 4½ of the other, to each inhabitant per annum.

INTERESTING RESULTS OF NINETY NEW YORK DAIRIES.

Prof. Wickson, of Utica, N. Y., gave results of ninety cheese fac- ies and creameries, located in different parts of the state of New rk, giving the average net return per cow to patrons, the highest erage per cow to a single patron, and the lowest average per cow a single patron. The figures are drawn from the actual records the yields of more than thirty-six thousand cows. The average ld per cow in these factories during the season of 1874 has been).57. In the individual factories the highest average per cow orted is $55.07, and the lowest average per cow in a factory run- ıg the same number of days is $31.22. Taking all the cows into account, it appears that the average return per cow for the son of average length is $39.57. It will be remembered that se figures are factory averages, not average yields in single herds.

t appears from comparing the reports of these factories that the rage return net to patrons for 100 pounds of milk has been one lar and twenty-two cents. The highest net yield is one dollar

and thirty-eight cents, and the lowest ninety-nine cents. Compare the average returns per cow with the average selling price of the factory and the pounds of milk required to make a pound of cheese in order to determine how much of the large yield per cow was due to the dairyman, and how much to the cheese-maker and salesman. In the factory reporting the highest average per cow, $55.07, the selling price of the season averaged 14.11c., and the milk taken was 9.67 pounds to a pound of cheese. Comparing this with the lowest average per cow, $31.22, I find that the latter sold cheese for one quarter of a cent less per pound through the season, and used nearly one-half pound more milk to a pound of cheese on an average. But this difference in manufacture and price can form only a very small part of the difference between the low mark at 31 and the high mark at 55 dollars.

The main points in the profitability of dairies are vested in the farm, not in the factory, as the following figures show: Of the dairies sending milk to the sixty factories, the best season's average per cow is $82,17, and the average of all the highest dairies reported by the factories is $50.04. The lowest yield in a single dairy, carrying to the factory during a long season, is $14.50 average money to a cow, and the average of all the poor dairies reported is $29.34 per cow.

FANCY BUTTER.

Prof. Wetherell said what we want is to get the farmers up to the highest standard of butter making, and if we have our market reports, let us know from them what is the *highest* as well as the lowest price that is paid for it. In this way we shall awaken the inquiry among the people as to how butter is made which commands 75 cents to one dollar per pound.

Prof. Arnold says that some of the highest priced butter that finds its way to market would not keep. It is sold fresh from the churn, every day or every week, and has the aroma of fresh-made butter that will not keep.

Mr. Bliss said from his observation of the markets, he has found that what he called "Orange county butter," which brings fancy prices in market, cannot be produced in Vermont. We can only make a standard article that has the keeping qualities, which the Orange county butter has not.

A MODEL DAIRY-ROOM

Mr. A. M. Foster, of Cabot, asked Prof. Arnold to describe a model dairy-room.

Mr. Arnold said, the most that is wanted for the room is to have it close, double-walled, and so it could be kept free from the influence of the outside atmosphere. He preferred the large pans, and would have them large enough for each to hold a milking of his cows; as for the minor details, they must be left to individual preference. He preferred Prof. Wilkinson's system of subterranean ventilation and explained the method of arranging it. The arrangement can easily be described. Prof. Wilkinson's own description calls it "gulf-stream" dairy arrangement, by which, by connecting milk-houses with ice-houses, and building a pool which extends in part beneath the ice and part in the milk-house, he secures a change of water continually, the cooled water under the ice continually taking the place of the warmed water in the milk-house. This change of water will continue so long as the water in one part of the long pool becomes heated by the introduction of the milk. There are points in the plan which are worthy of consideration by all who are in contemplation of milk-rooms. He said that it is important that a dairy-room be made tight; and to this end it was necessary that there should be a dead-air space between the walls, so that the temperature of the rooms will be completely under the control of the dairyman. He recommended that the walls be covered with paper, with solid sills, double doors and windows, and all so arranged that there could be no influence on the air in the room from the heat or cold outside. There should be a *uniform* temperature, if the dairyman would succeed in making butter.

HOW TO MAKE DAIRY FARMING PROFITABLE.

Prof. Leander Wetherill, editor of the Boston *Cultivator*, read a paper on "How to make Dairy Farming Profitable."

Mr. Wetherell said he accepted the invitation to this meeting, with a view to co-operating with the farmers of Vermont in promoting the interests of the dairy. He said he had heard a gentleman say, to-day, that it is very easy for men to tell the results of dairy products, but why don't they tell us *how to do it?* He said that was just what was wanted by the people. We desire *knowledge* on a given subject, and not mere opinions; and his desire this

evening would be to give some hints as to how to make dairy farming profitable.

His observation in this country led him to believe that the best cow, for all the practical purposes of the farmer, is produced by a cross breed between the Short-horns and the Native cow. Such a cross would give the best and largest quantity of milk, and also was the best for beef. He said, also, that the larger breeds, like the Short-horns, would give a larger product of milk for the feed given them, than would be obtained from the smaller breeds, like the Devons, the Ayrshires or the Jerseys; from which he was led to prefer the larger kinds of stock. The cow, the dairymen's factor, is, so to speak, a machine for converting forage into milk, veal, beef, and butter and cheese made of milk. Call the first cost of the machine for making milk $100; it must be kept running day and night, summer and winter, Sundays as well as other days. Suppose it takes 15 pounds of hay a day to run this machine, 20 pounds if she were not comfortably and well housed in cold weather, say $2\frac{1}{2}$ to $3\frac{1}{2}$ tons of hay a year—this will barely keep the machine running. If not thus furnished the machine stops. If 20 pounds of hay, or its equivalent be required to keep the cow alive, then the owner of the machine gets *nothing*. Give her 25 pounds, and she gives him 5 pounds of milk equal to one-half pound of cheese a day; give her 30 pounds, and he gets one pound of cheese a day, or 365 pounds a year, or its equivalent. In this calculation, 30 pounds of hay per day, produces $63\frac{2}{3}$ pounds of cheese for each ton of hay; 40 pounds of hay per day, would yield 100 pounds of cheese from each ton of hay. On this hypothesis, a ton of hay in excess of the amount necessary to keep up the animal heat and sustain vitality, gives 200 pounds of cheese. Thus it is desirable to get cows that will yield most over the cost of keeping, or of running the machine. If a cow eat 33 pounds a day, or its equivalent of grass. it will require four acres, at $1\frac{1}{2}$ tons per acre, to keep a cow a year, which, according to the present hypothesis, would produce $401\frac{1}{2}$ pounds of cheese a year. A farm of 30 acres would support twenty cows, yielding 8000 pounds of cheese; increase the productiveness of the farm one-half, and keep twenty cows that will eat one-half as much again, and we should then get 21,600 pounds of cheese.

If the cheese be worth 15 cents a pound, a farm of 80 acres, at $1\frac{1}{2}$ tons per acre, with 20 cows, would give a return of $1,024 50;

crease this by improvement to 2¼ tons per acre, the 20 cows eating and digesting it, and you have a gross return of $3,240. Thus is shown that a cow eating six tons of hay, or its equivalent, a year, would produce 400 pounds of cheese per annum, worth $60; while a cow eating and digesting nine tons, would produce 1,090 pounds of cheese, worth $163 50. But, it is said, it would be impossible to get nine tons of hay into a cow's stomach during the year; then he would advise farmers to breed up to that point. To do it, he would select a thorough-bred Short-Horn bull, of the Duchess or Princess family of Bates, and use him on his best cows, and thus breed a good herd of milch cows. No breed of cattle equal these families of Short-Horns, unless it be the Holstein, in converting food into growth and milk; crossed on our native stock, and you get some making 600 pounds of cheese in a season—$90 per cow a year, and a calf worth $20 or upwards.

Mr. Wetherell then gave the record of Mr. Henry Saltonstall's seven-eighths Jersey cow, "Sibyl," which showed that she had produced 13,065 pounds of milk in 365 days, or a little over 6½ tons of milk, an average of 35 5-7 pounds per day. Her feed during the year was old upland pasture in summer, with cut corn-fodder in August at night, about a bushel of grain in all between grass and cut time, and in winter, what hay she would eat clean, and a peck of roots a day. In July, she made 12½ pounds of butter per week. "Sibyl" was bred by Thomas Motley, of Jamaica Plain, Massachusetts, probably one of the best breeders of Jersey stock in the country.

In closing, Mr. Wetherell briefly alluded to what had been termed the "drudgery" of the farmer's life, and repudiated the too often accepted theory that there was more of "drudgery" in farm-work than in that of other occupations.

Dr. Horace P. Wakefield, Principal of the State Primary School at Monson, Mass., was next called upon, and gave an account of the management of the farm under his charge. He preferred Ayrshires as the best breed of cows for butter and cheese makers, and gave his methods of feeding—every day in the year a feed of hay, water with cold water in summer and warm in winter, and sprinkled with wheat-bran. He believed such feed best for dairy cows.

Mr. O. S. Bliss, secretary of the association, then called upon G. Hyde, of Connecticut, to give the association some account of

the Devon stock, to which call he responded that the Devons are not regarded as a desirable breed for beef. He said that each and all the different breeds of cattle had their merits, and farmers must adapt their stock to their land. He had tried the Ayrshire, and did not succeed, as he believed. from the fact that his soil was not adapted to that breed of cattle. He was compelled to keep Devons because they were best adapted to his soil and feed. He could not give statistics in regard to any of the breeds, as he had none with him. The Devons, with him, gave more milk and 25 per cent more butter from the same feed. He said that offers had been made to put the Devons in competition with other breeds, without finding any one to take the offer. He had 2¼ pounds of butter per day from some of his cows; they being fed two quarts of corn-meal per day, in connection with the ordinary pasture feed. While the Devons are small, they have a rotundity and beauty that certainly excels; and when put upon the scales they always disappoint in the right direction. He said that animals should be bred for especial purposes, and he had bred the Devons particularly for milking and dairy purposes. Animals that had been bred with a view to their value for beef, would prove a failure when the attempt is made to make milkers of them.

UNLIMITED MARKETS AND GOOD PROSPECTS.

Mr. Wickson then gave instances of successful dairying in his vicinity, and of the success that has attended skilled breeding with a view to milk-producing qualities, and closed by giving some practical suggestions.

The speaker alluded first to the market as the ultimate test of value and quality in any variety of dairy produce. A knowledge and full understanding of the requirements of the market lie at the foundation of the dairymen's success.

The influence of the trade is toward the sending of a more uniform product from the factories. There are different kinds of cheese wanted. There is white cheese and cheese of deep and light color; there are different sizes and shapes; there is a demand for different degrees of firmness. In each of these classes of demand there may be standards.

Of course, making cheese must always be an intelligent operation because of the variableness of the agencies employed, but there can be a greater uniformity in the mechanical departments.

Mr. Wickson stated that another feature of the influence of the t ıde upon the manufacture is seen in the enormous increase in the a ıounts produced, and it is fortunate that the trade affords indica- t ns also that the profitable demand will be continued. Accord- i ; to a common theory of political economy the supply had been c ıstantly endeavoring to meet the demand, and still the supply is ı filled. While cheese has continued to gain profitable prices, oth- e specialties in agriculture have fallen and risen again several times, a d there is every reason to expect a maintenance of profitable p ces. Professor Cairnes draws from his study of market prices t ; conclusion that agricultural products of vegetable origin are s ɔject to sudden and considerable fluctuations, while the commo- d ies of animal origin rarely rise rapidly, but when an advance is e ablished it is commonly held for a long time. He illustrates by i ıtancing butchers' meat in England, which has shown the most ı ırked advance in price, and states that there seems not the slight- e probability it will ever return to the price at which it was sold t enty years ago. So long as butchers' meat is beyond the reach c the English laborer, as it is now, American cheese will meet with p ɔfitable sale in England. The lesson which the trades reflect up- c the manufacture is that the signs are for an endurance of the p ɔsperity of the dairy industry, and this is an important consider- a on in view of the fact that the industry finds its productive pow- e increasing each succeeding year.

The speaker next treated at some length the improved methods c marketing which have been devised by the dairymen, tracing t ; steps from the old-fashioned sale in the fall at the factory, to t ; recent Board of Trade plan, and claiming that the development i the trade has been as marked as in the manufacture. The Board o Trade plan was discussed at length, and it was shown to be the r ıural outgrowth of culminating conditions and worthy of wide s ɔport by producers.

The speaker urged the improvement of the county boards of trade b the adoption of more approved methods of sale.

Mr. Wickson passed then to another branch of his subject, the p ɔbable commercial effects of the tendency toward novelties in n nufacture. The production of creamery butter has proved ex- c ɔtionally remunerative, and the demand for this delicious material g ɔws faster than the supply. . The improvement which has been

attained in the handling of skim milk, until the cheese made from it gains a price just below the very finest full cream, bids fair to exert a marked influence upon the manufacture. It is profitable to make creamery butter and the best grades of skimmed cheese, and there is now a wide disposition to try the experiment. If skillfully handled it will pay better than full milk cheese, except in the case of the few fancy factories which can return to patrons a large average price per pound for milk during the season. The speaker illustrated by reference to the results gained by the Freeman method, and by the old style of creameries. In reviewing the whole field, the speaker closed with the opinion that the dairy future is full of promise, but that its progress and development call for similar advance in the general understanding of the commercial influences which bear upon it.

The attention of our northwestern farmers is called to these valuable items of information gleaned upon the dairy business, with the hope that many who have felt the hardships of raising grain under the present expensive system of transportation, will be encouraged to follow the example of the thrifty farmers of New England and New York who are enjoying the benefits of steady and remunerative markets for the production of their dairies.

Western farmers ought not to rest under the standing imputation of inferiority. Boston and New York quotations for butter and cheese during the present month of February, while the butter market is unusually depressed, are in excess of Wisconsin and Minnesota prices to an amount equivalent to ten times the cost of freight on butter, and five times the cost of freight on cheese. Butter sales in Boston on the 16th inst. are reported at 35 to 40 cents for choice New York and Vermont dairies, which prices are also paid by buyers at the farmer's door for choice lots; and 25 to 35 cents for common to good; and, then, with the usual slur on western slovenliness and carelessness, the quotations wind up with these words: "Western butter at 20 to 31 cents." Factory-cheese sales in New York on the 16th inst., ranged from 16 to 17½ cents. It costs less to make a large quantity of good butter that will sell for 40 cents than a small quantity of miserable grease that brings only 21 cents. And with the improved stock used by first-class dairymen come other benefits than those of good prices for cheese; as the beef commands $7 to $8.50 for second quality; $8.50 to $9.50 for

fi t quality; and $9.50 to $10.75 for extra and choice, in Boston, a ording to quotations of 16th inst.; while on the same day in Bos- t the third quality of beef, which probably costs more per pound t n the better qualities, sold for only $5 to $6.

MISCELLANEOUS ADDRESSES.

MONOPOLIES IN THEIR RELATION TO THE INDUSTRIAL INTERESTS OF THE COUNTRY.

BY HON. GEO. B. SMITH, MADISON.

[An address delivered at Janesville, Wis., October 2, 1874, before the Southern Wisconsin Agricultural Society.]

Mr. President and Fellow-Citizens:

In accepting the invitation of your committee to deliver an address on this occasion, I named as my subject, "Monopolies in their relation to the industrial interests of the country." That subject I will now discuss as well as I can within the narrow limits to which I am circumscribed on an occasion like this. I did not choose this subject because I felt fully competent to master it, nor did I seek this time of public excitement in relation to some of its phases, in order to pronounce what might be regarded as a popular address. In what I have to say, therefore, I shall give you the result of the best reflection I have been able to give the subject, without any reference to popular prejudice.

Civil government is to be considered "in no other light than as an association of men for the protection and preservation of good order; a good order which is to be purchased by yielding up in some degree the liberty of self-control, but which yields or should yield in return the advantages of secured liberty and property, and of the tranquil discharge of all acts and purposes essential or convenient to human happiness. Viewed in this light, civil government is an institution established for the happiness and advancement of the governed, and not in any degree for the advantage and aggrandize-

ent of those who govern." It will be necessary to keep this idea constant remembrance as we proceed in what we have to say, because monopolies are not unfrequently the creation of government. The very word signifies special and peculiar privileges, whether granted by government or assumed or usurped by individuals. When monopoly rights are granted to individuals or corporations, it is not alone for the benefit and advantage of those to whom the grant is made, but all such special privileges or monopoly rights are, or should be granted for the happiness and advantage of the public and not solely or mainly for the advantage and aggrandizement of those to whom the monopoly is granted.

The word monopoly has various significations.

1.) "It is defined as the abuse of free commerce by which one or more individuals have procured the advantage of selling alone all a particular kind of merchandise to the detriment of the public."

2.) "All combinations among merchants to raise the price of merchandise to the injury of the public,"

3.) "A monopoly is also an institution or allowance by a grant from the sovereign power of a state, by commission, letters patent, or otherwise, to any person or corporation by which the exclusive right, of buying, selling, making, working, or using of anything is given."

The last definition more nearly describes monopolies as they exist in this country by legislation or as the result of legislation, and especially what is called the monopoly of the carrying trade, though in this state no person or corporation can be invested with the exclusive right of buying, selling, making or raising anything. And under our amended constitution and the laws passed in pursuance of it, every body is free to organize a corporation to carry on any legitimate business whatever, and if organized to build a railroad, the state has invested such corporation with the power of eminent domain which enables the company to take and use private property, because it is in such case declared to be for the public use. This is one instance where for the purpose of establishing a civil government it is necessary that individuals should in some degree give up their private, and we may add, their natural right of absolute control over their own property, for the public good and in part compensation for the protection which Government extends to the individual. Although everybody may have a right to build

a railroad, it is quite certain that everybody cannot do it, and but comparatively few can do it. Such corporation may therefore be practically though not theoretically a monopoly. It is especially of this species of so-called monopolies, and their relation to the industrial interests of the country that I intend to speak to-day.

There are other monopolies—many others that might profitably be discussed in this connection to which I can barely allude for want of time. I have therefore chosen to dwell more at length on that which just now most absorbs public attention. It is perhaps a matter of regret that the necessities of any government or of any people should oblige them to invest in any class of persons special privileges or monopoly rights, but we have not yet sufficiently advanced in wisdom or civilization, call it what you will, to dispense with this way of providing the public with what seems absolutely essential to its welfare; and when we reflect that monopolies and monopoly rights are the product of civilization, we cannot in the present state of our knowledge reasonably look forward to the time when it will be otherwise.

This subject is by no means a new one, nor is it peculiar to this country, for monopolies have existed everywhere in every country and in every age of which history gives any account. Puffendorf, in his work on the laws of Nature and Nations, in speaking of this subject says, Chap. 5, Sec. 7, "In this place something may be expected to be said concerning monopolies, whether any or all of them be against the law of nature or no; for it is an odious name and the laws of many states brand it grievously." Still he says that magistrates (and government) may give one man or company of men the sole power of importing certain commodities from certain places exclusive of all others. And there may be good reasons for granting such a privilege, for it requires vast charges to settle a trade with a very remote nation, * * * * and therefore the authors of such a commerce ought in reason to have security that others may not intercept *gratis* what thay have established at their great risk and charge. But as for those privileges a prudent government will not grant them except * * * * when the products concern the necessities of life. Nor even then must the merchants be allowed to enhance the price of those things at their pleasure; for it is against reason to give an opportunity of scraping up exorbitant riches out of the fortunes of the rest when the public get nothing

it. Lastly, it seems unjust that tradesmen or farmers should be ·ced to sell their manufactures or the produce of their ground to ·tain people only, * * * * for by this means the riches of e state may soon come into the hands of a few to the detriment d oppression of the rest."

We are also told by Grotius, who wrote more than a hundred ırs earlier than Puffendorf, and more than two hundred years ɔ, that the Romans and Alexandrians had monopolies, and he nks that all monopolies are not repugnant to the law of nature, they may sometimes be permitted, he says, by the sovereigns, on a just cause * * * * as may appear by the example of seph, when he was Governor of Egypt; but he also condemns h great severity, "those who combine to advance the value of ir wares, or who *charge a price unreasonable.*"

Grotius having quoted the example of Joseph in favor of monop-ɔs, Puffendorf contests him in this wise: "I cannot but take ice, by the way that Grotius brings the example of Joseph when was Viceroy of Egypt, in justification of monopolies, though t example is not much to the purpose, for neither did the King der others from buying up the corn in the years of plenty, nor from selling who had too much. Neither had the Alexandrians Strabo the monopoly of Indian and Ethiopic commodities from privilege, but from the situation of the place."

t will be observed that this author here endeavors to rescue the ients from the odium of establishing monopolies, while he is ıpelled to admit that it was done extensively in Europe; but n there the very word monopoly was *odious.* The same writer s that "monopolies of private men are specious and illegal, * * * * that they are generally carried on by clandestine frauds combinations, as if some few, by trick, should debar others n trading, * * * or if they should enter into a combina-to buy up all such sort of commodities, and then stifle them hat the scarcity may enhance the price." Against them, he ; may be applied that of Appollonious Lyaneus Philostral, 1 i. 2, in the beginning, "the earth is the mother of all, for she is ; but you, being unjust, have made her only a mother to your-es." The knavery of such ought as much to be condemned as e who enter into compact to raise extravagantly the price of r things by agreeing privately to sell nothing under such a

rate, which piece of roguery laborers and workmen are sometimes guilty of."

It is apparent from these authorities—and more might be quoted to the same effect—that monopolies have existed in almost every possible form, from a very early day, among organized people everywhere, and everywhere the very name has been odious. In England monopolies were the gift of the Crown as well as Parliament, and it was here, perhaps, more than in any other country with whose history we are familiar, that monopoly privileges were most extensively granted. Here monopolies were granted to private persons and to corporations who enjoyed the exclusive right of trade in particular articles, and the exclusive right of the whole commerce of particular countries, until at one time nearly the whole trade of that commonwealth, both foreign and domestic, was exclusively enjoyed by private and public monopolies.

As early as the accession of James the First to the throne of England (1602,) the evil of monopolies was so great that it become the subject of Parliamentary investigation, and of very decided public condemnation. On this subject Lord Bacon said, in his advice to George Villiers, afterwards Duke of Buckingham, and Prime Minister to King James, "But especially, care must be taken that monopolies, which are the cankers of all trading, be not admitted under specious colors of public good." This advice, and this warning, however, from the greatest of mankind, did not rescue or protect England from the evil of monopolies; indeed, so great was their power and influence that it scarcely checked their onward progress. The evil continued to increase, and so strong was the monopoly spirit there, long afterwards, that it became one of the most potent causes of separation between that country and this. It was insisted, you will remember, by English statesmen, and by the government, that the American colonies could only sell their products to that country, and worse still, that the colonies were obliged to take in return whatever England had to sell, whether they wanted it or not, and so they undertook to establish the tea monopoly, when our forefathers protested—rebelled, and "fought it out on that line," until success and independence crowned their efforts, and thus America became a power among the nations of the earth.

We have not, however, altogether avoided the establishment of

nopolies here. The General Government early established one ich has been silently but surely gnawing away at the vitals of or and industry ever since. We refer to the monopoly of inven- n. As I do not wish to dwell on this subject, I cannot do better m to quote from an address which I delivered before the State ricultural Society at Milwaukee, in 1872, on Labor and Capital, blished in the Transactions of the Society for 1872–3, page 147: "Our Government has intended to be generous to labor of the in, while it cruelly neglected the labors of the hand. But in s particular the Government has compelled its toiling and pro- ing millions to contribute to this bounty. I do not complain t the Government is generous to inventors, but the way in ich it is accomplished is of doubtful propriety. Every year the icultural interests of this country are paying millions of tribute, to the poor inventors of agricultural implements, but to the italist, who, taking advantage of the poverty of the inventor, chased his right for a trifling sum. And it is a scandal upon est legislation that repeated renewals of patents are obtained, order that the price may be kept up. All this is the busy work apital, while labor is compelled to contribute to its own dis- nfiture by aiding those who unjustly burden it. Again, trifling rovements are annually (or periodically) made to agricultural lements, so as to keep up the price to the old standard, that ital may be richly rewarded at the expense of thoughtless, care- labor. What is true of agricultural implements is equally of other inventions which are in general use. In reference to f these the labor of the country is paying heavy tribute, not he inventor, for whom the law was designed, but to the gam- g and unscrupulous speculator, for his skill in robbing the ntor of his invention. This is the rule; there may be excep- s to it." Here we have a monopoly created by the Government h affects the interest of every class of industry in the land in e ways than could be told in a good-sized book, and to a greater nt than can be easily calculated. There is also another mo- ly established and maintained by Government, whether for l or for evil we need express no opinion, that is of grander pro- ions, and vastly more extensive in its effects and influence on ndustrial interests of the country than perhaps all others com- d. We refer to the monopoly of the tariff. This reaches every

household, and touches every possible interest; and it does it every day, every month, every year, and all the time.

We have only mentioned these subjects, because they are monopolies which relate to the industrial interests of the whole country, and therefore flow naturally into the subject of this address. We have neither the time nor the inclination to elaborate further on this occasion.

The Government of the United States has expended untold millions in the improvement of the rivers and harbors in the interest of commerce and the carrying trade, but it has never built a railroad. It has, however, from time to time made extensive grants of land in aid of railroads, but you all know how this has been done. It has granted every alternate section and charged the same price for what remained as it would have charged for the whole if no grant had been made. This of course has been done upon the theory that the remaining lands would be worth as much, or more than the whole land without a railroad, and that purchasers could better afford to pay 20 shillings per acre with a railroad, than 10 shillings without one, and generally such grants have been made in the hope and belief that the country would sooner be settled and cultivated. Yet after all, those who have purchased the even sections, have actually paid for the odd sections granted in aid of railroads. Whether on the whole this has been good policy on the part of the Government, it it not worth while now to decide.

We have only alluded to the fact to show that railroads have been favored by the Government ever since their introduction into the country, or ever since their general usefulness has been appreciated. Especially have these grants been made in aid of roads in the Western States. Here was the land and here was the country to be settled and improved. The Eastern and older states never quite approved of this policy, but enough of them generously yielded to enable it to be carried out.

In early days when we all wanted railroads we all approved of it here. Not only were grants of land thus made, but the people in many instances and very generally voted municipal aid of towns and counties, and gave farm mortgages, either as a loan or as a gift in aid of the building of railroads. This aid of every description was uniformly placed in the hands of corporations previously formed for building the roads, and it has so happened, unfortunately we

ink, that neither Government who made the grants nor those who ade subscriptions in aid of the roads, have had a voice in their anagement. It is true that in theory every holder of stock has a ice in the corporations of which he is a stockholder, but somehow has not practically resulted that way to any great extent with unicipalities that have subscribed the aid.

It is not material now to know whose fault it has been that it is , and it is by no means certain that it is the fault of anybody. e have only mentioned the fact to show why it is that our people io now own but little of any stock in any of the roads of this ite, feel that somehow they belong in part to them, and that they ve, or should have some voice in their management. It is true at all the roads in the state are not land-grant roads, but there is arcely any road but has been the recipient of generous aid from r people, full up to the extent of their means, and always up to t winter, the legislation of the state has been liberal and gener- s to them, believing all the time that their interest and the inter- of the roads were identical, as when rightly considered they re- y were and are. Some complaints, however, had been made. It uld therefore, we suggest, be assuming too much to say, that in iat was done last winter, the people were all at fault and the rail- ds free from blame.

If the interest of the people and the railroads are identical, and erybody says they are, we may be sure that they will not long re- in in hostility to each other, no matter what may be the legal wer of the state over the question, and on that subject I will sim- quote what I have said in the discussion before the courts: "I quite sure that the state has sufficient power over corperations secure the people against wrong and injustice, against extortion- rates and unjust discriminations, and if our constitution gives re power than this, it gives too much, and therefore the power ver should be exercised even if it exists. Of what avail is it for s court to hold that the legislature has absolute power of life and th over corporations * * * when the exercise of such pow- would in any imaginable contingency be as oppressive to the peo- of the state and to every material interest in it, as it could be to corporations against which such legislation is aimed."

Again, when we reflect that the interest of the people and the roads are identical, we can all see and appreciate that any legis-

lation that would injure one would injure the other. If, therefore, the legislation of last winter shall prove unjust and injurious to the roads, it will be equally so to the interests of the people. It is not, however, my province in this address to discuss, much less to determine that question. I am not sufficiently familiar with railway charges to discuss the matter intelligently, and I have not sufficient faith and confidence in the judgment of the members of the last legislature on that subject, to rely implicitly on what they did as being exactly the right thing. Indeed I think it would be marvelous, if the legislature had hit the nail exactly on the head, and fixed, the first time trying, exactly the right charges in every particular. We can therefore easily understand how it is possible that injustice may have been done to the roads. If by that law the roads can be required to carry freight for less than it costs to carry it, or for less than will enable them to pay expenses and to pay interest on their just debts, and pay to those who have invested their money to build the roads a reasonable interest on the investment, then the law cannot be justified or defended.

If on the other hand it should be made to appear after a full investigation that the law is reasonably just in the rates of charges fixed, it would be difficult to find an excuse for the course pursued in reference to it by the railroads.

These are questions which, however, we cannot settle, and which can only be settled and finally determined after a careful and thorough investigation by the properly constituted authorities whose business and whose duty it is to know.

One thing, however, we may regard as settled now and forever, that is the general power of the state to regulate every great interest within its borders, and especially that it has the power to regulate the general management of railroads. And it will be wise, we think, so to exercise it that the power shall forever remain in the state. Already it has been suggested that the whole subject had better be transferred to the Congress of the United States, and some specious and plausible reasons have been assigned for it; but I think it would be a sad day for the people of this state, and for the people of every state, when they let this power pass out of their own hands. These corporations are the creations of the state, from the state they derive all their powers and privileges, and to the state alone they should be responsible for the manner in which

ey exercise their powers and privileges. It is true they particite in the carrying trade of the whole country, and the whole untry is to some extent interested in how it is done. But we are amily of states, with a common interest and a common destiny, ch having certain distinct and independent powers—certain disict and independent rights, and conspicuous among these is the ght to regulate our own domestic institutions. Upon a strict obrvance of this right depends our perpetuity as a nation, and our osperity and happiness as a people. We do not send representaes away to Congress to regulate our local and domestic affairs, t we send them there to join the representatives from other states, aid in regulating the affairs of the nation. We have instituted egislative body of our own, at home, to regulate our domestic airs, and our own representatives, coming from every section of e state, ought to be, and they are better qualified to attend to our al and home interests than those we send away, and more especly are they better qualified for this duty than representatives it to Congress from other states, who know nothing, and who n know nothing about our people and their peculiar needs.

We have said that the Government of the United States has ver built a railroad. A great national turnpike, however, was ilt years ago from the city of Washington to the city of St. uis, by authority of Congress. The road was intended to be the ans of communication between the East and the West; and so it s, for many long years before the railroad system of the United ates came into use. We are told that "from 1837 to 1850, thousds of emigrants from Pennsylvania, Maryland, Virginia, New rk, New Jersey and New England, with their wagons, their rses, their cattle, and their household goods, struck this road out Cumberland or Wheeling, and moved over it slowly but serely and comfortably to their new homes in Indiana, Illinois, isconsin and Missouri;" that the mails were carried over this route handsome coaches, each drawn by four horses, and at the rate of ty miles a day. It was a magnificent turnpike, built in the very st style of McAdamized roads; and it was in fact for many years e greatest thoroughfare between the East and the West.

The first railroad constructed in America for the conveyance of ssengers, was the Baltimore and Ohio Railroad; the first division the road was opened and put in operation in 1830, the same

year in which the Liverpool and Manchester railroad was opened in England.

The first railroad ever constructed in the state of New York, or in the north, was the Mohawk and Hudson road. It was chartered in 1826, commenced in 1830, and finished in 1831. It was one of the first railroads in the United States to use locomotive engines.

The actual construction of the Baltimore and Ohio railroad was commenced on the 4th of July, 1828, at Baltimore. It is described as follows: "All business was suspended, and a vast crowd of citizens assembled near the southwestern boundary of the city, where the work was to commence. The day was bright and beautiful; strains of martial music floated through the air, and a military and masonic procession approached the designated spot. A carriage drives slowly between the opening lines, and from it descends the venerable Charles Carroll, of Carrolton, then over ninety years of age, but still strong and vigorous. Every head is uncovered and bowed in respectful salutation as the honored patriot, accompanied by the directors of the road, proceeds with the ceremony of inaugurating the great work. The first sod was turned, and the first stone laid by the distinguished revolutionary patriot, and then a discharge of artillery announced that the mighty enterprise was commenced. Then turning to the people Mr. Carroll made a very short and appropriate address, containing these memorable words: "*I consider what I have just now done to be among the most important acts of my life, second only to my signing the Declaration of Independeuce, if indeed it be second to that.*"—*Flint on Railroads.*

Thus commenced the railroad-system of the United States. Since then there have been built and put in operation sixty-six thousand two hundred and thirty-seven miles, reaching from ocean to ocean, and forming a perfect net-work of roads reaching far out in every direction into the new and undeveloped parts of our country. Here in Wisconsin we have in operation two thousand three hundred and sixty miles; and when we reflect that all of this vast system of railroads was built by private enterprise, and nearly all by private means, we have every reason to be proud of the energy and public spirit of our people, and we should be very slow to cripple or destroy the spirit and enterprise that could accomplish such vast results. Yet, such legislation as will be sure to protect the people in their just rights, and against wrong and oppression, or from charges

unreasonable," should of course be had, but it is a question of grave doubt with many friends of the people, whether the legislature ought permanently to assume the business of fixing specific rates of fare and freight to be charged by these roads. It is said that different railroad companies combine, and avoid as far as possible, competition. This may be so, but they cannot avoid it altogether. *It is quite certain, however, that a fixed and definite legislative tariff of rates, applicable alike to all roads, prevents absolutely the possibility of any competition whatever.* And we are sure that the people of this state do not wish to establish and accomplish just that result. Competition is the life and soul of trade and business the world over. It is the great motive and incentive to the accomplishment of great enterprises, either of a public or private nature. Competition is the life of all business, and if there can be no competition there will be less business, and that will be carried on mainly by monopolies created for that purpose. In the absence of competition monopolies will grow and thrive, and public enterprise will fall to decay.

In the season of navigation our rivers and lakes compete with the railroads and divide a portion of the business, but in winter the railroads control almost the entire inland carrying trade, and that too, the railroads have increased with marvelous rapidity, and everything is done on a grander scale than of old—the great through mails from east to west are no longer carried on stage coaches at sixty miles a day," and emigration no longer wends its slow way along turnpike and common roads to the western states, but everything is carried with great speed and with comparative safety along through the country and away to the very borders of civilization, and as the country grows in wealth and increases in population we must have more railroad facilities to meet our increasing wants. Call it monopoly, call it what we will, this mode of transportation the only one yet discovered that can satisfy the demands of the age. We cannot prosper without railroads, and therefore we need have little fear that the present apparent antagonism between the people and the railroads will long continue.

The railroads must not, however, be above the law, but the laws must be fair and reasonable, and so they will be, we may be sure, for the people will in the end be always just.

One of our distinguished fellow-citizens, a Senator of the United

States, has recently sought to awaken our cupidity by informing us, and by endeavoring to show by authority that the state owns all the railroads now in operation in it, and that those who advanced the money to build them only hold them in trust for the state. We are not, I am sure, so easily deceived, and it is to be hoped that we are too unselfish and too honest to carry this advice into practice, by relieving them of the trust. We may be sure that those of our fellow-citizens and those from abroad who advanced their millions to build these roads did not understand that the state would own them as fast as they were built. Our people certainly did not set up such a claim, while they were building, and I don't think it quite honest to do it now after the roads are finished, but if the political necessities of the times require the consummation of such villainy on the part of our people let it be done at once and let it be done all at once, so that those who have hitherto labored under the delusion that they owned this property may be relieved from all further anxiety about it, in which case we might, perhaps, afford to be generous enough to pass a vote of thanks and possibly to erect a monument to those rascally monopolists who so generously furnished us with two thousand three hundred and sixty miles of railroad all equipped and ready for use, on such liberal terms. But seriously, since there is no probability, nor yet possibility that our people would follow such advice or fall into such an opinion, it seems hardly worth while to express or combat it.

There is, beyond question, a wide-spread opinion among the people of this state that the railroads have in some way been oppressive by unjust discriminations and over-charges, and that by this means the agricultural and industrial interests of the people of the state have been made to suffer. It would be very strange indeed if in the management of such vast and varied interests, intrusted as they must be to the hands of so many different persons, something of the kind should not have happened, and it would be equally strange if the evil, whatever it may be, had not been considerably magnified. However this may be, it is certainly a proper subject for public and legislative investigation, and we will add in this connection and in conclusion on that subject, that we do not believe in injustice being inflicted on the people or upon any interest, great or small, in the name of the people. And we believe, as we have before said, that the legislature possesses full and ample power to

cure fair dealing from the railroads; to prevent over-charges and ajust discrimination in their dealings with the public, and this we ave a right to demand from our legislature.

Hard times and poor crops will periodically injure the agricul- ıral and industrial interests of any people in spite of all legislation, ıd all mere human foresight and precaution, and we are quite sure ıat until some new light shall dawn upon the human intellect— ıtil some new order of things shall arise, capital, aggregated and ɔncentrated capital will continue to have, as it always has had, a ery marked and decided advantage over labor; and we feel equally ıre that labor, and especially unorganized labor, will never be ad- ıntaged and improved by any indiscriminate and unreasoning war- re against other interests.

Eternal vigilance, we are told, is the price of liberty; so it is the rice of all other human rights. We therefore cannot be too watch- ıl or too much guarded against the encroachments of every spe- es of monopoly, which interferes with free trade and free and un- ɜstricted commerce.

Nearly everybody who has discussed the question of railroads of te has quoted with approval a very eloquent passage from an opin- ɔn of the late Justice Paine on the subject. Mr. Carpenter did so ı his recent speech at Ripon, and Chief Justice Ryan did the same ı his opinion in the injunction cases. A part of the paragraph ıus quoted is as follows: Speaking of railroads, he says: "They ave done more to develop the wealth and resources, to stimulate ıe industry, reward labor, and promote the general comfort and rosperity of the country than any other, and perhaps than all oth- · physical causes combined." If this be in fact a correct appreciа- on of what railroads have done for the country—for labor, for in- ıstry and for the people—we should hardly be justified in classing ıem under the head of *monopolies*, for we have seen that the very ame of monopoly is odious, and that they are the "canker" of all ·ading. Nevertheless, railroads may charge too much and they ıay combine to prevent competition and to do injustice, and in ıany ways they may take undue advantage of the people and thus ecome obnoxious to many of the objections urged against genuine ıonopolies.

We have briefly referred to the time when, and the place where, ıis great railroad enterprise began in this country and to the pro-

phetic speech delivered on the occasion by that revolutionary patriot, Charles Carroll, of Carrollton, and also to the fact that within a period of less than fifty years over sixty-six thousand miles have been built and put in operation in the United States, and that all this has been the work of private enterprise and nearly all of private capital. We have also alluded to the fact that the Government has built no railroads, but that it did once construct a great macadamized turnpike over nine hundred miles in length, the building of which gave rise to a great national political controversy as to the constitutional right of the Government to engage in works of internal improvement. It was finally settled, as was then supposed, that it had no such constitutional right; but recently that question has been revived, and again it is contended that such power exists, and it is invoked to exercise it in the interest of "cheap transportation," by building a great double-track steel railroad from the Atlantic Ocean to the Mississippi River. It is claimed that this would cheapen and regulate the price of railway transportation everywhere. This magnificent Government scheme is proposed by its friends as a panacea for all evil.

Without reference to the question of constitutional power, which we do not believe the Government possesses, we believe it would multiply ten thousand fold the evils complained of. It would deaden and destroy private enterprise everywhere, and thus force the Government finally to assume the ownership and full control of all the railroads and the whole carrying-trade of our country, in which event every railroad manager, every railroad employee, would become a Government officer, and the whole carrying-trade become at once and forever a part of the politics of our people, and it would, we are sure, become a many times multiplied source of vice, corruption, and oppression, and become a great overshadowing Government monoply, to be managed and used for all time by politicians to promote their fortunes, perpetuate their power, and oppress the people.

Cheap transportation must come in good time; but it will never come through the interference of Government, or as the result of hostile legislation and embittered controversy between the different industrial and commercial interests. It must be the result of private enterprise, stimulated and encouraged by a liberal and generous confidence.

From this source has arisen all of our prosperity, and all of our
onderful success hitherto, and to it we may confidently look for
ntinued and greater advancement, and for more splendid results.
ich is the character of our American institutions and the enter-
ise and spirit of our people, that monopolies, whether of a private
public character, will not be allowed to control or rule the des-
nies of this country. Here the people are the source of all power;
d if it be rightly and intelligently exercised, we shall continue to
vance and improve, until finally, under the providence of God,
e shall reach the perfection of human government, and the acme
human happiness.

DDRESS AT THE GRANGE-PICNIC HELD AT DANE COUNTY AGRICULTURAL SOCIETY FAIR.

BY HON. GEORGE E. BRYANT.

Man says, "Let there be light," and immediately the flickering
pers glow. God said, "Let there be light," and the glorious sun,
e silvery moon, the twinkling stars, and the beautiful earth mov-
and shone, each in its proper sphere. Earlier history teaches us
at, in the most fertile spot of earth, the Creator of the Universe
anted a Garden and called it Eden. To this Garden, rich with
lden grain, sweet with the incense of beautiful flowers, crowned
th evergreen trees, laden with abundant fruit, in whose branches
e songs of birds made music sweet, and at their roots little brooks
rgled down from the mountain-side, and waters lept to cheer
e haunts of nature with their smiles, he brought man, then
oman. Here was the foundation of all society. Our first parents
ere not ministers, doctors, or lawyers. They were not artisans or
nilologions. No great monopolist dictated to them the price of
oes or sugar. They were plain farmer people; grangers who
aced faith in God, and they were happy, until tempted by that
ily politician, the devil. They attempted to set themselves up in
ade, heeded not the warnings of their Maker; got frightened;
creted themselves; abandoned farming; and at last turned tailors
d made clothing of fig-leaves. Here was the first secret society

of which we have any knowledge—the "Tailor's Union," formed by Adam and Eve, when they abandonded farming, and made garments. From that day to this, all over God's green earth, the "Tailors' Unions" have made the clothes we wear, cost us what they pleased. In the progress of time children were born, the world grew populous, there became many people, among them a curious fellow by the name of Crispin, who was a shoemaker, who discovered a curious fact; for which discovery he has been, by his followers and brother shoemakers, canonized; has been made by them a Saint, and is called Saint Crispin. His wonderful discovery was this: That all children were born bare-footed and must be shod. He formed shoemakers into secret societies, and our "soles" are high or low, in more than one sense, as they ordain.

Every book or newspaper we read has cost something extra on account of "Printers' Unions." Seeing how swimmingly the disciples of Crispin were getting on, other operatives and artizans formed "unions," made secret pledges, dubbed their patron a saint, and by so doing increased their wages and lessened their labor. The doctors had their little society meeting, and agreed among themselves that they would pill us—sometimes kill us—for so much and no less. The lawyers had their bar associations, and made a fee-bill, which read: "Take all your client has." In justice, however, to the profession, I will say, they are something like the old English robber—they take from the rich and give to the needy. They live well and die poor. Ministers combine, if not at donations, at ordinations. Merchants have quit running one another, and have formed boards of trade. Rogues and knaves are bound by secret ties. In short, everybody and everything, the farmer excepted, have had grips and signs, and save with him, co-operation has been the order of the day, but the farmer, "his hand against every man and every man's hand against him;" and as a namesake of mine said, the farmer's hand is too poor to play alone, for the tradesman sees it, and has both right, left, and a secret bower. The farmer, ever since commerce and manufacture have existed, has been a mere bush-whacker, confronting an organized, well-equipped foe; but at last a better day is coming; the Grange and the Farmer's Club are doing their good work. I bid them God speed. They are both fighting the same great enemy—the monopolist and the middlemen; the Club, with as much boldness, but with less

ill than the Grange. The enemy knows what blows the Club will ve, and studies his wards and parrys; but the Grange is a left- nder and strikes where he wots not of. The Clubs, as a general le, have been failures, and why?

1st. The enemy was there and sowed tares with the good seed.

2d. The wife, the mother, the sister, were not there; too often e Club has been a place where the boys learned to chew tobacco, d little else; but in the Grange, woman shines as she does in her n home. The society of the Grange, the bringing together the milies of different farmers and placing them upon a common latform, strengthens the strong and elevates the weak—each and l are put upon their best behavior, and where the incentive be for l to do their best, all will improve and each learn of the other. he only objection I have ever heard to the Grange is, that it is a cret society. This objection is urged very hard by store-keepers of l kinds. by railroads and other great monopolists. Some newspa- rs, paid by the vultures that feed on the farmers' hard-earned uits, howl magnificently, "hay-seed!" "hay-seed!" We grangers y let the wolf howl; our gate hath its keeper. Some good farmers, rough a mistaken notion, say we would join the Grange if it was ot secret; they believe in open-hand daylight. To all such persons will say, there is not a bushel-basket full of secrets in the four de- rees of a subordinate Grange. In fact, I believe that every farm- and his wife have more secrets between themselves than there is in e Grange, and I fear some of them have secrets quite as weighty, at they don't tell each other. I lived over forty years without longing to any society or order. I joined a Grange because I be- ved it would add to the pleasure and happiness of not only my- lf, but my wife and children. Farmers' wives are d barred from any of the pleasures of refined society; her visits to the lecture, e theater, and concert, grow rarer as the years roll by; men are o apt to forget that women are more sociable by nature than men; at they crave society. That taste and a desire to be pleasing and lmired is as much their nature as is man's to be a leader, or to use vulgar phrase, a boss. Women love to wear their best dresses as ell as a man loves ten per cent. This is right. One checks the her, and sociality makes better companions. In the Grange, any of these social wants are supplied. The few simple forms d ceremonies of purity make the young heart lighter and the

hearts of the old glad. It adds a zest to the somber winter-life of a farmer's wife, and brings him back oftener in thought and actions to the girl he loved and won.

And just here let me tell a story, old but true, illustrative to my mind of a coldness, a careless love that too often takes possession of the farmer, as years are added to years of married life, as cares increase, and duties seem to multiply:

Jeremiah Mason was a great lawyer of Portsmouth, New Hampshire, of later years of his life, of Boston. He and America's eminent statesman, Daniel Webster, had many battles of brains. Mason was not only a great lawyer, but he was a pious, consistent church-member. Some years after he had moved from New Hampshire to Boston, there came to his office an old man, whom he had known in youth and early manhood, at whose wedding he had been a guest, who desired Mr. Mason to procure a divorce for him from his old wife. Mr. Mason listened carefully to his statements, learned that together, his old friends had grown rich, that cares and family had increated, that the former, bent on getting rich, had grown careless of his wife's comforts, and at last from one thing to another, had come to the conclusion that all the love his wife ever had for him was transferred to their children; in short, that she didn't care a dime for him, and he proposed to divide up the property and let her go. Says Mr. Mason—Friend A., some thirty years ago you married Julia S.; you have raised three sons and two daughters to man and womanhood; you say they are well settled in life, and that they all side with Julia? Yes. Friend A.—Go home and for six months court Julia as you did be she was yours, and, if at the end of that time you want a divorce, come back to me, and I will file a bill. Brother A., let us pray; and thereupon Mr. Mason knelt down and prayed earnestly to God to show his old friend the right road to happiness. At the end of six months the client came back, not to Mr. Mason's office—not alone—but to his old friend's house, a loving old wife with him, and a green old life was their's ever after. There are probably not many farmers that get worked up to such an unhappy state of mind as did Mr. A., and there are few lawyers like Jeremiah Mason. His advice, however, I will warrant to make every family happy.

To all old men I would say, if in your old age you would grow happier as well as richer, "court your wives." It is the want of so-

iability alone that has made farm-life tedious; that has indueed so ıany girls to marry city sprigs, so many country boys to seek aiety in popular towns. Young people want fun, amusement, earer home. The Grange, with its monthly feast or dance, togeth- : with the innocent parts all take in initiation, supply a want long eeded among farming communities.

Farmers are too prone to put off the day of pleasure and recrea- on; there is always so much to do. There is a philosophy, not ew, but newly formulated that reads thus: "Put your finger on ıe present moment and enjoy it; it's the only one you've got, or ver will have." The Grange furnishes a place of weekly amuse- ıent as well as instruction; if carefully nurtured, old and young, ıen and women, young men and maidens, will there together gain ighter and brighter visions of life's duties. In union there is rength, and whatsoever things are good, whatsoever things are vely, should be sought after and cherished.

And now, sisters and brothers, one word to you and I am done. ou have erected here and there altars, sacred to Faith, Hope, Char- y and Fidelity, four symbols of our order. You have erected ıem, and now stand by, defend, uphold, and preserve them. Let) opposition intimidate you while you have a single pillar to lean ɔon. Go on in the good work you have begun; remembering al- ays how many enjoyments the great Creator has granted to man- nd; with what magnificence He has adorned and embellished our ɔrld; what sweets social life affords; what tender ties, what warm fections, what delightful sentiments has He created for the heart enjoy; and through the Grange, by the blessing of God, may you lp work out that great principle (for so many ages undiscovered) which *labor* shall receive its just reward, and have its due influ- ce in the affairs of men.

For the Executive Board,

W. W FIELD,
Secretary.

ATE Agricultural Rooms,
Madison, May 1, 1875.

Date Loaned

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Wisconsin. State Ag. Society.
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