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Transactions of the Wisconsin State Agricultural Society, including a full report of the state agricultural convention, held in February 1874, and numerous practical papers and communications. Vol. XI...

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TRANSACTIONS
OF THE
WISCONSIN
STATE AGRICULTURAL SOCIETY,

INCLUDING A FULL REPORT OF THE
STATE AGRICULTURAL CONVENTION,
Held in February 1874,
AND NUMEROUS
PRACTICAL PAPERS AND COMMUNICATIONS.

VOL. XII, 1873-4.

PREPARED BY
W. W. FIELD, SECRETARY.

MADISON, WIS.:
ATWOOD & CULVER, PRINTERS AND STEREOTYPERS.

1874.

ERRATA.

On page 29, under the head of "Short Horns," when speaking of the sale in New York, and of the impossibility of purchasing pure bred Short Horns in England, or of a public sale having been made in that country for 20 years, it should have read of the Duchess Family. Sales of other families of this celebrated breed have been quite numerous, and at remunerative prices.—SECRETARY.

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

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

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

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

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

ARTICLE V.

OF MEETINGS AND ELECTIONS.

The annual meeting of the society for the transaction of general business shall be held in its rooms in Madison, on the first Wednesday in December, at 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 country 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 agricultural works and periodical publications, together with such models, machines and implements as may be donated to, or otherwise acquired by the society.

4. To investigate, as far as practicable, the nature of fertilizers, 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 disapprove of the same.

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

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

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

The auditing, adjusting, allowing or rejecting of all bills, claims, or demands, of whatsoever nature, against the Society, and the issuing of orders upon the Treasurer for 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.	Stoner's 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.	Brazeal, 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.
Barlass, Andrew	Emerald Grove.	Bush, Samuel.	Milwaukee.
Barlass, David.	Emerald Grove.	Button, Henry H.	Milwaukee.
Barnes, George	Janesville.	Burnham, Miles ...	Danville.
Barrows, E. S.	Chicago.	Burnham, A., Jr.	Milwaukee.
Barry, James	Fitchburg.	Burnham, J. L.	Milwaukee.
Bates, A. C.	Janesville.	Byrne, John A.	Madison.
Beecroft, W. G.	Madison.		
Bement, E.	Oregon.	Casar, Wm.	Janesville.
Bemis, Jervis.	Janesville.	Camp, H. H.	Milwaukee.
Benedict, J. D.	Bristol.	Capron, Geo.	Madison.
Benedict, S. G.	Providence, R.I.	Carlton, W. D.	Sun Prairie.
Benedict, W. G.	Milwaukee.	Carpenter, J. A.	Waukesha.
Benson, S. W.	Bloomfield.	Carpenter, J. E.	Windsor.
Billings, Earl.	Madison.	Carpenter, J. H.	Madison.
Bird, I. W.	Jefferson.	Carpenter, S. D.	Madison.
Bird, T. E.	Madison.	Carr, N. B.	Madison.
Bishop, John C.	Fond du Lac.	Carr, Joseph S.	Eau Claire.
Black, John	Milwaukee.	Carter, A. M.	Johnstown.
Blair, Franklin J.	Milwaukee.	Carter, Guy.	Janesville.
Blanchard, Willard.	Windsor.	Carver, P. S.	Delavan.
Bliss, C. M.	Iowa.	Cary, J.	Milwaukee.
		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.	Potosi.
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.	Dousman, H. L.	Prairie du Chien
Coleman, W. W.	Milwaukee.	Dow, O. P.	Palmyra.
Colladay, Wm. M. . . .	Stoughton.	Drakely, S.	Madison.
Colton, S. B.	Middleton.	Drury, E. W.	Fond du Lac.
Cooper, E. D.	Mineral Point.	Dunlap, S.	Burke.
Cornell, James.	Beloit.	Dunn, Andrew.	Portage City.
Cornwell, H. H.	Verona.	Dunn, Wm.	Madison.
Corrigan, Jno.	Cedarburg.	Dunning, Abel	Madison.
Cottrill, J. P. C.	Milwaukee.	Durkee, H.	Kekosha.
Cottrill, W. H.	Milwaukee.	Dutcher, J. A.	Milwaukee.
Cottrill, C. M.	Milwaukee.	Dwinnell, J. B.	Lodi.
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.	Fairbanks, E.	St. Johnsb'ry, Vt
Danks, E. P.	Stoughton.	Farwell, L. J.	Chicago.
Daniells, W. W.	Madison.	Fenn, G. W.	Janesville.
Darling, K. A.	Fond du Lac.	Ferguson, D.	Milwaukee.
Darwin, A. G.	Brooklyn, N. Y.	Ferguson, Benj. . . .	Fox Lake.
Davidson, Adam.	Verona.	Fernly, Jno.	La Grange.
Davis, G. L.	Milwaukee.	Field, Martin.	Mukwanago.
Davis, Jno.	Milwaukee.	Field, W. W.	Boscobel.
Davis, N. P.	Pierceville.	Fifield, L.	Chicago.
Davis, S. B.	Milwaukee.	Fifield, D. E.	Janesville.
Davis, W.	Center.	Fifield, E. G.	Janesville.
Dean, E. B.	Madison.	Finch, Lorin	Bradford.
Dean, N. W.	Madison.	Firmin, F. H.	Madison.
Dean, John S.	Madison.		

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

NAMES.	RESIDENCE.	NAMES.	RESIDENCE.
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.	Stevens Point.
Koss, Rudolph.	Milwaukee.	McDonald, A.	Alloa.
		McDougal, Geo. W. .	Madison.
Ladd, M. L.	Sugar Creek.	McGeoch, 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. . .	Nepeuskun.
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.
Lloyd, Lewis.	Cambria.	Mullen, James.	Milwaukee.
Lockwood, John. . .	Milwaukee.	Murray, Geo.	Racine.
Ludington, H.	Milwaukee.		
Ludington, James . .	Milwaukee.	Nash, C. D.	Milwaukee.
Ludlow, A.	Monroe.	Nazro, John.	Milwaukee.

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

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

LIFE MEMBERS.

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NAME.	RESIDENCE.	NAME.	RESIDENCE.
Williams, S. G.....	Janesville.	Worthington, Geo .	Milwaukee.
Wilson, Wm	Westport.	Wright, D. H.....	Madison.
Wilson, Zebina.....	Palmyra.	Wright, Geo.....	Mt. Horeb.
Wolcott, E. B.....	Milwaukee.	Wright, J. S.....	Emerald Grove.
Wooley, J. T.....	Milwaukee.	Wright, Josiah T..	Janesville.
Wootton, Robert....	Madison.	Wright, N. A.....	Pra. du Chien.
Worden, Ed	Madison.	Wylie, Geo. W	Elkhorn.
Worthington, B. M .	Madison.		
Worthington, D.....	Madison.	Young, J. E.....	Harmony.

OFFICERS OF THE SOCIETY.

1873.

PRESIDENT.

WM. R. TAYLOR, - - - - COTTAGE GROVE.

VICE PRESIDENTS.

1st Cong. Dist.,	- -	RUFUS CHENEY,	- -	WHITEWATER.
2d	"	- -	C. H. WILLIAMS,	- - BARABOO.
3d	"	- -	J. H. WARREN,	- - ALBANY.
4th	"	- -	JNO. L. MITCHELL,	- MILWAUKEE.
5th	"	- -	SATTERLEE CLARK,	- HORICON.
6th	"	- -	ELI STILSON,	- - OSHKOSH.
7th	"	- -	J. G. THORP,	- - EAU CLAIRE.
8th	"	- -	JNO. T. KINGSTON,	- Necedah.

SECRETARY.

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

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, WM. R. TAYLOR,
Governor of Wisconsin:

SIR: The general success the last year among the cultivators of the soil has been marked and satisfactory. Good crops and remunerative prices have rewarded the labor of the farmer, and notwithstanding the financial disturbances during the latter part of autumn and first of winter, resulting in depreciation of prices of products of the farm, and a general disturbance in business circles for a brief time, the general result has been thrift and prosperity in all departments of industry.

AGRICULTURE.

WHEAT.

This crop was excellent, better than in any year since 1869, and about 20 per cent. increase over 1872. The quality was good, and the price, on an average, at the different railroad stations, about one dollar per bushel. The net return to the farmer on this cereal was quite profitable, but would have been much more satisfactory and remunerative upon the cost of production if an average of ten bushels increase per acre had been produced. The cost of production per bushel usually, I may say almost universally, is decreased in proportion as the number of bushels are increased per acre.

The valuable aids furnished by improved machines for preparing the soil, seeding, harvesting and threshing, render the cost of production much less than with the rude implements of olden times. The cost of raising this grain varies as the best modes of culture are pursued or otherwise. I am of the opinion, that under favorable conditions and surroundings, with thoughtful and intelligent culture, wheat has been grown in this state the past year for fifty cents per bushel, while the thoughtless, unskilled farmer has been able to obtain nothing above the cost of production.

CORN.

There has been a falling off in quantity of this great staple, at least 25 per cent., and the quantity was so inferior that I am of the opinion that the value of the crop for food was reduced fully 40 per cent. over the product of 1872. The causes of this low and inferior crop were largely to be attributed to a wet, cold, and hence backward spring, short, dry, cool summer and early frosts, accompanied with a damp cool atmosphere unfavorable to its maturity. The importance of early planting, with thorough culture, so as to push it vigorously forward was never more fully realized by producers of this crop than their experience the last year.

OATS.

Crop a little above the average of 1872, and of equal, if not superior quality. This excellent crop will go far to supply the deficiency caused by the partial failure of the corn crop, and while the price has been somewhat higher than in former years, the amount has been sufficient to supply the home demand and a small amount for export.

RYE.

This cereal is not grown to a great extent, only a few counties producing it in any abundance. The product was fully up to the average of the year previous, and of an improved quality.

BARLEY.

Moderate crop; less than in 1872; quality fair. I do not consider it a particularly desirable crop to raise in large quantities, as the demand is local and prices fluctuating and uncertain.

BUCKWHEAT.

Very light crop, not to exceed 60 per cent. of an average for the last five years. In portions of the state the extreme heat and drought killed the blossom, more particularly on sandy soils. Late sowed much injured by early frosts.

POTATOES.

Excellent in quality in all portions of the state, except where late planted and unripe at time of early frosts. Product much below that of 1872, probably 25 per cent. Cause—drought and the Colorado beetle.

BEANS AND PEASE.

The area planted to these products was somewhat increased over former years. The crop was good and well secured.

TOBACCO.

Yield 20 per cent. less than the previous year, and of only fair quality. The plants were put out late, owing to the wet, cold spring and early summer. The conditions seemed unfavorable during the season for its rapid growth, and the early frosts of autumn found much of it in an immature and unripe condition. The net profits of this weed product the last year have not been as satisfactory as formerly, and the prospect for an increased acreage in the future is not flattering. The amount grown in 1873, was about three million pounds, upon an area of 3,000 acres. The average price at place of production five cents. Total value \$150,000.

HOPS.

This crop was a great failure, not exceeding in the aggregate one-fourth of the product of a good season. This was largely to be attributed to the death of the old vines, caused as is generally supposed by the extreme severity of the winter previous, many of the old yards having been almost entirely destroyed. The prices paid were high, and quite remunerative to those having fair crops.

ONIONS.

This bulbous root is being raised quite extensively in same portions of the state, and when near to good markets is made very

profitable. Land suited to the raising of corn, of clean culture and pulverized finely, will produce good onions. You cannot well get the soil too rich for this crop. Manure used however, should be well rotted, fine, and thoroughly mixed with the surface soil. Land placed under the highest and best culture has been known to produce 1000 bushels per acre. Average crop, with good corn soil and fair culture, about 400 bushels. The demand for this crop is steadily increasing, as its valuable and healthful properties as an article of food are better understood and appreciated. The product for 1873 was above the average and of superior quality.

CRANBERRIES.

The culture of this crop is rapidly increasing and with the most flattering prospect of remunerative returns. The lands adapted to this branch of industry are mostly in the central and northern portions of the state, and are obtained at prices quite as low as good lands for general farm purposes.

These lands or marshes, in their native state, are some of them quite thickly set to the cranberry vine, are producing the fruit in considerable quantities, and if favorably located, so that they can be readily and at little cost drained and flowed—two important requisites in the profitable raising of this crop—will be made highly productive and remunerative.

The *Milwaukee Journal of Commerce*, in a recent number, speaking of cranberry culture, says:

"Respecting their value as a product, we have some Munchausen reports for the year 1873. One gentleman picked from his "best acre" 1,373 bushels. He received \$2.80 per bushel, and as the picking cost him \$1.00 per bushel, his income from that one acre was \$2,461.40. Others had a yield of from 700 to 1,000 bushels per acre, but these are examples of the greatest yields. Some parties average 113 bushels to the acre, others as low as twenty bushels, the latter being marsh just commencing to bear. By the sudden appreciation of the marsh lands producing this article of consumption, many have almost instantly found themselves wealthy. Men who, a year or two since, would have taken a thousand or two for all they possessed, are now the "heaviest" men known to the bankers of their towns."

I am of the opinion that the culture of this excellent and healthful fruit is to become in a brief period a very important branch of

industry, and that Wisconsin at no distant day is to be the largest cranberry producing state in the union. The product was much below the crop of 1872.

FRUIT.

APPLES.

Short crop—trees badly killed by the severity of the last winter, many of them cracking open an inch or more, exposing the very heart of the tree, and causing immediate disease and early death. Many counties reported an entire failure, and others having a fair crop, complained of inferior, knotty and poor quality of fruit. The product was at least 50 per cent. below the crop of 1872, and of vastly inferior quality. The severity of such winters as 1873 must teach Wisconsin apple growers the necessity of planting the iron-clad varieties only. The less hardy and usually more toothsome and desirable varieties may be raised with marked success under favorable conditions and surroundings, but they must not be relied upon for the main crop in this latitude.

GRAPES.

About three-fourths of an average crop, and of fair quality. Concord most hardy, and hence produced in greatest abundance. Clinton, Delaware and other choice varieties raised in considerable abundance with extra care, culture and protection in winter.

PEARS.

Very few raised. Much troubled with blight. Experience and observation incline me to the belief that the central and northern portions of the state are better adapted to the successful culture of this delicious fruit than the southern portion, and perhaps this better adaptability is to be attributed somewhat to climate and to better protection by the large timber belts of that part of the state, which modify the severity of the winters and afford more full protection than the more open prairie lands of the southern part. Repeated trials in the growing of this fruit are to be encouraged until the causes of failure are fully understood and successfully removed.

RASPBERRIES, STRAWBERRIES AND BLACKBERRIES.

The raising of these small fruits I would highly encourage and commend, not only to the small gardener in our villages and cities, but to the general farmer. With little labor and small expense these berries may be grown in great abundance, and are not only healthful and a luxury, but are a considerable source of profit, if near our cities and larger towns, where they may be marketed to advantage. Their culture I am happy to say has increased the last year, particularly upon our prairie and sandy soils, where they flourish with great vigor, bearing fruit abundantly. I know of no climate or soil better adapted to an abundant yield or more perfect maturity of these fruits, than that which our state affords.

STOCK RAISING.

I would again urge upon the farmers of the state the importance of raising *more* and *better* stock. Be governed by circumstances as to the kind, whether horses, cattle, sheep or hogs. While any part of our state is adapted to the raising of stock, some portions are more especially calculated to produce better pasturage and hay than others, and would be more suited to successful horse, cattle and sheep growing than for swine, while other localities are better for corn and clover, indispensable articles of food in successful hog growing. Wisconsin is too far removed from the great consuming markets of the east and of foreign countries to enable the farmers to obtain remunerative returns for their labor by shipping the coarse grain products of the farm to such distant markets. These products must be utilized at home, on the farm, in the growth and production of animals which can be transported to eastern or foreign markets at a trifling cost of their value, when compared with the expense of shipment of grain, etc., upon which they are to be fed. And here let me say, that it should be apparent to every thinking, intelligent farmer, that it costs no more to ship a good animal, pound for pound than a poor one, and that the extra price per pound which such animals always command is a valuable consideration—in fact is

the cream of the farmer's labor, costing nothing for transportation on the additional sum received.

Another important consideration in the growing of stock is that one is better able to keep up the fertility of his soil in this branch of farming. He is not only saving the transportation of his products to the place where wanted, but he is keeping his land in so healthy and fertile a condition that it will continue to bring forth continually and abundantly its golden crops.]

SHORT HORNS.

Forty thousand six hundred dollars paid for a single cow of this celebrated breed at a sale the last year in New York. Fifteen cows at an average of a trifle less than twenty thousand dollars each, prices said to be above those ever paid for cattle in this or any other country. It is said upon undoubted authority, that it is impossible to purchase any pure bred short horns in England; not because there is none, but from the fact that the owners have not enough for themselves, and hence will not sell at any price. It is also reported that there has been no public sale of short horns in England for twenty years, and no probability of one for a century to come. It certainly speaks well for the prosperity of our country, and particularly for the energy of short horn breeders, that we are able to supply the mother country with this valuable breed of cattle, and at such remunerative prices. Now I am not going to advise the stock raisers of Wisconsin to all attempt to grow twenty thousand dollar cows, or to all go into the breeding of short horns, but I do desire to recommend to the farmers and stock raisers the importance of growing better cattle of the breed they prefer. It costs but little more to keep a cow which gives twice the amount of milk of another. It takes less corn to fatten a steer of the short horn breed than a common one, the weight of each animal being the same, while the former commands often double price in the market for beef. Where farmers are not able to purchase this valuable stock at prices such as they command, several small farmers can club together and own a bull which all can use, and by judicious crossing can raise first class grade cattle at a small cost over the price of the common herd. Such grades are usually better milkers than

either the families of sire or dam, and for fattening are almost equal to the full bloods. I would not advise even the purchase of blooded stock of the most celebrated and fashionable families for the common farmer, for I believe equally as good animals for the dairy or butcher may be obtained at a less price from families of pure bred stock and of equally desirable points for profit. Of course, if you wish to grow stock for sale, to breed from, only pure thoroughbreds should be used. No grade males should ever be used if you desire to improve your herd.

There is no longer an excuse for the scrubby, unprofitable stock of the country being continued, when by co-operation and the wise expenditure of a few hundred dollars the best thoroughbred and grade cattle and other stock may be procured.

What I have here said relative to the short horn cattle is substantially true of all animals reared upon the farm. The best are the cheapest.

DAIRYING.

This important branch of industry is rapidly increasing. The number of cheese factories in the state, so far as ascertained, is sixty-five, with an annual product in round numbers, of three million two hundred thousand pounds of cheese, and some twenty thousand pounds of butter.

From observation and information obtained from reliable sources I am fully convinced that no branch of farming has paid better in Wisconsin for the past five years than dairying. This interest has been mostly confined to cheese manufacture, very little butter having been produced for export. I doubt not however, that this branch of dairy farming might be made highly remunerative, as transportation would be much less, not to exceed one-third to one-half the cost of the tariff on cheese, compared to the value of each in the eastern markets. Associated effort in this direction will, I have no doubt, soon be introduced, and butter factories spring up in various localities of the state, and be operated with marked success.

(From a statistical and practical review of the dairy interest in the United States for 1873, by X. A. Willard, Esq., who is the

best authority upon dairy subjects, probably of any man in the United States, I see that the amount of cheese exported from the United States in 1873 was 80,000,000 pounds, in 1867, 58,000,000 pounds, and in 1859 a little less than 10,000,000 pounds. It will thus be seen that the cheese interest has increased enormously in the United States, as the amount of home consumption has probably increased in substantially the same ratio as has the increased demand for export.) The increased cheese product in Wisconsin, the last year, has been fully equal to that of most of the states, and possibly greater than any of the western states.]

Mr. Willard states that little first class butter is exported, as the price in our home market is more than it would command in foreign markets, transportation added. He further says:

"There has been a general impression that the dairy business was being overdone, and fears have been entertained from year to year, that there was likely to be an immense surplus of dairy products beyond the consumptive demand. These fears have never been realized, and in my opinion they will not be realized for some years to come. It is true dairying is being extended into new districts, but consumers are also increasing, and at a ratio quite equal to that of the production. Besides the natural increase of our population, we have an annual immigration from the old world of half a million or more souls. These must be provided for, and they are for the most part excessive consumers of dairy products. The population of England is also rapidly increasing and her demands are larger from year to year. Notwithstanding the discouragements of the year, I have full faith in the dairy, and believe it offers quite as favorable prospects of remuneration as other branches of agriculture, and indeed a better prospect, if we take a series of years together. But there must be industry and economy, attention to the business and good management."

I here present a detailed statement of the number of cheese factories in the state, where located, and the amount of product of each for 1873:

NAME.	Post Office.	Cheese. lbs.	Butter. lbs.
H. Conover	Plymouth	156,230	.....
Pierce & Strong	Sheboygan Falls	109,000	.....
F. Mather	Sheboygan Falls	98,000	.....
H. Smith	Sheboygan Falls	94,058	.....
A. G. Dye	Sheboygan Falls	78,197	.....
Seth Conover	Plymouth	77,494	.....
C. Harmon	Winooski	75,040	.....
Holden Bros	Sheboygan Falls	69,754	.....

Number of Cheese Factories, where Located, and Product of each—continued.

NAME.	Post Office.	Cheese. lbs.	Butter. lbs.
D. Kintz	Sheboygan	67,000	.....
Andrew Dye	Onion River	37,700	.....
A. E. Stoddard	Greenbush	30,148	.....
Mr. Greener	Schnopsville	30,000	.....
S. Meade	Onion River	26,200	.....
Gibbsville Factory	Gibbsville	25,000	.....
A. D. DeLand	Sheboygan Falls	22,526	.....
J. A. Smith	Greenbush	20,000	.....
James Slyfield	Hingham	16,000	.....
H. Haverkort	Sheboygan	14,600	.....
Wm. Springer	Sheboygan	12,000	.....
H. Gilman .....	.....	12,000	.....
G. W. Weeder	Sheboygan Falls	10,000	.....
C. B. Briggs	Cascade	8,000	.....
Chester Hazen	Ladoga	246,692	.....
Chester Hazen	Brandon	50,938	.....
Bristol & Orvis	Oakfield	38,744	.....
John Schrooten	New Castle	31,550	.....
Charles C. M. Hodge	Oak Center	8,136	1,550
Geo. D. Curtis	Rosendale	7,500	1,600
W. C. White	Kenosha	54,290	1,287
W. J. Bush	Woodworth	26,474	.....
L. A. Havens	Salem	50,781	.....
Wm. Munson	Salem	74,500	.....
J. B. Vosburgh	Randall	80,078	.....
Joshua Greenwood	Whitewater	80,000	.....
Galloway's Factory	Whitewater	43,727	500
Joseph N. Farnsworth	Darien	1,500	800
Steven Favill	Lake Mills	170,000	1,000
Geo. R. Hoisington	Farmington	28,039	.....
S. T. Hoisington	Farmington	4,376	1,194
New Glarus Factory	Evansville	80,000	.....
C. H. Wilder	Evansville	35,000	.....
E. Devereux	Evansville	72,256	.....
Melvin and Graves	Brooklyn	74,500	.....
A. Chapman	Columbus	32,000	.....
M. S. Barrett	Burnett Station	70,000	.....
J. B. Cochrane	Beaver Dam	116,600	.....
A. S. Davison	Fox Lake	22,000	.....
Darien Factory	Darien	70,000	.....
T. P. Davis	Allen's Grove	50,000	.....
H. F. Dousman	Waterville	94,000	.....
J. G. Carswell	Lone Rock	21,000	.....
Thomas Dale	Union Grove .....	.....	2,275
John Porter	Mazomanie .....	.....	4,985
John Foote	Lodi	4,600	300
Chipman & Curtis	Sun Prairie	19,367	.....
Louis Perrot	Greenville	9,397	529
Geo. P. Winter	Markesan	17,346	769
C. P. Skidmore	Stockbridge	12,000	600
Geo. Rogers	Oshkosh	16,000	600
N. W. Morley	Baraboo	27,289	400
F. B. Elsworth	Weelaunee	74,407	.....
Winslow & McNab	Beloit	105,000	.....
H. Winston	Belleville	49,636	.....
Wm. Wilson	Token Creek	6,000	.....
J. A. Wieting	Lodi	25,395	.....

FISH CULTURE.

In my last report, I briefly alluded to this subject, mentioning a few parties who had taken a lively interest in this new branch of industry, and more especially in the artificial propagation and rearing of the common brook trout. I am happy to state that the interest then manifested has largely increased the last year in the production of this delicious article of food, and that the results have been entirely satisfactory. There are now several prominent fish culturists in the state; prominent among whom are Alfred Palmer, of Boscobel; T. C. Douseman, of Waterville; and the Richardson Brothers, of Big Spring. Trout culture is, I believe, a specialty with these gentlemen, and success has crowned their efforts.

In this connection I wish to call the attention of our legislators and citizens generally, to the importance of utilizing the pure spring waters of our state for the propagation of the luscious trout, and to the equally important fact that our numerous lakes and rivers should be planted with more valuable varieties than now occupy them, and thus increase and cheapen a very desirable and healthful article of food for our people.

An important move has been made the last summer by the fish commissioners of several of the New England States, in conjunction with the United States Fish Commissioner, with a view to the propagation of a fish known as the Land Locked Salmon. This fish is found in the larger streams of the state of Maine, and in several of the ponds or lakes of that state, and is said to be a distinct and specific race of salmon, averaging from 2 to 5 lbs. in weight, and possessing all the rich, excellent and game like flavor of the salt water salmon, although their average weight is much less. These enterprising fish commissioners have fixed upon Sebec Lake in the state of Maine, where they propose to erect hatching houses and commence the rearing of this land-locked salmon.

A few hundred, or at most a few thousand dollars wisely and judiciously expended by the state would no doubt transfer these young salmon, or other choice table varieties of fish to our large

streams and lakes, and in a short period of time greatly increase the food producing power of the state, as it is now well understood by intelligent observers that the fertility of the same area of water of the usual depth of our large lakes and streams is much greater than that of the land.

The last legislature passed a law vesting in the governor the appointment of fish commissioners for the state, and his excellency has appointed the following named gentlemen: William Welch, Madison; T. C. Douseman, Waterville; and Alfred Palmer, Boscobel.

The appropriation made to carry out the object was very small, yet it will enable the commissioners to commence and lay a foundation for beneficial and profitable results in the future. If success should attend the efforts heretofore made, and which will be made by these commissioners the present year, I doubt not a liberal and fostering hand will be extended by the state to this branch of industry.

MISCELLANEOUS.

THE SCIENCE OF AGRICULTURE.

It is often asked, can agriculture be reduced to a science? Can results be carefully collected and recorded so as to be of practical value to the farmers. Facts are being established by repeated experiments which already reply to this question in the affirmative. The Journal of the Royal Agricultural Society of England for 1873, gives a summary of conclusions touching the results of twenty years' successive experiments in the growth of barley upon the same land. Also, experiments have been made for a great number of years in succession on the same land with wheat, in England, and with similar results. These results have shown a very little increase of crop by "mineral manures alone. Much more by ammonia-salts and mineral manure together, and that in the use of artificial manures for many years, in 99 out of 100 cases in which wheat is grown in the ordinary course of agriculture, the supply of immediately available mineral constituents is in excess relatively to the immediately available supply of nitrogen."

The practical application of these valuable results is, that upon the same land for twenty years in succession, an annual expenditure of less than \$15 per acre in artificial manures has yielded an annual increased product of 48 bushels of barley to the acre, and a corresponding increase in wheat, and of superior quality, and an increase of about 1 1-2 tons of straw. When we take into consideration the results of this labor of twenty years by chemists of scientific attainments and culture, and that this experiment was directed to the growth of a single variety of grain, need we ask whether agriculture is a science? And yet these experiments only show the great uncertainty of this pursuit, and that only a series of years in succession can determine definite results, but that only the results of such experiments can be safely laid down to rule and guide the young farmer. When an agricultural society or a government, employs learned scientific men to make experiments of this kind, concerning a single point in the science of agriculture, for the benefit of this great industry and for the progress of the world, is there not something in it that should stimulate the youth of our country to engage in a calling as grand and noble as any within the range of human knowledge? Similar experiments are being made upon our University Experimental Farm at Madison, under the direction of W. W. Daniells, M. S., Professor of Agriculture, and is a valuable aid to the establishment of scientific facts. A more liberal policy should be shown, however, toward this and kindred institutions, so that a foundation broader and wider may be laid for scientific investigations, and that practical and valuable results may be conferred upon the farmers of the state. Let agricultural colleges and practical farmers, give thought and study to some particular point in agriculture for years in succession until it becomes a fixed fact. Let these facts be recorded and handed down to posterity to guide and direct the beginners in this noble avocation. Such is scientific farming.

FERTILIZERS.

A vast amount of valuable material has been annually wasted in our state, which ought to be saved in convenient form to be applied to, and enrich the land, for want of manufactories to put it in condition for such application. I am glad to be able to state

that a company has been organized in the principal commercial city of our state—Milwaukee—for the manufacture of two kinds of fertilizers. One from blood alone, and one from the bones of animals and refuse lard. These are obtained at the slaughter and packing houses, and by a scientific and practical process, are concentrated into available forms for use and profit. The waste of all our large cities and towns should be utilized in this way, and although the demand for these concentrated manures in this state is not great, on account of our rich natural soil, yet in many localities they may be used with beneficial results, and I trust this new branch of industry, so auspiciously commenced, will rapidly be extended until the refuse material throughout the state shall be saved and converted into valuable and convenient fertilizers to gladden the soil of this and adjoining states. The bone and lard fertilizers of this company are sold at \$25 per ton, and the blood at \$50. It is claimed that as a top dressing for grain or grass, it has no superior; and is also excellent for top and bottom dressing for vegetables. If sown broadcast, 100 to 300 pounds to the acre is sufficient. It may prove a renovator of worn or exhausted soils of great value, also an excellent manure for gardens. I would advise trials in various forms, and note carefully results.

MINERAL WEALTH.

The mineral wealth of the state is being brought to light more and more each year under the fostering hand of the state, by the geological survey, and by private enterprise. With the opening of the northern portion of the state by new and important lines of railways, affording facilities for utilizing these mineral deposits, capitalists will be induced to seek investments in these newly discovered mines of wealth, and the prospect is flattering that these vast resources will be speedily developed, and those portions of the state contiguous to these deposits be largely increased in population and wealth in a brief period of time. New and very valuable mines of magnetic iron ore are reported to have been found near Ashland the past year. The specimens shown are said by competent persons to be very rich, and the quality is said to be almost inexhaustible. Copper is also found in the northern part of the state, near the shore of Lake Superior of

rich and excellent quality, awaiting labor and capital to direct it, and transportation facilities to convey it to market, all of which will soon be furnished. As the railways penetrate this hitherto wilderness country, capital can be largely increased and labor amply remunerated by developing these mines of wealth. The zinc interest was also largely increased the past season. In the south western portion of the state this ore is found in great abundance, and in close connection with the lead bearing formations. So large is the business in the vicinity of Mineral Point, that I am informed that 150 to 200 teams have been seen in that city daily delivering this ore at the railroad depot to be shipped to the state of Illinois, near the coal fields, there to be manufactured. I look upon the mining interest as one of the important branches of industry in the state; an interest which should be encouraged and to which the attention of capital may be attracted and directed. To this end I trust the geological survey will be prosecuted to completion, and facts spread, not only before our own people, but before the capitalists of the old world, that our great mineral resources and wealth may be known. A few thousand dollars, if wisely expended in this scientific research will, I doubt not, prove of incalculable benefit to the state's development and progress.

HEDGES.

In my last annual report I called the attention of the farmers of the state to the vital importance of live fences. From further observation and thought upon this subject, I am fully confirmed in the practical value of the ideas then advanced. While I am fully of the opinion that excellent live fences may be grown from the soft maple, box elder, white thorn, different varieties of the cultivated and crab apple, etc., yet I shall only here speak of the cultivation of willow and honey locust, both being rapid growers and making a first class live fence.

WILLOW.

From its extreme hardiness and ease with which it is grown from slips or cuttings, I believe it to be the best live fence plant for Wisconsin. Horace Cole, Esq., of Rolling Prairie, Dodge county, writes me giving his experience in growing this fence and its val-

ue for fuel. He says, "A good fence may be grown in from five to seven years, according to the land and attention the fence receives." Will grow more rapidly on low moist land than on high dry soil. My plan of growing a fence is to plow and pulverize the soil thoroughly and deep where the hedge is to stand, then set the slips one foot apart, leaving the top a little above the ground; cultivate and keep the ground clear of weeds for two years, cutting back or bending down to make a tight fence when sufficiently large. The willow does not sprout up if a root is cut off. I have plowed by the side of a hedge row, and broke off numerous roots, large and small, and never have seen a single shoot from such broken roots. I have willow fences on both dry and wet land and believe that I can convince any one that it is no humbug. As to its value for firewood, I am honestly of the opinion that five acres of willow upon moist land of twelve years growth will supply a family with fuel for a thousand years. The rapidity of its growth is wonderful."

In the monthly report of the Commissioner of Agriculture for August and September, 1873, I find practical instructions for planting and cultivating the willow for hedges, being part of a series of papers by Wm. Scaling, Esq., of England, a gentleman of many years experience in the propagation of the willow, and whose advice may be relied upon as of much value. He says:

"To form a good efficient willow-hedge the ground must be dug to a depth of 15 to 18 inches, and effectually cleared of weeds, and, if poor, manured; in fact it is necessary it should undergo a similar preparation to what would be required if it were intended to plant a thorn-hedge. Should the ground be very low, and charged with stagnant water, it will be necessary to throw out a ridge to plant upon, for no willow will flourish in a swamp.

"If it be desirable to form a hedge at once, willow stakes, 4 or 5 feet long may be used, the ends of which must be sharpened and pushed 12 inches into the prepared ground, 6 inches apart, in a standing direction thus // // // //, and be temporarily wattled at the top to hold them in position, until such time as they shall have fastened themselves by the spray which will grow up perpendicularly, thus www. Or, if it be preferred, they may be pushed in straight, and as the shoots put out at the sides they can be wattled together, and thus form a fence equally effective as the above.

"Another method is to plant a double row, crossing them in the manner following xxx. These should be secured temporarily by a baste-tie, until by growth they become fastened in position. The above methods are the most expensive on account of the extra length of the cuttings required, and would,

of course, only be adopted where it was required to have a hedge in the shortest possible time. The most economical mode is to plant cuttings taken from two or three year old shoots, and not more than 12 inches long; these should be pushed into the ground at the same distance apart, viz., 6 inches, or closer, if the hedge is intended to be game-proof, and at the end of the first year, if the shoots have not grown sufficiently strong, they should be cut to the ground, when the subsequent growth will be found strong enough to train into a permanent fence in any form that might please the fancy of the grower.

"As regards the monetary value of a fence of this description, my own experience leads me to estimate its annual produce, based upon a low calculation, at 5s. per chain. The weight of cuttings obtained from a hedge at Toton, 200 yards in length, and of two years' growth, which was cut February 21, 1871, amounted to 1 ton 15 cwt. 1 qr., and which, at the moderate estimate of 50s. per ton, comes to £4 8s. 3½d. In this case the fence was allowed to grow two years before cutting, as it was desirable to leave it as a screen for more tender plants; whereas, had it been cut each year, which would have been the case under ordinary circumstances, the crop would have been more valuable.

"It should not be overlooked that, owing to the rapidity of its growth, a willow fence forms an excellent shelter for plants and cattle in an almost incredible short space of time; whilst as a protection against game it possesses this advantage over every other description of fence, that by attention, and getting it sufficiently close—which may readily be accomplished by interweaving the shoots—it can be rendered perfectly game-proof, for whereas rabbits would burrow under netting, the roots of the willow would present an insurmountable barrier to their ravages.

"I should recommend a temporary protection of posts and rails, similar to that used for the defence of a thorn-hedge, but which would not be required so substantial, in consequence of the shorter time it would be necessary for it to remain, as, without some such safe-guard, it would, of course, be liable to be trodden down by cattle. A hedge so planted must be kept clear of weeds, and the soil maintained in a friable state, to admit of freedom of growth, until such time as it becomes perfectly formed, when no further attention or protection will be requisite. I should not advise the line of hedge-row to be encumbered with timber-trees, as they must, necessarily, stunt the growth of the hedge. The description of willow I recommend for the above purpose is the *Salix kersii*. The substitution of willow for thorn in the formation of hedges is not, by any means, a novel idea, its peculiar properties, in this respect, having been noticed by eminent authorities for years past. The properties of the bitter willow are thus described by Miller, the well known author of the Gardner's Dictionary: The extreme bitterness of the leaves and twigs renders it valuable for many purposes; when used as a band or withe it is never eaten by vermin, nor, when formed into a hedge, is it browsed on by cattle."

I am aware that there is a prejudice in some portions of the state against the willow hedge, from the fact that some years since parties traveled over the state selling willow slips for hedges — that many were purchased and proved a failure. I am not prepared to say that the kind sold was the best of the numerous varieties of this hedge plant, but so far as my information and observation extends, none of the parties purchasing and planting at that time have been especially benefitted. Some cases which came under my observation — and I doubt not it was so in nearly all trials — the land was not properly prepared, the slips planted in an imperfect and unintelligent manner, no care bestowed upon them by culture, cutting back, mulching or other proper treatment and attention; hence the result was anything but satisfactory. He who undertakes to grow a live fence must understand that the young plants must have proper care and protection, the same as corn or other products of the farm in their early stages of growth, or a partial or total failure is sure to follow the experiment.

Honey Locust.—This hedge plant stands high in northern localities, many believing it to be one of, if not, the most valuable plants for a live fence. In a prize essay on the honey locust, the writer states its merits as follows :

“I am convinced by experience and observation that for a hedge plant suitable to the requirements of a northern latitude there is none superior to the honey locust. The following are a few of its superior qualities:

“1. That it will stand the severest Winters uninjured. 2. There is no hedge plant that will grow and make a hedge in so short a time. 3. When it once becomes a fence it will with little care remain so, not like some plants, in which, when constantly pruned, the lower branches die out, and thus make an ineffectual hedge. Some may imagine it to be only the common locust growing here as an ornamental tree. It belongs, in fact, to a family of plants which do not sprout and upon which the borer never works. The red bud and Kentucky coffee tree belong to the same order as the so-called honey locust. There is a honey locust hedge at Elizabethtown, New Jersey, over forty years old. It is one mile in length and has always been tight and strong, and it is at this time known to be the best hedge on the continent. The hedges of J. L. Budd, of Benton county, Iowa, some four miles in length, are also beautiful, symmetrical and a perfect protection against all farm stock. I mention these two instances because the one is in the rich prairies of the West and the other in the sterile soil of the East.”

The importance of this live fence question should be apparent

to every farmer in the state. The enormous labor and expense incident to the building of line and division fences, to say nothing of repairs and rebuilding, the former of which is continual, and the latter on an average once in twelve to fifteen years, is a matter worthy their earnest, careful thought and consideration. If by a little labor and the expenditure of a few cents per rod for plants, one can in from five to ten years be the possessor of a live fence which shall not only be a source of pleasure and profit to themselves, but a legacy of equal value to the landed estate, if without fences, to hand down to their children and their children's children to bless them and the avocation they pursue, is it not worthy of their best endeavors? Will it not pay too? I believe it will bring forth fruit an hundred fold. I believe it to be of equal interest to the American farmer to the important questions of co-operation, transportation, etc., now agitating the country. I believe it will reduce the expenditures of farming, hence give more profitable results than any other one thing which the farmer can do.

I would say to the farmers of the state, if willow or locust do not suit you, buy plants better suited to your taste, or better adapted to your locality, but grow live fences.

INDUSTRIAL SOCIETIES.

These organizations are in a healthy and flourishing condition. The state, district and county societies are holding annual exhibitions and with an increased interest among the people. A report somewhat in detail, of the work of the state society will be found under the head of "Proceedings." I am not able to furnish even a synopsis of the work of district societies, no returns having been made to this office, but I am informed that a deep interest is manifested in their organizations, that annual fairs are held, and with success and profit. Especially is this true of the Northern Wisconsin Agricultural and Mechanical Association, the success of which has been marked and full of good results to the industrial interests of that part of the state.

I here give an abstract of the incorporated county agricultural societies of the state, which shows their condition for the year 1873.

ABSTRACT OF RETURNS OF COUNTY AGRICULTURAL SOCIETIES FOR 1873.

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WISCONSIN STATE AGRICULTURAL SOCIETY.

COUNTIES.	OFFICERS OF SOCIETY.			PLACE AND DATE OF FAIRS.		FINANCES.			
✓	Presidents.	Secretaries.	Treasurers.	Place.	Time.	Receipts.	Expenses.	Premiums.	Am't in Treasury
Adams	W. D. Clark ...	D. Scofield	A. F. Hill	Friendship	Oct. 1- 2	\$464 07	\$366 82	\$97 25	.....
Buffalo	A. Rockwell ...	J. W. DeGraff ..	J. J. Senn	Lincoln	Sept. 18-19	795 80	504 17	180 00	\$111 63
Columbia... ..	E. Fairbanks ...	L. H. Doyle	J. Q. Adams ...	Columbus	Sept. 17-20	1,114 33	387 78	644 00	378 25
Clark	J. S. Dore	J. F. King	W. T. Hutchins'n	Neillsville	Oct. 14-16	1,405 00	1,414 50	70 50	20 00
Crawford ...	N. Miller	C. D. Lamport ..	R. Wallin	Seneca	Oct. 1- 3	593 25	446 77	203 65	.....
Dodge	T. B. Grover ...	S. B. Bolens	D. Barber	Juneau	Sept. 18-20	503 60	330 95	172 05	.....
Dane	M. Anderson ...	Geo. C. Russell ..	Geo. A. Mason ..	Madison	Sept. 16-19	2,799 34	487 17	485 00	31 12
Door	J. Kimber	J. R. Mann	F. B. Parkman ..	Sturgeon Bay ..	Sept. 19-20	201 75	66 33	124 00	.....
Fond du Lac ..	E. D. Norton ...	J. J. Beeson	C. P. Phelps ...	Fond du Lac ..	Sept. 18-20	1,230 33	915 13	319 00	2 20
Grant	H. A. Moore ...	C. B. Sprague ...	W. W. Robe ...	Lancaster	Sept. 10-12	1,202 27	575 52	632 25	150 43
Green	F. Mitchell	W. W. Wright ...	W. Brown	Monroe	Sept. 17-20	1,369 85	465 35	904 50	.....
Green Lake ...	W. H. Powers ...	Jos. Yates	C. A. Peck	Berlin	Oct. 7- 9	1,186 48	145 32	877 50	163 36
Iowa	J. Whitman ...	J. Ralph	R. Carter	Dodgeville ...	Sept. 10-12	1,366 00	424 65	897 30	44 05
Jackson	W. T. Price	F. H. Allen	O. O'Heary	Black Riv. Falls	Sept. 15-18	878 00	639 55	328 25	.....
Jefferson ...	J. C. Olin	D. W. Curtis ...	Jas. Barr	Jefferson	Oct. 1- 3	1,699 14	1,009 64	689 50	58 41
Juneau	L. Beckwith ...	R. A. Wilkinson ..	M. Temple	Mauston	Oct. 1- 3	814 00	171 08	476 50	292 52
Kenosha ...	J. M. Kellogg ...	H. H. Tarbell ...	L. H. Thayer ..	Bristol	Sept. 16-18	890 64	318 34	396 25	175 05
Kewaunee ...	E. Bach	V. Miller	C. Deda	Kewaunee	Oct. 3- 4	473 90	441 35	78 50	45 95
LaCrosse ...	W. Van Zandt ...	A. J. Phillips ...	F. W. Stiles ...	La Crosse	Sept. 16-18	2,488 62	1,096 08	1,000 85	391 69
Lodi Union ...	P. S. Kingsley ...	J. Van Ness ...	J. B. Dwinnell ..	Lodi	Oct. 1- 4	1,070 46	427 88	632 00	121 54
Manitowoc ...	J. Hall	A. Pining .....	.....	Manitowoc	Oct. 1- 3	240 65	60 50	176 50	4 65
Marathon ...	R. E. Parcher ...	W. Wilson .....	.....	Marathon	Oct. 2- 3	744 00	312 92	438 50	2 58
Marquette ...	J. Graham	S. A. Pease .....	.....	Montello	Oct. 1- 2	204 75	57 00	147 75	.....
Monroe	J. L. Steere ...	W. H. Blyton ...	T. B. Tyler	Sparta	Sept. 10-12	832 35	488 35	278 00	69 00
Ozaukee ...	A. M. Alling ...	C. Welke .....	.....	Cedarburg	Oct. 1- 2	321 20	137 97	163 45	18 78
Oconto and Shawano..	R. Gillett	G. F. Paramore ..	M. Finegan	Gillett	Oct. 15-16	108 83	3 70	56 75	48 48

Pierce	J. M. Bailey...	W. Howes	F. J. Atwater ..	Prescott	Sept. 18-19	350 74	168 15	173 50	17 59
Portage	C. Couch	J. H. Felch....	E. Webster	Amherst	Sept. 22-24	528 00	236 62	268 48	23 50
Racine	N. D. Fratt....	A. L. Lawton ..	W. E. Chipman..	Burlington	Sept. 10-12	3,217 89	1,186 52	1,511 30	520 00
Richland ..	P. M. Smith....	W. J. Waggoner.	A. W. Bickford.	Richland Centre	Sep.29 Oc 1	1,588 08	992 43	240 15	376 93
Rock	Seth Fisher....	R.J. Richardson	C. Miner	Janesville	Sept. 9-12	3,879 48	1,930 00	1,461 60	487 88
Sauk	H. H. Potter...	J. M. True.....	T. T. English..	Baraboo	Sept. 16-18	965 68	338 53	551 75	75 40
Sheboygan .	H. N. Smith....	J. E. Thomas ..	W. D. Hotchkiss	Sheboyg'n Falls	Sept. 17-19	761 75	509 00	352 75	.....
St. Croix ...	G. W. Martin..	R. R. Young...	A.D. Richards'n	Richmond....	Sept. 22-23	407 55	66 30	276 00	.....
Trempeale'u	J. Rhodes	C. E. Perkins...	D. Arnold.....	Galesville	Sep.30 Oc. 1	529 36	346 50	167 00	68 25
Vernon.....	F.K.V'nWagn'r	H. Trowbridge.	A. L. Russell ..	Viroqua	Oct. 1- 4	742 21	327 94	361 00	53 27
Walworth ..	D. L. Flack ...	S. G. West.....	H. Latham	Elkhorn.....	Sep.30 Oc. 3	3,897 43	2,042 76	1,738 00	.....
Washington	L. Findor.....	G. J. Wilmot ..	F. Loring	West Bend	Oct. 7- 9	660 25	471 21	286 50	80 72
Waukesha ..	J. Lain	F. H. Putney ..	O. M. Tyler....	Waukesha.	Oct. 8-10	2,937 27	2,053 97	800 00	83 30

PATRONS OF HUSBANDRY AND FARMERS CLUBS.

That organization and co-operation among farmers is absolutely necessary to accomplish any settled purpose, or even to protect their interest in this age of combination of all other pursuits, is by the more intelligent cultivators of the soil a conceded fact. Single handed and alone, the farmers can have but little influence; but combine them together, and their *numbers, strength, intelligence and good common sense* may be a *tremendous power for good*. Granges and Farmers Clubs are being organized in every county in the state, and I hope ere another year comes round that every town will have one of the organizations formed and at work. The former order which is now gathering great strength and power in the state, and throughout the Union, derived its name from the Latin word *granum*, signifying grain. The word grange has a variety of meanings, but all indicating or pointing towards an agricultural connection. In French it means a grain farm, and *grangier* means a farmer. In Scotch it has reference to grain farm buildings, and in English it means a farm and all that is not movable pertaining to it. The word grange is very old, and was not limited in its meaning to a mere farm, but, as Scott says, was used in that "higher and more aristocratic sense to which it is fairly entitled," "Rotherwood."—"In Ivenhoe"—was called a grange. This was in the twelfth century. When Maurice de Bracy tried to persuade the Lady Rowena to consent to marry him he having abducted her, asks her: "How else wouldst thou escape from the mean precincts of a country grange where Saxons herd with the swine which form their wealth?" to which the lady referring to "Rotherwood," replies: "Sir knight, the grange which you condemn has been my shelter from infancy."

La Grange was the name of La Fayette's Chateau, and the word is said to have had about the same meaning as park, lodge or hall when applied to first-class residences. Thus it will be seen that the name grange adopted by the farmers of the United States has a significant and novel meaning, somewhat flavored with ideas of aristocracy and even of royalty; but it will be noticed that it always refers and is connected with the soil, with the cultivation of gardens, fruits and flowers and other agricultural and horticultural pursuits.

The principal persons in which the power of a government is invested are the owners of the land, in all other countries but the United States, and here the reverse is true. While I do not desire to see an aristocracy built up in any country, much less here, I do desire to see the owners and cultivators of the soil unite together for their common benefit and protection. I would not have them assume an aggressive policy, invading the realms of other departments of trade or industry, but I would have them assume a defensive attitude and endeavor to rectify some of the evils which exist, the tendency of which is to reduce the profits of their labor and build up oppressive and ruinous monopolies. Agriculture is greater than all other interests combined, in this state and in the Union, and in my judgment it is not only a right and a privilege which farmers have of shaping and guiding the destinies of the country, but it is their imperative duty so to do; but in so doing, they should take no narrow and prejudicial view of the situation. Power is accompanied by grave and important responsibilities, and should be exercised with intelligence, wisdom and caution.

Farmers should remember—and I believe the large majority do—that other great industrial and legitimate interests demand recognition and protection in their just rights, and that no man is a fit representative of a people who sees, knows or cares for no other interest than that in which he is engaged, but that he only is a true representative who is just to his own interest and generous and fair towards all others, and who has sufficient intelligence, moral honesty and integrity to be able to see clearly the just relations which these varied interests bear to each other and to the state.

A word as to which of these organizations farmers should join. One says that the grange "is a secret organization; that truth seeks the light and fears not investigation; that she throws the doors of investigation wide open and challenges examination." Another says, "I cannot be reconciled to this female element of its organization; that women had better remain at home, attend to the children, mend stockings and look after general domestic matters." To those farmers who believe in organizations of any kind for the advancement of their calling, I would say that this

WISCONSIN STATE AGRICULTURAL SOCIETY.

problem is easily solved. If you do not like the *secret* features of the grange, or even the *woman* feature, just join the clubs, or form yourselves into other industrial societies, with or without signs and pass words as you may elect, but with this great aim in view, of elevating and bettering the condition of yourself, your family and your brother farmers throughout this broad land. Many object to joining farmers' clubs, because they admit all, regardless of their calling or pursuit, and that no plans can be laid for their mutual protection and welfare but that the world knows it, and that the benefits which might be realized are lost.

I have ever found that it was much easier to find fault and pull down, than to build up in this world, and that no institution or order is so perfect that no objection can be found to its workings. Some object to the Episcopal church, because they pretend to be *the church*. Some object to the Baptist, because of their particular mode of baptism or close communion. Others find fault with our Methodist brethren, saying that they are too zealous, make too much noise and create too much of a sensation in the world, and so on through the long list of christian denominations. We are not exactly alike by nature, or by education. We look at all these things from our peculiar stand point, and act accordingly. This is all right—just as it should be; each working in that way and manner which seems to him best to accomplish the most good to his fellow man, as I doubt not these christian churches are doing, notwithstanding the objections raised against each. So with the granges and clubs. I would say to the farmers of the state, join the one where your taste, inclination and peculiar surroundings shall incline you, and then work with a will to elevate and dignify your business, better your condition and make society and the world feel your ennobling and beneficial influences. It matters not so much where you work, as that you work. If your purposes and designs are right, whether in the grange, club or other industrial society, you can accomplish much to educate and elevate the farmers of our state and country.

Some persons seem to be alarmed at this great farmers movement, and say it will lead to a separate political organization, and that should this occur the country would be in imminent danger. I apprehend the alarmists are most of them professional politicians

who see in the uprising of the toiling millions a weakening in their power, and that their services may not always be required by the people in the occupation they now pursue. I hope the time will never come when any class interest will be arrayed politically against any or all other class interests in this country; but I do desire to see the time come when the great agricultural interests of this country shall be in the ascendancy, and when men of intelligence, virtue, honesty and integrity, men representing the views, wishes and feelings of the great industrial masses shall sit in the councils of the state and nation. I shall have no fears of the downfall of the republic, if the government is placed in the hands of men of education, honesty and good common sense, whose lives have been spent in an occupation where the utmost economy and frugality were required.

I cannot better express my political views in connection with this farmers' movement than in an article from a recent number of the "*Western Rural*." He says:

"Shall our rural people descend from their pursuits and the peaceful thoughts of Agriculture, and become absorbed in the dirty and angry discussions of the political rings? Are the interests of the nation really so deeply involved in this quadrennial contest, that for a half year our farmers must listen to the harangues of stump orators, and the inflammatory appeals of political papers, and let the interests of their own business affairs become, for the time being, a matter of secondary concern? The masses of farmers do not take leading parts in political strife. *Should* they serve as mere jackstraws, to be played upon by party tricksters, who make politics a business and profession? We desire every farmer to answer this question for himself.

"If the representations of the different party mouthpieces are to be believed, there are no incorruptible statesmen in America to-day — nobody into whose hands can be safely committed the conduct of government, and the custody of the public moneys; and everybody is figuring and conniving to procure his individual promotion, for the pecuniary gain and influential position or fame that result. Are these representations true, or false? Are they not made in order to excite our prejudices for the time being, and influence our votes in favor of or against such candidates, as the case may be? Can we not recall that the same newspaper and the same editor who denounces a certain man to-day as unworthy of confidence, but a short time ago was as emphatic in his praise? Did not the stump pettifogger of last night urge the claims of one who, one year ago, he declared to be a demagogue, a defaulter, and a deceiver? Indeed, do not these very opposing editors and advocates, after their diatribes have been uttered, adjourn to the nearest bar, and drink

with each other as "hale fellows well met," and indulge in laughs over their essays?

"Would it not be just as well if our rural population—the voters, would let the politicians harangue to smaller audiences, and enjoy the contest a little more among themselves, and we attend to the more vital interests of Agriculture, without which politicians would find their "occupation gone," and there would be no need of governmental machinery? Or, if need be that they turn aside for a season to look after political affairs, let them make their own candidates and vote for them, and drive the professional politicians to honest walks of life, where they can get their bread through labor and sweat—in works that may confer some good upon their fellows, instead of living and fattening as they now do on official spoils and pillage.

"If there is any danger of the disruption and downfall of the American experiment of free government, as many assert at this day, it lies in this fact,—that *the body of the people do not rule*, but are mere machines in the hands of artful managers, who foist themselves into the governmental offices, and perpetuate their power by blindfolding the people. To exchange the rule of one *party* for another, is often but gaining the difference betwixt "tweedledum" and "tweedledee;" and our boys can figure that difference. The surety of a continued republic or democracy, where the people themselves rule, is in the *actuality* of the people's rule, as contradistinguished from the rule of those who make ruling their vocation and business, and who subordinate their country's good to their individual aggrandizement and profit.

"We profoundly believe there *is* danger in the existing order of things. And we further believe that the only escape from this danger lies in a return to the cardinal principle of a people's government, by that people assuming the direction of their own affairs, and driving out the gamblers that infest the precincts of the state. The rural yeomanry should exercise a potent influence in their own government. They have little voice in it now.

"The movement known as the 'Patrons of Husbandry,' and the efforts in the direction of 'Farmers' Clubs' and kindred associations, however crude and undeveloped they may yet be, are indications of a wholesome common sense in the minds of the yeomanry and a growing ambition to do something for the true interests of the commonwealth. Only through the organization and co-operation of the people can this *true* 'reform' ever be accomplished. No free government *can be* maintained where the people are degraded and repressed.

"We would not be an unnecessary alarmist, nor a hasty disorganizer; but we emphatically appeal to the farmers to look this matter in the face. Do your own thinking! Do not leave this God-given privilege to the keeping of partisan editors and stump orators! Give the imaginary issues of politics the go-by! Take no delight in the mock fights and burlesque tragedies of the political stage! Ascertain your own proper status and rights in the governmental economy, and, knowing these, assert them, and demand their recognition! Arise to a proper comprehension of the dignity of your position,

and, by the exercise of the franchises conferred upon you, demonstrate to mankind that you are something more than servitors of others and the laughing stocks of men who use you!"

For some years this order was looked upon as insignificant, and its enemies even ridiculed it and said that it could never become instrumental of special good to the farmers of the country. Soon, however, it began to grow, and when the cultivators of the soil began to ask "what they should do to be saved" from other co-operative schemes and combined efforts which were taking the lion's share of the profits of their labor, this organization was ready at their hand, with practical machinery to bring farmers together that they might express their views and wishes in a manner best calculated for their protection, and to promote their interest and welfare. The order now numbers more than a million members, with representatives in every state of the Union.

The "declaration of purposes" by the National Grange, which convened in St. Louis in February last, is a document of which the farmers should be proud. It is a broad platform, with clear and well defined purposes and objects, and should commend itself to all thinking, unprejudiced minds. Believing it worthy a place in this volume, I give it in full, as follows:

"PLATFORM AND PRINCIPLES.

"Profoundly impressed with the truth that the National Grange of the United States should definitely proclaim to the world its general objects, we hereby unanimously make this declaration of the purposes of the Patrons of Husbandry:

"1. United by the strong and faithful tie of agriculture, we mutually resolve to labor for the good of our order, our country and mankind.

"2. We heartily indorse the motto: 'In essentials, unity; in non-essentials, liberty; in all things, charity.

"3. We shall endeavor to advance our cause by laboring to accomplish the following objects: To develop a better and higher manhood and womanhood among ourselves; to enhance the comforts and attractions of our homes and strengthen our attachments to our pursuits; to foster mutual understandings and co-operation; to maintain inviolate our laws, and to emulate each other to hasten the good time coming; to reduce our expenses both individually and corporate; to buy less and produce more, in order to make our farms self-supporting; to diversify our crops, and crop no more than we can cultivate; to condense the weight of our exports, selling less in the bushel and more on the hoof and in fleece; to systematize our work and calculate intel-

ligerly on probabilities; to discountenance the credit system, the mortgage system, the fashion system, and every other system tending to prodigality and bankruptcy. We propose meeting together, talking together, working together, buying together, selling together and generally acting together for our mutual protection and advancement, as occasion may require. We shall avoid litigation as much as possible by arbitration in the grange; we shall strive to secure harmony, good will, vital brotherhood among ourselves, and to make our order perpetual. We shall earnestly endeavor to suppress personal, local, sectional and national prejudice; all unhealthy rivalry and all selfish ambition. Faithful adherence to these principles will insure our mental, moral, social and material advancement.

"4. For our business interests we desire to bring producers and consumers, farmers and manufacturers into the most direct and friendly relations possible. Hence, we must dispense with a surplus of middlemen. Not that we are unfriendly to them, but we do not need them. They are surplus, and their exactions diminish our profits. We wage no aggressive warfare against any other interest whatever. On the contrary, all our acts and all our efforts, so far as business is concerned, are not only for the benefit of the producers and consumers, but also for all other interests that try to bring these two parties into speedy and economical contact; hence we hold that transportation companies of every kind are necessary to our success, that their interests are intimately connected with our interests, and harmonious action is mutually advantageous. Keeping in view the first sentence in our declaration of principles of action, that individual happiness depends upon general prosperity, we shall therefore advocate for every state the increase in every practical way of all the facilities for transporting cheaply to the seaboard, or between home producers and consumers, all the productions of our country. We adopt it as our fixed purpose to open out the channels in nature's great arteries that the life-blood of commerce may flow freely. We are not enemies of railways, navigable and irrigating canals, nor of any corporations that will advocate our industrial interests, nor of any laboring classes. In our noble order there is no Communism, no Agrarianism. We are opposed to such spirit, and the management of any corporation or enterprise which tends to oppress the people and rob them of their just profits. We are not enemies to capital, but we oppose the tyranny of monopolies. We long to see the antagonism between capital and labor removed by common consent, and by an enlightened statesmanship worthy of the nineteenth century. We are opposed to excessive salaries, high rates of interest and exorbitant per cent. profits in trade. They greatly increase our burdens, and do not bear a proper proportion to the profits of the producer. We desire only self-protection and the protection of every true interest of our land by legitimate transactions, legitimate trade and legitimate profits. We shall advance the cause of education among ourselves and for our children by all just means within our power. We especially advocate for our agricultural and industrial colleges, that practical agriculture and domestic science and all the arts which adorn the home, be taught in their courses of study.

"5. We emphatically and sincerely assert the oft-repeated truth taught in our organic law, that the grange, national, state or subordinate, is not a political or party organization. No grange, if true to its obligations, can discuss political or religious questions, nor call political conventions, nor nominate candidates, nor even discuss their merits in its meeting; yet the principles we teach underlie all true statesmanship, and, if properly carried out, will tend to purify the whole political atmosphere of our country, for we must bear in mind that no one by becoming a grange member gives up that inalienable right and duty which belongs to every American citizen, to take a proper interest in the politics of his country. On the contrary it is right for every member to do all in his power legitimately to influence for good the action of any political party to which he belongs. It is his duty to do all he can in his own party to put down bribery, corruption and trickery; to see that none but competent, faithful and honest men, who will unflinchingly stand by our industrial interests, are nominated for all positions of trust, and to have carried out the principles which should always characterize every grange member; the office should seek the man, and not the man the office. We acknowledge the broad principle that difference of opinion is no crime; that progress towards truth is made by difference of opinion, while the fault lies in bitterness of controversy. We desire a proper equality, equity and fairness; protection for the weak and restraint upon the strong; in short, justly distributed burdens and justly distributed power. These are American ideas, the very essence of American independence, and to advocate the contrary is unworthy of the sons and daughters of an American republic. We cherish the belief that sectionalism is, and of right should be, dead and buried with the past. Our work is for the present and future. In our agricultural brotherhood and its purposes we shall recognize no North, no South, no East, no West. It is reserved by every Patron, as his right as a freeman, to affiliate with a party that will best carry out his principles.

"6. Ours being peculiarly a farmers' institution, we cannot admit all to our ranks. Many are excluded by the nature of our organization, and not because they are professional men, or artisans, or laborers, but because they have not a sufficient direct interest in tilling or pasturing the soil, or may have some interest in conflict with our purposes. But we appeal to all good citizens for their cordial co-operation to assist in our efforts toward reform, that we may eventually remove from our midst the last vestige of tyranny and corruption. We hail the general desire for fraternal harmony, equitable compromise, and earnest co-operation as an omen of our future success.

"7. It shall be an abiding principle with us to relieve any of our oppressed and suffering brotherhood by any means at our command. Last, but not least, we proclaim it among our purposes to inculcate a proper appreciation of the abilities and sphere of woman, as is indicated by admitting her to membership and position in our order. Imploring the continued assistance of our Divine Master to guide us in our work, we here pledge ourselves to faithfully and harmoniously labor for all future time, to return by our united effort to the wisdom, justice, fraternity and political purity of our forefathers."

STATE AGRICULTURAL CONVENTION.

This convention was held under the auspices of the Wisconsin State Agricultural Society, composed of representatives of granges, farmers' clubs, county societies and other industrial organizations of the state, practical farmers who came together to impart information, and to create a deeper interest among the people in the pursuit of agriculture and the kindred arts. Its proceedings were full of interest. Practical papers upon the several branches of agriculture and other subjects having a direct bearing upon the progress and advancement of the farmers calling were read and discussed with much interest and profit. A pretty full report of the proceedings of this convention, with the papers read, will be found in this volume, under the head of "State Agricultural Convention," and I cordially commend it to all interested directly in the pursuit of the various industries of the state. I would especially call attention to the valuable paper of Mrs. M. B. Huntly, of Appleton, upon "Farm Life—Its Hardships and Pleasures," and "Our Boys," by Mrs. H. P. Tucker, of New London. The former was read by the author, and the latter by Miss Hattie Bacon, a student of the University of Wisconsin, the writer being unable to attend the convention. These papers, and the manner in which they were presented to the convention were highly commended and approved.

ARBITRATION.

I observe that some of the farmers' clubs and granges of the state are discussing the benefits to be derived by submitting differences which occur between individuals to arbitration, and I am of opinion that some of the latter have even gone so far as to incorporate into their constitutions a clause binding members to this mode of settlement, and he who fails to live up to his promises is supposed to have more regard for law than justice, and is a subject of discipline, or even expulsion. This is a move in the right direction. I commend it highly. The amount of money expended in litigation is enormous, and as to law, it is very uncertain at best. He who goes to law expecting to obtain justice is usually disappointed, and this can be no worse, if he settles by ar-

bitration. The time squandered, expenses, etc., are much less in the latter than in the former case. If there is an understanding among a community of farmers that their difficulties shall be settled by their friends, they often even save them that trouble and slight expense by getting together and settling themselves. The easiest and cheapest way of harmonizing differences is usually the best. Justice is more sure to be obtained; the ill feeling and enmity usually engendered by law is avoided; social relations in the community are maintained, and society is really elevated and improved. I am of the opinion that this is true reform, and that if carried out among the farmers of the state, the amount annually saved in money, to say nothing about time lost, happiness destroyed, ill feelings towards neighbors engendered and a general lowering of the morals of the entire community, would be sufficient to pay the entire farm taxes of the state. This question is worthy the earnest thought and consideration of the entire farming interest of the state.

UNIVERSITY FARM.

Under the above heading may be found experiments upon the University farm, by W. W. Daniells, M. S., Professor of Agriculture and Analytical Chemistry in the State University, upon the "improvement of soils by mechanical means." The results obtained by the three years' experiments have not proved satisfactory, as the condition of soil and season, without proper drainage, have been unfavorable, as clearly shown by the Professor. It will be seen that there was a depreciation in the product of trench and subsoil plowing, and a very slight increase only, where the soil was stirred to the depth of twelve inches, over the common plowing of five inches. This would probably have been very different had not the season been unusually wet, or had the land been properly drained. These experiments are of much interest, and should be continued for many years in succession, to establish facts and prove of value to the farming interest. I am of the opinion that under favorable conditions of drainage, beneficial and profitable results will follow deep tillage, at least from eight to twelve inches in depth.

CENTENNIAL CELEBRATION.

In my last report I called attention to this worthy and great National enterprise. I then believed, as I still do, that this great work should be pushed forward by the National Government. Congress has however created a Centennial Board of Finance, a corporate body, with power to issue stock to an amount of ten million dollars, in shares of ten dollars each, and this Board will urge upon the people of Wisconsin and all other states, to help bear the burden as well as to share the benefits of this international jubilee. I am glad to see the interest manifested in this exposition by our people.

Wisconsin should feel a just pride in this anniversary, not only in exhibiting her rare agricultural and mineral wealth, her progress in manufactures and works of art, but to show the rapid development of our young state, having an existence of only about a quarter of a century, in all that pertains to true progress, and that our patriotic people feel a national pride in making this exhibition a success worthy of a great republican people. I exceedingly regret that our legislature at its session just closed, did not enact a law creating a State Board of Managers to look after the interests of Wisconsin in connection with this celebration, men whose education, enterprise and long residence in the state had made them familiar with its resources and capabilities. The next legislature should act promptly in this matter, for our gallant young state with her vast resources in agriculture, mining, lumber, manufactures and commerce, cannot afford to let such an occasion pass without a full and complete representation. This, in my judgment, cannot and will not properly be done except by the appointment of suitable persons, with moderate compensation for their services, whose duty it shall be to look after the interests of the state and her individual citizens; select the amount of space required to have Wisconsin exhibits favorably shown to the world, and generally to look after the welfare of our state, and see that she has a fair chance in this great World Show.

TRANSPORTATION.

The transportation facilities of the country are of vital importance, for upon them depend in a great measure the success of a people. Many of the products of the west are practically valueless in the hands of the producer, when commanding high prices in the east, in consequence of enormous transportation charges; and the manufactured goods of eastern producers are enhanced in value from the same cause; and as we examine this question in all its different phases and bearings, it will be found that it is of vital interest to all our people. Every man, woman and child in the state is paying tribute to our transportation system upon many of the articles they eat and drink, and upon nearly everything they wear. They are also dependent upon the same system for all of the luxuries and most of the necessities of life. In fact, the want of better facilities for interstate communication and a consequent reduction of transportation charges between the east and the west is a serious drawback to the development and progress of the vast agricultural, mineral and manufacturing industries of the state, and calls for earnest and efficient measures of relief. It must be apparent to our people that individual effort can accomplish nothing as against corporations of vast powers and of immense wealth. These great questions of transportation charges by railways and other common carriers, and of the burdens of state which they ought to bear by taxation, etc., must be met by the intelligent people of the state firmly and unitedly, to the end that the profits of labor and capital engaged or employed in the varied industries, trade and commercial interests of the state may be equally and justly distributed.

If, as is alleged, the railway corporations have not made returns of the full amount of their gross earnings to the state, and by so doing have evaded the state laws and defrauded the treasury of legitimate revenues; if they have obtained, by corrupt means, an influence in the halls of legislation or before the courts, which are subversive of the best interests of the people, let them be shorn of their power and strength, and made to understand that these great arteries of commerce were created and brought into existence, not for the building up of monopolies and the enriching

of the few, but for the convenience and the benefit of the people of this whole country—for the progress and advancement of our vast and varied interests, and for bettering the condition of all the people. At the same time, I would have these great corporate interests appreciate the fact that the sentiment of the thinking, intelligent people of this state is, that the capital invested in these highways of commerce shall pay a reasonable profit, or interest, upon the investment—at least remunerative returns equal or above the industrial and manufacturing interests by which they are fed and sustained. In other words, these railroads and all other legitimate enterprises are so closely interwoven and connected that they are mutual interests, each dependent upon the other for support and life, and hence the profits of the labor and capital invested in each should be as equally distributed as possible, to produce the greatest amount of contentment and happiness among our people, and mete out even-handed justice.

The masses of the people believe that railways are charging them exorbitant rates of transportation for freight and passengers, and will not be satisfied until an impartial investigation is had and the naked facts laid before them. I have long thought it expedient and wise to create a railroad commission, with power to send for persons and papers, to enquire into complaints, and ascertain if special privileges are given to one person or company over others under similar circumstances, and am happy to state that a law has been enacted to have such board appointed. The railroad interest is now of sufficient value and importance to warrant the people in knowing its relative position to the other great interests of the state, and of still fostering and encouraging it, or holding it in check, that it may not absorb or cripple other great business avocations and pursuits of the state.

Transportation by water is one of the questions which should receive the cordial support and encouragement of all our people, for there is no disguising the fact that transportation by water is much cheaper than by land. This has been demonstrated in all ages of the world, and will probably never be successfully contradicted. We see in our own state, that transportation by lake and river, coming in competition with railways during the season of navigation reduces the tariff of the latter. The same is true of the Erie

Canal of New York and all other water communication. The Fox and Wisconsin river improvement should be pushed forward to an early completion, thereby creating additional transportation facilities, and opening up to a vast area of northwestern country another competing line for the commerce of this rich and valuable district of country.

This Fox and Wisconsin River Improvement has been assumed by the General Government, and while I have never had much faith in the practicability of making these rivers navigable, to the extent of doing the vast carrying business of the northwest which would naturally seek this channel to the seaboard, yet those having this important work in charge inform me that they have the utmost confidence in the feasibility of the river improvement plan—that it is entirely practical and will prove a success. My plan would be, to so improve the river that vessels of light draft could pass, to aid in the building of a canal. I would then build a canal broader and deeper than the Erie; have the capacity sufficient, and the work of such permanent character, that steamers of such size and power as would be ample to tow throughout its entire length barges and other freight boats without hindrance or delay. Suppose it cost the General Government ten millions of dollars. As vast as is this amount, it is but a trifling sum when compared to the profits which would accrue to both producer and consumer within a brief period of time, as a result of this great National Highway. While I would urge upon Congress and our state legislatures to do all in their power that is legitimate and right, to afford additional railway facilities; to limit their tariffs to a reasonable interest upon the labor and capital invested and honestly utilized in their proper operation, yet at the same time I would ask these representative men of the states and nation to investigate the great question of transportation by water. I believe that the opening of great water routes between the Mississippi River and the Atlantic would come nearer solving the problem of cheap transportation than all other ideas which have been advanced. These water lines would ever be in competition with other systems of commerce, while railways will never be competing lines, build as many of them as you will, except you construct and op-

erate lines by the General Government, which is, to say the least, of questionable propriety.

MANUFACTURING.

I cannot let an occasion pass, however often it may occur, without bringing to the attention of our people the vital importance of manufacturing. I believe that no people, purely agricultural, ever became a thrifty and prosperous community, but that agriculture is advanced and successful as diversified industries find a home, and build up in its midst. Statistics of English agriculture show that in the northern portion of that country, which embrace the coal region, the seat of mining and manufacturing industries, that the price of labor averaged some 37 per cent. higher than in the southern portion of England, where the people were almost exclusively engaged in agriculture. Thus the laborers wages were advanced and the proprietor's profits increased, as he sold his products at his very door at remunerative prices, with no cost of transportation added. As the various industries of a people prosper, society improves, and land and labor become more valuable; and the general good of a state is advanced. The farmer and manufacturer are mutually dependent upon one another, and as these mutual interests are recognized and encouraged, and their proper relations with other trade and commercial interests better known, and their harmonious workings more fully understood and wisely adjusted, will true progress and civilization advance.

Agriculture in its rudest forms, unaided by other industries and pursuits, furnished little more for man than for the beast of the field which feed upon its herbage. The land had little value; but as manufacturing and the varied industries of the world began to develop—each exchanging with the other its products—land became of value and the grade of civilization was raised. The conditions of society incident to, or closely connected with the mutual interests of the farmer and manufacturer are strikingly illustrated by contrasting the large manufacturing districts of our own country with those strictly agricultural and far removed from other pursuits. In the former case the lands are

high, commanding from two to five hundred dollars per acre, while in the other, although similar lands, but far removed from a home market—which manufacturing always brings—command, perhaps, but ten to fifteen dollars per acre. The cost of production of the varied crops of the farmer is very similar, whether such productions are far removed from the population who consume them or not, hence those farmers far removed from the centers of trade, manufacturing and all other food consuming industries lose the larger proportion of the profits which accrue to those near to this consuming population. They are taken from them by middle men, transportation companies, etc., until their labor barely furnishes them a living and a home. I would be glad to see manufacturing cities and villages springing up upon the excellent water powers of our numerous streams and along the railway lines now traversing all portions of Wisconsin, and the raw material, such as mineral, lumber and wool, manufactured into the many useful articles needed by our people. This would contribute to increase prices for farm products of every kind, and add largely to the aggregate wealth of the state. Let a liberal and statesmanlike policy be pursued by those who have the power to shape the destiny of our commonwealth, by encouraging manufacturing in all its varied branches, saving to producer and consumer by lessening the distance between them, and no state in the northwest can excel us in wealth and general prosperity. The elements of progress and advancement are within our borders; let them be utilized in the interest of our people and for the benefit of the world.

On behalf of the Executive Board,

W. W. FIELD.

Secretary.

STATE AGRICULTURAL ROOMS,

Madison, April 1, 1874.

PROCEEDINGS.

EXECUTIVE MEETINGS.

OFFICE OF THE SOCIETY,

Plankinton House,

MILWAUKEE, Sept. 22, 1873.

As required by section three of the by-laws of the Wisconsin State Agricultural Society, the executive committee met in the convenient rooms of the Plankinton House, so' generously furnished to them by the genial proprietor, W. H. Cottrill, Esq., at 7 1-2 o'clock P. M.

President W. R. Taylor in the chair.

Present: Messrs. Ex President Hinkley, Mitchell, Eaton, Clark, Cheney, Williams, Blair, Fratt, Stilson, Warren, Martin, Douseman and Field.

After calling the committee to order, President Taylor stated that the by-laws of the society required the board to meet on the first day of the fair. That he was not aware that there was any business of special interest or importance to come before them, but that he would state for their information that by the liberality of the public spirited citizens of Milwaukee, and the energy of members of the board from that city—Messrs. Mitchell and Blair—funds had been raised to put the grounds in fine condition for the exhibition. That under their supervision this money had been judiciously and wisely expended, and that he could assure the committee that the buildings, stalls, track for trials of speed, etc., were all in the best possible condition for the great exposition of 1873.

Secretary Field stated that the number of entries exceeded any former year since his connection with the society, and that he was

warranted in saying that if they continued to come in as rapidly until the following day at 2 o'clock, P. M., the utmost limit of the society's accommodations would be reached.

Superintendents Mitchell and Williams said that the horse and cattle stalls and sheds were then full, and that it would be impossible to accommodate more in their respective departments without additional room. On motion Messrs. Mitchell, Greene and Martin were appointed a committee to arrange a daily programme for trials of speed, and for a general exhibition in the horse department: Messrs. Williams and Stilson on exhibition of cattle in the ring, and president Taylor and secretary Field on the annual addresses and other exercises of the society during the continuance of the fair. Superintendent Fratt was requested to close the gates at 9 o'clock on the following day. Adjourned until 8 P. M., Tuesday.

OFFICE OF THE SOCIETY,

Plankinton House,

MILWAUKEE, Sept. 23, 1873.

Board met pursuant to adjournment, at 8 P. M.

President Taylor in the chair.

Full board present. The board continued in session for a brief time on this and Wednesday evening, the 24th. A few questions of a local nature were brought before them by the superintendents of the several departments, were adjusted with no opposition, and are thought to be of little interest to the public, hence will not be given in detail.

Adjourned to 7 1-2 P. M., Friday.

OFFICE OF THE SOCIETY,

Plankinton House,

MILWAUKEE, Sept. 26, 1873.

Board met at 7 1-2 P. M.

Present—President Taylor, Secretary Field, Treasurer Blair and Auditing Committee Mitchell, Fratt and Douseman.

Secretary Field said that the wet and unfavorable weather of Wednesday had prevented the committee from prosecuting their labors with their usual promptness, hence an arrangement of his

books preparatory to paying premiums had been somewhat delayed, and that no premiums would be paid until Saturday morning, but that if any were desirous of returning to their homes that night, if they would send him a line at his office at Madison, he would remit by check the amount due them.

A few claims were passed upon by the Auditing Committee, when the board adjourned to 8 A. M., Saturday.

OFFICE OF THE SOCIETY,

Plankinton House,

MILWAUKEE, Sept. 27, 1873.

Board met at 8 A. M.

Present, same as the evening before.

Premiums and audited accounts paid until 6 P. M., except that an adjournment was had from 1 to 2 P. M. for dinner, when the board adjourned until the 16th of October at 7 1-2 P. M.

OFFICE OF THE SOCIETY,

Plankinton House.

MILWAUKEE, Oct. 16, 1873.

Board met pursuant to adjournment.

Auditing Committee, Treasurer Blair and Secretary Field present.

Premiums and audited accounts were paid throughout the evening and the following day until 6 P. M., when, no further business appearing, on motion, the board adjourned *sine die*.

DECEMBER MEETING.

STATE AGRICULTURAL ROOMS,

MADISON, Dec. 2, 1873.

As required by the by-laws of the society, the executive board met at 7 1-2 P. M.

President Taylor in the chair.

The order books, bills and vouchers were laid before the board by Secretary Field, and Treasurer Blair presented his report of the financial condition of the society for the year just closed, giv-

ing a full statement of receipts and expenditures and furnishing vouchers for moneys paid out by him.

The Auditing committee then proceeded to examine and compare the vouchers of the Treasurer with the stub-book and bills of the Secretary, and finding them correct, approved the same.

Adjourned *sine die*.

FEBRUARY MEETING.

STATE AGRICULTURAL ROOMS,

MADISON, Feb. 3, 1874.

The Executive Board of the Wisconsin State Agricultural Society met pursuant to the requirements of the by-laws, in their rooms in the Capitol, at 9 o'clock A. M.

Present—Ex-President B. R. Hinkley, Vice Presidents Eli Stilson, Rufus Cheney, Satterlee Clark, J. H. Kingston, Geo. E. Bryant, Treasurer F. J. Blair, and additional members, of the Executive Board, Messrs. Levi B. Vilas, Curtis Mann, N. D. Fratt, J. O. Eaton, Dr. C. L. Martin and Secretary W. W. Field.

In the absence of President W. R. Taylor, ex-President B. R. Hinkley was called to the chair.

On motion of Secretary Field, the board proceeded to revise the "general regulations," "rules of entry," etc.

It was urged by several members of the board, that in consequence of the largely increased expense for forage incident to the rapidly increasing exhibits of stock, and of the great labor and care required in the management of this department, that a superintendent of forage should be appointed, and on motion of J. O. Eaton, it was voted to create such department and appoint a superintendent for the same.

Subdivision 3, under "rules of entry," was amended so as to embrace the volume of the Herd Book in which the animal is recorded; also by inserting the name of Eli Stilson in place of E. P. Brockway.

Subdivision 8 was amended by adding to the end of the proviso these words: "except for the special premium in class 8."

Subdivision 10 was amended by striking out the words "and

cattle," so that the entry cards of all exhibitors, except those exhibiting horses, will bear the *name* of the owner.

"Declaration and payment of premiums" was amended so as to read as follows: "The prizes awarded by the committees will be paid on demand during and after Friday evening, at the secretary's office in the city. The diplomas and medals awarded, will be prepared immediately and delivered with as little delay as possible."

Class 7—"Geldings or Mares for Single Harness," was amended so as to read: "Best roadster for single harness," etc.

Adjourned until 2 P. M.

Board met at 2 P. M.

Quorum present.

On motion of vice President Stilson, it was voted that one hundred dollars be offered as premiums on Galloway Cattle.

Best exhibition, not less than 6 head.....	\$60
Second best.....	40

Class 16—"Milch Cows"—statement amended so as to require the kind and amount of feed during the 10 days mentioned.

Class 18—"Herds" amended so that one bull and four cows or heifers over 2 years old shall constitute a herd, and by adding to the end of said class as follows:

Best 4 calves, 1 bull and 3 heifers, to be bred and owned by the exhibitor in the state.....	\$40
Second best.....	30
Third best.....	20

Also an additional herd premium was offered; open to all breeds except Short Horns, as follows:

Best bull and 4 heifers over 2 years old.....	\$60
Second best.....	40
Third best.....	20

"Sweepstakes" amended so as to read, best cow or heifer of any age.

Class 20—"Long Wool Cotswold" stricken out, and "Not Cotswold" stricken out of Class 21.

Class 24, "Swine," amended by striking out premiums on "Essex" and "Suffolks," and first and second premiums on boar and sow pigs in "Berkshires," "Poland Chinas" and "Chester

Whites," and adding in place of the premiums stricken out of the three last named breeds, as follows :

Best boar pig over six months and under one year old.....	\$8
Second best.....do.....do.....do.....	4
Best sow.....do.....do.....do.....	8
Second best.....do.....do.....do.....	4
Best boar pig under six months old.....	8
Second best.....do.....do.....do.....	4
Best sow.....do.....do.....do.....	8
Second best.....do.....do.....do.....	4

On motion of Vice President Kingston, it was voted that a building should be erected the coming season in time for the Fair of 1874, to fully accommodate the exhibitors in the Poultry department.

Class 28, "Products of the Flouring Mill, Dairy and Apiary," amended so as to give a first premium of silver medal and \$10 on winter and spring wheat flour ; butter made in June and at any time ; farm and factory made cheese ; and second premium of \$10 for each of the above products.

On motion of Vice President Cheney, the sum of fifty dollars was appropriated as a special premium for best and largest display of wood and iron working machinery in actual operation in power hall.

Proposition of O. L. Packard, Esq., of Milwaukee, to furnish power to operate the machinery in power hall at \$110 for the Fair of 1874, provided the same was held in Milwaukee, was, on motion of Secretary Field, accepted and adopted.

Vice President Clark moved that any portion of the \$800, or other sums annually appropriated to the Horticultural Society, and not awarded in premiums to the horticultural department, be retained in the treasury of this Society. Carried.

Adjourned to 7 1-2 P. M.

Board met pursuant to adjournment.

Full board present.

J. O. Eaton offered the following resolutions, which were referred to a special committee, consisting of Messrs. Eaton, Clark and Bryant :

"*Resolved*, That the compensation of the members of this board for the year 1874, and until otherwise ordered, shall be as follows :

"The President shall receive the sum of five dollars per day and actual expenses for the time necessarily employed in the business of the society.

"The Vice Presidents and members of the Executive Board shall receive five dollars per day for each day's actual attendance in the service of the society at the annual fairs, and their actual expenses for attendance at the December and February meetings of the board.

"That each superintendent shall present an itemized account for the expenses of his department, and shall certify that it is correct, and an order shall be drawn for each employee separately.

"The Secretary shall receive the sum of two thousand dollars per annum and actual expenses when away from Madison on business of the society, and shall be allowed one hundred and fifty dollars per annum for clerk hire in addition to the clerk service for the week of the fair.

"That all printing for the use of the society shall be let by the Secretary to the lowest bidder.

"The auditing committee are hereby instructed not to audit any account unless the above resolution is complied with.

"That it shall be the duty of the Secretary to prepare proper blanks to carry out this resolution."

A communication was received from N. E. Allen, Esq., relative to a seeder trial to be held under the auspices of the State Agricultural Society. The communication was discussed in a somewhat informal manner by several members of the board, on the importance of the trial and the beneficial results which might follow if carried out fully, but before arriving at a definite conclusion, on motion of Vice President Clark, the communication was referred to a select committee of three, and the chair appointed as such committee Messrs. Clark, Cheney and Fratt.

Adjourned to Wednesday at 9 A. M.

WEDNESDAY, February 4, 9 A. M.

Quorum present.

Ex-President Hinkley in the chair. J. O. Eaton, chairman of the committee to whom was referred the resolution relative to compensation of officers of the society reported the resolution to the board without amendment, and on motion of Curtis Mann it was unanimously adopted.

Vice President Clark moved that the time of holding the fair for 1874 be fixed for the 7th to 12th of September. Carried.

The following communication from the common council of

Milwaukee, received by Secretary Field, was then laid before the Board.

CITY CLERK'S OFFICE, MILWAUKEE February 3, 1874.

Resolved, by the common council of the city of Milwaukee in joint convention assembled, That an invitation is hereby extended to the officers of the State Agricultural Society, to hold their next annual meeting in this city; and we do hereby extend to them the hospitality of the city, and pledge ourselves to do what lays in our power to render it a success.

Resolved, That the mayor and clerk be instructed to forward a certified copy of this resolution to the office of the Society at Madison.

H. LUDINGTON. *Mayor.*

I, Edward Mahoney, clerk of the city of Milwaukee, do hereby certify that the foregoing resolution was unanimously adopted by the common council of said city on the 2nd day of February, 1874.

EDWARD MAHONEY, *City Clerk.*

On motion of Curtis Mann the above communication was received, and on motion of vice-president Clark, was referred to a committee consisting of the president, secretary, treasurer and Messrs. Eaton and Fratt, who were authorized to fix the place for holding the next state fair.

Senator Clark moved that all books in the library of the society of a scientific nature and in foreign languages, be donated to the University of Wisconsin. Carried without dissent.

Communication from His Excellency Wm. R. Taylor, tendering his resignation as president of the State Agricultural Society was received by Secretary Field and laid before the board.

STATE OF WISCONSIN, EXECUTIVE DEPARTMENT,
MADISON, February 4, 1874.

To the Executive Board of the Wisconsin State Agricultural Society:

GENTLEMEN:—Herewith please accept my resignation as President of said society.

With high esteem,

I remain your humble serv't,

W. R. TAYLOR.

Vice President Clark moved that the resignation of the Governor be accepted and that the board proceed to elect to fill the vacancy, which was agreed to.

The chair appointed Messrs. Clark and Eaton tellers.

Vice president Clark nominated vice-president Eli Stilson as President. Vote taken, and Mr. Stilson was declared unanimous-

ly elected. President elect Stilson thanked the Executive Board in a few well chosen words for their expression of confidence in electing him to so important and honorable a position. He said the long period in which they had been associated together in the great work of the society had left pleasant memories in his mind of the past and inspired bright hopes for the success of the society in the future, and he confidently hoped that with their counsel and advice he should be enabled to so discharge the delicate and oftentimes perplexing duties of the office as to meet their approval and that of the society, and to aid in advancing the interests of the organization and the cause of agriculture throughout the state.

Adjourned until 2 P. M.

AFTERNOON SESSION, 2 P. M.

Board met.

President Stilson in the chair. Secretary Field stated that a committee from the State Horticultural Society were present and would be glad to communicate with the board relative to an appropriation for that department for premiums, and moved that they be then heard, which was agreed to.

C. H. Greenman, on behalf of said committee, said that they had been appointed by the State Horticultural Society to confer with the State Agricultural Society and to ask for an appropriation of \$800, which their society would offer as premiums in the horticultural department. This sum he stated had been generously appropriated annually for some years and it had enabled their society to offer liberal premiums which had been very satisfactory to exhibitors of fruits and flowers.

On motion, the sum of \$800 was appropriated to the State Horticultural Society, the same to be offered by them in premiums, and only such part of the above sum as shall be actually awarded for premiums to be paid.

Moved by J. O. Eaton that the secretary be requested to send a postal card to each life member announcing the time when each annual volume of Transactions would be ready for distribution with the charges by express and mail. Motion seconded and adopted. Secretary Field moved that President Stilson be appointed a delegate to represent this society in the National Agricultural

Congress which convenes in Atlanta, Georgia, in May 1874, which was voted unanimously.

Class 53—"Works of art" was amended by adding at the end of the class.

Best collections of oil paintings not less than 25 whether painted by the exhibitors or not.....	\$50
Second best.....	25

Class 56—"Miscellaneous" was stricken out, the board thinking it better to have all entries made under that particular class to which they are more nearly related, as they are more likely to command attention and that examination and consideration by the committees with their merit entitle them to receive.

The board spent much time in the appointment of superintendents of the different departments, and in the selection of suitable awarding committees from the different parts of the state, and having completed this difficult task, no further business appearing, bills for the attendance at this meeting were presented, audited and paid, and on motion the board adjourned *sine die*.

SOCIETY MEETINGS.

MEETING FOR THE ELECTION OF OFFICERS.

CITY HALL, Milwaukee, September 25, 1873.

Pursuant to the requirements of the constitution and of due notice by the secretary, the life members of the Wisconsin State Agricultural Society met in the old city hall at 8 o'clock P. M. for the election of officers for the year 1874.

President Taylor in the chair.

After calling the meeting to order, the president said that the time fixed by the constitution for the election of officers had arrived and he awaited their pleasure. Dr. A. H. VanNorstrand moved that a committee of one from the state at large and one from each congressional district be appointed by the chair to recommend the names of suitable persons to fill the various offices of the society for 1874. E. W. Keyes stated that he be-

lieved it had been the usual custom prior to the appointment of such committee to have the report of the treasurer for the current year read by the secretary. Secretary Field said that it had been the custom of the society to have the treasurer's report read at this meeting during the absence of the committee to recommend nominees for officers of the society, but that since by order of the society such report had been published in detail and a copy sent to each life member, this annual reading had been dispensed with.

The motion of Dr. VanNorstrand receiving a second was adopted, and the chair appointed the following committee :

State at Large—Nelson Dewey, of Grant county.

1st Congressional District—Clinton Babbitt, Rock county.

2d " " O. S. Willey, Dane county.

3d " " J. H. Warren, Green county.

4th " " H. L. Palmer, Milwaukee county.

5th " " Satterlee Clark, Dodge county.

6th " " A. H. VanNorstrand, Brown county.

7th " " Joseph S. Carr, Eau Claire county.

8th " " Carl Hoeflinger, Marathon county.

After the meeting of the committee, secretary Field stated that no provision had ever been made by the society for a distribution of the annual volume of Transactions to the life members, who were entitled to them. That he had taken the responsibility of sending packages by express to some of the cities where a number of the life members resided, at the expense of the society, there to be distributed by the person to whom sent, but that he did not feel authorized to send to all the members without some action of the society, as the expense would be large.

Mr. Hurlbut moved that the secretary be requested to forward a copy of the Transactions to each life member by mail or express as he might think proper. E. W. Keyes said that a postal card could be sent to each life member notifying him that the volume was ready for distribution, and then if the person desired it, he could order it sent to him at his expense. After some further discussion upon the subject, the whole question was referred to the executive committee to be by them arranged as should seem best for the interest of the society and welfare of the individual members.

The committee returned and submitted the following report, which the chairman said was unanimous:

President.—W. R. Taylor Dane county

Vice Presidents.

1st Congressional District.—Rufus Cheney, Walworth county.

2d " " C. H. Williams, Sauk county.

3d " " J. H. Warren, Green county.

4th " " John L. Mitchel, Milwaukee county.

5th " " Satterlee Clark, Dodge county.

6th " " Eli Stilson, Winnebago county.

7th " " J. G. Thorp, 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.

Dr. C. L. Martin, Janesville.

N. D. Fratt, Racine.

N. S. Greene, Milford.

Nelson Dewey, Cassville.

J. O. Eaton, Lodi.

T. C. Douseman, Waterville.

Levi B. Vilas, Madison.

On motion, the report of the committee was adopted.

Mr. Douseman stated that he did not desire to serve as member of the committee the coming year, and wished the society to select some one in his place. The name of Curtis Mann of Oconomowoc was substituted in place of Mr. Douseman, and he was duly elected. Mr. C. H. Williams also resigned his position as Vice President of the society, stating that he had served the society for several years in that capacity and that he desired to be relieved by the appointment of some other person. The resignation of Major Williams was accepted, and on motion Judge Geo. E. Bryant of Madison was elected in his place.

Several of the life members expressed their regrets that Vice President Williams and Colonel Douseman felt it to be their duty to withdraw from the executive board, as they had been active and earnest workers during their connection with the society, and had given entire satisfaction as superintendents of their respective departments; Major Williams having had charge of the cattle department for many years and discharged the delicate and arduous duties with much credit to himself and pleasure and satisfaction to exhibitors and the society. Colonel Douseman had

been connected with the society for only a brief time, but his services as superintendent of the swine department and member of the executive board had been efficient and valuable.

On motion the society adjourned *sine die*.

ANNUAL MEETING.

STATE AGRICULTURAL ROOMS,
MADISON, Dec. 3, 1873.

As required by article five of the constitution, the society met in their rooms in the capitol, at 3 o'clock P. M.

Number of life members present not large, but sufficient to answer the constitutional requirement.

President Taylor in the chair.

After calling the society to order, the president inquired of the secretary what business there was to come before the meeting.

Secretary Field stated that the only business to come before the annual meeting of which he was cognizant, was to settle with the treasurer, and to present two amendments to the constitution which had been sent to him by Vice President Stilson.

Treasurer Blair then presented his report, which had been examined and approved by the executive committee at their session the day previous.

REPORT OF THE TREASURER.

To the Executive Board of the Wisconsin State Agricultural Society:

GENTLEMEN: The financial transactions of the society for the year ending December 3, 1873, have been as follows:

RECEIPTS.		
Cash on hand, December 6, 1872	\$1,974 61	.....
Received from State Treasurer	2,000 00	.....
Advertising in premium list of 1872	50 00	.....
Advertising in premium list of 1873	764 75	.....
Pork packers of Milwaukee, special premium on swine.....	200 00	.....
Peirce & Whaling, iron merchants, Milwaukee, special premiums on wagons and plows	125 00	.....
Chamber of Commerce, Milwaukee, special premium on wheat	25 00	.....
W. H. Cottrell, proprietor Plankinton House, Milwaukee, special premium on butter	50 00	.....
Lansing Bonnell, proprietor Newhall House, Milwaukee, special premium on butter	50 00	.....

Treasurer's Report—continued.

RECEIPTS—CON.		
Worthington & Meek, Milwaukee, dealers in farm machinery, special premium on best display machinery	\$25 00	.....
Arnold & Yale, dealers in wood and iron working machinery, Milwaukee, special premium on best display mechanical machinery	25 00	.....
Eleven life memberships	220 00	.....
Entry fees	969 00	.....
Ground rent, collected at fair	1,986 00	.....
Gate fees	12,741 10	.....
Discount on premiums	15 00	.....
Hay and grain sold at close of fair	96 13	.....
		\$21,316 59
EXPENDITURES.		
For premiums	\$7,752 80	.....
Office expenses, including postage, expressage and freight	366 70	.....
Expense of members attending meetings of the Executive Board	346 45	.....
Printing and advertising	927 75	.....
Superintendence at fair	2,018 80	.....
Clerical service	515 00	.....
Police, labor and watch at fair	510 00	.....
Livery and omnibus hire at fair	127 50	.....
Hay, straw and grain at fair	1,109 77	.....
Music at fair	175 00	.....
Expenses for power hall	375 62	.....
Interest on land	273 68	.....
Salary of Secretary Field from Oct. 1, 1872, to Jan 1, 1874	2,500 00	.....
Dinner tickets	435 00	.....
To Horticultural Society	231 50	.....
Medals and Diplomas	395 56	.....
Miscellaneous, including orders No. 1, 9, 18, 23, 48, 56, 57, 58, 80, 91, 95, 120, 157, 197, 199, 248, 249, 252, 253, 289, 330, 331, 341, 347, 383, and 384	879 60	.....
		\$18,940 73
Balance on hand		\$2,375 86

Very respectfully submitted,

F. J. BLAIR, *Treasurer.*

STATE AG'L ROOMS, Madison, Dec. 3, 1873.

Secretary Field moved that a committee of three, excluding members of the executive board, be appointed by the chair to examine the report of the treasurer in detail, and compare it with the stub book and vouchers of the secretary. This motion was seconded and adopted, and the chair appointed S. D. Carpenter, C. R. Gibbs and Geo. E. Bryant.

Secretary Field read the amendments to the constitution submitted by vice president Stilson, as follows:

1st. Amend subdivision two of article five of the constitution of the Wisconsin State Agricultural Society, by inserting between the words "be" and "held" in the first line of said sub-division the words "by ballot and shall be," so that said sub-division two shall read as follows: 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.

2nd. Amend sub-division two of article five of the constitution of the Wisconsin State Agricultural Society, by adding after the words "programmes of the exhibition," the words "and each county agricultural society shall be entitled to three votes in the election of officers, such votes to be cast by its president, or duly appointed delegate or delegates," so that said sub-division two shall read as follows: 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, and each county agricultural society shall be entitled to three votes in the election of officers, such votes to be cast by its president or duly appointed delegate or delegates.

No further business appearing, on motion a recess was taken until 5 o'clock P. M., at which hour the president called to order, and the committee presented the following report:

To the Wisconsin State Agricultural Society:

GENTLEMEN: The undersigned committee to which was referred the annual report of the treasurer, have carefully examined the bills and vouchers furnished by the secretary, and have examined also the report of the treasurer, and find the footings correct. Vouchers No. 393, \$3; No. 392, \$10.50; No. 390, \$26; No. 381, \$20; No. 351, \$3; No. 319, \$7 and No. 314, \$18, had not reached the treasurer, but were issued by the secretary, aggregating \$87.50. When these orders are paid, we believe the annual account of 1873 will be settled correctly.

Quite a number of orders of small amounts we find with no amount stated in the orders, all of which your committee can see might readily occur in the haste of doing business with dozens of parties at a time, and while we have no doubt the accounts are perfectly correct, we nevertheless would urge that in the future, payments be delayed until more care can be taken by the officers. Perhaps there is no way to fully remedy the evil, as sundry small bills must be met and paid as they occur with scarcely a moment's consideration. The system is well calculated to embarrass the officers of the society, and may in certain cases lead to difficulties that ought to be prevented. To

remedy this, no way suggests itself to the minds of your committee but to defer payment to a day and place certain.

The treasurer reports the whole receipts during the year from all sources.....	\$21,316 59
Total disbursements for the year.....	18,940 73
Leaving balance of	\$2,375 86

All orders reported as not having reached the treasurer for 1872, have been presented and paid, except Nos. 9, 262 and 276.

Respectfully submitted,

S. D. CARPENTER,
GEO. E. BRYANT,
CHAS. R. GIBBS,

Committee.

Vice President Cheney moved that the report of the committee be received and adopted, which was unanimously agreed to.

Secretary Field presented a detailed account of all orders drawn by him during the fiscal year just ended, giving the name of the person to whom drawn, and the nature and amount of each, which he stated would be printed with the treasurer's report in convenient form for reference, and forwarded to each member of the society by mail.

On motion adjourned *sine die*.

WARRANT ACCOUNT OF THE SECRETARY.

Number of orders issued for the year ending December 3, 1873, the amount and object of each, and the name of the person to whom issued.

No.	To whom and for what issued.	Amount.
1	Simonds & Brooke, amount overpaid on special premium...	\$15 00
2	B. R. Hinkley, expense at Ex. meetings.....	16 75
3	H. Ludington, services at State Fair and Ex. B'd meeting..	50 00
4	John L. Mitchel, expenses at Ex. meeting	15 00
5	W. R. Taylor, expenses at Ex. meeting	8 00
6	W. R. Taylor, services at State Fair, 1871	48 00
7	F. W. Case, clerical services 1872, in preparing volume of 1871 for publication	100 00
8	George A. Bruen, interest on mortgage from June 2 to Dec. 2, 1872.....	136 84
9	Robert Monteith, filling out diplomas, 1872	2 00
10	A. Thomas, p. emium.....	7 00
11	C. H. Greenman, premium.....	18 50
12	E. W. Keyes, P. M., postage stamps	10 00
13	A. M. U. Ex. Company, express charges	9 35
14	W. W. Field, salary as secretary	500 00
15	E. W. Keyes, P. M., postage stamps and paper wrappers....	10 64
16	A. E. Tuttle, premium.....	34 50
17	Republican and Leader Printing Co., printing and advertis- ing.....	15 00
18	Jos. Eidel, drayage.....	5 00
19	J. Ehnert, premium	5 00
20	M. J. Cantwell, printing and stationery.....	14 00
21	A. M. U. Ex. Company, express charges	25
22	F. S. Lawrence, premium.....	17 50
23	N. W. Telegraph Co., telegraphing	1 50
24	E. W. Keyes, P. M., postage stamps.....	10 00
25	W. W. Field, salary as secretary.....	100 00
26	Miss J. E. Anderson, premium.....	2 00
27	E. W. Keyes, P. M., box rent.....	3 58
28	Geo. A. Mason, Treasurer Horticultural Society.....	231 50
29	J. O. Eaton, expenses in attending Ex. Board	12 00
30	John H. Warren, expenses Ex. Board.....	12 50
31	N. D. Fratt.....do.....do.....	17 00
32	T. C. Douseman.....do.....do.....	14 40
33	B. R. Hinkley.....do.....do.....	18 50
34	Eli Stilson.....do.....do.....	16 30
35	R. Cheney.....do.....do.....	18 00
36	C. L. Martin.....do.....do.....	12 00
37	C. H. Williams.....do.....do.....	13 50
38	W. R. Taylor, expenses Ex. meeting.....	12 00
39	B. Root, premium for essay	25 00
40	J. I. Rowell, premium.....	30 00
41	A. M. U. Ex. Company, express charges	4 75
42	W. W. Field, salary	400 00
43	R. J. Flint, clerical services.....	10 00
44	A. M. U. Ex. Company, express charges.....	5 00
45	W. J. Park & Co., stationery.....	7 25
46	E. W. Keyes, P. M., postage stamps	10 00
47	E. W. Keyes, P. M., box rent and stamps.....	3 54
48	E. Moore, boarding men at State Fair, 1872	9 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
49	W. W. Field, salary	\$500 00
50	A. M. U. Exp. Company, express charges	2 50
51	E. W. Keyes, P. M., stamped envelopes	34 20
52	U. S. Exp. Company, express charges	75
53	E. W. Keyes, P. M., postal cards	5 00
54	Democrat Co., printing	6 00
55	G. A. Bruen, interest on mortgage	136 84
56	J. C. Plumb, trees and labor	34 00
57	Eli Stilson, expenses to National Convention, Ind.	40 00
58	Chas. W. Green, Sec. National Agricultural Convention...	15 00
59	A. M. U. Exp. Co., express charges	7 20
60	Milwaukee News Co., printing premium list	329 00
61	E. W. Keyes, P. M., paper wrappers	11 20
62	E. W. Keyes, P. M., postage stamps	10 00
63	W. W. Field, salary	500 00
64	E. W. Keyes, stamped envelopes	20 00
65	Morrow Bros., advertising	15 00
66	E. W. Keyes, P. M., postage stamps	10 00
67	A. M. U. Exp. Co., express charges	2 35
68	Miss Jennie Field, services in the secretary's office	25 00
69	E. W. Keyes, P. M., postage	3 64
70	Levi Alden, proof reading	50 00
71	E. W. Keyes, P. M., postage and envelopes	20 00
72	U. S. Exp. Co., express charges	4 00
73	A. M. U. Exp. Co., express charges	2 30
74	Cramer, Aikens & Cramer, tickets for state fair	75 00
75	Democrat Co., printing	11 00
76	E. W. Keyes, P. M., postage stamps	10 00
77	U. S. Exp. Co., express charges	18 00
78	A. M. U. Exp. Co., express charges	48 40
79	H. Cutler, work in secretary's office	10 00
80	N. E. Foote, sign painting and materials	24 00
81	N. D. Fratt, supt. and assts. state fair	240 00
82	Sat. Clark, supt. and assts. state fair	246 00
83	O. S. Willey, supt. and assts. state fair	59 00
84	H. W. Hewett, asst. supt. state fair	12 00
85	Eli Stilson, assistant and watchman	27 50
86	Eli Stilson, services as superintendent	42 00
87	N. D. Fratt, services as superintendent	36 00
88	T. C. Douseman, services as superintendent	36 00
89	T. C. Douseman, services as assistant superintendent	24 00
90	D. H. McArthur, ticket accountant	42 00
91	E. Elderkin, general work	10 00
92	J. W. Bashford, services as clerk	35 00
93	E. W. Hulse, services as clerk	30 00
94	E. B. Dean, ticket seller	20 00
95	A. H. Main, expenses and purchases for society	14 90
96	Robert Anderson, services in secretary's office	35 00
97	H. W. Eaton, assistant superintendent and night watchman.	25 00
98	J. O. Eaton, superintendent	42 00
99	F. S. Capron, premium	28 00
100	S. B. Cook, premium	15 00
101	Mary Werner, premium	1 00
102	P. Briody, premium	15 00
103	A. Porter, premium	15 00
104	E. W. Chapin, premium	13 00
105	G. Chapin, premium	23 00
106	S. Hazeltine, premium	30 00
107	H. C. Crandall, premium	5 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
108	E. P. Richardson, premium.....	\$2 00
109	Mrs. Helen Bently, premium.....	4 00
110	James Austin, premium.....	3 00
111	M. D. Nichols, premium.....	20 50
112	M. Morrell, premium.....	32 00
113	J. A. Byrne, clerk for secretary and treasurer.....	35 00
114	G. S. Haskell & Co., premium.....	39 00
115	N. C. Thompson, premium.....	25 00
116	Severance & Williams, music.....	175 00
117	H. Boorse, premium.....	15 00
118	A. Schultz, premium.....	10 00
119	Theo. Heiss, premium.....	10 00
120	Wm. Schallock, cartage.....	4 50
121	J. E. Cooper, assistant superintendent, 1872 and 1873.....	38 40
122	Emma Lancey, premium.....	2 00
123	N. S. Greene, superintendent.....	36 00
124	John Taylor, premium.....	100 00
125	Wm. Reed, premium.....	33 00
126	H. G. Roberts, premium.....	9 00
127	C. L. Martin, superintendent and assistants.....	84 00
128	Wm. Peirce, premium.....	15 00
129	Joshua Peirce, premium.....	15 00
130	Mrs. Alexander Mitchel, premium.....	34 00
131	Geo. Wolf, premium.....	14 00
132	Robinson & Letts, premium.....	5 00
133	W. Berry, premium.....	10 00
134	Mrs. S. R. Kane, premium.....	8 00
135	S. Louis, premium.....	33 50
136	C. H. Greenman, premium.....	23 00
137	Frank McVean, premium.....	4 00
138	A. H. Swan, premium.....	30 00
139	F. C. Curtis, premium.....	60 00
140	C. A. Smith, premium.....	3 00
141	A. W. Reddy, premium.....	2 00
142	S. Grover, premium.....	3 00
143	H. W. Roby, premium.....	20 00
144	H. W. Roby, assistant superintendent and expenses.....	32 90
145	Chester Hazen, premium.....	83 00
146	Mrs. C. Gephart, premium.....	3 00
147	A. Middlemass, premium.....	15 00
148	Robert Allen, premium.....	15 00
149	Jno. H. Paul, premium.....	70 00
150	B. R. Hinkley, member ex. board and exp.....	48 50
151	Miss Mary Newnham, premium.....	10 00
152	Miss Mary Stransky, premium.....	2 00
153	Geo. W. Horton, services as clerk.....	40 00
154	Jos. Schweitzer, omnibus hire.....	40 00
155	Alex. Stuart, premium.....	10 00
156	E. J. Grover, hay and straw.....	490 84
157	Jos. Cochrane, sprinkling track.....	20 00
158	John Campbell, premium.....	20 00
159	H. McAffrey, premium.....	5 00
160	J. C. Starkweather, premium.....	55 00
161	J. C. Corrigan, premium.....	190 00
162	Daniel Williams, clerk for president.....	20 00
163	C. H. Williams, exp. cattle department, 1872.....	16 00
164	C. H. Williams, supt., assistant and marshal.....	83 75
165	J. S. Rowell, premium.....	360 00
166	M. P. Carpenter, premium.....	60 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
167	N. J. Swan, hay and straw.....	\$490 97
168	R. Cheney, supt., assistants and clerk.....	146 00
169	James Eagan, premium.....	7 00
170	H. McAfferty, premium.....	105 00
171	Mary Austin, premium.....	3 00
172	D. T. Pilgrim, premium.....	31 00
173	Wm. H. Bell, assistant marshal and use of horse.....	36 00
174	G. W. Wylie.....do.....	36 00
175	Wm. Kitzrow, premium.....	71 00
176	S. W. Granger, premium.....	131 00
177	S. Wetherbee, keeping horse for Hinkley.....	5 00
178	Wm. Rhodes, premium.....	130 00
179	W. E. Cadwell, premium.....	5 00
180	S. W. Granger, premium.....	100 00
181	E. D. Rood, premium.....	15 00
182	H. C. Crandall, police.....	8 00
183	P. Brooks, premium.....	27 00
184	Eli Stilson, premium.....	170 00
185	J. Stoddard, premium.....	67 00
186	L. Rawson, premium.....	183 00
187	G. J. Kellogg, premium.....	80 00
188	R. H. Barnes, premium.....	270 00
189	A. Stemler, premium.....	45 00
190	Jos. Adams, premium.....	10 00
191	W. Kroeger, premium.....	3 00
192	H. Newnham, assistant to Warren and Eaton.....	15 00
193	S. P. Phelps, premium.....	5 00
194	O. Secor, premium.....	5 00
195	Emma Louis, premium.....	35 00
196	G. P. Douseman, assistant marshal.....	18 00
197	N. B. Caswell, hardware.....	28 32
198	J. Kirby, livery.....	19 00
199	C. A. Buttles, hardware.....	16 65
200	R. J. Day, police.....	15 00
201	Henry Newnham, night watch.....	15 00
202	Alfred Wood, police service.....	18 00
203	T. M. Brown, assistant superintendent horse department.....	20 00
204	John Schulock, premium.....	5 00
205	D. Huntley, premium.....	53 00
206	A. G. Hart, premium.....	20 00
207	G. H. Daubner, premium.....	25 00
208	H. Pool, police duty.....	12 00
209	A. Z. Maynard, night watch.....	12 00
210	J. H. Balch, clerk secretary's department.....	45 00
211	L. A. Nichols, night watch.....	15 00
212	H. Pool, premium.....	75 00
213	W. W. Ellsworth, premium.....	10 00
214	W. Little, premium.....	30 00
215	P. A. Van Vranken, premium.....	26 00
216	C. B. Fowler, premium.....	26 00
217	James Magson, premium.....	150 00
218	Arnold, Yale & Co., power in power hall.....	200 00
219	Wm. Harttert, hardware and labor.....	126 88
220	Rodway, Conway & Co., shavings.....	1 50
221	Wm. Jeffers, night watch.....	18 00
222	John Jeffers, premium.....	105 00
223	N. Brick, premium.....	10 00
224	R. B. Allen, premium.....	40 00
225	C. C. Hachard, premium.....	7 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
226	J. H. Warren, marshal and assistants.....	\$203 50
227	J. T. Kavanaugh, premium.....	10 00
228	G. Gillett, labor at fair.....	18 00
229	Joseph Reek, premium.....	15 00
230	W. M. Ormond, assistant superintendent horse department.....	33 00
231	O. Cook, premium.....	100 00
232	Geo. Jeffers, premium.....	14 00
233	W. M. Ormond, premium.....	10 00
234	Matthews Bros. & Co., premium.....	15 00
235	A. H. Main, ticket seller's and treasurer's expenses.....	247 50
236	W. R. Taylor, service for watchmen, etc.....	63 00
237	Sentinel Co., advertising and posters.....	92 50
238	A. H. Main, services in treasurer's office.....	60 00
239	H. A. Shaw, night watch.....	13 50
240	T. S. Redford, premium.....	15 00
241	E. S. Higgins, premium.....	30 00
242	Henry Gephart, premium.....	10 00
243	C. Robinson, gate keeper.....	12 00
244	J. Ross, premium.....	50 00
245	Sarah B. Botker, premium.....	18 00
246	J. W. Dunlop, premium.....	14 00
247	George Baxter, premium.....	10 00
248	John Fruhling, work on track.....	6 00
249	W. W. Field, incidental expenses, as per bill.....	89 52
250	J. N. McIntosh, premium.....	10 00
251	J. L. Pierce, premium.....	1 00
252	E. D. Rood, work on track.....	23 40
253	John Mohr, work on track.....	15 00
254	W. W. Field, board and incidental expenses during fair.....	32 25
255	J. M. Mitchell, canvass sign.....	2 00
256	R. L. Porter, premium.....	10 00
257	Mrs. McAlpine, premium.....	8 00
258	W. P. King, night and day watch.....	20 00
259	Mrs. C. P. Root, premium.....	10 00
260	R. H. Sabin, premium.....	27 00
261	C. H. Hall, services as chief clerk secretary's office.....	30 00
262	Mrs. C. L. Folsom, premium.....	4 00
263	J. J. Corrigan, premium.....	20 00
264	J. W. Park, premium.....	21 50
265	Mrs. J. W. Park, premium.....	16 00
266	Miss M. L. Park, premium.....	2 00
267	E. B. Thomas, premium.....	43 00
268	Mrs. E. B. Smith, premium.....	8 00
269	E. B. Smith, premium.....	16 00
270	Mrs. M. A. Fink, premium.....	4 00
271	W. J. Park & Co., stationery and books.....	40 94
272	C. T. Bradley, premium.....	90 00
273	Geo. Harding, premium.....	20 00
274	Chas. Foster, premium.....	10 00
275	Geo. D. Doubleday, premium.....	30 00
276	H. H. Greenman, premium.....	10 00
277	F. Banks, premium.....	20 00
278	John Aitkin, premium.....	15 00
279	John Porter, premium.....	3 00
280	W. H. Plumb, premium.....	2 00
281	B. B. Olds, premium.....	10 00
282	Alfred Palmer, premium.....	30 00
283	A. B. Bailey, premium.....	10 00
284	Richardson Bros., premium.....	20 00

PROCEEDINGS—WARRANT ACCOUNT.

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Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
285	Geo. E. Bryant, premium	\$90 00
286	Fannie A. Randles, premium	15 00
287	P. McGeoch, premium	40 00
288	J. Meacham, premium	23 00
289	Ferdinand Kohn, collecting tickets and general work	25 00
290	M. M. Dorn & Co., livery	4 50
291	I. N. Rogers, premium	5 00
292	P. Putnam, premium	16 00
293	F. Ludington, premium	130 00
294	E. B. Thomas, premium	31 00
295	Geo. Murray, premium	455 00
296	C. H. Hall, chief clerk secretary's office	70 00
297	M. J. Cantwell, tags and printing	46 00
298	Howard & Towers, premium	50 00
299	Booth & Gardner, advertising	6 00
300	J. S. McGowan, superintendent poultry department	24 00
301	Eliza Nelson, premium	4 00
302	F. Bell, premium	20 00
303	W. A. Booth, services in secretary's office	5 00
304	S. A. Fox, premium	75 00
305	Isadore Munger, premium	13 00
306	Rodney Seaver, premium	95 00
307	Peter Davy, premium	30 00
308	E. & J. Smith, premium	104 00
309	Richard Richards, premium	115 00
310	Mrs. Wm. Taber, premium	3 00
311	Atwood & Culver, printing	96 50
312	Morrow & Bro., advertising	30 00
313	Geo. P. Pepper, premium	87 50
314	Miss Kate Pepper, premium	18 00
315	W. J. Morgan & Co., diplomas	70 75
316	Geo. Lawrence, premium	10 00
317	M. L. Butterfield, premium	50 00
318	H. B. Sherman, premium	236 00
319	Thomas Bones, premium	7 00
320	Simon Ruble, premium	82 00
321	W. F. Smith, premium	55 00
322	A. A. Boyce, premium	2 00
323	W. W. Field, salary as secretary	500 00
324	R. S. Houston, premium	60 00
325	O. L. Packard, pulleys and oil	18 74
326	F. Ludington, wood	30 00
327	John Foley, Jr., oats and corn	127 96
328	Parks & McLaughlin, posting bills	2 00
329	J. & J. Egelhoff, premium	25 00
330	Mayhew Bros., lumber	80 65
331	C. Elson, labor and incidentals	163 70
332	Julia Williams, premium	2 00
333	Mr. Bradley, entry fee refunded	2 00
334	Wm. Beck, service chief of police	50 00
335	Cramer, Aikens & Cramer, printing tickets	12 50
336	Journal of Commerce, posters	20 00
337	Peirce & Whaling, premium	8 00
338	Mrs. W. G. Benedict, premium	6 00
339	Mrs. W. Miller, premium	4 00
340	Mrs. C. Chadbourne, premium	2 00
341	R. R. Steele, use of furniture	13 00
342	J. L. Mitchel, service as superintendent	30 00
343	Daniel Wells, premium	25 00

Warrant Account of Secretary—continued.

No.	To whom and for what issued.	Amount.
344	W. O. Stillman, livery	\$64 00
345	Milwaukee News Co., advertising and tickets.....	9 25
346	Steam Refined Soap Co., premium	2 00
347	Blair & Persons, use of crockery and cartage, 1872 and 1873.	35 00
348	F. J. Blair, expenses at January meeting and at State Fair..	32 00
349	John Casey, labor.....	12 00
350	O. L. Packard, premium.....	25 00
351	Simpson & McKerrow, premium.....	3 00
352	W. R. Taylor, service as President, 1873.....	250 00
353	Henry Stacy, premium	10 00
354	R. Hughes, premium.....	40 00
355	Wm. Warden, premium.....	19 00
356	E. W. Warden, premium.....	155 00
357	L. B. Vilas, services on Ex. Board, 1873	30 00
358	A. T. Riddell, premium.....	6 00
359	W. Woodard, premium.....	25 00
360	E. W. Keyes, P. M., rent of box and postage.....	3 83
361	E. W. Keyes, P. M., postage stamps.....	10 00
362	Wm. Rhodes & Son, premium	20 00
363	H. H. Bennett, premium.....	10 00
364	John Matthews, premium	110 00
365	S. H. Seamans, premium	72 00
366	Medberry, Stevens & Co., premium.....	10 00
367	Stickney & Baumbach, premium.....	21 00
368	James Barrow, premium.....	10 00
369	L. S. Palmer, premium.....	8 00
370	Hiram Fooder, premium.....	13 00
371	Henry Swallow, premium	2 00
372	H. J. & J. N. Clapp, premium	25 00
373	A. & P. Humbert, premium.....	43 00
374	Mrs. P. Humbert, premium.....	6 00
375	A. M. U. Exp. Co., express charges.....	5 80
376	Gould's Nursery, premium.....	31 50
377	C. E. Westbrook, premium	80 00
378	Cramer, Aikens & Cramer, advertising	3 00
379	Geo. D. Curtis, premium.....	10 00
380	Geo. W. Ringrose, premium	4 00
381	Allen Stetson, premium	20 00
382	Arnold, Yale & Co., premium \$25.00, oil \$3.00.....	28 00
383	Bunker & Vroman, lumber	9 40
384	Timothy Brown, tax certificate on fair ground.....	179 06
385	Mrs. Sally Bell, premium.....	8 00
386	E. W. Keyes, P. M., stamped envelopes.....	17 10
387	Bloedel & Mueller, medals.....	135 80
388	H. S. Durand, premium.....	96 00
389	E. J. & Wm. Lindsey, premium.....	25 00
390	J. C. Acker, premium.....	26 00
391	F. J. Blair, refreshment tickets (dinner).....	435 00
392	James Ozanee, premium.....	10 50
393	John Dearsley, premium	3 00
Total amount issued by the Secretary		\$18,607 37
Amount of orders No. 234, 253, 255, 257, 270, 341, 345, 249, 353, 267, 363, 368, 369, 370, 371, 372 and 373, of 1872, paid by the Treasurer		420 86
		\$19,028 23
Amount of orders No. 314, 319, 351, 381, 390, 392 and 393, of 1873, not received by the Treasurer at the close of the year, Dec. 4, 1873.....		87 50
Total amount of orders paid by the Treasurer		\$18,940 73

EXHIBITION OF 1873.

The twentieth state fair of the State Agricultural Society was held upon the grounds occupied by the society for the three previous years, and familiarly known as the Cold Spring grounds. Under the lead of Hon. John L. Mitchel, one of the vice presidents of the society, the liberal and ever public spirited citizens of Milwaukee generously furnished these grounds to the society for their state fair, putting them in the best possible condition for the exhibition, including repairs of buildings, fences, stalls, track, etc., free of expense. The crops throughout the state had been abundant, with prices remunerative, and hence the executive committee had high hopes that the fruits of the farmer, the result of his summer labors, would be brought to this exposition in such abundance as never before seen at a state fair in Wisconsin. In this they were not disappointed. The number of entries exceeded largely any exhibition in the state, and the exhibits were of a highly creditable and meritorious character.

I shall not particularize in relation to the exhibits in the different departments, as a report of the superintendents of each will be found in this volume under the head of "superintendent's reports," giving a somewhat detailed statement of the character of their respective departments. Monday the office of the secretary was crowded all day by exhibitors making entries, and waiting hours for their turn, to do that which they ought to have done by letter or in person the week previous.

The executive committee and superintendents of departments were busy throughout the day in giving directions and superintending the erection of additional stalls, pens, etc., as notwithstanding the liberal provision made for the accommodation of exhibitors, the arrangements were found to be insufficient. And

yet with all that could be done, such was the unexpected rush, particularly in the cattle, sheep and swine departments, that some of the stock were without shelter when the darkness of night overtook the builders.

The *Milwaukee News* of Tuesday said :

"Yesterday, the first day of the twentieth annual meeting of the Wisconsin State Agricultural Society, was ushered in with clouded skies, and every indication of rain. The day wore on, midday arrived, and the sun came out from behind the leaden clouds, its effulgent rays imparting warmth and cheerfulness to both nature and humanity. A cool, invigorating breeze sprung up, which served to make the day more delightful, and so far as the weather was concerned the State Fair had opened promisingly indeed. As stated in the *News* of Sunday, there were many articles of exhibition on the grounds Saturday, but during the whole of yesterday there was an almost endless line of wagons, drays and carriages winding their way to Cold Spring. They were loaded heavily with all that time, wealth and ingenuity could devise—everything, in fact, from a lace collar to a threshing machine. Hundreds of men and boys were actively engaged preparing for the exhibition of as many different articles of trade and works of art. The buildings are in an excellent state of repair, and are bright and clean as a whistle with their new coat of whitewash. A few of the larger have had floors added to them this season, and those without are neatly spread with sawdust.

"Applicants for entries thronged the secretary's table all day. They bore down on the patient young gentlemen who plied the pen and pencil till finally it was found necessary to form lines and give each his turn, as is sometimes done on election day at an overcrowded election precinct. The prospects are that the fair will be a great success. The exhibitors are numerous, and their goods are of excellent quality and in good taste."

Tuesday, the day of the formal opening, was most auspicious. The weather was pleasant, air cool and invigorating, and the faces of officers and exhibitors wore an agreeable and happy look. The gates were closed at 9 o'clock A. M. At 10 o'clock the band discoursed sweet music in front of the president's office, and at eleven the formal opening address by President Taylor was delivered, which was both interesting and instructive, and was listened to by a much larger number of people than are usually in attendance at so early a period of the exhibition. This address may be found under the head of "Opening Address," in this volume, and will be found worthy a careful perusal.

The *Milwaukee Sentinel* of Wednesday comments relative to the second day of the fair, as follows :

"Yesterday dawned clear and pleasant, and an atmosphere tinged with a shade of Indian summer rendered the second day of the fair all that the most anxious could have desired for completing the arduous work of setting up articles for exhibition, bringing stock from abroad, disposing of material and supplies on the ground, and doing all and sundry of the thousand and one things that crowd forward unexpectedly on such an occasion, and demand dispatch when ordinary calculation would have supposed the whole task ought to be completed. Preparation day at a great fair is no exception to the general experience that one seldom knows when he is done "fixing up," as the ladies say. Work at the office of the secretary progressed, as it had done on the previous day, amid a crowd of waiting applicants, and the recording clerks found their duties not only not diminished but rather increased up to a late hour in the afternoon. The whole number of entries is very large, as indicated by our reports yesterday morning, but the exact number is not yet known. It is certainly above 3,000. Everything about the grounds wore an improved appearance over the aspect of Monday and really required to be seen to be appreciated. The superintendents of the different departments, and all persons in authority, likely to know what would be a just estimate of the prospects of the week, agree that if the weather continues good the fair will far over-shadow any previous one held in the state. This is the first day of regular exhibition, and consequently, the first for a general influx of visitors, though every train coming into the city yesterday was overloaded, and most of those on the Milwaukee & St. Paul Road carried from three to four extra cars, all filled.

Wednesday.—The executive committee at their meeting on Tuesday evening congratulated themselves that everything connected with the different departments were in excellent condition; that the arrangement of exhibits had been confided to trusty and efficient hands; that the display in each and all departments had never equaled the present, and that the promise for the future of the fair, both from an educational and financial stand point, was most promising and hopeful if the weather continued good. This is ever a matter of great solicitude on the part of state fair officers, as their best laid plans and schemes for improvement, amusement and profit are often entirely frustrated by a week, or even a few days of bad weather during their exhibition. On Tuesday night the sun set behind heavy black clouds, portending no good for the following day, and at an early hour Wednesday morning the weather looked still more gloomy and forbidding, and "Old Probabilities" predicted rain, seeming to have no regard for even a great state exposition. But the masses had come to this state show of the varied industries, to see, be amused, instructed and

benefited, to have a day of recreation, relaxation from business, and were not to be turned aside by Old Probabilities, or any other prophet, and at eleven o'clock the grounds were well filled with visitors, who viewed the extensive and beautiful exhibits with pleasure, and many of them I doubt not with profit. The weather, which had been unpleasant throughout the forenoon, occasionally misting slightly, with a damp, cold, disagreeable wind, became early in the afternoon much more discouraging, and by one o'clock Old Probabilities had everything his own way, and rain it did in torrents the balance of the day, putting an effectual extinguisher upon the pleasures of the day.

A reporter for the *Milwaukee News* well described the weather and pictured the scene at the fair grounds as follows:

"Old Probabilities" is a prophet of the first order of merit, as all who read in yesterday's *News* what he had to say about the weather of that day will testify. He said rain, and it rained, and although many are becoming so hardened to think he is in a measure responsible for the terrible weather that visits us occasionally, they have a great deal of respect for him and his predictions. Yesterday morning the sun was obscured by leaden clouds, and the wind, fresh from the southeast, was not a comforting assurance of a pleasant day. Thousands of people were in the city, and many more were coming on every train. All roads leading to and from the city were crowded with wagons and carriages loaded down with merry groups of visitors to the Fair, and the prospects for an immense crowd were cheerful. Old heads gazed at the crowd long and earnestly, some prophesying rain, and others, without a proper regard for the veracity of the man at Washington, a general clearing up. The hour for exhibiting stock, as stated in the *News* of yesterday, had been fixed at 9:30 in the forenoon. Accordingly, at that time the great throng commenced their exodus from the city to the fair ground. Those who rode in open carriages were vexed occasionally by falling drops of rain, which served as delicate premonitions of what was to follow. Some of the men were dressed in summer clothing, and the ladies as a rule were arrayed in light fabrics of delicate colors. To these the prospect of a rain storm was something peculiarly interesting. They had no overcoats, no umbrellas, nor anything else by which to protect themselves from the inclemency of the weather. They hoped for the best, however, and would not believe in a storm until they felt its presence. The grounds were reached and the merry crowd dispersed in every direction to view the articles on exhibition. At about eleven o'clock, when the grounds were literally swarming with people, and all seemed to be in the height of their enjoyment, the clouds darkened, the atmosphere changed, and the rain began to fall. And how it did rain! Slowly at first came the drops, and the people, loth to leave the grounds, still tarried, hoping, after all, it would soon pass over. They

waited until the case looked hopeless indeed, and then, wet and muddy, made a rush for the buildings. Faster and faster fell the rain, until it seemed as though the flood gates of heaven were open, and that it would never stop. The wind freshened considerably, and the air, which in the morning was comfortable, soon became raw and cold. The clouds seemed to become more compact and dense, and all, exhibitors and visitors alike, resigned themselves to the fact that a rainy day was before them. It did not take long to make the grounds, which but a short time before were teeming with a busy throng, deserted, nor to make the track one continuous mass of mud and water. The prospect was dreary enough at that time, but the people seemed determined to make the best of it. They flocked to the buildings and filled them to overflowing, crowded, jammed, stepped on each others' toes, and in several other ways made things decidedly interesting for all concerned."

Thursday morning the sky was clear, with cool breezes from the northwest, and flattering prospects of good weather for the balance of the week. This was to be the great day of the fair. His Honor, Mayor Ludington, had early in the week, with commendable forethought and good common sense, issued the following proclamation to the good people of Milwaukee:

"PROCLAMATION BY THE MAYOR.—Whereas, the Wisconsin State Fair is to be held in Milwaukee the coming week, and it is rightly expected of our citizens that they will take an active part in making this exhibition of the industries of Wisconsin a success; therefore, I request all merchants, bankers and others who feel an interest in promoting the agricultural and mechanical interests of our city and state, to close their places of business on Thursday next, after 12 o'clock, noon; that all public offices and schools be closed after 10 o'clock A. M. on said day, in order that all our business men and their employes, public officers, teachers and their pupils, may be enabled to attend the fair on that day, and show to the people of our state that Milwaukee feels a deep interest in the progress of our industrial interests, and in the prosperity of the State Agricultural Society.

"H. LUDINGTON, *Mayor*.

"Milwaukee, Sept. 20, 1873."

This wise suggestion of the mayor was warmly seconded by most of the business citizens of that enterprising commercial metropolis, giving their thousands of employes an opportunity to rest from their daily routine of toil and to view the products of the soil and workshop here annually brought together.

By 12 o'clock M., the spacious grounds were one living, moving mass of people. The mud had nearly dried up, the sun shone brightly, and officers, exhibitors and people generally were happy

and joyful. At 12 o'clock M., Dr. J. H. Twombly, President of the University of Wisconsin, delivered the annual address. Brief addresses were also made by His Excellency C. C. Washburn, and Geo. E. Morrow of the Western Farmer. These addresses were listened to by an intelligent assembly, and by a much larger number of people than is usual on such occasions. They may be found in this volume under the head of "Annual Addresses," and are worthy of careful reading.

The number of persons in attendance during the afternoon was probably larger than ever before assembled together upon a fair ground in Wisconsin, many estimating the vast assemblage at thirty thousand. The number would have been largely increased had the weather on Wednesday been favorable, as thousands who from advices received, had their plans all made to be present on Thursday, as the mayor had designated this as the *big day*, were detained at home by the threatening and forbidding aspect of the weather.

Friday, the last day of the fair, is usually a lean day in attendance, but this was an exception to the rule. Many of the more important races had been postponed until this day, owing to the track not being in the best condition the day previous, which drew quite a large crowd, largely from the city, and made the day one of the most entertaining and attractive of the week.

The exposition was a decided success. While the receipts were not as large as at some of the exhibitions of the society—although much larger than in 1872—yet the executive committee believe that in no year since the organization of the society, has there been so good a display of animals and articles as at this exhibition of 1873, and that the exhibits are of that superior class which show a marked improvement in stock, farm machinery and implements, heavy machinery, cereals, fruits, flowers and works of art, over the exhibition of any former year.

This is, of course, gratifying to the committee, and they can but feel that it is in part due to their indefatigable exertions for a series of years, that these marked and beneficial improvements have been wrought, and that their great annual industrial gatherings of the people under the auspices of this society have been a

stimulus to the farmer and the manufacturer, and an educator of the people generally in the higher departments of industry.

The total receipts from the exhibiton were \$19,316.59, which, with the amount of two thousand dollars received from the state, has enabled the society to meet all of its liabilities promptly, and show a balance of \$2,375.86 at the close of the fiscal year, December 3, 1873.

OPENING ADDRESS.

BY WM. R. TAYLOR, PRESIDENT.

Members of the State Agricultural Society:

GENTLEMEN: Another year, with its change of seasons, with its sunshine and its storm, its times of hope, and intervals of despondency, has come and gone. The fruitage of its industry is being garnered for future use, and the new year stands waiting for report upon progress of the old. We meet again—agriculturists, mechanics, manufacturers, artisans of every calling, to compare notes upon the past year's work—to exhibit the best specimens of our skill and industry, to note defects and make record of excellences, as comparison shall bring them out,—to catch new inspiration, each in his chosen life-work,—and to gather fresh strength and fresh courage to meet the increased demands which the new year shall make upon us.

And what fitter time could we convene for such purposes, than in this autumn season, when nature has well nigh exhausted her energies in our service, and is calling for respite; and in what fitter place, than upon these beautiful grounds, just outside of the great metropolis of our state, and in hearing of the busy hum and din of her ceaseless industries.

This society has publicly declared its object to be, "the advancement of agriculture, horticulture, and the mechanical and household arts;" and the executive board, following out the catholic spirit which characterizes the act of organization, has not only invited the representatives of these, but of all other activities

which help to build up a thriving state, to aid in making this exhibition in the true sense a successful one. There is no natural antagonism between the legitimate industries of the world. Their interests, in the highest sense, are one. Each does its perfect work only as part of a systematic whole. Break the connection, and its usefulness is impaired. It has been very aptly said that "civilization climbs by a staircase of its own building. It lays one step, and then mounts that as a basis from which to build another." It may also be said that, while agriculture forms the framework of this stairway, and the physical foundation upon which it rests, the bolts, and bars, and braces, which add strength to the structure, and the fittings and adornments which give it grace and finish, are supplied from 10,000 industries. This truth we must grasp and hold in our efforts to secure to agriculture its equal rights and privileges, as we strive to raise it to that rank and dignity in the economy of civilization, which its importance so plainly demands. Unless this be done, our discussions and deliberations will be fruitful of mischief rather than of good, and these annual exhibitions will come far short of securing the highest results. This much I say, in full view of that organized uprising of farmers which the great northwest has witnessed within the last twelve months. And I say it as one who has some claim to speak in the interests of agriculture, and who has faith to believe that great good will yet come of this movement, if it be suitably tempered, and controlled by reason and discretion.

One of the chief difficulties with the farmer is that his occupation has thus far been wholly individualized. There has been no effective union, no concert of action, no efficient means for the prompt and thorough dissemination of valuable facts and experience. This accounts, to a great extent, for the prostration of agriculture at the feet of every interest that is organized and cohesive. All the great human achievements are the result of united effort. Our whole social and political system is union, from the family circle to the confederacy of states. Farmers cannot afford to ignore the situation about them—the inexorable logic of facts.

We are sadly behind, and whatever may be the cause, a closer union, an intelligent co-operation, can do much towards removing it. There is a great want of organized, intelligent, associated ef-

fort, not for the purpose of making war upon other legitimate industries, but to prevent these from making direct or indirect war upon us, and to secure a fair and open field in the race of industrial life. Whatever mistakes may be made or mischief be wrought through the influence of misguided or designing men, the legitimate end and aim of the present movement must remain what I have just stated, and good will come of it, if it results only in securing among farmers a closer union. This is needed, if for no other purpose than as an educating agency. The industrial world is moving, and the farmer must move with it, unless he be content to plod behind and do menial service. He must not only be educated to a correct knowledge of the details of his business—of its needs and capabilities—but also to a proper understanding of its relationship to every other industry with which it comes in contact. This is the only road to an effectual and permanent cure for the ills which the farmer has thus far been made to suffer. The signs of the times are not without promise. If I mistake not, agriculture has entered upon a new field of progress and development. The farmer of to-day is beginning to appreciate the importance of brain-work, and of the intelligent application of science to agriculture. He is led to this, in part, by the force of circumstances, by the growing scarcity of labor, and the consequent necessity of substituting mind for muscle. But the chief incentives are of a higher order. They are the results already secured, and the wonderful possibilities revealed by the scientific investigation of earnest men.

The growing spirit of enterprise and inquiry is seen in the increased patronage of agricultural papers—in the rapid multiplication of town, county, district and state organizations of farmers, and in the establishment of agricultural schools and colleges throughout the country. The practical result yet reached through these agencies may not be such as we would desire, yet the enterprise which prompts and sustains them is the surest possible guarantee of success in the future. When a few of the best men of any industry set themselves intelligently and earnestly to work to secure its improvement, by turning natural and mechanical agencies to its profitable use, or in any other way perfecting its processes, the most gratifying results are sure

to follow. It is to this point that agriculture, in its various forms of field-culture, stock-breeding, fruit-growing, etc., has now come. But, few even yet of the great mass of farmers, seem to be thoroughly awake; still these are bringing into the work of improvement so much brain and energy that the contagion of their example, and the eloquence of their success, will, in time, bring over the skeptical and the sluggish.

Wisconsin is determined to take her place near the forefront in this march of progress. Few states of the union can boast of more varied industry, and none can claim natural advantages of a higher order or wider range. While her agriculture is advancing with rapid strides, her mining, lumbering, and manufacturing industries, are keeping even pace. The busy city, near whose limits we are met, furnishes, in the record of her growth, incontestable evidence of the enterprise and prosperity of the state.

The first State Fair I attended in Milwaukee was in the year 1859. This was then, to be sure, a beautiful city, rising here by the lake. But the population was scarcely half what it is to-day. The financial crisis of 1857 had struck her an almost vital blow, and she was suffering, partly in herself and partly through sympathy with the rest of the country, from paralysis of enterprise and from all the evils which hard times bring to a stricken people. The great war followed with its mighty drain upon the young life-blood of the city, and with a train of blighting influences, which war inevitably leads on. But looking around to-day, one would scarcely suppose there had ever been a blight upon her prosperity or a shadow upon her path. Her population since 1859 has doubled. Her railroads, which then only touched the Mississippi at two points, now radiate in every direction. She has become the first primary wheat market, and one of the first primary grain markets of the world. The total receipts of cereals at Milwaukee in 1859 were 7,700,000 bushels, while for the year ending Aug. 30, 1873, they were 30,400,000 bushels. In the year first named, her reported manufactures hardly exceeded in value \$2,000,000; in 1872 they were nearly \$20,000,000. Other statistics of equal significance might be given, but these I have offered more for the purpose of illustrating the resources and capabilities of our young state, than otherwise. But in the

growth and prosperity of her metropolis, independently considered, the state of Wisconsin will always take pride.

I shall make no excuse for discussing now, a single topic which is semi-political, but not partizan in its character. Occupying temporarily the place of executive head of this society, formed in the interests of farming and other industries, it is becoming that I should express my opinion on a subject of vital importance to all those industries represented around me. The exchange of our products with each other has been so burdened with the cost of transportation, that labor is robbed of its profits, and the fertile earth is forced to produce three bushels of grain as the price of getting two to market. The remedy for this evil is in the hands of the people. The patriots and statesmen who framed our state constitution, while providing that the legislature might create corporations, either by special or general laws, wisely ordained that all general laws or special acts, enacted under this provision, "might be altered or repealed by the legislature at any time after their passage." This section of the constitution gives to the legislature power to control railroads and other corporations, and to protect the people from extortion and oppression at their hands. It is my opinion that the time has now come to exercise this power, delegated twenty-five years ago to the legislature by the people for their protection. No violent remedies are needed. No legislation should be enacted that will weaken credit or impair the fair value of existing rights. But recent events have admonished us that the remedy should be ample, should be promptly offered, and should be efficacious. I measured my words when I designated the authors of this constitutional provision as patriots and statesmen. When it was created by them, not a mile of railroad had been made in the state; no incorporated monopoly had laid a spoliating and heavy hand upon the people. But they fore-saw the evil which was to arise so many years after their labor had been completed, and provided a cure. This is evidence that they were inspired by the highest patriotism and statesmanship, and challenges the everlasting gratitude of the people of the state.

But I must not detain you longer. Suffice it to say that the past year, despite the effects of a long and severe winter, has

been, upon the whole, a bountiful one, and leaves us little cause to murmur at the dispensations of Providence. The present display of the products of the farm, the orchard, the vineyard, the dairy, the garden, household arts and the workshop, is excellent, doing credit alike to the skill and industry of the producer, and to their enterprise in bringing them in such condition and quantity to this, our annual exhibition. But we must not conclude that anything like perfection has been reached. It must not be forgotten that these are but samples of the best of our products. It is the cream that rises to the surface on occasions like this.

So far as this, the Twentieth Annual Exhibition of the industry of Wisconsin bears upon the material interests of the state, there is no good reason why it may not be made the most useful of the series. Little good, however, can come of all the preparation thus far made, unless those who are to systematize and watch over the several departments, shall do their work well and faithfully. To this end I would especially and earnestly urge upon the superintendents of departments, and upon the judges who are to examine and pass upon the articles and animals on exhibition, the necessity, though often delicate and difficult, of a patient and faithful discharge of the duties devolving upon them.

It now remains for me, in behalf of the society, to declare the exhibition open, and to urge upon all present to make the best use possible of the opportunities it affords.

ANNUAL ADDRESSES

Delivered on the Fair Grounds, September 25, 1873, by J. H. TWOMBLY, D. D., President of the University of Wisconsin, Governor C. C. WASHBURN, and GEO. E. MORROW, Editor of the *Western Farmer*.

MECHANICAL AND MANUFACTURING INDUSTRIES.

BY J. H. TWOMBLY, D. D.

Mr. President and Fellow Citizens: We meet to-day for congratulations and words of encouragement. Around us are evidences of peace and plenty, yet the fact of a wide-spread dissatisfaction thrusts itself upon our attention. The intense, outbursting life of a young and intelligent people, aided by beneficent showers, genial suns, rich soils and national peace have insured harvests which make the toilers sing with gladness, yet, mingling with the songs of the reapers, are notes of complaint and disquietude. On the hill top and in the valley, along the fertilizing stream, and by the quiet lake, are heard the notes of grievance. A profound conviction has seized upon the industrial classes, that custom, law and monopolies have conspired to unsettle the balances of justice, and that they are subjected to taxation and extortion which honorable men should not endure. Startled ears hear premonitory thunders. In the work-shops along the Atlantic coast, in the quiet fields and crowded cities of the middle states, and on the broad prairies of the fertile west, earnest men are conning the fiery denunciations of the ancient seers as appropriate to their oppressors. The secret nightly gatherings, the numerous conventions held amid the pressure of business, the sharp discussions heard in the shop, and in the mart of trade, or finding utterance through the popular press, demonstrate the prevalence of wrong, and a resolute will to resist it.

We have no wish, by picturing scenes of real or fancied wrong, to inflame passions already excited, or in any way to widen the

gulf now existing between classes and callings—we would rather pause in the rushing tide, calmly contemplate the asserted evils, and assay to indicate the appropriate remedy.

The grievances now calling forth the murmurings of the people, are many in form, yet essentially one in origin. By monopoly, industry is everywhere robbed of its just reward. This relentless tyrant, through various organizations, created ostensibly for the public good, exercises legislative functions, systematically levies unjust taxes upon the products of labor, and by vile combinations, commits general robbery in the name of commerce. A grasp like that of steel is upon every industry, and every toiler from the distant east to the golden gates of the west, pays tax to the greedy monster.

On the side of the oppressor, are, pre-eminently, thought, wealth, concentration, from which spring control of markets and unjust legislation. Such a power cannot be met by caucuses, by secret associations, special legislation and public displays. These may do their part in arousing the people to a defence of their rights, but are inadequate to remove the evil. Other means must be adopted. If monopoly make rifle-pits, industry must make rifle-pits. If monopoly mine, industry must countermine. There must be on the side of industry a development of counteracting forces, or the subjugation of the people is inevitable. The general uprising of our working classes is an argury for good. Their formal proclamation against the corruptions of politicians and the extortions of monopolists rings like the knell of doom in the ears of many who have been fattening upon the hard-earned and scanty gains of the workingmen. From legislative enactments but little can be anticipated. Legislators are to often venal for us to expect that they will stand in unbroken ranks and scorn proffered gain. I do not wish to throw a shadow over the bright hopes any may cherish respecting the beneficial results of social and political organizations. The assembling of the people to discuss their rights and their grievances, will awaken intellect, stimulate varied inquiry, show them their power, and lead to useful co-operative combinations. I hail the organization of the farmers as a prelude to success, but I do not look for that success in the sphere of politics. While I would counsel every man to carry his convictions

to the ballot box ; and deposit his votes for true and honest men only, I would warn all to adopt as quickly as possible, other and more reliable measurers.

Long and fiercely had raged the battle of the Wilderness, and in the opinion of many of the soldiers and officers, the Union Army was well-nigh whipped ; but, when in the opening light of the morning, a column of *thirty thousand strong* was seen moving toward Richmond, patriots took new courage, the rebels said the Union has a general now, and trailing their banners, beat a retreat.

Press on the discussion, watch the caucus, the ballot-box and the law-making bodies, and while you develop the forces necessary to confront the enemy—*flank him*.

I do not assert, nor do I believe, that all, or a majority of the evils of which laborers now complain come from the injustice and oppression of the men of wealth. The mammoth monopolies of our age are made possible only through the supineness of the majority of our laborers. In an hour when questions of profound interest excite the public mind, and a war of classes is threatened, men should endeavor to comprehend the whole field of controversy, and hasten to adopt measures which, while they directly check aggression, shall lift the burdened party to such a position of power as to remove the liability to oppression.

In the hope of aiding to solve the problem which now commands almost universal thought, I shall briefly discuss the following topic :

A VARIETY OF INDUSTRIES — THE SOURCE OF FINANCIAL AND SOCIAL PROSPERITY.

I discuss this subject with special reference to the state of Wisconsin. Our principal misfortune is that we are only partial producers of the necessities and ordinary luxuries of life, and hence are compelled to purchase in distant markets, and pay not unfrequently the cost of a double transportation. Our deficiency in manufactures is the cause of great financial embarrassment. I think I fully comprehend the situation of our state as one of the youngest in this sisterhood of republics, and I speak of deficien

cies only to point out the source of our troubles, and to stimulate, if possible, the people of this commonwealth to encourage the introduction of manufactures and the employment of skilled labor.

I may assume as a basis of comparison that as large a share of manufactured products is used in Wisconsin as in other states, in proportion to the population. The entire population of this country in 1870 was 38,558,371, and that of Wisconsin, 1,054,670, or about one thirty-seventh of the whole.

The total wealth of the United States at that time was \$30,068,518,507, and the total valuation of Wisconsin was \$702,307,329. It will be seen that in respect to wealth Wisconsin falls below its proportion, estimated on a basis of population. On this basis it should be valued at \$812,662,662, or \$110,355,333 more than its present worth. In respect to wealth, it is below the average of the states, and almost correspondingly deficient in the value of manufactured products. Our soil is fully equal to that of the country at large, and our farming interests are well developed, which facts are shown by the following

TABLE :

	United States.	Wisconsin.
Acres of land in farms	188,921,099	5,899,343
Value of farms	\$9,262,803,861	\$300,414,064
Value of farming implements.....	336,878,429	14,239,364
Value of farm productions, including betterments	2,447,538,658	78,027,032

By an examination of these figures we discover that on the basis of population, the wealth of the state in farms and farming implements is more than forty millions, and its farm productions thirteen millions in excess of its relative proportion. Turning to the department of manufactures, we find a deficiency of \$15,000,000 in the capital invested, and a greater deficiency in the amount of wages paid and of products realized. The value of products manufactured in the United States in the year ending June, 1870, was in round numbers, \$4,232,000,000, and in Wisconsin, \$77,214,000, while the proportionate share for the state was \$113,000,000, showing a deficiency on the basis assumed of nearly \$36,000,000.

The influence of such an annual balance against us in manufactured goods must be felt—nay, in the long run, it will be disastrous. In these gross amounts of manufactured articles are included lumber and the products of flouring and grist mills, which, in this state, are, respectively, \$20,419,877 and \$15,130,719, and in the whole country, \$445,000,000 and \$210,000,000. If we deduct these items from the gross amount, our deficiency becomes still more apparent, for in the other articles, our proportion is about \$95,000,000, and the amount realized scarcely \$42,000,000, showing a deficit of \$53,000,000. There are many articles of luxury and utility which we cannot expect to produce in this state, and some, not in the country. There are many others used by all classes of society, and necessary for the people of every village and hamlet in the land, which can be produced here as well as elsewhere. Some of these are specified in the following table, and the sum total of our relative deficiency is nearly \$18,000,000.

ARTICLES.	Total in the United States.	Total in Wisconsin.	Proportion for Wisconsin on the basis of population.
Boots and shoes	\$181,644,090	\$2,271,425	\$4,909,299
Buttons	1,178,893	.....	31,862
Clothing	161,560,544	2,340,458	4,366,501
Carpets	22,776,900	11,960	615,592
Furniture	69,088,684	1,542,356	1,867,262
Glass	18,238,862	.....	492,942
Hardware	22,237,329	18,240	601,009
Hats and caps.....	24,848,167	26,000	672,572
Iron, all kinds excepting pig....	277,263,000	2,452,755	7,493,595
Paper	45,428,523	146,800	1,227,798
Saddles and harnesses.....	32,709,981	711,695	884,053
Sewing machines.....	14,097,446	.....	381,012
Trunks, valises and satchels.....	7,725,480	92,500	208,797
Upholstery	9,379,310	23,300	253,495
Woolen goods.....	151,298,196	1,115,646	4,087,248
Worsted goods	22,090,331	6,000	597,036
	\$1,061,565,736	\$10,760,135	\$28,689,073
			19,760,135
Deficit of Wisconsin.....			\$17,929,938

Considering the recent settlement of this state, and the necessity of giving attention to agriculture, the presentation which I have made is neither dishonorable nor discouraging. Compared

with other states of this great west, Wisconsin holds an honorable position.

The Wisconsin of 1870 thoroughly eclipses the Wisconsin of 1860.

CONDITION OF MANUFACTURES AT THE TWO DATES.

	1860.	1870.	Increase.
Manufacturing establishments.....	3,064	7,013	3,949
Capital.....	\$15,831,581	\$41,981,872	\$26,150,291
Wages.....	4,268,708	13,575,682	9,307,934
Materials.....	17,137,334	45,851,266	28,713,932
Products.....	27,849,467	77,214,326	49,364,859
Hands employed.....	15,414	63,910	48,496

Here is indubitable evidence of progress, the increase per annum in the value of products amounting in a single decade to nearly \$50,000,000.

All honor to the sagacious men who have seen opportunities for thrift, or for improvement, in our social condition, and have introduced a new industry. Our deficiencies in this department, though marked, are by no means discouraging, and the progress now making, shows that capital, genius and enterprise are moving in the right direction.

The advantages possessed by Wisconsin to become a highly successful manufacturing state are unquestionable. Says one of our intelligent citizens, in a communication recently addressed to me: "The water-power existing almost undeveloped on the Milwaukee, Rock, Wisconsin, Black, Chippewa, St. Croix, Menomonee, and lower Fox rivers, is ample to drive the machinery of an empire." Another gentleman known in the best circles of the state writes, after describing the vast water-power in various localities, "in addition, the forests abound with pine, birch, birds-eye and curly maple, butternut and other woods adapted to cabinet and wood manufactures of all kinds. The mineral wealth of the state is inexhaustible."

The very able report of the commissioner of immigration, published in 1873, gives a variety of interesting facts on this subject.

From the animals raised on our farms are taken hides enough to supply all the necessary kinds of leather to meet the wants of

the people, and instead of sending them a thousand miles away to be made up into needful articles, in cities where the expense of living is much greater than it is here, sound policy demands that they be manufactured at home.

As a wool growing state, Wisconsin holds a prominent position, but in this respect it is capable of doing far more than it does at present. The quantity of wool might easily be doubled, or even quadrupled, and the amount produced should be manufactured in the state. Along our numerous rivers should be heard the rattle of the spindle and the click of the shuttle.

Cotton, likewise, could be manufactured here with profit. It might be brought up the Mississippi at a moderate expense, and water and peat would furnish the power for manufacturing. Other materials besides those specified abound in the state, and large amounts of materials not produced here could be brought from neighboring states, and from the seaboard, for less than is now paid for transporting the manufactured articles. There are two other facts which should not be overlooked. One is the intelligence of the laboring people of Wisconsin. Scarcely in any other section of the country is elementary education so general, so nearly universal, or common schools so flourishing.

The other fact is that our climate is salubrious, so that congregating people in villages, or in large working establishments is entirely safe.

An active member of the state says, in a letter on this subject, "we can make Wisconsin the New England of the Mississippi valley." More than this, I would add, we can make Wisconsin New England with a western expansion.

INCREASING THE VARIETY OF INDUSTRIES BY ESTABLISHING MANUFACTORIES, WOULD PRODUCE MANY BENEFICIAL RESULTS.

One of the most obvious, would be to give employment to a much larger number of persons. Agriculture can be prosecuted but a part of the year, and by a portion of the people. The brief summer is a period of severe pressure, but there are portions of the year in which a part of every farm-gang finds but little to do, and the inmates of the home pass the hours and days to little profit.

Turning to the statistics of Massachusetts, we find striking illustrations of the fact that a variety of industrial pursuits multiplies opportunities for employment. In many of the small towns, there is at least one manufacturing establishment to every one hundred of the population. Each establishment, though small, has its own center of life and influence, gives aid to many families, and draws to itself wealth, not unfrequently from distant parts of the country. In such communities all classes of persons are stimulated to industry, and labor of every kind finds opportunity and reward. The old, the feeble in health and the young, find profitable labor, and are able to add something to their own accumulations and to the general wealth.

Furnish the people of Wisconsin with similar opportunities and thousands who are now too feeble, from age or other causes, to accomplish much on the farm, and many other thousands who are not now regularly employed, would find pleasant and remunerative labor, and while benefiting themselves, would do much to improve the finances of the state. Thousands of youth now growing up in idleness for want of employment suited to their constitution and natural bent, would be saved to themselves and society. Start an establishment for the manufacture of whips, buttons, shoes, thread, hats, spades, knives, clocks, clothing or other useful articles, and many hands are at once stretched out for something to do.

Work is a divine institution, the original college, and they are unfortunate who fail to secure its fostering influence. Few things should a republic dread more than an indolent people, a people that cannot find employment. Yet all were not born to till the soil or build houses; each has his own aptitude. Attempt to make your born merchant a good ditcher, and he fails you every time. Make the lawyer, born and fed in your household, plant and hoe, he moves with a listlessness that ought to tell you his heart is elsewhere, and if you make him a farmer, life will be to him the severest drudgery. He has his special gift and a right to exercise it. A certain amount of mechanical skill, and of agricultural skill, is born to a nation annually, and the nation can use it or waste it at its pleasure, but cannot divert it without loss. A state's labor well divided is sufficient to furnish its inhabitants with suitable food, clothing and appropriate luxuries. When all

have suitable occupation the comforts of home are multiplied, means for benevolent activities increased, education advanced, and a spirit of personal independence awakened vital to society.

ECONOMY OF MATERIALS.

By a universal law, variety of pursuits induces economy of materials. It legitimately raises everywhere, and in reference to every substance, the question: What is its use? What can be made of it? It induces the habit of finding value in every material, of coining everything into gold.

The progress of our agriculturalists in wealth, is greatly retarded by needless and numerous loss. Property in farming implements, live stock, farm productions, and the best of fertilizers, amounting to \$70,000,000 or \$80,000,000 annually, is greatly damaged by exposure to the weather. In this way our farmers lose more money than they pay for all their taxes. Five millions of dollars per year is a moderate estimate for this loss; and any new impulse given to industry that shall stimulate men to utilize the materials at their command, and the products of their labor, would be a public benefaction. So far as mechanical industries, by quickening thought, opening new departments of business, and multiplying facilities for acquisition would secure this result, their encouragement is most desirable.

PROTECTION AGAINST DERANGED MARKETS.

The importance of having at all times a fair market for the products of labor is universally admitted. One means for securing it is the multiplication of industries. Let all the people of a state follow one vocation, and a single incident may seriously affect the prosperity of the whole population. Are they agriculturalists? Drought or mildew at once drains their pockets and enervates their hearts and hands. Are they engaged in mining, or any particular kind of manufacture? Any adverse influence affecting their chosen pursuit brings calamity upon the whole community.

The sum total of human wants is essentially the same from year to year, and, though the demand for a particular commodity may for a time be slight, others will be sought in its place, so that varied industry will ever find a market. With a distribution of

toil in a state suited to the real wants of the people, a general financial pressure is scarcely possible, and, if it come, will soon disappear.

MULTIPLY THE CONVENIENCES AND LUXURIES OF LIFE.

He who placed us here designed us for something higher than physical toil and the gratification of physical desires. He has enveloped the earth in beauty, giving us plants and flowers, waving forests and gorgeous landscapes. He has scattered everywhere the delicate works of His hands, diamonds in the depths of the earth, and pearls in the ocean's bed, and has set in the blue canopy above glorious luminaries forever shining. From the varied landscape, from the silver light of morn, and from the golden sunset, comes a voice proclaiming the duty of culture. Man's capacities and wants increase with the development of his powers. Stultified to savagery, ground-nuts supply him with food, and a few withered leaves a pillow for his empty head. Illuminated by the light of science and religion, his powers are awakened, and with every new impulse comes a new want. Every true want is an index of growth.

To turn the sod, gather the golden harvest, and merely consume or hoard the products of toil will not fill the measure of human responsibility.

Beyond these needful services lies a world of intelligence and felicity, and why should not the sons and daughters of farmers possess the highest means of enjoyment? Agriculture alone cannot furnish these means. The very life of agriculture and all its accumulated means of high success, are derived from sources external to itself. Strike mechanism from the world, and the now beautiful homes of our farmers and men of wealth are instantly reduced to wigwams, and agriculture, as a well defined calling, ceases to exist. Multiply the products of mechanism, the homes of laborers are decorated with new attractions, and life, radiant with added beauty, possesses new value.

Thoughtful men, solicitous for the improvement of Mexico, are endeavoring to decide upon the best means of introducing into that country a greater variety of industries, believing that such a movement will hasten her political and social regeneration.

Give to Ireland the machine shop and the factory, and she will speedily settle the question of her independence. These are kept from her now to prolong her vassalage.

Multiplying our industries would speedily

INCREASE THE WEALTH OF THE STATE.

This result would be accomplished, as already indicated, by giving employment to a greater number of persons. Each hand directed to new toil would contribute something to the aggregate wealth.

New markets would be opened near the place of production ; enhanced prices would be realized, and much time saved in disposing of commodities.

Opening a manufacturing establishment in any portion of the country gives at once increased value to land. Not only house lots, but farms in the vicinity frequently double in value in a single year.

New opportunities for investment would be offered to men of moderate means, and thus a larger amount of money become productive.

Capital would come from other states and probably from other countries, and the wealth of the millionaire become subservient to the wants of the laborer.

A more prolific source of gain would be found in transmitting our raw materials into wealth. Minerals and water power are worthless till they are used. The aboriginal inhabitants of this country possessed its boundless resources as truly as we do, yet they were as poor and dependent as the animals that roamed through the forests. It is intelligent labor alone that transforms minerals, timber and water power into gold. "The material of wealth becomes wealth by the intervention of some act of our intelligent being." Wealth, then, will be in proportion to intelligent industry.

How did Great Britain gain her ascendancy over the nations ? Not by force of arms, or by diplomacy, but through the benefits of skilled labor. By this agency she has converted almost worthless raw material into articles of great value, not only for herself, but for all the nations of the world. The power of her machinery

gave her the advantage over all manufacturing peoples who followed the old handicrafts. She stopped in a few years all the looms in Turkey. She reduced the exportation of cloth from India from 250,000,000 yards per year to absolutely nothing. These results were easily accomplished, for her steam engines, through her skillfully prepared machinery, were more than a match for all the hand-power in the world. Twenty years ago her steam-power was estimated to equal the muscular energy of six hundred millions of men, that is, of more than the entire adult male population of the globe. The coal to raise the steam was mined by forty thousand men, and the engines driven by it were built by 35,000 more. So that a substitute for the muscular energy of the whole adult population of the world is provided for by less than 100,000 men. Give to Wisconsin an equal share of mechanical power, in proportion to its population, it would possess a force equal to the muscular energy of 20,000,000 of men. This power now lies buried in your peat-beds, or thunders uselessly down your rivers. The practical question is, will the people encourage the adoption of measures to utilize this power, and convert it into wealth? By a multiplication of industries a large proportion of the millions now paid for transportation would be saved.

The exact cost of transporting our raw material to the east, and of bringing back manufactured goods, cannot be estimated. We know it is great, it is felt in every sale of material and in every purchase of products. According to a statement passed to me by the secretary of the Milwaukee chamber of commerce, it appears that in 1872 the wheat crop amounted to 22,300,000 bushels, of which 15,800,000 were shipped at a cost of about thirty cents per bushel, including storage and insurance, making a grand total of nearly \$5,000,000. The amount paid for the transportation of the surplus wheat crop the present year will be nearly \$7,000,000. To this sum add the sums paid on other raw materials and partially manufactured products and on the various kinds of goods imported from the older states, including many articles made of wood and iron, and it will be found that we are paying \$25,000,000 annually for the support of wealthy corporations, and to the same extent impoverishing ourselves. Apply the remedy!

GIVE NEW STIMULUS TO EDUCATION.

Wherever the mechanical industries are extensively pursued under a free government, intellectual activity is fostered. Despotism imposes insupportable burdens upon the laborer, and monopolists are ever ready to crush him beneath their iron heels, consequently the mechanic and the artizan may frequently be found in a state of degradation. Under such circumstances the farmer sinks much lower, for subsistence is secured by the agriculturalist with less mental effort than by the artizan.

Whatever the mental development prevalent in an agricultural community, the introduction of such mechanical arts as will meet the demands of that community, will quicken its thought and raise it to a higher plane of life. We should then hail with pleasure the opening of any new line of effort which demands clearer and more vigorous thinking.

Mechanical industries, especially in a free country, are favorable to the public schools, and their encouragement is desirable, therefore, as giving to the common people an essential element of power. Among the great forces controlling the people of the United States, wealth and learning are prominent. They make laws and expound them, they shape the school system, mould science and philosophy, and span the continents with railways, and the oceans with cables.

At their shrines the millions bow, and the class or guild that has not its men of wealth or its thought-makers, must become the servants of the leaders, the hewers of wood and the drawers of water for the benefit of masters condescending to employ them. This result is inevitable. The *clear, sharp alternative* presented to the laborers of America to-day is *education or vassalage*. Laborers as a class cannot be wealthy, yet in a republican state where every one of them is born to the sceptre and the throne, they can be educated, and are at fault if they are not, for they have power to lay taxes for this purpose upon the wealthy. The treasures of the country are at their command, and they can honorably do much to restore the lost equilibrium in society, by giving public education a wider range and greater thoroughness.

They can speak the school into symmetry and efficiency, and

thus secure to their sons and daughters those invaluable elements of power, knowledge and mental discipline, and if they fail to do it, they are untrue to themselves, to the children of their own blood, and to the behests of society.

Monopolies cannot be controlled or to any great extent restrained by legislative enactments. They spring from active brains. They are not fortuitous; but are the product, near or remote, of sleepless vigilance, protracted study and vigorous thought. Such forces can be checkmated only by corresponding forces. The laborers must be true to themselves and to their children. They should seize upon all facilities for education with avidity, and teach their children to do the same, as a means of present and permanent safety.

The agriculturist and the mechanic, as fully as the physician and the engineer need special training. Every art is based on a science, and only he who understands the principles involved is a true artizan, and only such can realize the highest benefits from their labors.

The intention of the congressional land grant of 1862, was to secure to the young farmers and mechanics of the country a thorough preparation for their special callings, and a general education for the duties of citizens. That grant should have been supplemented by other grants from the public domain and by donations from the states. There ought to be at least one thoroughly organized industrial college in every state, with free tuitions, with courses of study brief and practical, and with such surroundings that young men can acquire a good outfit for the duties of life, without having the idea of labor educated out of their minds.

It is not the mission of education to make farmers, mechanics, lawyers, physicians, or clergymen, merely, but *men*—men of thought, of sterling integrity and symmetrical character. The nation wants *men*, not mere machines on the farm and in the workshops.

Prior to February, 1872, 172,000,000 of acres had been given to railroad corporations, and for the education of the millions of the youth of the country only 70,000,000.

Aside from Alaska, there remain nearly 1,000,000,000 acres of land, and it is for the people to say what shall be done with it.

A cry has gone out through the country, "homes for the homeless and lands for the landless"—it has the ring of benevolence, but is prompted by a greedy spirit of speculation.

Our country does not need the rapid settlement of its now unoccupied lands, but a just balance of social forces, a proper distribution of the profits of labor.

Recently it has been proposed to devote the proceeds of all the sales of public lands to the common schools—but let it be distinctly remembered, that whatever general plan may be adopted for disposing of the income from the sales of public lands, congress can at any time, give millions or hundreds of millions of acres to influential corporations.

Do any urge that educated men are not practical? They have been called to fill all the highest positions in the gift of the people. When our country was on the verge of bankruptcy, a college graduate was appointed secretary of the treasury, and from 1787 to 1814 a college graduate held this secretaryship. Chase, Fessenden and McCullough, who have rendered such signal service in the department of national finance, were graduates. Chancellor Livingston, a graduate of Columbia College, induced Fulton to return from France and renew his experiments, secured for him state aid, and furnished money for the building of his first boat, and thus gave the steamboat to America.

Junius Smith was the projector and President of the British and American Steam Navigation Company, the first company ever formed for the navigation of the ocean.

DeWitt Clinton projected and carried forward the great canal uniting the lakes, through the Hudson, with the Atlantic ocean. Prof. Morse gave to civilization the telegraph, and Field has bound the continents with the cable.

Of the 9,000,000 of adult males in the country, only about 70,000 are graduates; yet from this number comes at least one-half of the occupants of the highest positions in the gift of the people. Says Macauley: "Take the Cambridge calendar, the Oxford calendar, for 200 years—look at the church, the parliament, the bar, and it has always been the case that the men who

were first in the competition of the schools were first in the competition of life."

Profoundly convinced that the multiplication of the mechanic arts will, in many ways, conduce to the education of the laboring classes, I would urge the adoption of energetic measures for their promotion.

No movement so vast as that of changing the industries of a state can be pushed forward by violent measures. Yet immediate steps can be taken toward even the grandest results. The greater the end to be achieved, the more imperative the necessity for early and comprehensive measures. The first condition of success is a clear conception of the necessity of directing capital and labor to mechanical and manufacturing operations.

Let every friend of the state give the subject thought. Let every paper collect and send forth pertinent facts. In different parts of the commonwealth, men are considering this subject and anxiously waiting for a concentration of effort. Much, doubtless, can be accomplished by effecting an organization that would inform our own citizens respecting the facilities furnished by this state for manufacturing operations, and by presenting suitable facts to the people of the older states whose interests and enterprise might lead them to co-operate with our endeavors.

Many of the numerous granges in this state might obtain corporate powers, and with funds raised among themselves, commence some kind of remunerative manufacture.

The necessities are great, and the movement must correspond. A brave and hopeful people, like the citizens of Wisconsin, will esteem a work of real magnitude, inspiring, not disheartening, and will rise in manly courage to surmount difficulties and achieve success. Remembering their honorable deeds in peace and their brilliant record in war, they will, as they contemplate the necessity for action, shout their chosen watchword, *Forward*, and will promptly execute the command.

REMARKS OF HON. C. C. WASHBURN, OF MADISON.

Gov. Washburn said that after the able and exhaustive address to which they had listened from the president of our Agricultural College and State University, it would be presumptuous in him to say anything about farming. The fact was that his knowledge about farming was acquired at a time when farming meant work, and the knowledge he possessed they would not thank him for imparting. Who is there here that knows anything, or wants to know anything about a sickle or a flail? He had a painful recollection of both; and who could blame him, considering that his inclination for hard work had never been excessive, if, at the first favorable opportunity he had dropped those implements.

Had the innumerable labor saving agricultural machines which now make the labor of the husbandman almost a pastime, been in use when he was a boy, he would doubtless to day be "whistling o'er the furrowed land" as happy as any of them, instead of being called out here, and asked to speak when he had nothing to say.

One of the unpleasant features of holding the office he then held, was that the people seemed to think that the incumbent must be acquainted with every subject, and that it was his duty to speak at all times and all places.

This he could say, without study or exaggeration, that he was gratified and proud of the exhibition he witnessed on the State Fair grounds.

Few of the older states could present a better show of stock of all kinds and farm products generally, and the results of manufacturing industry on exhibition they need not be ashamed of. Again and again in years past he had urged upon the farmers the necessity of co-operation and working more in harmony, and he was glad to see that at last they were waking up to their true interests. He congratulated the farmers on their prosperous condition.

While almost every other branch of industry was now prostrate, and fortunes were being swept away in a day which it had required long years to accumulate, the farmers are prosperous and independent.

REMARKS OF GEO. E. MORROW, ESQ., OF THE WESTERN
FARMER.

Mr. Morrow said, that in view of the length of time the audience had been standing in the unpleasant wind, he should decline to detain them longer, except to acknowledge the honor done him, and to call attention to what seemed a very appropriate arrangement by the secretary, in securing at this, the exhibition of the chief agricultural society of the state, addresses by the chief Executive officer of the state, the president of the chief educational institution, and a representative of the agricultural press. The state government, the educators, and the agricultural press, all had a deep interest in the prosperity and improvement of the agricultural interests of the state, and this society was one of the chief agencies in securing such improvement. All these agencies should work together in heartiest sympathy, aiding each other in all practicable ways.

REPORTS OF SUPERINTENDENTS.

HORSE DEPARTMENT.

BY JOHN L. MITCHELL, SUPERINTENDENT.

The show of horses at the fair of the state society, held in Milwaukee in September, 1873, probably exceeded in quantity and quality that of any preceding one, but the weather, which showered anything but blessings, made it impossible to exhibit the animals as they deserved.

The roadster class was the most conspicuous for its excellence. It showed that Wisconsin also is moving in the national direction of trotting-breeding, and with no laggard step, for the stock-horses on the grounds represented the most sought-for strains in the country, and were evidence in themselves of the value of "blue blood" in the horse. It may not be out of place here to mention the stables of Richard Richards of Racine, Geo. C. Stevens of Milwaukee, and Geo. D. Doubleday of Whitewater; they were prominent for their numbers and merit, and their proprietors are doing the state much service.

The draft class was full and fine, owing mainly to the stock of H. B. Sherman of Burnett Junction, and Simon Ruble of Beloit. These gentlemen presented weighty reasons for the belief they have in the heavy horse.

The thorough breds were few. In fact thorough breeding can hardly be said to exist in Wisconsin. Most of the premiums in this class went without competition, and in some instances were awarded to animals not qualified in the way of pedigree.

The class for general purposes was as usual filled to overflowing, and in a great measure by non-exhibitors. This is the convenience class through which parties secure cheap and easy stall-room upon the grounds, by obtaining an entry tag, without

any intention of appearing in the ring. This frequently works injustice to bona fide exhibitors, as at our last fair, when many worthy animals were turned away for want of accommodation. Some stringent regulation should be made to meet these cases.

The trials of speed were, with one possible exception, tame affairs. This was the result partly of the unfavorable circumstances of bad weather and track, but mainly of lightness of purses offered—good horses will not now-a-days take the risk of a record for a paltry sum of money.

For the benefit of spectators, some way ought to be devised of exhibiting all the horses at one time. A cavalcade may not be feasible, but it might be understood that the stalls are all to be opened at a stated hour and are to remain open for a given length of time; horses in training, of course, to be excepted.

On the whole, the horse exhibition of 1873 passed off smoothly and without disturbance. The short-comings of the department were not a few, still it must be remembered, in extenuation, that there are sure to be some hitches where horses tackle each other in hot competition.

CATTLE DEPARTMENT.

✓ BY CHARLES H. WILLIAMS, SUPERINTENDENT.

There was a time, when raising neat cattle was deemed a branch of farming unsuited to the climate and soil of this state, but thanks to the energy and persistent labors of the managers of our agricultural papers, and the energy and public spirit of a number of the enterprising farmers of the state, who purchased and brought here the finely bred animals of the older and more improved states, it has been demonstrated beyond question, that Wisconsin, if not one of the best stock producing states in the union, can at least grow them well and profitably—as has been seen each year at our annual exhibitions during the past four or five years, where were home grown animals of all the various classes, equal to those found in any of the other states.

The last of these exhibitions, held at Milwaukee in September,

1873, fully equaled in numbers and quality, the very large and valuable display of cattle made the year previous, but was more creditable to the state, in that the stock on exhibition, was more largely owned by resident farmers, and that there was an increase in the number of exhibitors, several of whom, were such for the first time—seeming to indicate a more extended and growing interest in favor of cattle breeding.

There were on exhibition at this fair, two hundred and twenty-five head of neat cattle, divided among the various classes, as follows: Short Horns, eighty head; Devons, forty-four; Ayrshires, forty-three; Alderneys, twenty; Grade cattle, sixteen; working oxen, ten; fat cattle, six; milk cows, six. The Grade cattle, fat cattle and milk cows, being crosses of the Short Horn. The working oxen, crosses of the Short Horn, and crosses of the Devon. In addition to the above, there were quite a number of the Black Galloway—making in all, a number on exhibition largely in excess of the stalls provided by the Society.

It will be seen from this detailed statement of entries, that the animals on exhibition in this department comprised one hundred and eighty-eight thoroughbreds, and only thirty-seven grades of all classes, from which it may be fair to conclude that the general farmer does not contribute as much towards the annual exhibitions of the society, in this branch of the show, as his interest in the improvement of the cattle of the state would seem to require.

The efforts made by the society to encourage the introduction and breeding of thoroughbred cattle and other thoroughbred stock in the state, are mainly for the purpose of bringing within reach of farmers generally the means by which they can gradually improve and make better the native cattle and other poor stock of the state. It would be very gratifying, and add much to the interest of the exhibitions, if the progress made in this important branch of agriculture was more fully shown by the exhibition of a much larger number of the improved grade cattle, working oxen, fat cattle and milk cows. It is hoped the general farmer will in the future show more interest in this department, and place on exhibition at the annual fairs a much larger number of their well-developed and improved grades.

SHEEP DEPARTMENT.

BY VICE PRESIDENT STILSON, SUPERINTENDENT.

As the exhibitors at the fair in 1873 were mainly the same as in 1872, in this department, I will not attempt to particularize each exhibitor's stock as I did in 1872, but will devote a few words to the importance of this department. The exhibitors of 1873 vied with each other in the fine quality of their stock, showing that Wisconsin is well adapted to sheep husbandry. And when we contemplate the great value of this industry to productive and successful farming, we must give an encouraging word to all those who have adopted sheep husbandry in mixed farming, and to those who have not yet engaged in this branch of farming, but have feed for more stock, we would urge the keeping of small flocks of sheep not only as a source of revenue, but particularly to maintain the fertility of the farm. Remember that the sheep is said to be the animal with the golden hoof, and the land on which he treads will turn into gold. Five bushels of wheat per acre can easily be added to the wheat crop on arable lands that have long grown wheat, when sheep are kept on the farm with clover for a rotation in grain growing. And the more we can diversify the industries of the country, the better they will pay the producers. Wool is a product of far greater value in proportion to the products of the coarse feed upon which it is grown, hence the cost of transportation is materially reduced, and the profits of the farmer enlarged.

AGRICULTURAL DEPARTMENT.

BY C. LOFTUS MARTIN, SUPERINTENDENT.

In accordance with a resolution of our executive board, I herewith hand you a brief report of the agricultural department. The number of entries was very large, and the building devoted to this branch of the exhibition well filled. The show of winter and spring wheat, corn, oats, barley and other cereals, including garden seeds, was good. The products of the dairy could not

well be excelled. Splendid samples of cheese, and as to butter, I never tasted better. The display of bread and cake, preserved and canned fruits, added largely to the attraction of this department, and was very creditable. The exhibition of vegetables might fairly challenge any state in the Union. Superb cauliflowers, potatoes, cabbage, turnips, carrots, and all other vegetables were shown in abundance and of the finest quality.

Among the largest exhibitors in this department, perhaps I ought to mention Gen. J. C. Starkweather, of Oconomowoc, whose collection of the varied products of the farm was very fine, and received high commendation. G. C. Haskell, of Rockford, Illinois, who had a beautiful display of field and garden products. His show entitles him to much credit. E. B. Thomas and P. Putnam, of Dodge's Corners, and W. H. Plumb, of Milton, also made creditable exhibitions. But why particularize, where all made so fine a showing. I ought to thank every exhibitor for the magnificent display made in this department, and in the name of the society I hereby do so, and say, come again ladies and gentlemen, with the products of your labor, and we will furnish you with all possible facilities for making this important department of the state fair a grand success.

In this connection I desire to say that the vegetable garden may be made the source of the greatest blessing to any family in the state. Nothing is more conducive to good health in the spring and early summer, than fresh, succulent vegetables. Dispepsia and indigestion are becoming almost as prevalent throughout the country as scurvy among the salt-water sailors. Now it ought to be, if it is not, well known that this afflicting disease may be cured and even prevented by the free use of sweet, fresh vegetables at all seasons, especially in spring and summer. They are as necessary elements of comfort and good health to man as the sweet grasses of the field are to the healthy condition of the domestic and wild animals, and yet we see farmers, and those engaged in all other pursuits as well, whose children would be as much surprised to see an egg plant as a palm tree, or asparagus grown for any other purpose than to decorate or ornament the looking glass; who never see spinach or lettuce in May, who see the spring lamb cooked and eaten without either mint sauce or

green peas, and in fact all the laws and conditions which we must obey to enjoy good health, ignored and disregarded.

To those who thus tamper with their own health, I wish to say go on and suffer, take physic if you like it better, but I protest in the name of humanity that you have no right to inflict disease and suffering upon your families when the products of the garden are within your reach, and contain the very medical properties they require.

FRUIT AND FLOWER DEPARTMENT.

BY O. S. WILLEY, SUPERINTENDENT.

To expect little and then to be overstocked with the good and beautiful things of this world's offering, does not often happen; but such was the case in more senses than one in the horticultural department at the state exhibition in 1873. So universally did the opinion prevail that the fruit crop was a failure, that no one connected with the society expected a fine show, but were not slow to express their opinion that this department of the state fair would be a failure, and even your superintendent had believed their assertions, thinking that fruit growing had touched "hard pan," and could only hope that from the ashes of general despondency there might yet arise a bright horizon. But how happy were all, when they again learned how easy it is to be mistaken, and how sure we all were that fruit can be raised in Wisconsin, when we saw the big boxes, barrels and baskets unloaded at Fruit Hall.

The professional cultivators were on hand in usual number, but I think with larger collections than usual. I was fully convinced that Mr. Peffer had not lost his interest, for there he was with 124 varieties piled up around him and still not happy for want of room; and friend Kellogg, with 69 sorts, not to mention his innumerable crabs, that he piled up in such profusion that the most casual observer could not help but notice his "crabbish" appearance. These with his fine show of grapes were good to look upon and deservedly took their share of premiums. There were six entries for the best and greatest variety of apples, Messrs. Baum-

bach, Thompson, Wolff and the Gould Nursery having fine exhibitions, showing great care in their collections and arrangements.

For best 10 varieties of apples there were seven entries. In this list was a fine show by Thomas Barnes, of Racine, but the list was of special interest to the lake shore and would not be found well adapted to much of the balance of the state. Mr. Kellogg exhibited for best 10, Red Astrachan, Duchess, Fameuse, Talman Sweet, Golden Russet, St. Lawrence, Ben Davis, Utter, Willow Twig and Northern Spy.

A feature of this exhibition of more than ordinary interest was the preservation of a few early or summer varieties in very perfect condition. The Duchess has been considered a very poor keeper, yet here it was in good condition for show. By this I think we may learn a lesson applicable to other sorts. The Alexander, shown by Mr. Peffer, was the largest as well as the heaviest apple; the Colvert for weight, and St. Lawrence for size vied for the second honors.

Mr. Peffer showed seventeen varieties of pears, Gould's nursery, seven well ripened sorts, and Mr. Kellogg six varieties of "\$5" specimens. Mr. Wolff's pears were also very fine, and took first premium on three varieties.

Plums were in limited quantities. Evidently the "Little Turk" had more than his share.

Grapes were shown in great profusion, Messrs. Greenman and Kellogg dividing the honors. I have never seen such a profusion in quantity and quality as were on the tables. Evidently the grape is at home on our soil and climate. Mrs. Mitchell's foreign grapes were of their usual superior size and attractiveness.

Among so many non-professional exhibitors I cannot name all. They all did well and evidenced the greatly increased interest taken by the amateur growers. There were twelve exhibitors for variety of apples, ranging in quantity from thirty-eight plates, "a fine display" of W. Reed, to seventy-three plates by B. B. Olds. The first premium was taken by J. C. Ackers on eighty-seven varieties; second by E. B. Thomas, on sixty-six varieties; third by J. W. Parks, on sixty-five varieties; while Messrs. Lewis, Jeffers, Starkweather, Pilgrim, Jacobs, Dewy and Ozanne, all had creditable exhibitions.

There were 15 entries for 10 varieties, and 16 exhibitors of 5 varieties of apples. E. B. Thomas had 25 varieties of well grown pears, and J. W. Park, 24 varieties, scarcely less attractive; J. Ozanne, 17 varieties very fine, and J. L. Pierce, 10.

The pears attracted much attention, and many an anxious heart wondered if they cost all they are worth. Is it cheaper to buy or grow, or go without?

The amateurs were not behind in their show of grapes. Mr. Lawrence's 22 varieties, and Mr. Reed's 15, showed plainly there is a taste and an ambition that is guiding the ship of fruit to a harbor of satisfactory results. The Delaware took the lead as a single variety, and the Concord for best three bunches. The committee had a laborious task in making their awards, and "respectfully request the superintendent of the hall to so arrange the classes that one side might be assigned to professionals and the other to non-professionals, and that the single specimen plates be *all* arranged on one table."

Nursery trees were shown in goodly number, and proved an interesting feature of the Fair.

Summer fruits attracted but little attention, and I think will not meet the expectations of the designers until the time comes when the society can hold annual summer exhibitions.

Seedling fruits were shown in goodly numbers, and I think will result in much good. The encouragement for new varieties should be continued.

Fruit is not all that is attractive at a fair, hardly all that is necessary to make it a success. Indeed, we would be almost lost, were the florists to be taken from us. We cannot spare Mr. Pollard, the enthusiastic representative of Mrs. Mitchell's gardens. His vast collections of rare plants were admired more than ever, and I have no doubt, were the means of encouraging others to do likewise. The non-professional florists were not so numerous as I desired, but those who made an effort did well, filling a large share of the hall with a choice lot of cut and pot flowers and plants.

The same remark will apply to the professional class, for where all do so well it is difficult to specify the special merit of any. The great difficulty was to find room for so large a display. I will, I trust, be excused by the others, if I express my and the

society's gratitude to James Vick of Rochester, N. Y., for his interest in the floriculture of the state, and the very fine feature of the fair made from his home grounds.

Some features of improvement for the future have occurred to me, but will mention only one. In view of the limited amount of room and the great labor attending the collecting and arranging of fruit, exhibitors should not be required to have duplicates, when competing for different premiums. I can see no reason for requiring an exhibitor who competes for best ten and best five varieties, to have five of those plates in duplicate, providing he thinks and desires to have the best ten include those he shows as the best five. It only takes up this much more room and causes very much additional labor. There should also be some more distinctive line drawn between professional and nonprofessional florists. Does it necessarily follow that because Mr. A., B. and C. are nurserymen and sell fruit trees, their wives and daughters are necessarily professional florists, when they have no green house and never sell a flower? The present rule obliges them to compete with green houses. This subject needs the light and wisdom of the executive committee.

I wish to acknowledge my obligations to H. W. Roby, Milwaukee, for special assistance in the floral department.

POULTRY DEPARTMENT.

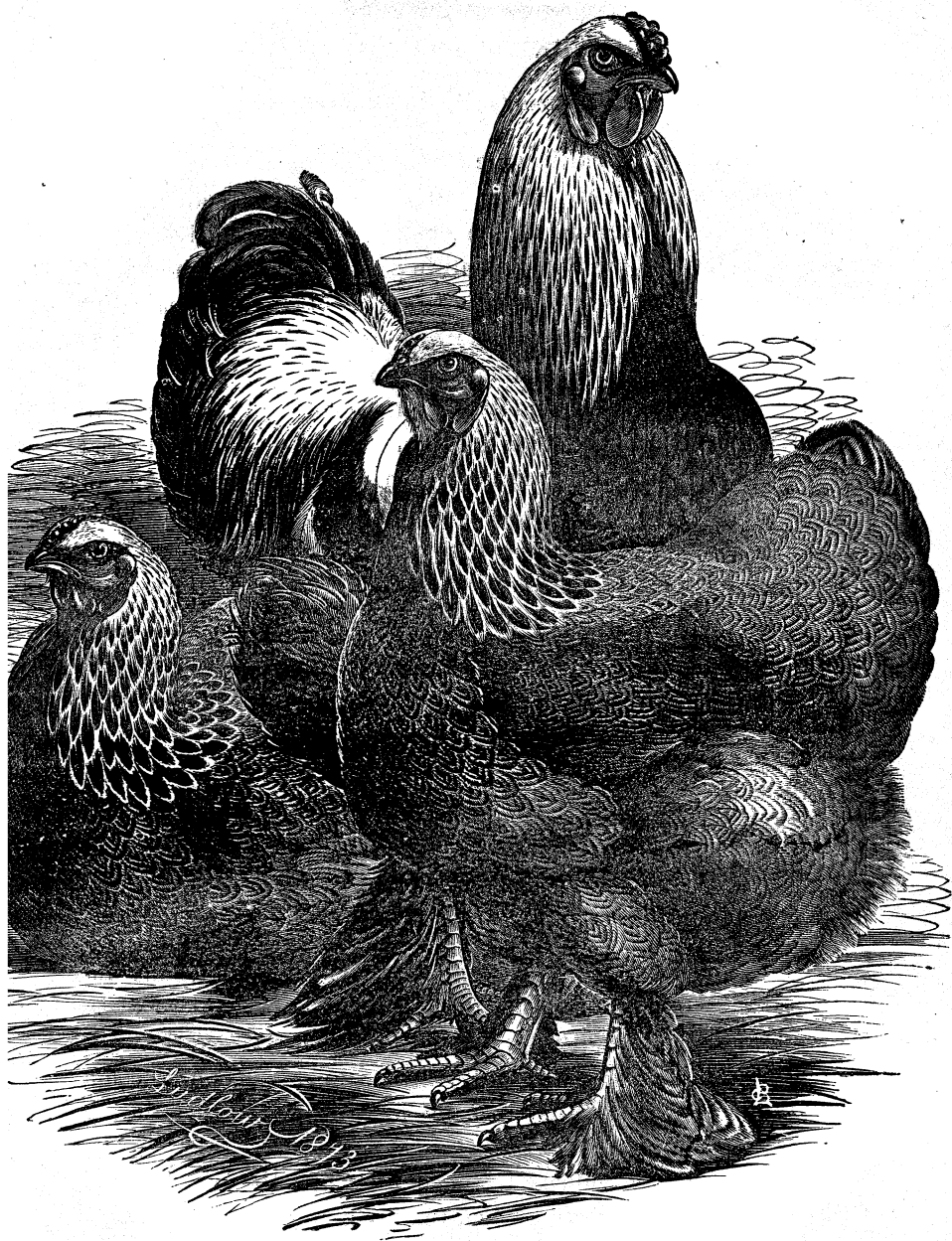
BY J. S. M'GOWEN, ASS'T SUPERINTENDENT.

The interest manifested in this department the last year was commendable. The growth of poultry in the state is rapidly increasing, the number of exhibitors at our annual fair greater, and the birds shown are of improved varieties.

The conveniences for making a good display were not suitable. The space allotted was poorly lighted, hence the exhibits could not be shown to as good advantage. A new and well arranged building should be erected by the society for the exhibitions in this department.

A word as to poultry. To thrive well they should have access to water, gravel, vegetation, etc. If kept in considerable numbers an acre of land could be devoted to them with more profit than if planted to almost any crop. The care of them requires but little labor—can be mostly done by children, who take great pleasure in it.

Mr. Allen says "that the care of poultry exerts a social and moral influence which cannot be estimated by dollars and cents; that they withdraw the thoughts of children from idle games and worthless habits; that while grains and fruits and flowers are beautiful and attractive, yet they fail to enlist that sympathy and feeling which attractive animal life affords. "That comparatively few can indulge in the luxury of improved flocks and extensive herds, but that all can gratify their tastes by keeping a few choice fowls." In this idea I fully concur, and am glad to witness the interest manifested in the rearing of poultry in the state, and I doubt not the exhibitions made at the State Fair will continue to prove more attractive, pleasing and profitable.



DARK BRAHMAS.

Bred by THOS. F. ANSDALL, St. Helena, England. Imported Dec. 1873, by S. H. SEAMENS, Wauwatosa, Wis. Winners of Grand Medal, Exhibition, Milwaukee, Feb. 20, 1874.

MACHINERY DEPARTMENT.

BY VICE PRESIDENT CHENEY, SUPERINTENDENT.

Again I have the honor, herewith, to present the report of the committee on machinery, which will be found instructive to the manufacturer, interesting to the exhibitor and beneficial to the society, as well as profitable to all interested in the promotion of this branch of industry. The superintendent of this department takes pleasure in recommending its careful perusal, also the adoption of its suggestions for the future good of the society.

The improvements made last fall for the convenience of exhibitors in this department were duly appreciated, as our well filled "power hall" fully demonstrated. About double the number of machines were in operation, as compared with any previous year. With ample and well regulated power, furnished the second time by John Brownell of the Dayton, Ohio, Works, a good floor not heretofore provided, all machinery moved with the regularity of a well regulated shop, giving entire satisfaction to exhibitors and spectators, and at the same time forming one of the chief attractions of our fair.

Among the prominent exhibitors in this department were A. O. Packard, Arnold & Yale, E. P. Allis, and Filer & Co., Milwaukee, Powers of Fort Atkinson, and Stevens of Chicago. The interest these gentlemen take in our annual fairs, proves the benefit to be derived from exhibitions of this character. The encouragement given by our society has been appreciated and improved.

Those wishing to advertise their machinery have steadily increased their exhibitions, until this department of our fair excels, both in quantity and quality, that of most other states in the west.

Also in the display of agricultural implements there has been a steady increase, notwithstanding the unfavorable weather during the week of the fair.

Every kind of machinery intended to lighten the labor of the farmer was fully represented, and the exhibitor, though exposed to the cold, the rain and the mud, stood hero like by his machine, ready to point the inquirer to the special advantages *his* possessed over every other competing machine. Nothing is now wanting to

make this part of our exhibitions an entire success but provisions for actual trials in the field.

For full particulars see report of the committee.

In conclusion, let us all give the Wisconsin State Agricultural Society our encouragement and support, that the future may demonstrate fully, that time, labor and money, expended by the state or society have been a blessing to all.

REPORT OF SPECIAL COMMITTEE.

MILWAUKEE Sept. 28, 1873.

To Maj. RUFUS CHENEY, *Superintendent of Machinery Department, Wisconsin State Fair Exhibition:*

The judges appointed to examine and report on the various articles of machinery placed on exhibition, respectfully submit the following report:

At the outset the judges encountered a task that should properly be divided between several sets of judges. The display of machinery and implements was so extensive (embracing near 2,000 articles) that no one set of judges could satisfactorily to themselves and to exhibitors, do even partial justice. The most we could do in the two days allotted, after we received the class book (a large share of the time it having rained), was to pass over the acres of machines and implements, devoting but a moment's attention to each machine.

To obviate the difficulties in the future, under which the judges labored, we respectfully submit the following recommendations:

That the labor of examining the various machines and implements be divided between judges appointed separately, on the following divisions:

- 1st. On reapers and mowers.
- 2d. On threshers, horse powers, stump machines, farm gates, hay tedders, and horse rakes.
- 3d. On plows, harrows, cultivators of all kinds, lawn mowers, bog cutters, land rollers, lumber wagons, sleds, drills, seeders, etc.
- 4th. On engines, wood and metal working machinery, and tools of all kinds.
- 5th. On churns, cider mills, washing machines, and including all domestic hand machinery or tools, and all farm land tools.
- 6th. On miscellaneous implements, including hay presses, wind mills, pumps, rams, and all tools, machines and implements not included in the foregoing divisions.

It seems to us, from a practical standpoint, that these general divisions of labor would not only secure more satisfactory results to the credit of the society, but also for the benefit and satisfaction of exhibitors.

To this class of persons the society owes much for the popular interest taken in the annual exhibitions. The exhibition of even the smallest im-

plement or machine, is not without its attendant cost to the exhibitor, and in many cases the items of expense are very heavy, and have to be borne by mechanics and laboring men, who are induced to exhibit their wares or inventions as a means of advertising their usefulness, and in hopes to reap some benefit from their outlay of expense. It strikes us that it is the interest of the society to render this laudable object as successful as possible, by not only granting all proper facilities for exhibition, but to render some test of its appreciation of meritorious machines or tools, either by awards of diplomas, medals, or at least by "honorable mention,"—something that meritorious exhibitors may use to advantage outside the enclosure of the fair grounds. We therefore recommend an extension of the premium list, not with a view to trench materially upon the financial resources of the society, but such official mention as will induce competition and stimulate a commendable rivalry—multiply the objects of this display, and consequently intensify the popular interest in the annual exhibitions.

The judges feel constrained to urge attention to another matter, with a view to making known and encouraging the production and introduction of the best harvesting and mowing machines. The present plan of placing these machines in repose on the fair grounds, with artistically displayed paints and varnish glittering in the sun, at a season of the year when they cannot be tested, is but a show to please the eye of fancy, but accomplishes no *practical* good, either to the manufacturers or purchasers. The interest of the former is to find sales at remunerative prices; the interest of the latter centers wholly in the *best* machinery. The best machine may not be the one that can cut over the greatest area of land in a given time. But *the* question for the husbandman is, by what machine can he harvest 10, 15, 25 or 100 acres with the least possible outlay of money—all things considered, nothing short of actual field work can determine this matter. As well might a race horse be tied to a post and judges appointed to examine and report upon his speed and powers of endurance, while thus in a state of inaction, as to determine and report upon the relative merits of reapers, harvesters, mowers, &c., by merely looking at them as inert objects beautified by paint.

If our annual fairs were only intended to mass citizens and strangers together to look at a museum of curiosities and have a good time generally, then these remarks would be out of place, but as the avowed object is to make our annual exhibitions practical educators of a large and worthy class of citizens—with a view to cheapen the means of production—to stimulate invention so as to secure the greatest results from the smallest outlays of labor and capital, our annual fairs should be utilitarian and instructive as well as amusing.

To this end, the judges assigned to the duty of examining machinery are unanimously of the opinion that one or more state tournaments ought to be inaugurated under the auspices of the agricultural society, to practically test the relative value and usefulness of harvesting machines, at least during the season of harvest. To this end the judges recommend that a time and some central place or places be designated for the practical trial of harvest-

ing machines, under the superintendence of an officer or officers of the society, with special judges appointed of practical, worthy farmers, to determine from actual test in harvesting ten or more acres, which machine, or class of machines is the most valuable to the farmer, when gauged by the standard of *dollars*.

1st. Cost of machine.

2d. Dynamic power required to operate same.

3d. Saving of grain.

4th. Actual aggregate cost to the farmer of cutting, raking and binding, say ten acres of grain.

Each machine to be debited with the cost of labor, *pro rata* interest per annum (say putting the maximum of 100 acres per year) on cost of machine, and credited with the grain saved, at a pre-determined rate per bushel, the work to be done in a good husbandlike manner; field to be raked, if necessary, to secure litterings, etc.

Such a test as this would be practical, and enable the farmers to determine what class of machines are financially the best.

To prevent any tampering with the judges, their awards should be made on the spot, sealed and delivered to the officer in charge, to be opened by the president of the society, and promulgated at the next annual fair.

Tests of several other machines might be made in the same manner, but not of equal necessity.

The display of agricultural and other machinery was truly creditable, and would challenge that of many older states. The disposition and arrangement were all that could be desired, and the general interest manifested in these multifarious implements, shows that our people have a just appreciation of labor-saving machinery.

It would be quite too discursive to notice each meritorious article and machine, even had the judges the time and opportunity to have properly examined them, yet there were some that deserve at least "honorable mention," among which we will cite the following:

Of the entries for the best display of farm machinery, Messrs. Worthington & Meek, and Messrs. E. J. & Wm. Lindsay of Milwaukee, did not only great credit to themselves, but added a great feature of the fair, by their splendid assortments of agricultural machinery. It was a difficult matter to decide the palm of excellence between them, but the premium, offered by the former, by their generous desire, and the unanimous vote of the judges, was awarded to the latter.

The display of machinery in Power Hall was magnificent, and reflected great credit on the enterprise of those who contributed to that end.

The special premium offered by Arnold and Yale "for the best display of machinery in operation in Power Hall," was, without hesitation or dissent, awarded to O. L. Packard of Milwaukee. That gentleman had on exhibition fourteen machines—eight in operation. Arnold & Yale of Milwaukee, had eight pieces, and five in operation, counting the fan blower attached to a surface planer.

Considerable feeling seemed to be manifested by the latter party, who held that as they had an engine in operation, and another ready to operate, the two being worth more than all the other machines, they should receive their own premium. But the judges unanimously considered that they had no right under the offer for the "best display" to consider values, any more than avoirdupois weight, and so, on a second hearing, at the request of Messrs. Arnold & Yale, the judges voted to adhere to their decision.

In the matter of breaking plows for which a special premium had been offered, the judges followed the best light before them, and gave the premium to N. C. Thompson, of Rockford, Ill. Without being put to practical test, the judges had no alternative but to judge of apparant advantages. There was a large display, and all of apparent superior workmanship. The award was made to the Thompson plow, solely on the ground that the steel plate facing to the wrought iron plate backing, was made in sections instead of one rectilinear piece. The object of this seemed obvious, to facilitate the hardening process, it being a well known metallurgical fact that small sections of steel can be more readily tempered than large pieces.

In the matter of wagons, by a mistake in the printed programme, they were placed in another class over which these judges had no control, but the superintendent called their attention to the fact, and requested them to act in the matter. They did so, and awarded the first premium to the Eglehoff wagon, of Milwaukee, but the judges in the Fine Arts Department, not being appraised of our action, made a different award. We feel as though we had done our duty, and will leave the matter for the executive board to settle.

The judges, deeming the following articles worthy of special recognition, respectfully recommend special premiums, in the way of diplomas, or otherwise, as the Executive Board may determine:

Washing Machine—L. E. Stevens, Madison.

Fanning Mill—J. S. Rowell, Beaver Dam.

Sulky Planter—N. C. Thompson, Rockford, Ill.

Rotary Hay Press—W. H. Banks, Chicago.

Hay Tedder—Worthington & Meek, Milwaukee.

Wind Mill—Growley & Watson, Delavan.

Wagon Tongue Support—Matthew Patterson, Janesville.

Wagon Jack—Matthew Patterson, Janesville.

Force Pump—Lourecks & Monell, Brodhead.

Force Pump and Lever Power—Mr. Jewett, Cottage Grove.

Scotch Clipper Plow—S. H. Skinner, Union Grove.

General Display Agricultural Hand Tools—Worthington, Cooley & Co., Jackson, Mich.

Stationary Engine—E. P. Allis & Co., Milwaukee, of great special merit.

Also Gas and Water Pipes—E. P. Allis & Co., Milwaukee.

Rectangular Churn—Cornish & Curtis, Fort Atkinson.

All of which is respectfully submitted.

S. D. CARPENTER, *Chairman*.

MANUFACTURER'S DEPARTMENT.

BY VICE PRESIDENT CLARK, SUPERINTENDENT.

The undersigned respectfully begs leave to make the following report on the manufacturer's exhibition at the annual fair of the society in 1873:

While the exhibition was certainly the best ever collected at any fair held in the state, it is much to be regretted that there are so many manufacturers in the state, who have not "state pride" sufficient to induce them to compete for the prizes offered by the society; not that the prizes would intrinsically compensate them in many instances for the trouble, but it would materially assist the society to compete with that of other states for the best display.

There are quite a number of enterprising citizens of Milwaukee who always make extraordinary exertions (and at considerable expense), to make our exhibitions successful, and to all those the society should feel much indebted. We hope many more will endeavor to emulate them in the future.

There were some articles on exhibition, entitled to more than a passing notice, and I propose to enumerate some of them that seem the least common, at the same time I hope not to disparage those that shall not be specifically mentioned.

I desire to say in regard to stoves of all kinds, that the very best extant, were on exhibition, and that the difference (if any) between them was so slight that it seems impossible to decide which was the best. The best evidence that all are good, is the fact that every person who has one in use, claims for it the preference.

The thanks of the society are especially due to Jno. Smith & Co., Toledo, Ohio, for a splendid display of brass furnishing goods.

W. E. Goodman, Milwaukee, presented one of the most attractive features of the fair, in his display of gas fixtures, gas apparatus and plumber's work. We hope he will call again.

We have seldom seen on exhibition a more elegant assortment of fire and burglar-proof safes, than were exhibited by Arnold, Yale & Co., Milwaukee.

C. A. Buttles, Milwaukee, was on hand as usual with a splendid display of everything in his line, among the most attractive of which was his ornamental iron work.

Otto Zweitusch, Milwaukee, contributed largely to the beauty of the exhibition by setting up at considerable expense a splendid marble fountain, with the draft apparatus for mineral waters of every variety, and a beer preserver, all of which attracted a great deal of attention.

No branch of industry attracts more attention than carriages, and the manufacturers are always on hand in force with a display which cannot be excelled anywhere.

Too much credit cannot be awarded to the furniture firms of Milwaukee, for their efforts to make our fairs attractive; they have been always on hand with the most elegant and costly furniture and cabinet ware to be found anywhere.

Messrs. Gunther & Hanson exhibited an elegant display of furs of all kinds, worthy of special mention.

In manufactures the display was good, and I regret that the bad weather operated unfavorably.

Two years of good weather would place us in a position that would enable the society to offer greater inducements to manufacturers and producers to exhibit at these annual fairs.

FINE ARTS.

BY J. O. EATON, SUPERINTENDENT.

As superintendent of the Fine Arts Department, I have but little to report.

It is expected that the citizens of the place where the fair is held will give tone to this department by freely and generously contributing from their parlors.

Some sore head, each year the fair has been held in Milwaukee, has growled because no better exhibition was made in this department. This year, as recommended in my last report, this department was left entirely to the enterprise of Milwaukeans, and they freely and generously contributed, *one oil painting and three chro-*

mos, proving that the citizens of the metropolis of the state either had nothing to exhibit, or that they were wanting in pride and enterprise sufficient to make an exhibition.

If the country made no greater efforts to contribute to the several departments of the state fair than the citizens of Milwaukee did in this, our exhibitions would be entire failures.

In Class 53 there were some very fine oil paintings entered for the society premiums by Alexander Stewart, R. L. Porter, Theodore Heiss, E. A. Foote and J. W. McIntosh of Milwaukee, and Mary Newnham of Summit.

Paintings in water colors, by Charles Foster and Maria C. Lynch of Milwaukee, and Mary Newnham of Summit.

Crayon portraits from nature and photographs, by Theodore Heiss and Miss Sarah P. Kemper, were very much admired. India ink photographs, by Charles Foster and Mrs. J. T. Kavanaugh, received merited praise.

The Spencerian College of Milwaukee, exhibited a large number of very fine specimens of penmanship.

In musical instruments, Mr. H. N. Hemstead, the most extensive dealer in the state, as usual, made a very fine showing.

Specimens of wood and seal engraving, by John Marr of Milwaukee, fully sustained the reputation of this well-known workman. Carving in wood by Mrs. S. K. Kane, and gilding on glass by George Galoway, each received the approbation of the judges.

A collection of stereoscopic views by H. H. Bennett, of Kilbourn City, and an exhibition of oleographs by the Milwaukee Oleographic Company, were the marked features of this department, and cannot be better praised than in the words of the judges, Hon. J. E. Thomas and Hon. T. S. Allen, who report: "We cheerfully call attention to the very fine specimens of Oleographs, placed on exhibition by the American Oleograph Company of Milwaukee, and express the hope that the company may be richly rewarded pecuniarily for their efforts to establish and maintain an enterprise that must, if properly appreciated, exert a marked influence in cultivating a refined taste. Without desiring to enter into invidious comparisons, we mention Master Charles Foster of Milwaukee, who was awarded the first premium for India ink photographs (copy)—a lad of fourteen years, who prom-

ises, by his work, to become eminent in the profession. In stereoscopic views, there was but one entry, but the collection was very complete and was awarded a diploma and ten dollars. The collection belongs to and was exhibited by H. H. Bennett, of Kilbourn City, who makes this business a specialty. In closing their report, the committee most respectfully suggest that "the citizens of Milwaukee owe it to themselves to see to it another year, and make this department worthy of the metropolis of the state."

Class 54, "Millinery and Dressmaking," was assigned to this department. Three articles—a cloak, sack and dress—constituted the entire entries. I cannot account for this meagre showing only upon the supposition that the stock of millinery goods in Milwaukee is so small, that had the dealers taken samples to the fair, they would have nothing left to sell.

Class 55 was also placed in this department, and embraced samples of plain and fancy sewing, crochet and fancy knitting, worsted and silk embroidery, wax work, shell work, leather work, bead work, feather work and hair work in all the styles known to the fair sex, all of which, judging from the attention they attracted, were of the finest quality.

Among many other articles found in this department were a large case of stuffed birds, by Mrs. Spranger of Milwaukee, a collection of insects by Kirchner & Dudeshamer, a collection of woods, by Mr. Church of Prospect Hill; a miniature saw mill, by a blind man, which received a full share of admiration.

Rev. E. A. Wanless, formerly a missionary in Turkey, exhibited articles from that country, consisting of samples of silk, cotton and woolen goods, a spinning wheel, articles of clothing—cap, vest and slippers, specimens of embroidery and knitting; also a bunch of grass known as feather grass, all of which added attractiveness to this department, and the information given by Mr. Wanless gave much pleasure, and was highly appreciated.

PREMIUMS AWARDED.

HORSE DEPARTMENT.

CLASS 1—*Thoroughbred Horses.*

Best stallion, 4 years old and over, J. J. Ross, Mineral Point.....	\$50 00
Second best, Geo. E. Bryant, Madison.....	25 00
Best stallion 1 year old and under 2, J. & T. Barrows, Columbus.....	10 00
Best brood mare, 4 years old and over, J. Corrigan, Cedarburg.....	30 00
Best filly, 3 years old and under 4, H. McCafferty, Columbus.....	15 00
Best sucking filly foal, John C. Corrigan, Cedarburg.....	10 00

(WM. HOBKIRK,
S. B. DAVIS,
C. H. PHILLIPS,
C. LOFTUS MARTIN,
Committee.)

CLASS 2—*Roadsters.*

Best stallion, 4 years old and over, Richard Richards, Racine.....	\$50 00
Second best, Wash. Woodward, Burke.....	25 00
Best stallion, 3 years old and under 4, Geo. Doubleday, Whitewater....	30 00
Second best, Wm. Pierce, Racine.....	15 00
Best stallion, 2 years old and under 3, Richard Richards, Racine.....	15 00
Second best, W. M. Ormond, Milwaukee.....	10 00
Best stallion, 1 year old and under 2, Richard Richards, Racine.....	10 00
Second best, E. W. Chafin, Mukwanago.....	5 00
Best sucking stallion foal, C. T. Bradley, Milwaukee.....	10 00
Second best, L. N. Rogers, Fennimore Center.....	5 00
Best brood mare, 4 years old and over, C. T. Bradley, Milwaukee.....	30 00
Second best, Samuel Randals, Waukesha.....	15 00
Best filly, 3 years old and under 4, Richard Richards, Racine.....	15 00
Second best, H. H. Greenman, Whitewater.....	10 00
Best filly, 2 years old and under 3, Richard Richards, Racine.....	10 00
Second best, Orlando Secor, Mt. Pleasant.....	5 00
Best filly, 1 year old and under 2, Richard Richards, Racine.....	10 00
Second best, Richard Richards, Racine.....	5 00
Best sucking filly foal, F. S. Capron, Oconomowoc.....	10 00

(DAVID RHODA,
C. L. HOOD,
C. H. PHILLIPS,
Committee.)

CLASS 3.—*Horses for General Purposes.*

Best stallion 4 years old and over, G. W. Warden, Minnesota Junction..	\$30 00
Second, P. Briordy, Dover.....	15 00
Best stallion 3 years old and under 4, J. J. Carrigan, Muskego Center..	20 00
Best stallion 2 y'rs old and under 3, G. W. Warden, Minnesota Junction.	10 00
Second, S. P. Phelps, Sylvania.....	5 00
Best stallion 1 year old and under 2, E. W. Chafin, Mukwonago.....	8 00
Best sucking stallion foal, A. Porter, Mukwonago.....	5 00
Second, G. G. Chafin, Mukwonago.....	3 00

Best brood mare, G. G. Chafin, Mukwonago.....	20 00
Second, A. Porter, Mukwonago.....	10 00
Best filly 2 years old and under 3, R. Hughes, Watertown.....	10 00
Second, G. W. Warden, Minnesota Junction.....	5 00
Best filly 1 year old and under 2, Wm. Warden, Minnesota Junction...	6 00
Second, Wm. Warden, Minnesota Junction.....	3 00
Best sucking filly foal, John Aitken, Waukesha.....	5 00
Second, P. Putnam, Dodges Corners.....	3 00

(S. HAYT,
SAML. DRAKELY,
CHAS. H. LARKIN,
H. C. CRANDALL.

Committee.)

CLASS 4.—Draft Horses.

Best stallion 4 years old and over, H. B. Sherman, Burnett	\$30 00
Second best, Simon Ruble, Beloit	15 00
Best stallion 3 years old and under 4, H. B. Sherman.....	20 00
Second best, Simon Ruble	10 00
Best stallion 2 years old and under 3, H. B. Sherman.....	10 00
Best stallion 1 year old and under 2, Simon Ruble	8 00
Second best, Simon Ruble.....	4 00
Best sucking stallion foal, Simon Ruble.....	5 00
Best brood mare, H. B. Sherman.....	20 00
Second best, Simon Ruble	10 00
Best filly 3 years old and under 4, Simon Ruble.....	15 00
Best filly 2 years and under 3, William Warden, Minnesota Junction..	10 00
Second best, H. B. Sherman	5 00
Best filly 1 years old and under 2, H. B. Sherman.....	6 00
Best sucking filly foal, Simon Ruble	5 00

(S. HAYT,
H. C. CRANDALL,
CHAS. H. LARKIN,

Committee.)

CLASS 5.—Jacks and Mules.

Best Jack, John Campbell, Lannon Springs	\$20 00
Second best, F. Bell, Brookfield.....	10 00
Best Jenny, F. Bell, Brookfield.....	10 00
Best pair working mules, A. B. Bailey, Menomonee Falls.....	10 00
Second best, John Shulock, Wauwatosa.....	5 00
Best mule colt, W. E. Cadwell, Wauwatosa.....	5 00

(S. HAYT,
SAM'L DRAKELEY,
CHAS. H. LARKIN,
H. C. CRANDALL.

Committee.)

CLASS 6.—Matched Horses and Mares.

Best pair carriage horses, C. S. Higgins, Milwaukee	\$30 00
Second best, Joshua Pierce, Racine.....	15 00
Best pair roadsters, A. H. Swan, Wauwatosa.....	30 00
Second best, I. H. Gildersleeve, Whitewater.....	15 00
Best pair farm horses, H. B. Sherman, Burnett.....	20 00
Second best, August Shultz, Waterloo.....	10 00
Best pair draft horses, H. B. Sherman.....	20 00
Second best, Simon Ruble, Beloit.....	10 00

(SAM'L DRAKELY,
C. H. PHILLIPS,
H. C. CRANDALL,
S. HAYT.

Committee.)

CLASS 7.—*Geldings or Mares for Single Harness.*

Best mare for single harness, R. Hughes, Watertown	\$30 00
Second best, gelding, E. D. Rood, Milwaukee.....	15 00

(SAM'L DRAKELEY,
C. H. PHILLIPS,
H. C. CRANDALL,
S. HAYT.

Committee.)

CLASS 8.—*Trotters.*

Best and fastest trotting stallion, J. C. Corrigan, Cedarburg, "Jackson."	
Time, 2.45 $\frac{1}{4}$	\$100 00
Best and fastest trotting mare, J. S. Rowell, Beaver Dam, "Badger Girl."	60 00
Second best, P. Brooks, Hartford	30 00
Best and fastest trotting gelding, S. W. Granger, Milwaukee. Time—	
1 heat 2.40.....	60 00
Best and fastest trotting span, M. P. Carpenter, Grand Rapids, Mich...	60 00
Second best, C. E. Westbrook, Manchester.....	30 00

SPECIAL PREMIUM, \$500.

First premium, J. S. Rowell, Beaver Dam, "Badger Girl." Time, 2.33 $\frac{1}{2}$	
2.33 $\frac{1}{4}$	\$300 00
Second premium, S. W. Granger, Milwaukee, "Gen. Howard".....	150 00
Third premium, C. E. Westbrook, Manchester, "Charley Westbrook."	50 00

(WM. HOBKIRK,
S. B. DAVIS,
D. J. PULLING,
J. L. D. E—

Committee.)

CLASS 9—*Running Horses.*

Two mile heats—2 in 3.	
R. H. Barnes, Chicago, "Lady Fairfield," first premium.....	\$200 00
Bradley & Metcalf, Columbus, "Cap. Jinks," second premium.....	100 00
Mile heats—3 in 5.	
R. H. Barnes, Chicago, "Fairplay".....	100 00
A. Stemler, Chicago, ———.....	50 00

(WM. HOBKIRK,
D. J. PULLING,
J. L. D. E—

Committee.)

CLASS 10—*Sweepstakes on Horses.*

Best stallion and 5 of his colts, G. W. Warden, Minnesota Junction, grand silver medal and.....	\$100 00
Best brood mare with foal by her side, C. T. Bradley, Milwaukee, grand silver medal and.....	50 00

S. HAYT,
WM. HOBKIRK,
S. B. DAVIS,

Committee.

CATTLE DEPARTMENT.

CLASS 11.—*Short Horns.*

Best bull, 4 years old and over, John Matthews, Darlington.....	\$30 00
Second best, Francis Banks, Burlington.....	20 00
Best bull, 3 years old and under 4, Geo. Murray, Racine.....	30 00
Second best, Wm. Rhodes, Salem Station.....	15 00
Best bull, 2 years old and under 3, Eli Stilson, Oshkosh.....	30 00
Second best, Wm. Rhodes & Son, Salem Station.....	15 00
Best bull, 1 year old and under 2, F. Ludington, Milwaukee.....	30 00
Second best, Eli Stilson, Oshkosh.....	15 00
Best bull calf over 6 and under 12 months, Geo. Murray, Racine.....	15 00
Second best, J. C. Mitchem, Genesee.....	10 00
Best bull calf under 6 months, T. S. Redford, Sussex.....	15 00
Second best, E. & J. Smith, Rochester.....	10 00
Best cow, 4 years old and over, Geo. Murray, Racine.....	25 00
Second best, Geo. Murray, Racine.....	15 00
Best cow, 3 years old and under 4, F. Ludington, Milwaukee.....	25 00
Second best, F. Ludington, Milwaukee.....	15 00
Best heifer, 2 years old and under 3, Geo. Murray.....	25 00
Second best, Geo. Murray.....	15 00
Best heifer, 1 year old and under 2, Geo. Murray.....	25 00
Second best, H. B. Sherman, Burnett.....	10 00
Best heifer calf, 6 months old and under 12, Geo. Murray.....	10 00
Second best, Geo. Murray.....	5 00
Best heifer calf, under 6 months, E. & J. Smith, Rochester.....	10 00
Second best, Geo. Murray.....	5 00

(CLINTON BABBITT,
ROBERT OGILVIE,
WM. LYSAGHT,
Committee.)

CLASS 12.—*Devons.*

Best bull 3 years old and under 4, C. B. Fowler, Wauwatosa.....	\$20 00
Best bull 2 years old and under 3, L. Rawson, Oak Creek ..	20 00
Second best, Hiram Gooder, Rochester.....	10 00
Best bull 1 year old and under 2, L. Rawson, Oak Creek.....	20 00
Best bull calf 6 and under twelve months, W. T. Smith, Elkhorn	10 00
Second best, L. Rawson	5 00
Best bull calf under 6 months, W. T. Smith, Elkhorn.....	10 00
Second best, L. Rawson	5 00
Best cow 4 years old and over, W. T. Smith.....	15 00
Second best, L. Rawson.....	10 00
Best cow 3 and under 4, L. Rawson.....	15 00
Second best, W. T. Smith.....	10 00
Best heifer 2 and under 3, L. Rawson.....	15 00
Second best, W. T. Smith.....	10 00
Best heifer 1 and under 2, L. Rawson.....	15 00
Second best, L. Rawson.....	10 00
Best heifer calf over 6 and under 12 months, L. Rawson	6 00
Second best, L. Rawson	3 00
Best heifer calf under 6 months, C. B. Fowler, Wauwatosa.....	6 00
Second best, Hiram Gooder, Rochester.....	3 00

(EDW. ELDERKIN,
CHESTER HAZEN,
GEO. E. BRYANT,
Committee.)

CLASS 13—*Ayrshires.*

Best bull, 4 years old and over, H. S. Durand, Racine.....	\$20 00
Second best, D. Huntley, Appleton.....	10 00
Best bull, 3 and under 4, Jonathan Stoddard, Greenbush.....	20 00
Second best, D. Huntley, Appleton.....	10 00
Best bull, 2 and under 3, H. S. Durand.....	20 00
Best bull, 1 and under 2, Chester Hazen, Ladoga.....	20 00
Second best, F. S. Capron, Oconomowoc.....	10 00
Best bull calf, 6 and under 12 months, Chester Hazen.....	5 00
Best bull calf, under six months, H. S. Durand.....	10 00
Second best, Jonathan Stoddard.....	5 00
Best cow, 4 and over, Jonathan Stoddard.....	15 00
Second best, Chester Hazen.....	10 00
Best cow, 3 and under 4, Jonathan Stoddard.....	15 00
Second best, D. Huntley.....	10 00
Best heifer, 2 and under 3, Chester Hazen.....	15 00
Second best, Chester Hazen.....	10 00
Best Heifer, 1 and under 2, H. S. Durand.....	15 00
Second best, D. Huntley.....	10 00
Best heifer calf, 6 months and under 12, Jonathan Stoddard.....	6 00
Second best, H. S. Durand.....	3 00
Best heifer calf under 6 months, Jonathan Stoddard.....	6 00
Second best, Chester Hazen.....	3 00

(C. M. CLARK,
STEPHEN FAVILL,
W. C. WHITE,
Committee.)

CLASS 14—*Alderneys.*

Best bull, 3 years old and under 4, Geo. E. Bryant, Madison.....	\$20 00
Second best, G. W. Warden, Minnesota Junction.....	10 00
Best bull, 1 year old and under 2, Chester Hazen, Ladoga.....	20 00
Second best, Geo. E. Bryant, Madison.....	10 00
Best bull calf, under 6 months, H. S. Durand, Racine.....	10 00
Second best, Geo. E. Bryant.....	5 00
Best cow, 4 years old and over, H. S. Durand.....	15 00
Second best, Geo. E. Bryant.....	10 00
Best cow, 3 years old and under 4, Geo. E. Bryant.....	10 00
Best heifer, 1 year old and under 2, Geo. Murray, Racine.....	15 00
Second best, Geo. E. Bryant.....	10 00
Best heifer calf, under 6 months, H. S. Durand.....	3 00

(C. M. CLARK,
STEPHEN FAVILL,
W. C. WHITE,
Committee.)

GALLOWAY CATTLE.

. Herd shown by Peter Davy of Ashippun, also a herd shown by J. N. Smith of Bath, Michigan.

There was no class for this breed of cattle printed in the premium list of the society, and hence no premiums offered. The executive committee, however, deeming the exhibition of these cattle very creditable, gave a special premium of thirty dollars to Mr. Davy, and twenty dollars to Mr. Smith.

(CHAS. H. WILLIAMS, *Sup't.*)

CLASS 15—*Grade Cattle and Working Oxen.*

Best grade cow 3 years old and over, E. & J. Smith, Rochester.....	15 00
Second best, Martin Robinson, Wauwatosa.....	10 00
Best heifer 2 years old and under 3, E. & J. Smith, Rochester.....	15 00
Second best, J. C. Mitchem, Genesee	10 00
Best yearling heifer, E. & J. Smith, Rochester.....	6 00
Second best, E. & J. Smith, Rochester.....	3 00
Best yoke working oxen, L. Rawson, Oak Creek.....	20 00
Second best, F. Ludington, Milwaukee.....	10 00
Best yoke 3 year old steers, L. Rawson, Oak Creek.....	15 00
Best 2 year old steers, L. Rawson, Oak Creek	10 00

(C. M. CLARK,
STEPHEN FAVILL,
J. W. WOOD,
Committee.)

CLASS 16—*Milch Cows.*

Best milch cow of any breed 4 years old and over, M. L. Butterfield, Waukesha.....	30 00
Second best, E. & J. Smith, Rochester.....	15 00
Best milch cow 3 y'rs old, M. L. Butterfield, Waukesha, silver medal and	20 00

(C. M. CLARK,
STEPHEN FAVILL,
J. W. WOOD,
Committee.)

CLASS 17—*Fat Cattle.*

Best pair fat oxen, 5 years old and over, P. McGeoch, Wauwatosa....	\$20 00
Best fat cow, steer or heifer, John Matthews, Darlington.....	10 00
Second best, E. & J. Smith, Rochester.....	5 00

(C. M. CLARK,
STEPHEN FAVILL,
J. W. WOOD,
Committee.)

CLASS 18—*Herd.*

Best bull, and 5 cows or heifers over 1 year, Geo. Murray, Racine....	\$100 00
Second best, Eli Stilson, Oshkosh.....	60 00
Third best, F. Ludington, Milwaukee	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, Wm. Rhodes & Son, Salem.....	20 00
Best bull of any age, Geo. Murray	50 00
Second best, Eli Stilson	25 00
Bull of any age, Wm. Rhodes & Son, Salem, special premium.....	20 00
Best cow of any age, Geo. Murray	40 00
Second best, Geo. Murray.....	20 00

CLINTON BABBITT,
C. C. PARKS,
C. M. CLARK,
Committee.

SHEEP DEPARTMENT.

CLASS 19—*American Merinos.*

Best buck 2 years old and over, O. Cook, Whitewater	\$20 00
Second best, J. H. Paul, Genesee	10 00
Best buck one year old and under 2, J. H. Paul	15 00
Second best, Geo. Lawrence Jr, Waukesha	10 00
Best pen 3 buck lambs, A. & P. Humbert, Cadwell's Prairie	10 00
Second best, J. H. Paul, Genesee	5 00
Best pen 10 ewes 2 years old and over, O. Cook, Whitewater	30 00
Second best, A. & P. Humbert, Cadwell's Prairie	15 00
Best pen 3 ewes 2 years old and over, O. Cook, Whitewater	20 00
Second best, Geo. Lawrence Jr, Waukesha	10 00
Best pen 10 ewes 1 year old and under 2, J. H. Paul, Genesee	20 00
Second best, O. Cook, Whitewater	15 00
Best pen 3 ewes 1 year old and under 2, I. J. & J. N. Clapp, Kenosha ..	15 00
Second best, O. Cook, Whitewater	10 00
Best pen 10 ewe lambs, J. H. Paul, Genesee	20 00
Second best, A. & P. Humbert, Cadwell's Prairie	10 00
Best pen 3 ewe lambs, I. J. & I. N. Clapp, Kenosha	10 00
Second best, O. Cook, Whitewater	5 00

(H. HEMENWAY,
ALMON OSBORN,
Committee.)

CLASS 20—*Long Wool—Cotswold.*

Best Buck, 2 years old and over, John Matthews, Darlington	\$20 00
Second best, Geo. Harding, Waukesha	10 00
Best buck, 1 year old and under 2, Wm. Rhodes & Son, Salem	15 00
Second best, Wm. Rhodes & Son, Salem	10 00
Best pen 3 buck lambs, Wm. Rhodes & Son, Salem	10 00
Second best, Wm. Rhodes & Son, Salem	5 00
Best pen 3 ewes, 2 years old and over, John Matthews, Darlington	20 00
Second best, Wm. Rhodes & Son, Salem	10 00
Best pen 3 ewes, 1 year old and under 2, Wm. Rhodes & Son, Salem ..	15 00
Second best, Geo. Harding, Waukesha	10 00
Best pen 3 ewe lambs, Wm. Rhodes & Son, Salem	10 00
Second best, Wm. Rhodes & Son, Salem	5 00

(HENRY STEVENS,
R. B. OGILVIE,
GEORGE KEYS,
Committee.)

CLASS 21.—*Long Wool—Not Cotswold.*

Best buck, 2 years old and over, John Matthews, Darlington.	\$20 00
Best pen 3 buck lambs, S. A. Fox, Waukesha	10 00
Best pen 3 ewes, 2 years old and over, S. A. Fox, Waukesha	20 00
Second best, John Matthews, Darlington	10 00
Best pen 3 ewes, 1 and under 2 years, S. A. Fox, Waukesha	15 00
Second best, S. A. Fox, Waukesha	10 00
Best pen 3 ewe lambs, S. A. Fox, Waukesha	10 00
Second best, S. A. Fox, Waukesha	5 00

(HENRY STEVENS,
GEO. KEYS.
Committee.)

CLASS 22.—*Southdowns.*

Best buck, 2 years old and over, Howard & Towers, Omro.....	\$20 00
Second best, G. H. Daubner, Brookfield Center.....	10 00
Best pen 3 buck lambs, Howard & Towers, Omro.....	10 00
Second best, G. H. Daubner, Brookfield Center.....	5 00
Best pen 3 ewes, 2 years old and over, H. B. Sherman, Burnett.....	20 00
Second best, H. B. Sherman, Burnett.....	10 00
Best pen 3 ewes, 1 year and under 2, Daniel Wells, Milwaukee.....	15 00
Second best, G. H. Daubner, Brookfield Center.....	10 00
Best pen 3 ewe lambs, Daniel Wells, Milwaukee.....	10 00
Second best, Howard & Towers, Omro.....	5 00

HENRY STEVENS,
R. B. OGILVIE,
GEO. KEYS.

Committee.)

CLASS 23—*Fat Sheep.*

Best fat sheep, J. N. Smith, Bath, Michigan.....	\$10 00
Second best, S. A. Fox, Waukesha.....	5 00
Best cashmere buck, Seward Hazeltine, Richland Center.....	15 00
Best cashmere ewe, Seward Hazeltine, Richland Center.....	10 00
Best cashmere kid, Seward Hazeltine, Richland Center.....	5 00

HENRY STEVENS,
R. B. OGILVIE,
GEO. KEYS,

Committee.

SWINE DEPARTMENT.

CLASS 24—*Essex.*

Best boar, 2 years old and over, John Jeffers, Darien.....	\$15 00
Second best, R. B. Allen, Hartland.....	10 00
Best boar, 1 year old and under 2, John Jeffers.....	10 00
Best breeding sow, 2 years old and over, John Jeffers.....	15 00
Second best, R. B. Allen.....	10 00
Best breeding sow, 1 year and under 2, John Jeffers.....	10 00
Second best, John Jeffers.....	5 00
Best breeding sow, with litter of pigs, John Jeffers.....	15 00
Best boar pig, under 1 year, R. B. Allen.....	10 00
Second best, John Jeffers.....	5 00
Best sow pig, under 1 year, R. B. Allen.....	10 00
Second best, John Jeffers.....	5 00

(F. D. FULLER,
L. D. POTTER,

Committee.)

CLASS 24—*Berkshire.*

Best boar, 2 years old and over, James Magson, Walworth.....	\$15 00
Second best, Joseph Adams, Oconomowoc.....	10 00
Best boar, 1 and under 2 years, Allen Stetson, Honey Creek.....	10 00
Second best, L. Rawson, Oak Creek.....	5 00
Best breeding sow, 2 years old and over, P. McGeoch, Wauwatosa.....	15 00
Second best, James Magson, Walworth.....	10 00
Best breeding sow, 1 year old and under 2, James Magson, Walworth.....	10 00
Second best, H. B. Sherman, Burnett.....	5 00
Best breeding sow, with litter of pigs, James Magson, Walworth.....	15 00
Second best, Howard & Towers, Omro.....	10 00
Best boar pig, under 1 year, H. B. Sherman, Burnett.....	10 00

Second best, P. McGeoch, Wauwatosa.....	5 00
Best sow pig under 1 year, Allen Stetson, Honey Creek.....	10 00
Second best, Howard & Towers, Omro	5 00

(F. D. FULLER,
L. B. POTTER,
Committee.)

CLASS 24.—*Poland-China.*

Best boar, 2 years old and over, John Jeffers, Darien.....	\$15 00
Best boar, 1 year old and under 2, Henry Stacy, Palmyra.....	10 00
Second best, W. Little, Janesville	5 00
Best breeding sow, 2 years old and over, R. Seaver, Darien	15 00
Second best, W. Little, Janesville.....	10 00
Best breeding sow, 1 year old and under 2, W. Little, Janesville... ..	10 00
Second best, W. Little, Janesville	5 00
Best breeding sow, with litter of pigs, R. Seaver, Darien	15 00
Second best, John Jeffers, Darien.....	10 00
Best boar pig, under 1 year old, Joseph Reek, Geneva.....	10 00
Second best, R. Seaver	5 00
Best sow pig, under 1 year old, W. W. Ellsworth, Woodstock.....	10 00
Second best, Joseph Reek, Geneva	5 00

(F. D. FULLER,
L. B. POTTER,
Committee.)

Cheshire.

The exhibition of Cheshire Hogs was fine. There being no class for this breed in the premium list, and hence no premiums offered, the executive committee, deeming them worthy, gave a special premium of ten dollars to F. Ludington of Milwaukee, and ten dollars to Geo. Baxter of Greenfield.

(T. C. DOUSEMAN, *Sup't.*)

CLASS 24.—*Chester White.*

Best boar, 2 years old and over, John Taylor, Waupun	\$15 00
Best boar, 1 year old and under 2, John Taylor, Waupun	10 00
Second best, Rodney Seaver, Darien.....	5 00
Best breeding sow, 2 years old and over, John Taylor.....	15 00
Second best, Rodney Seaver	10 00
Best breeding sow, 1 year and under 2, John Taylor.....	10 00
Best breeding sow, with litter of pigs, John Taylor	15 00
Best boar pig, under 1 year, Rodney Seaver.....	10 00
Second best, John Taylor.....	5 00
Best sow pig, under 1 year, Rodney Seaver.....	10 00
Second best, John Taylor.....	5 00

CLASS 24.—*Special Premiums.*

[Offered by Messrs. Plankinton & Armour, Layton & Co., Van Kirk & McGeoch, Pork Packers of Milwaukee.]

Best boar of any age, James Magson, Walworth	\$50 00
Best sow of any age, James Magson, Walworth.....	50 00
Best 6 pigs, under 8 months, Rodney Seaver, Darien	25 00
Best boar and sow of any age, with 5 pigs of same breed, H. B. Sherman, Burnett	50 00
Second best, John Taylor, Waupun	25 00

F. D. FULLER,
L. B. POTTER,
Committee.

The exhibition of Swine in my department has been large. I feel very much gratified to be able to say that, in my judgment, the quality as well as variety of breeds, I have never seen excelled in the state.

T. C. DOUSEMAN, *Supt.*

CLASS 25—*Poultry.*

Best trio gray dorkings, S. H. Seamans, Wauwatosa.....	\$3 00
Second best, S. H. Seamans, Wauwatosa.....	2 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, S. H. Seamans, Wauwatosa.....	2 00
Best trio Polands, S. H. Seamans, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best trio Hamburgs, P. A. Van Vranken, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best trio game fowls, C. A. Smith, Milwaukee.....	3 00
Second best, A. W. Reddy, Janesville.....	2 00
Best trio white Leghorns, S. H. Seamans, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best trio buff Cochins, P. A. Van Vranken, Wauwatosa.....	3 00
Second best, P. A. Van Vranken, Wauwatosa.....	2 00
Best trio partridge Cochins, S. H. Seamans, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best trio light Brahmas, P. A. Van Vranken, Wauwatosa.....	3 00
Second best, P. A. Van Vranken, Wauwatosa.....	2 00
Best trio dark Brahmas, P. A. Van Vranken, Wauwatosa.....	3 00
Second best, P. A. Van Vranken, Wauwatosa.....	2 00
Best trio Houdans, P. A. Van Vranken, Wauwatosa.....	3 00
Second best, P. A. Van Vranken, Wauwatosa.....	2 00
Best trio bantams, S. H. Seamans, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best pair bronze turkeys, P. Putnam, Dodge's Corners.....	3 00
Second best, S. A. Tenney, Durham Hill.....	2 00
Best pair common turkeys, John Dearsley, Wauwatosa.....	3 00
Best pair Muscovy ducks, S. H. Seamans, Wauwatosa.....	3 00
Second best, E. P. Richardson, Milwaukee.....	2 00
Best pair Aylesbury ducks, P. A. Van Vranken, 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, S. H. Seamans, Wauwatosa.....	3 00
Second best, S. H. Seamans, Wauwatosa.....	2 00
Best and greatest variety of poultry, S. H. Seamans, Wauwatosa, Silver Medal and.....	15 00

MARTIN LARKIN,
D. MOSHER,
J. D. OLCOTT,
Committee.

AGRICULTURAL DEPARTMENT.

CLASS 26—*Field Products.*

Best bushel spring wheat, club, D. T. Pilgrim, West Granville.....	7 00
Second best, Frank McVean, Oconomowoc.....	4 00
Best bushel spring wheat, Rio Grande or China Tea, C. C. Hutchard, Kingston.....	7 00

Second best, E. B. Thomas, Dodges Corners.....	4 00
Best bushel spring wheat, fife, H. Boorse, Milwaukee.....	7 00
Second best, D. T. Pilgrim, West Granville.....	4 00
Spring wheat, Odessa or other variety, J. C. Starkweather, Oconomowoc.....	4 00
Best white winter wheat, M. Morrell, Baraboo.....	7 00
Second best, F. D. Fuller, Madison.....	4 00
Best rye, H. Boorse, Milwaukee.....	5 00
Second best, Wm. Reed, North Prairie.....	3 00
Best oats, J. C. Starkweather, Oconomowoc.....	5 00
Second best, E. B. Thomas, Dodges Corners.....	3 00
Best barley, D. T. Pilgrim, West Granville.....	5 00
Second best, J. C. Starkweather, Oconomowoc.....	3 00
Best buckwheat, D. M. Aspinwall, Farmington.....	5 00
Second best, E. B. Thomas, Dodges Corners.....	3 00
Best flaxseed, D. T. Pilgrim, West Granville.....	5 00
Second best, Simpson & McKurrow, Sussex.....	3 00
Best hops, L. S. Palmer, Baraboo.....	5 00
Second best, J. Austin, Wyocena.....	3 00
Best timothy seed, J. Aitkin, Waukesha.....	5 00
Second best, D. T. Pilgrim, West Granville.....	3 00
Best clover seed, E. B. Thomas, Dodges Corners.....	5 00
Second best, John Porter, Pewaukee.....	3 00
Best peas, Geo. S. Haskell & Co., Rockford, Ill.....	5 00
Second best, J. C. Starkweather, Oconomowoc.....	3 00
Best beans, E. B. Thomas, Dodges Corners.....	5 00
Second best, F. S. Capron, Oconomowoc.....	3 00
Best dent corn, J. C. Starkweather, Oconomowoc.....	5 00
Second best, P. Humbert, Cadwell's Prairie.....	3 00
Best flint corn, J. C. Starkweather, Oconomowoc.....	5 00
Second best, S. Groves, Wauwatosa.....	3 00
Best bushel early potatoes, H. McCaffrey, Wauwatosa.....	5 00
Second best, D. T. Pilgrim, West Granville.....	3 00
Best bushel late potatoes, F. S. Capron, Oconomowoc.....	5 00
Second best, James Eager, Wauwatosa.....	3 00
Best bushel carrots, J. C. Mitchem, Genesee.....	5 00
Second best, James Eager, Wauwatosa.....	3 00
Best bushel turnips, E. B. Thomas, Dodge's Corners.....	5 00
Second best, H. Swallow, Hartland.....	3 00
Best bushel onions, P. Humbert, Cadwell's Prairie.....	5 00
Second best, E. B. Thomas, Dodge's Corners.....	3 00
Best six squashes, Geo. S. Haskell & Co, Rockford, Ill.....	5 00
Second best, E. B. Thomas, Dodge's Corners.....	3 00
Best six pumpkins, L. Rawson, Oak Creek.....	5 00
Second best, E. B. Thomas, Dodge's Corners.....	3 00
Best dozen watermelons, P. Putnam, Dodge's Corners.....	5 00
Second best, E. B. Thomas, Dodge's Corners.....	3 00
Best exhibition field products, J. C. Starkweather, Oconomowoc, Silver Medal and.....	30 00
Second best, Geo. S. Haskell & Co., Rockford, Ill., Bronze Medal and.....	15 00

SPECIAL PREMIUM

Offered by Milwaukee Chamber of Commerce.

Best bushel winter wheat, M. Morrell, Baraboo.....	25 00
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GEO. G. SWAIN,
I. J. HOILE,
Committee.

CLASS 27—Garden Products.

Best 6 heads cauliflowers, August Ernst, Milwaukee.....	\$2 00
Second best, Mrs. E. B. Thomas, Dodge's Corners.....	Western Farmer
Best 12 beets, Geo. S. Haskell & Co., Rockford, Ill.....	2 00
Second best, Wm. Hicks, Brookfield Center.....	Western Farmer

Best 12 parsnips, James Eager, Wauwatosa.....	2 00
Second best, Mrs. E. B. Thomas, Dodge's Corners.....	Western Farmer
Best 3 heads cabbage, Geo. S. Haskell & Co., Rockford, Ill.....	2 00
Second best, Henry Kreger, Milwaukee.....	Western Farmer
Best 12 Tomatoes, G. W. Ringrose, Wauwatosa.....	2 00
Second best, C. C. Dewey, Wauwatosa.....	Western Farmer
Best 12 purple egg plant, Geo. Jeffrey, 5 mile house.....	2 00
Second best, Geo. Jeffrey, 5 mile house.....	Western Farmer
Best 12 sweet potatoes, W. H. Plumb, Milton.....	2 00
Second best, J. C. Plumb, Milton.....	Western Farmer
Best ½ peck lima beans, Mrs. E. B. Thomas, Dodge's Corners.....	2 00
Second best, Geo. S. Haskell & Co., Rockford, Ill.....	Western Farmer
Best exhibition of garden products, Geo. S. Haskell & Co., Rockford, Ill.....	10 00
Second best, Mrs. E. B. Thomas, Dodge's Corners.....	6 00

GEO. G. SWAIN,
I. J. HOILE,
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, Medberry, Stephens & Co, Milwaukee, Silver medal and.....	10 00
Second best, Park Smith & Co, Waterford, Bronze medal and.....	5 00
Best 25 lbs. June made butter, S. R. Houston, Kenosha, Silver medal and.....	10 00
Second best, D. P. Webster, Mukwonago, Bronze medal and.....	5 00
Best 25 lbs. butter made any time, F. C. Curtiss, Rocky Run, Silver medal and.....	10 00
Second best, John Aitkin, Waukesha, Bronze medal and.....	5 00
Best 3 cheeses farm made, G. D. Curtis, Rosendale, Silver medal and.....	10 00
Second best, Mrs. P. Putnam, Dodges Corners, Bronze medal and.....	5 00
Best 3 cheeses factory made, Wm. Berry, Fon du Lac, Silver medal and.....	10 00
Second best, H. C. Crandall, Waukegan, Bronze medal and.....	5 00
Best 10 lbs. honey, R. H. Sabin, Milwaukee.....	10 00
Second best, A. G. Hart, Appleton.....	5 00
Best extracted honey, A. G. Hart, Appleton.....	5 00
Best method of handling bees, A. G. Hart, Appleton.....	10 00
Best 10 lbs. maple sugar, David Hollinger, Wausau.....	5 00
Best gallon maple syrup, S. B. Smith, Big Bend.....	5 00

SPECIAL PREMIUMS.

Offered by W. H. Cottrill, proprietor Plankinton House and Lansing Bonnell, proprietor Newhall House, Milwaukee.

Best butter made in September, F. C. Curtiss, Rocky Run.....	\$50 00
Best butter made in June, R. S. Houston, Kenosha.....	50 00

W. C. PRIEST,
C. MEINERT,
Z. WILLSON,
Committee.

CLASS 29—*Household Products.*

Best 2 loaves of Graham bread, Miss Emma Lewis, Racine.....	\$3 00
Best two loaves of white bread (hop yeast), Miss Emma Lewis, Racine.....	3 00
Best 2 loaves white bread (milk rising), Miss Emma Lewis, Racine....	3 00
Best 5 lbs. soda crackers, A. T. Riddell, Milwaukee.....	2 00
Best 5 lbs. picnic crackers, A. T. Riddell, Milwaukee.....	2 00
Best 5 lbs Boston crackers, A. T. Riddell, Milwaukee.....	2 00
Best sponge cake, Miss Emma Lewis, Racine.....	2 00

Best pound cake, Miss Emma Lewis, Racine.....	2 00
Best jelly cake, Miss Emma Lewis, Racine.....	2 00
Best gold or silver cake, Miss Emma Lewis, Racine.....	2 00
Best fruit cake, Miss Emma Lewis, Racine.....	2 00
Best exhibition bread and cake, A. T. Riddell, Milwaukee.....	silver medal.
Best 2 bottles currant wine, C. D. Richards, Milwaukee.....	diploma.
Best 2 bottles cider vinegar, A. F. W. Boden & Co., Milwaukee.....	diploma.
Best 2 bottles wine vinegar, A. F. W. Boden & Co., Milwaukee.....	diploma.
Best canned peaches, S. B. Smith, Big Bend.....	\$2 00
Best canned plums, S. B. Smith, Big Bend.....	2 00
Best canned currants, G. H. Lamberton, Lamberton	2 00
Best canned tomatoes, Mrs. P. Humbert, Cadwell's Prairie	2 00
Best canned gooseberries, S. B. Smith, Big Bend.....	2 00
Best canned raspberries, S. B. Smith, Big Bend	2 00
Best canned strawberries, Miss W. Miller, Milwaukee.....	2 00
Best preserved peaches, Mrs. W. Miller, Milwaukee.....	2 00
Best preserved plums, M. Robinson, Wauwatosa	2 00
Best preserved apples, Mrs. J. W. Park, Dodges Corners.....	2 00
Best preserved watermelons, Mrs. P. Humbert, Cadwell's Prairie.....	2 00
Best preserved grapes, D. Huntley, Appleton.....	2 00
Best apple butter, Mrs. J. W. Park, Dodges Corners.....	2 00
Best raspberry jam, D. Huntley, Appleton.....	2 00
Best blackberry jam, Mrs. M. G. Benedict, Milwaukee	2 00
Best crab apple jam, Mrs. P. Humbert, Cadwell's Prairie	2 00
Best sour pickled cucumbers, Ripon Pickle Company, Ripon.....	2 00
Best pickled mangoes, Mrs. J. W. Park, Dodges Corners	2 00
Best pickled peaches, Mrs. Chadbourne, Milwaukee.....	2 00
Best pickled watermelons, Mrs. C. M. Fulsom, Milwaukee.....	2 00
Best pickled apples, Mrs. D. Huntley, Appleton.....	2 00
Best tomato catsup, Mrs. C. M. Fulsom, Milwaukee.....	2 00
Best cucumber catsup, Mrs. M. G. Benedict, Milwaukee.....	2 00
Best exhibition preserves and pickles, Gordon & Dilworth, Milwaukee,	
Exhibition preserves and pickles, Ripon Pickle Company.....	Silver medal. Diploma.

GEO. S. HASKELL,
Mrs. A. H. CUTTING,
Mrs. J. M. PUTNEY,
Committee.

FRUIT AND FLOWER DEPARTMENT.

CLASS 30.—*Fruits by Professional Cultivators.*

APPLES.

Greatest variety of apples, G. P. Pfeffer, Pewaukee	\$10 00
Second best, Gould's Nursery, Beaver Dam.....	7 50
Third best, Geo. J. Kellogg, Janesville	5 00
Fourth best, Geo. Wolff, Thienville	3 00
Best ten varieties adapted to the northwest, G. P. Pfeffer, Pewaukee.....	10 00
Second best, Geo. J. Kellogg, Janesville	7 50
Third best, Gould's Nursery, Beaver Dam....	5 00
Best five varieties adapted to the northwest, G. J. Kellogg.....	5 00
Second best, G. P. Pfeffer.....	3 00
Third best, C. H. Greenman, Milton	2 00
Best and greatest variety of winter apples, Geo. J. Kellogg	10 00
Second best, G. P. Pfeffer.....	7 50
Third best, Gould's Nursery	5 00
Best five varieties winter apples, C. H. Greenman, Milton	5 00
Second best, G. P. Pfeffer.....	3 00
Third best, Geo. J. Kellogg	2 00

Best plate Red Astrachan, G. P. Pepper	2 00
Second best, Geo. Wolff	1 00
Best plate Duchess of Oldenberg, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate St. Lawrence, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate Fameuse, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate Utters, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate Plumb's Cider, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate Seek-No-Further, G. P. Pepper	2 00
Second best, Geo. Wolff	1 00
Best plate Willow Twig, Geo. J. Kellogg	2 00
Best plate Ben Davis, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Best plate Talman Sweet, Geo. J. Kellogg	2 00
Second best, G. P. Pepper	1 00
Best plate Golden Russet, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00
Largest apple, G. P. Pepper	1 00
Second, Geo. Wolff	50
Heaviest apple, G. P. Pepper	1 00
Second, Geo. Wolff	50

PEARS.

Best and greatest variety, G. P. Pepper	7 50
Second best, Gould's Nursery	4 00
Third best, G. J. Kellogg	2 50
Fourth best, Geo. Wolff	1 00
Best three varieties, Geo. Wolff	3 00
Second best, G. P. Pepper	2 00
Best Flemish Beauty, G. P. Pepper	3 00
Second best, Geo. Wolff	2 00

PLUMS.

Greatest variety, G. P. Pepper	3 00
Second, Geo. Wolff	2 00
Best Miner C. H. Greenman, Milton	1 00
Second best, G. J. Kellogg	50
Best native or wild, G. P. Pepper	2 00
Second best, Geo. J. Kellogg	1 00

PEACHES.

Best show of named fruit, G. P. Pepper	2 00
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GRAPES.

Best and greatest variety, Geo. J. Kellogg	\$7 50
Second best, C. H. Greenman	5 00
Best five varieties, C. H. Greenman	5 00
Second best, Geo. J. Kellogg	3 00
Third best, G. P. Pepper	2 00
Best three varieties, Geo. J. Kellogg	3 00
Second best, C. H. Greenman	2 00
Third best, G. P. Pepper	1 00
Best two varieties, C. H. Greenman	2 00
Second best, Geo. J. Kellogg	1 00
Best single variety, G. P. Pepper	3 00
Best three bunches Concord on one cane, Geo. J. Kellogg	1 00
Best three bunches Delaware on one cane, C. H. Greenman	1 00
Best single variety, quality to rule, Geo. J. Kellogg	5 00
Best show foreign, Mrs. Alexander Mitchel	3 00

35 varieties apples on one tree, G. J. Kellogg Commended.
 Plate Harvest apples, M. Robinson, Wauwatosa Commended.

F. S. LAWRENCE,
 F. C. CURTISS,
 J. M. SMITH,
 J. W. PARK,
Committee.

CLASS 31.—*Fruits by Non-Professional Cultivators.*

APPLES.

Best and greatest variety, J. C. Ackers, Elkhorn	\$10 00
Second best, E. B. Thomas, Dodge's Corners	7 50
Third best, J. W. Park, Dodge's Corners	5 00
Fourth best, Geo. Jeffrey, Five Mile House	3 00
Best ten varieties adapted to the northwest, B. B. Olds, Clinton	10 00
Second best, S. Lewis, Lake Mills	7 50
Third best, Geo. Jeffrey, Five Mile House	5 00
Best ten varieties, without regard to adaptation, James Ozane, Somers	5 00
Second best, J. C. Ackers, Elkhorn	3 00
Third best, J. W. Park, Dodge's Corners	2 00
Best five varieties adapted to the northwest, D. Huntley, Appleton	5 00
Second best, Geo. Jeffrey, Five Mile House	3 00
Third best, S. Lewis, Lake Mills	2 00
Best and largest variety of winter, J. C. Ackers, Elkhorn	10 00
Second best, J. W. Park, Dodge's Corners	7 50
Third best, Thomas Bones, Racine	5 00
Best five varieties of winter, Wm. Reed, North Prairie	5 00
Second best, S. A. Tenney, Durham Hill	3 00
Third best, Thomas Bones, Racine	2 00
Best plate Red Astrachan, E. B. Thomas, Dodge's Corners	2 00
Second best, J. C. Ackers, Elkhorn	1 00
Best plate Duchess of Oldenburg, D. Huntley, Appleton	2 00
Second best, Geo. Jeffrey, Five Mile House	1 00
Best plate Fameuse, Luther Rawson, Oak Creek	2 00
Second best, S. Lewis, Lake Mills	1 00
Best plate St. Lawrence, Luther Rawson, Oak Creek	2 00
Second best, S. Lewis, Lake Mills	1 00
Best plate Utters, Mrs. A. A. Boyce, Lodi	2 00
Best plate Plumb's Cider, S. Lewis, Lake Mills	2 00
Best plate Seek No Further, D. T. Pilgrim, West Granville	2 00
Second best, Wm. Reed, North Prairie	1 00
Best plate Talman Sweet, J. W. Park, Dodge's Corners	2 00
Second best, Wm. Reed, North Prairie	1 00
Best plate Golden Russet, G. W. Ringrose, Wauwatosa	2 00
Second best, Wm. Reed, North Prairie	1 00
Best plate Willow Twig, S. Lewis, Lake Mills	2 00
Second best, E. B. Thomas, Dodge's Corners	1 00
Best plate Ben Davis, J. C. Ackers, Elkhorn	2 00
Second best, S. Lewis, Lake Mills	1 00
Largest apple, J. W. Park, Dodge's Corners	1 00
Second, Daniel Goelser, Paynesville	50
Heaviest apple, S. A. Tenny, Durham Hill	1 00
Second, Daniel Goelser, Paynesville	50

PEARS.

Best and greatest variety, E. B. Thomas, Dodge's Corners	7 50
Second best, J. W. Park, Dodge's Corners	4 00
Third best, J. Ozane, Somers	2 00
Fourth best, J. L. Pierce, Milwaukee	1 00
Best 3 varieties, J. Ozane, Somers	3 00
Second best, E. B. Thomas, Dodge's Corners	2 00
Best Flemish Beauty, S. Lewis, Lake Mills	3 00
Second best, R. H. Sabin, Milwaukee	2 00

PLUMS.

Best Miner, S. Lewis, Lake Mills.....	1 00
Best native or wild, S. Lewis, Lake Mills.....	2 00
Second best, Wm. Reed, North Prairie	1 00

GRAPES.

Best and greatest variety, F. S. Lawrence, Janesville.....	\$7 50
Second best, Wm. Reed, North Prairie	5 00
Third best, S. Lewis, Lake Mills	3 00
Fourth best, E. B. Thomas, Dodge's Corners	2 00
Best five varieties, Wm. Reed, North Prairie	5 00
Second best, F. S. Lawrence, Janesville	3 00
Third best, S. Lewis, Lake Mills.....	2 00
Best three varieties, Wm. Reed, North Prairie.....	3 00
Second best, S. Lewis, Lake Mills.....	2 00
Third best, E. B. Thomas, Dodge's Corners.....	1 00
Best two varieties, Wm. Reed, North Prairie	3 00
Second best, S. Lewis, Lake Mills.....	1 00
Best single variety (Delaware), E. B. Thomas, Dodge's Corners.....	1 00
Best three bunches Concord on one cane, Wm. Reed, North Prairie..	1 00
Best three bunches Delaware on one cane, Wm. Reed, North Prairie..	1 00
Best single variety, quality to rule, E. B. Thomas, Dodge's Corners....	5 00

CRABS.

Best variety, Wm. Reed, North Prairie	\$2 00
Second best, D. T. Pilgrim, West Granville.....	1 00
Best plate Hyslop, D. T. Pilgrim, West Granville	1 00
Best plate Transcendent, S. Lewis, Lake Mills	1 00
Best seedlings, S. Lewis, Lake Mills	2 00
Second best, Wm. Reed, North Prairie.....	1 00
Show of apples on branches, John Baker	Commended.

Your committee would respectfully suggest to the superintendent of this department the importance of assigning professionals to one side of the building, and non-professionals to the other, and that the single specimen plates be *all* arranged on *one* table.

GEO. J. KELLOGG,
GEO. P. PEFFER,
HAYDEN M. THOMPSON,
A. G. TUTTLE,
H. H. GREENMAN,
Committee.

CLASS 32.—*Sweepstakes on Fruits.*

Best collection of fruit of all kinds by professional and non-professional cultivators, Geo. P. Pepper, Pewaukee.....	7 50
Second best, J. G. Kellogg, Janesville	5 00

C. M. HAMBRIGHT,
JAMES BRAINERD,
A. A. BOYCE,
Committee.

CLASS 33.—*Nursery Trees.*

Best collection deciduous nursery grown trees, Stickney and Baumbach, Wauwatosa.....	\$10 00
Best collection of evergreens, Geo. J. Kellogg, Janesville	10 00
Second best, Stickney & Baumbach, Wauwatosa.....	5 00
Best collection of fruit trees, Gould's Nursery, Beaver Dam	10 00
Second best, H. M. Thompson, St. Francis	5 00
Best collection of hardy flowering shrubs, Stickney & Baumbach, Wauwatosa.....	3 00

EXHIBITION—PREMIUMS AWARDED.

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Second best, H. M. Thompson, St. Francis.....	2 00
Best collection hardy ornamental hedge plants, Stickney & Baumbach, Wauwatosa	3 00

I. J. HOILE,
E. B. THOMAS,
WM. REED,
Committee.

Summer Fruits.

Plantation of currants, R. H. Sabin, Milwaukee	\$5 00
Plantation of raspberries, R. H. Sabin, Milwaukee.....	5 00
Plantation of strawberries, R. H. Sabin, Milwaukee.....	5 00

J. S. STICKNEY,
O. S. WILLEY,
Committee.

CLASS 34.—Flowers by Professional Cultivators.

Best floral design, A. Middlemass, Milwaukee.....	\$10 00
Best collection cut flowers, Wm. Kitzrow, Milwaukee.....	5 00
Best basket of cut flowers, G. W. Dunlop, Milwaukee....	3 00
Best pyramidal bouquet, G. W. Dunlop, Milwaukee.....	3 00
Best pair round boquets, G. W. Dunlop, Milwaukee.....	3 00
Best pair flat boquets, G. W. Dunlop, Milwaukee.....	2 00
Best bouquet everlasting flowers, Wm. Kitzrow, Milwaukee	3 00
Best display dahlias, Wm. Kitzrow, Milwaukee.....	5 00
Best ten named dahlias, Wm. Kitzrow, Milwaukee.....	3 00
Best display of roses, Wm. Kitzrow, Milwaukee.....	5 00
Second best, J. W. Dunlop, Milwaukee.....	3 00
Best display named verbenas, Wm. Kitzrow, Milwaukee.....	3 00
Best ten named verbenas, Wm. Kitzrow, Milwaukee.....	2 00
Best show of asters in quality and variety, H. G. Roberts, Janesville..	2 00
Best show petunias, H. G. Roberts, Janesville.....	1 00
Best show dianthus, H. G. Roberts, Janesville	2 00
Best show gladiolas, H. G. Roberts, Janesville.....	2 00
Best show greenhouse plants, Wm. Kitzrow, Milwaukee.....	10 00
Second best, A. Middlemass, Milwaukee	5 00
Best twenty varieties greenhouse plants in bloom, Wm. Kitzrow, Mil..	10 00
Show greenhouse plants, A. Middlemass, Milwaukee	Commended.
Best ten geraniums, Wm. Kitzrow, Milwaukee.....	5 00
Best six fuschias, Wm. Kitzrow, Milwaukee.....	3 00
Best six carnations, Wm. Kitzrow, Milwaukee	2 00
Best display of flowers raised by exhibitor, Wm. Kitzrow, Milwaukee.	10 00
Best display ornamental foliage plants, Wm. Kitzrow, Milwaukee	5 00

DR. M. RISCH,
MRS. F. S. LAWRENCE,
J. POLLARD,
Committee.

CLASS 34—James Vick's Special Premiums.

Best and finest collection cut flowers, Miss Kate Pepper, Pewaukee....	\$20 00
Best collection phlox drummondii, Mrs. C. C. Kingsley, Milwaukee..	10 00
Best collection asters, M. Dresser, Kenosha.....	10 00
Best collection balsams, Mrs. E. B. Thomas, Dodge's Corners.....	10 00
Best collection dianthus family, M. Dresser, Kenosha.....	10 00
Best collection pansies, D. Huntly, Appleton	10 00
Best collection stocks, Miss Kate Pepper, Pewaukee	10 00
Best collection everlasting flowers and grasses, Mrs. E. B. Thomas, Dodge's Corners	10 00

FLOWERS GROWN BY PERSONS UNDER TWENTY YEARS OF AGE.

Best collection cut flowers, Dora Park, Dodge's Corners.....	10 00
Best collection phlox drummondii, Dora Park, Dodge's Corners	5 00
Best collection asters, Dora Park, Dodge's Corners	5 00
Best collection dianthus family, Dora Park, Dodge's Corners.....	5 00
Best collection stocks, Dora Park, Dodge's Corners	5 00
Best collection gladiolas, Dora Park, Dodge's Corners	5 00
Best collection everlasting flowers and grasses, Dora Park, Dodge's Corners	5 00

We respectfully recommend that a Diploma and Grand Silver Medal be awarded to James Vick, Esq., of Rochester, N. Y., for his unparalleled display of cut flowers.

DR. M. RISCH,
MRS. F. S. LAWRENCE,
J. POLLARD.

Committee.

CLASS 35.—*Flowers by Non-Professional Cultivators.*

Best floral design, Henry Gephart, Milwaukee.....	\$10 00
Second best, Sarah Bodtker.	5 00
Best collection cut flowers, Miss Kate Pepper, Pewaukee	5 00
Second best, Miss I. G. Munger, Dodge's Corners.....	3 00
Best basket of flowers, Miss I. G. Munger, Dodge's Corners	3 00
Second best, Mrs. J. W. Park, Dodge's Corners	2 00
Best pyramidal bouquet, Miss Kate Pepper, Pewaukee	3 00
Best bouquet everlasting flowers, Mrs. S. B. Smith, Big Bend.....	3 00
Best display dahlias, Miss Kate Pepper, Pewaukee.....	5 00
Best ten named dahlias, Miss Kate Pepper, Pewaukee.....	3 00
Best display of roses, Mrs. S. B. Smith, Big Bend.....	3 00
Best show seedling verbenas, Miss I. G. Munger, Dodge's Corners ...	2 00
Best show asters, in quality and variety, M. Dresser, Kenosha	2 00
Second best, Mrs. S. B. Smith, Big Bend	1 00
Best show perennial phlox, Miss I. G. Munger, Dodge's Corners.....	1 00
Best show pansies, Mrs. S. B. Smith, Big Bend.....	1 00
Best show petunias, Miss I. G. Munger, Dodge's Corners.....	1 00
Best show dianthus, M. Dresser, Kenosha.....	2 00
Best show gladiolas, Miss Kate Pepper, Pewaukee.....	2 00
Best show greenhouse plants, H. W. Roby, Milwaukee.....	10 00
Second best, J. H. Walker, Milwaukee	5 00
Best 20 varieties greenhouse plants in bloom, H. W. Roby, Milwaukee.	10 00
Best show ornamental foliage plants, J. H. Walker, Milwaukee.....	5 00

DR. R. A. KOSS,
MRS. D. HUNTLEY,
O. S. WILLEY,
H. G. ROBERTS,

Committee.

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

Best floral design, Mrs. Alex. Mitchell, Milwaukee.....	\$10 00
Second best, Robt. Allen, Milwaukee.....	5 00
Best show greenhouse plants, Mrs. Alex. Mitchell, Milwaukee.....	10 00
Second best, Robt. Allen, Milwaukee.....	5 00
Best 20 varieties greenhouse plants in bloom, Mrs. Alex. Mitchell, Mil.	10 00
Best 10 Geraniums, Robt. Allen, Milwaukee	5 00

SPECIAL PREMIUM.

Lignarium, Q. W. Church, Prospect Hill.....	\$15 00
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O. S. WILLEY,
MRS. D. HUNTLEY,
H. G. ROBERTS,

Committee.

CLASS 37—*Special Premium offered by Worthington & Meek, Milwaukee.*

Best display farm machinery, E. J. & Wm. Lindsay, Milwaukee \$25 00

Special Premium offered by Arnold & Yale, Milwaukee.

Best display of mechanical machinery in operation in power hall, O.
L. Packard, Milwaukee..... 25 00

Special Premium offered by Peirce & Whaling, Milwaukee.

Best steel crossing plow, N. C. Thompson, Rockford, Ill \$25 00
Washing machine, L. E. Stevens, Madison..... Commended.
Fanning mill, J. S. Rowell, Beaver Dam Honorable Mention.
Sulky planter, N. C. Thompson, Rockford, Ill..... Honorable Mention.
Rotary hay press, W. H. Banks, Chicago Diploma.
Hay tedder, Worthington & Meek, Milwaukee..... Diploma.
Windmill, Crowley, Watson & Co., Delavan Honorable Mention.
Wagon tongue support, Matthew Patterson, Janesville Commended.
Wagon jack, Matthew Patterson, Janesville Commended.
Force pump and power, Loucks & Monell, Brodhead .. Honorable Mention.
Force pump and power, — Jewett, Cottage Grove.... Honorable Mention.
Display agricultural tools, Worthington, Cooley & Co., Jackson, Mich.,
Honorable Mention.
Stationary engine, E. P. Allis & Co., Milwaukee Diploma.
Rectangular churn, Cornish & Curtis, Ft. Atkinson Diploma.
Horse corn planter, Springfield Manufacturing Company, Springfield,
Ill. Diploma.

S. D. CARPENTER,
W. H. WASHBURN,
S. A. BRADLEY,

Committee.

CLASS 40.—*Stone Cutters Work, Brick and other building material.*

Best specimen drain tile, H. Berthlet, Milwaukee \$3 00
Best display gas fixtures, W. E. Goodman, Milwaukee..... Diploma.
Display ornamental plaster work, John Thompson, Milwaukee.... Diploma.
Asphalt pavement, W. C. Turner, Milwaukee Diploma.
Artificial stone, Geo. P. Sherman, Milwaukee..... Diploma.

E. J. COOPER,
Chairman.

CLASS 41.—*Metallurgic Products.*

Best show pig iron, Minerva Furnace Co., Milwaukee Diploma.
Best show castings, E. A. Harris, Milwaukee..... Diploma.
Best bar steel, Peirce & Whaling, Milwaukee..... \$3 00
Best ingot of copper, Peirce & Whaling, Milwaukee 3 00

S. DAVIS,
H. EASTMAN.
Committee.

CLASS 42—*Stoves, Furnaces, Hollow Ware and Articles of Hardware.*

Best cooking stove for wood, Werner Krøger, Milwaukee..... \$3 00
Best cooking range for families, in operation, Wm. Frankfurth, Milwaukee..... 3 00
Best ornamental parlor stove, Peterman, Streedy & Co., Milwaukee.... 3 00

Best exhibition, brass and copper ware, Daniells & Lehman, Milwaukee	Diploma.
Exhibition brass furnishing goods, Jno. Smith & Co., Toledo, O ..	Diploma.
Best hollow ware, Geo. A. Abert, Milwaukee	Diploma.
Best fire grates, Coe & Elliot, Milwaukee	3 00
Best steel hammers, in variety, T. M. Rice, Milwaukee	2 00
Best horse shoes, Peirce & Whaling, Milwaukee	2 00
Best display plumbers work, W. E. Goodman, Milwaukee	Diploma.
Best refrigerators, Cornelie Bros. & Co., Milwaukee	3 00
Best display of safes, Arnold, Yale & Co	25 00
Best ornamental iron work, C. A. Buttles, Milwaukee	5 00
Display of heavy hardware, Peirce & Whaling, Milwaukee	Diploma.
Alarm money drawer, Beuchholz & Wergin, Milwaukee	Diploma.
Display draught apparatus, Otto Zweitusch, Milwaukee	Diploma.
Patent heat radiator, Werner Krøger, Milwaukee	Diploma.
Hot air furnace, Daniells & Lehman, Milwaukee	Commended.
Display aquariums and ferneries, Wærle & Detwiller, Milwaukee,	Diploma.
Broiler, J. Mansfield, Jefferson	Diploma.
Fire extinguisher, A. E. Foote, Milwaukee	Silver Medal.
Lightning rods, W. W. Wallis, Milwaukee	Diploma.
Kerosene cook stove, S. P. Haskell, Chicago	Diploma.
Carpet stretcher, O. Vanorman, Fond du Lac	Diploma.
Sash balance, Geo. P. Sherman, Milwaukee	Diploma.
Lighter and heater, Geo. P. Sherman, Milwaukee	Diploma.

S. DAVIS,
H. EASTMAN,
Committee.

CLASS 43—*Silver and Britannia Ware.*

Best display plated ware, Blair & Persons, Milwaukee	Diploma.
Display of china, Blair & Persons, Milwaukee	Diploma.
Display of lamps, Blair & Persons, Milwaukee	Diploma.

SATTERLEE CLARK,
Superintendent.

CLASS 44—*Surgical and Mathematical Instruments and Apparatus.*

Display orthopedic instruments and apparatus, Hendley & Co., Milwaukee	Diploma.
Display mathematical and philosophical instruments, Jno. Smith & Co., Toledo, O	Diploma.
Patent crutch, E. T. Pearl, Milwaukee	Diploma.
Ladies' corsets and shoulder braces, Miss S. Grimshaw, Milwaukee	Diploma.

SATTERLEE CLARK,
Superintendent.

CLASS 45—*Chemical Manufactures.*

Best sample yeast cakes, Waterloo Yeast Co.	Diploma.
Best sample bar soap, Steam Refined Soap Co., Milwaukee	\$ 2 00
Best sample fancy soap, Steam Refined Soap Co., Milwaukee	2 00
Best sample potash, Steam Refined Soap Co., Milwaukee	2 00
Best caddy lucifer matches, Barber Jones & Co.	3 00
Best show of perfumery, Kiewert & Ludwig, Milwaukee	Diploma.
Best show fancy soap and perfumery, Kiewert & Ludwig, Mil.	Diploma.
Best liquid slating, J. Grant, Milwaukee	Diploma.
Best show lucifer matches, Barber Jones & Co., Milwaukee	Diploma.
Best baking powder, Waterloo Yeast Co.	Diploma.
Best furniture polish, C. A. Libby, Milwaukee	Diploma.

L. H. WEHMER,
L. D. MARSH,
Committee.

CLASS 46—*Carriages, Wagon Work, Etc.*

Best double carriage, Wechselberg, Brown & Co., Milwaukee	Diploma
Best single top buggy, G. W. Ogden & Co., Milwaukee, Transactions and Western Farmer.	
Best single open buggy, G. W. Ogden & Co., Milwaukee	Diploma
Best trotting wagon, Sherin & Bro., Milwaukee	Diploma
Best double sleigh, J. Meinecke, Milwaukee	Diploma
Best single sleigh, G. W. Ogden & Co	Transactions
Best lumber wagon, H. Poole, Monroe	Diploma
Best exhibition carriages, wagons and sleighs, G. W. Ogden & Co., Grand Silver Medal.	
Landor Coach, J. Meinecke, Milwaukee	Diploma
Physicians Phaeton, J. Meinecke, Milwaukee	Diploma
Trotting sulky, T. M. Rice, Milwaukee	Diploma
Dumping Wagon box, O. Gunnelson, Christiana	Diploma
Carriage wheel, Sabin, Bushnell & Hastings, Fond du Lac	Diploma

Special Premium offered by Peirce & Whaling.

Best farm wagon, H. Poole, Monroe	\$75 00
Second best, J. & J. Egglehoff, Milwaukee	25 00

CLASS 47.—*Cabinet Ware, Cooperage, Willow Ware, House Building Material, etc.*

Best parlor set, A. D. Seaman & Co., Milwaukee	Silver Medal.
Best chamber set, Matthews Bros. & Co., Milwaukee	Diploma.
Best extension table, Matthews Bros. & Co., Milwaukee	\$5 00
Best center table, N. Brick, Milwaukee	5 00
Best book case, Matthews Bros. & Co., Milwaukee	5 00
Best lady's work stand, N. Brick, Milwaukee	5 00
Best writing table or desk, A. D. Seaman & Co., Milwaukee	5 00
Best spring bed bottom, W. H. Jennings, Racine	2 00
Best 6 dining chairs, Matthews Bros. & Co., Milwaukee	5 00
Best tubs, Menasha Wooden Ware Company	Western Farmer.
Best pails, Menasha Wooden Ware Company	Western Farmer.
Best display cooperage and wooden ware, Menasha Wooden Ware Company	Diploma.
Best butter firkins, W. D. Kirkland, Sheboygan Falls	Western Farmer.
Best splint baskets, G. R. Elliott, Racine	Western Farmer.
Best willow baskets, C. F. Raun, Milwaukee	Western Farmer.
Best display willow ware, C. F. Raun, Milwaukee	Grand Silver Medal.
Best dozen brooms, John Steinel, Milwaukee	Diploma.
Best window blinds, Robinson & Letts, Ripon	\$5 00
Display adjustable chairs, Wilson Adjustable Chair Co., Chicago	Diploma.
Chamber set, J. S. Farrington & Sons, Milwaukee,	Honorable Mention.
Chamber set, A. D. Seaman & Co., Milwaukee	Honorable Mention.
Chamber set, N. Brick, Milwaukee	Honorable Mention.
Patent rocker, N. Brick, Milwaukee	Commended.
Rustic chairs and settee, C. A. Buttles, Milwaukee	Commended.
Bevel lathe, Butler Bevel Lathe Co., Newmarket, N. H.	Meritorious.

JAMES E. THOMAS,
T. S. COLE,

Committee.

CLASS 48—*Leather and Leather Manufactures.*

Best 6 sides upper leather, Kuehn Brothers, Milwaukee	Diploma.
Best 6 calf skins, Kuehn Brothers, Milwaukee	Diploma.
Best single harness, R. T. Lombard, Racine	Diploma.
Best 3 trunks, Romadka Bros., Milwaukee	Diploma.

- Best exhibition pegged boots and shoes, Bradley & Metcalf, Milwaukee Diploma.
 Best exhibition sewed boots and shoes, Bradley & Metcalf, Milwaukee Diploma.

SATTERLEE CLARK,
Superintendent.

CLASS 50—*Clothing, Furs, etc.*

- Best exhibition furs and fur goods, Gunther & Hansen, Milwaukee. Silver Medal.
 Best exhibition gents' hats and caps, Gunther & Hansen, Milwaukee. Diploma.

SATTERLEE CLARK,
Superintendent.

CLASS 51.—*Domestic Manufactures.*

- Best woolen kersey blankets, Mrs. Sally Bell, Milwaukee..... \$4 00
 Best rug of any material, Mrs. Mary A. Fisk, Milwaukee..... 4 00
 Best 15 yds. rag carpet, Mrs. J. W. Park, Dodge's Corners..... 4 00
 Best woolen stockings, Mrs. J. W. Park, Dodge's Corners..... 2 00
 Best woolen yarn, Mrs. J. W. Park, Dodge's Corners ... 2 00
 Best silk quilt, Mrs. Wm. Taber, Oconomowoc 3 00
 Best double carpet coverlet, Mrs. H. Boorse, Milwaukee... 3 00
 Best knit counterpane, Mrs. Mary Austin, Milwaukee..... 3 00
 Best wrought shawl, Miss Emma Lewis, Racine..... 3 00
 Best exhibition of taste and skill in cutting and making ladies dresses
 by other than professional manufacturers, Miss Emma Lewis, Racine. 5 00
 Best gent's shirts, Mrs. C. P. Root, Madison 3 00
 Best wool socks (juvenile), Miss Maria L. Park, Dodge's Corners 2 00
 Best display of articles of domestic manufacture, Miss Emma Lewis,
 Racine 5 00
 Patchwork quilt, Miss Carrie Bliss, Racine..... Honorable Mention.
 Patchwork quilt, Mrs. Mary Grover, Oconomowoc..... Honorable Mention.

MARY E. THOMAS,
 MRS. A. H. CUTTING,
 MRS. G. L. PIERCE.
Committee.

CLASS 53—*Works of Art.*

- Best portrait in oil from nature, Alex. Stuart, Milwaukee. Diploma and \$10 00
 Second best, Mrs. J. T. Kavanaugh, Milwaukee..... 10 00
 Best original landscape in oil, from nature, R. S. Porter, Milwaukee.
 Diploma and 10 00
 Second best, Theo. Heiss, Milwaukee..... 10 00
 Best historical landscape in oil, from nature, Miss Mary Newnham,
 Summit..... Diploma and 10 00
 Second best, J. M. McIntosh, Milwaukee 10 00
 Oil painting, A. E. Foote, Milwaukee Honorable Mention.
 Best specimen flower, Miss Mary Newnham, Summit..... Silver Medal.
 Best portrait in crayon, Theo. Heiss, Milwaukee..... Silver Medal.
 Best portrait in crayon, from photograph, Theo. Heiss, Milwaukee...
 Silver Medal.
 Best India ink photograph, Chas. Forster, Milwaukee..... 10 00
 Best carving in wood, Mrs. S. R. Kane, Milwaukee Diploma.
 Best seal engraving, John Marr, Milwaukee..... Silver Medal.
 Best wood engraving, John Marr, Milwaukee..... Silver Medal.
 Best gilding on glass, Geo. Galloway, Milwaukee Silver Medal.
 Best collection stereoscopic views of Wisconsin natural scenery, H.
 H. Bennett, Kilbourn City..... Diploma and 10 00
 Copy in crayon from engraving, Miss Sarah P. Kemper, Milwaukee.
 Diploma.
 Best exhibition oleographs, Am. Oleograph Co., Milwaukee... Silver Medal.

Your committee find that much care is necessary on the part of exhibitors when making entries. In several instances which came under our observation, articles were not properly brought into competition, owing, doubtless, to the hurried manner in which the entries were made at the latest moment. We regret that in some cases there was no competition, while it is well known to the committee that half a dozen citizens of Milwaukee might easily have made the show in this class worthy of the city and state. We cheerfully call attention to very fine specimens of oleographs placed on exhibition by the American Oleograph Company of Milwaukee, and express the hope that they may be pecuniarily rewarded for their efforts to establish and maintain an enterprise that must, if properly appreciated, exert a marked influence in cultivating a refined taste.

Without desiring to enter into invidious comparisons, we will mention Master Charles Forster of Milwaukee, who was awarded the first premium for India Ink Photograph (copy), a lad fourteen years of age, and who promises, by his work, to become eminent in the profession. We will also make special mention of A. E. Foote of Milwaukee, who is said to have pursued his artistic studies without an instructor, and who placed on exhibition, of his work, two landscapes in oil, both possessing considerable merit, and worthy of honorable mention. The collection of Stereoscopic Views, shown by H. H. Bennett of Kilbourn City, who makes this business a specialty, was very complete, and was awarded a Diploma and \$10.

In closing, the committee suggest, that the citizens of Milwaukee owe it to themselves to see to it another year, that this department is made worthy of the metropolis of the state.

Very respectfully submitted, with thanks to Superintendent Eaton and the officers of the society who have extended to us every kindness and courtesy.

JOHN E. THOMAS,
THOS. S. ALLEN.

Committee.

CLASS 54—*Millinery.*

Best ladies' cloak, Sarah B. Bodtker, Milwaukee	\$3 00
Best ladies' sack, Sarah B. Bodtker, Milwaukee.....	3 00
Best ladies dress, Miss. Emma Lewis, Racine	3 00

MRS. C. H. LARKIN,
MRS. W. W. FIELD,
MISS. MARY E. THOMAS,

Committee.

CLASS 55—*Needle, Shell and Wax Work.*

Best samples plain sewing, Mrs. C. P. Root, Madison	\$4 00
Plain sewing by child under 12, Miss. Smith, Big Bend.....	3 00
Best crochet work collar, Mrs. Eliza Nelson, St. Louis Mo.....	4 00
Best fancy knitting work, Mrs. S. R. Kane, Milwaukee.....	4 00
Best tidy by child under 12, Mrs. C. P. Root, Madison.....	3 00
Second best, Miss. Emma Laney, North Prairie.....	2 00
Best specimen landscape embroidery Mrs. Helen Bently, Milwaukee.	4 00
Specimen landscape embroidery, Miss. Jennie Craig, Mil. . . .	Commended.
Best ladies' embroidered slippers, Miss. Sarah Bodtker.....	2 00
Best worsted embroidery, Miss. M. Mahoney	4 00

Second best, Miss. Julia Bower.....	2 00
Worsted embroidery, Miss. Mary Stransky	Honorable mention.
Best needlework or floss embroidery, Mrs. James McAlpine, Milwaukee.....	4 00
Second best, Miss Sarah Bodtker, Milwaukee.....	2 00
Needlework embroidery, Miss Carrie Bliss, Racine.....	Commended.
Best silk embroidery, Mrs. James McAlpine, Milwaukee.....	\$4 00
Second best, Miss Sarah B. Bodtker, Milwaukee.....	2 00
Best work in wax, Mrs. S. R. Kane, Milwaukee.....	2 00
Second best, Miss Mary Werner, Prairie du Sac.....	1 00
Best shell work, H. G. Roberts, Janesville.....	2 00
Best leather work, Mrs. S. R. Kane, Milwaukee.....	2 00
Best bead work, Miss Mary Stransky, Milwaukee.....	2 00
Second best, Mrs. Moran, Milwaukee.....	1 00
Best ornamental work with indelible fluid, Miss Sarah Bodtker, Milwaukee.....	1 00
Best exhibition hair jewelry, Miss Cornelia Gephart, Milwaukee.....	3 00
Artificial flowers, Miss Elizabeth Boorse, Milwaukee	Commended.
Agricultural wreath, L. Milbreth, Horicon	Commended.
Five tidies, Mrs. Mary Austin	Honorable Mention.
Tatted tidies, Miss Mary Hay, Omro	Honorable Mention.
Wreath worsted flowers, Miss Mary Hay, Omro.....	Honorable Mention.
Toilet set, Miss Jennie Stevens, Caledonia Center.....	Honorable Mention.
Machine embroidered fancy goods, Misses E. & J. McIntosh, Milwaukee.....	Diploma.

Your committee have found it difficult to decide between competitors in many cases, and do not expect to entirely escape criticism on the part of those who may be disappointed by the awards made. In worsted embroidery, the collection was large and elegant in detail, and the committee regret their inability to award premiums to all, and not violate the rules of the society. Among those exhibiting worsted embroidery who did not secure awards, we mention Miss Cornelia Gephart and Mrs. Augusta Sprague, of Milwaukee, both exhibiting specimens worthy of honorable mention. Miss Sarah Hart, of Brookfield, is also entitled to commendation for her skill in the manufacture of worsted flowers.

With thanks to the superintendent for his courtesy, we submit our report.

Mrs. C. H. LARKIN,
Mrs. W. W. FIELD,
Miss MARY E. THOMAS,
Committee.

CLASS 57—*Natural History.*

Best collection of the woods of Wisconsin, Q. W. Church, Prospect Hill	Diploma.
Best collection of the birds of Wisconsin, J. G. Spranger, Milwaukee,	Diploma.
Best collection of insects of Wisconsin, Kirchner & Diedeshamer, Milwaukee,	Diploma.

J. W. WOOD,
I. A. LAPHAM,
Committee.

Best exhibition live fish artificially reared, Alfred Palmer, Boscobel...\$30 00	
Second best, Richardson Brothers, Big Spring.....	20 00

D. M. ASPENWALL,
A. H. HART,
WM. M. SAUNDERS,
Committee.

The exhibition of trout artificially raised was really splendid. The premiums not half enough for so praiseworthy an enterprise.

I. A. LAPHAM,
Superintendent.

STATE AGRICULTURAL CONVENTION.

Held at Madison, February 4 to 7, 1874.

MADISON, February 4, 7 1-2 P. M.

The joint convention of the Agricultural and Horticultural societies met in the assembly chamber to listen to the address of Hon. W. C. Flagg, President of the Illinois Farmer's Association, upon "our republican democracy." Secretary Field in the chair.

There was a large and appreciative audience composed of legislators, delegates representing the numerous industrial societies of the state, many of them with their intelligent wives and daughters, with numerous ladies and gentlemen, residents of the city. The address was listened to with marked attention, and is here presented in full.

OUR REPUBLICAN-DEMOCRACY.

BY HON. W. C. FLAGG,

President Illinois State Farmer's Association.

De Tocqueville, in the introduction to his Democracy in America, wrote these remarkable words :

"The gradual development of the principle of equality is, therefore, a providential fact. It has all the chief characteristics of such a fact ; it is universal, it is durable, it constantly eludes human interference ; and all events, as well as all men, contribute to its progress. * * * * * *"

"If the men of our time should be convinced by attentive observation and sincere reflection that the gradual and progressive

development of social equality is at once the past and future of their history, this discovery alone would confer the character of a divine decree upon the change. To attempt to check Democracy would be in that case to resist the will of God, and the nations would then be constrained to make the best of the social lot awarded to them by Providence."

More than a generation has passed away since these remarkable words were written; but every passing year has given them new force and a wider currency. We find them confirmed by Ger-vinus in his introduction to the "History of the Nineteenth Century." "The emancipation of all the oppressed and suffering is the vocation of the century, and the force of this idea has been victorious over mighty interests and deeply rooted institutions, which may be perceived in the abolition of serfdom and villenage in Europe, and in the liberation of the slaves in the West Indies. This is the great feature of the time. The strength of belief and conviction, the power of thought, the force of revolution, a clear view of the object pursued, endurance and self sacrifice are all enlisted on the side of the people, and give this historical movement the character of a divine ordinance which cannot be resisted." John Stuart Mill added his eminent testimony in his work on "Liberty:" "There is confessedly a strong tendency in the modern world towards a democratic constitution of society, accompanied or not by popular institutions." The *Westminster Review* of October, 1868, repeats the idea, "all society is tending to a democratic form, and all government to democratic government. It is impossible, even were it desirable, to arrest the tendency, and the only hope lies in inaugurating a sound system of morals which shall be effectually binding upon all individual persons composing the state."

I think there is no doubting the justness of these conclusions. Whether we hope as radicals, or as conservatives fear the result, we must agree as to the facts. Almost within the last decade Russia has emancipated her serfs, Italy has achieved constitutional freedom and national unity, Germany has become unified, England has extended the privileges of her franchise, and France and Spain, rid at least of an unscrupulous emperor and an infamous queen, and are now struggling with what ability they may, to

solve the difficult but ever recurring problem of self government. Within the same period, the dark shadow of slavery that hung over the great republic of North America and the great empire of South America, has passed away like a cloud from the face of the new world.

“God said, I am tired of kings;
 I suffer them no more;
 Up to my ear the morning brings
 The outrage of the poor!

* * * * *

My angel—his name is Freedom;
 Choose him to be your king;
 He shall cut pathways east and west
 And fend you with his wing.

* * * * *

I will divide my goods—
 Call in the wretch and slave;
 None shall rule but the humble,
 And none but toil shall have.

I will have never a noble—
 No lineage counted great;
 Fishers, choppers, and ploughmen,
 Shall constitute a State.”

Emerson—Boston Hymns,

Democracy, spreading like a flood of light over the earth, concerns every nation and every age. To the American people, who have staked all upon its success, and who hailed its coming as the dawn of a political millenium, it is at once the object of a profound enthusiasm and of a patriotic anxiety—the object of profound enthusiasm, because we believe it to be the highest type of ideal or actual government; of a patriotic anxiety, because from inexperience and human imperfection, it often falls far short of its brilliant theories, and has caused but too many men of undoubted ability to despair of our republic. The old Federalists and the former Nullifiers did not entirely believe in the principles upon which our government is founded. Garrison once pronounced the constitution of the United States to be a “covenant with death and an agreement with hell.” Choate declared that the Declaration of Independence was made up of “glittering and sounding generalities.” To such straits, in one direction and

another, have men been driven whenever the nation has been untrue to the fundamental principles of its constitution. It is not wonderful, therefore, that men grow cynical and skeptical as the horrible details of the Tammany ring, the Kansas senatorial election and the credit mobilier become public, and that many lose faith in the capacity of the more depraved and ignorant portions of our country to govern themselves.

For one, however, I do not share in this lack of faith. I admit very grave existing abuses in our body politic, arising from failing in practice to carry out the theory of our government. "Go and put your creed into your deed," said anti-slavery Emerson to the slaveholding republic. The admonition must be repeated to a republic that, based upon the rights of men, gives unequal privileges to capital and labor; to corporations and private persons; to manufactures and agriculture; to trade and productions. Evils in some shape will be a constant attendant on democratic government, just as they are on all other human affairs. Bryant, in his glorious poem, apostrophizes freedom, not as

"A fair young girl with light and delicate limbs,
And wavy tresses,"

but as

"A bearded man armed to the teeth."

And adds—

"Thine enemy never sleeps,
And thou must watch and combat till the day
Of the new earth and heaven."

We must expect the old foe under new faces. It was African slavery ten years ago—it is corporate wealth and monopoly to-day—it will be something else when this war with our Shylock aristocracy has placed them where our former slave aristocracy is now—in the position to *earn* what they consume by honest work. But, recurring to the self-evident truths of the declaration, and to the manifest drift of civilization, no man can be doubtful of ultimate good results: provided that you and I do our duty as citizens, and that when the cry of the "Philistines be upon thee," arouses this young giant of nations, it shall not be found shorn of its strength in the harlot lap of luxury and corruption. Let us never despair of the republic; never give up,

because of its abuses, the government of the people "over all, by all, and for the sake of all."

So I shall speak to-night of

REPUBLICAN-DEMOCRACY,

Meaning thereby a democracy limited by a constitution and qualified by a representative government. It is the rule of the people, directly or indirectly exercised, under the limitations of an organic law. But, as this organic law is itself only a more formally expressed will of the people, and is subject to their revision and amendment, we are compelled to go further back, and to a higher source, to find our constitution of constitutions. We find this in the

HIGHER LAW,

—the fundamental part of all laws, constitutions and governments. Although twenty years since it was common to regard the doctrine of a Higher Law as Utopian and revolutionary, yet none is better founded in right or reason, sustained by more weighty authority, or more essential in securing conscientious and wise action in voter and representative, and therefore more important in a republican democracy. A careful examination of a wide range of authorities enables me to say, that wise men in all ages unite in maintaining one or more of three propositions:

1—That so far as each individual is concerned, his own conscience is the supreme law of his action, and must be obeyed at all hazards in all private or public affairs.

2—That the consentaneous opinion of mankind, called *jus gentium*, and sometimes the "unwritten law," as the result of the sum of the moral judgments of our fellow beings, and corrective, perhaps, of the bias of personal interest or prejudice that may warp our personal judgment, is of nearly equal value in determining the right or wrong of a given action, and ought constantly to be consulted.

3—That the law of nature—the Divine law, or law of God—as it is differently termed, according to the supposed source of the communication, is subject to the approval of conscience, supreme.

I need not delay to prove these points. Confucius, the laws of

Menu, the Bible, Aristotle, Cicero, Calvin, Hampden, Dr. Clarke, Archbishop Butler, Burke, Guizot, Lieber, Barnes, Parker, Beecher—authorities of all kinds might be cited, but I will not weary your patience with the long array. In all these authorities, covering a wide field of space, time, religious faiths and forms of government, we trace the genus of the consequent idea now generally laid down by our writers upon government; that the state and its laws must be, so far as their sphere extends, an expression of natural right and justice, or they lose their power and authority, and will not, and ought not, to be obeyed. They must express the average moral sentiment of the people to be governed; and will express it, if a means be furnished whereby the moral judgment of each of the constituency can be had upon the action of the government.

In less intelligent and more superstitious ages than the present, it was not considered necessary to refer to the moral judgment of the people. The matter was readily disposed of by assuming a divine origin for the laws and a divine authority for the ruler. The Jewish polity was professedly and long entirely theocratic. The ancient Indian kings, though of the warrior caste, were surrounded by priests who directed their policies. The Babylonian "king of kings," and the rulers of the Medes and Assyrians, were even worshipped with divine honors. The Persian kings were under the strong influence of the Magi. In Ethiopia a priestly caste elected one of their own number ruler, and a like constituency chose the Egyptian kings.

In all these instances in ancient history, and the fact is unfortunately not entirely ancient, we generally find a close alliance between the temporal power of a state and the religious teachers of the people, whereby the sovereign was brought under the influence of the prevailing religion and gave it support, and in turn was sanctified and strengthened by its influence.

The Greeks and Romans in their myths, claimed the gods as their law givers and as the progenitors of their rulers.

"Ideas drawn from the bible," as Lieber explains, "were carried over to the crowned heads of Christianity. They came to be called the anointed of the Lord, as the kings of Israel were." Hence we have, down even to our own time, the union of church

and state, and a widely spread belief that kings are the vicegerents and special servants of God. The ruler is still *rex dei gratia*. The king can do no wrong. Perhaps, even now, as Falstaff told Prince Hal, "The lion will not touch the true prince;" even the present emperor of Germany, in 1866, reluctantly consented to the absorbing, or as we would say annexation policy of Bismarck, because his "sincere belief in the divine origin of royal power made him reluctant to the last, to consent to the overthrow of other thrones for the benefit of his own," and this was not ten years ago!

But in this somewhat irreverent age, when "the tramp of democracy's earthquake feet goes thrilling the wide world through," such theories as these, that would name Isabella of Spain and the present Prince of Wales vicegerents of God are regarded scornfully. They are "played out."

In contrast to these ancient opinions, it is demonstrable, from what I have already said, that a democracy, as the best expression of the moral sentiment of a nation and as the nearest approach to the requirements of the divine law, is in a much truer sense of a divine origin. I would develop the idea something in this wise:

1. The first duty of the individual being to obey the higher law, the citizen in a democracy, as well as elsewhere, is primarily subject thereto, and as elsewhere, should endeavor to obey what he believes to be its dictates in his public as well as his private acts.

2. The requirement of the Higher law in our civic or political action, I assume to be expressed in the most general terms by the Golden Rule which has been formulated by the highest religious and philosophical authorities, and can be determined with sufficient precision. Confucius said "He whose heart is right, and bears toward others the same feelings that he has for himself, is not far from the moral law of duty declared to men by their rational nature; he does not do to others what he desires they should not do to him." His disciples said, "The doctrine of our master consists in having righteousness of heart and in loving one's neighbor as himself." Plato said, "It is not right to return an injury or to do evil to any man, however one may have suffered from him." Aristotle, when asked how we should treat our

friends, replied, "As we should like to have our friends treat us." All these authorities lead to the Christian precept, "All things whatsoever ye would that men should do to you, do ye even so to them." Kant, according to Lieber, expressed the idea in a scientific form thus: "Act always in such a manner that the immediate motive or maxim of thy will may become a universal rule in an obligatory legislation for all intelligent beings." You will notice that only a government which declares and makes all men equal in their rights, personal and political, would render it possible for the citizen to obey these dictates of the Higher law.

3. Now the citizen in a democracy, bound by the Higher law, must carry its precepts into his public action as elector or official. He can do so, of course, but imperfectly. His own imperfect nature will prevent him from always being able or desiring to discern his duty with entire clearness and accuracy. Besides, he must act with others who may have a different intellectual and moral preception from himself. "Though the statesman," says Whewell, thinks and reasons, and discovers and adopts truths, he will often be compelled to adopt truths on the part of the state much more slowly and more imperfectly than he himself acquires and professes them in his own mind." Then there is the difficulty of imperfect expression. Our conviction must often be expressed by supporting one of two parties, neither of which has our entire approval; by voting for one of two men, neither of whom is our choice; by voting for or against a given proposition when we think the best policy is not subserved by doing either. But these qualifications, which alike affect the voter at the polls and the representative in the legislature, everyone may and should carry into public life, with the same moral convictions, the same earnest reverence for the divine law that should control him in private life.

4. But the citizen in a democracy alone has the opportunity to do all this. No other form of government, even in theory, provides for the expression, in a mass as it were, of the moral convictions of all its people in constitution and statutes. The constitution and laws even of a limited monarchy, are the expression of only a part of the people, and cannot entirely express the views of those who are disfranchised.

5. But in a democracy where all vote, the chances are that in

the long run and over the whole country, we will get the most honest, straight forward, and, for that state, the wisest expression of opinion upon the direction of its affairs. The prejudices, passions and selfish interests of individuals are, to a great extent, neutralized, and the result will, as a rule, be a public policy that will reflect the character of the people as a whole. The saying, *vox populi, vox dei*, very common in the mouths of demagogues, thus comes to have a real significance when the persons comprising a democracy are intelligent and virtuous.

I would not claim that we, or any other nation, have more than begun to approximate the ideal thus suggested. But we have the peculiar advantage that our theory of government gives us all the advantages resulting from the advancement of society in intelligence and morality. As the popular intelligence increases, the tone of government is elevated. Every child that is taught in our free schools, or conscientiously reared in our homes, is so much added to the wisdom and virtue of our government. And herein lies the vital importance of an intelligent and prosperous agricultural class. The farmers of the land must furnish not only food, but they must supply the vigor, the intellect and the virtue that cities cannot reproduce. And while the rural homes of America remain the conservators of private, and, so far as may be, of public virtue, and the pioneers in pushing on the columns of social and political progress and reform, I have hope and confidence in the perpetuity of the republic.

It is in accordance with this idea, that there is something more than self-interest in the organization and carrying on of governments that we speak of the moral character of the state and that Whewell appropriately concludes his *Elements of Morality* with a treatise upon polity.

DEMOCRACY AN HISTORICAL RESULT.

Not only do we find that a democracy furnishes the best means of expressing the moral sentiments of the people, but as a matter of fact sufficiently necessary, but not generally recognized, history shows it to be the natural growth, the normal condition of jural society. Searching the records of every nation that has made important advances in civilization, we find democracy in

some shape underlying even the most centralized and despotic forms of government.

Man is by nature a social being. Aristotle calls him a "political animal." Society for the proper protection of each in his rights must become jural society or government. Hence every community, with hardly an exception, consciously or unconsciously, assumes the character of a state, and this state in its inception, or so far back as we can trace it, is democratic. The natural sequence of development appears to have been this :

1. There is a local self-government in which all with considerable freedom participate ; but this is a government unrestrained except by the merest rudiments of a common law and totally without a written constitution or statute law. This is what Professor Maine characterizes as "village communities," and in his opinion originated in the community of goods and interests of families of the same blood.

2. Next with advancement in civilization and intercourse, centralization follows, whereby these roughly organized communities are aggregated and become one nation under the overpowering influence of a superior individual or class, in which process, local liberties and privileges are apt to be trampled upon, but in which the personal safety of the citizens and public welfare are generally promoted. This was the work first of feudal lords and then of such personages as Alfred in England and Charlemagne on the continent.

3. Then comes constitutional government, of which republican democracy is a form. Government, at first a shapeless mass of brute force, is gradually developed into an articulated series of powers, limitations and balances ; in all forms of which there constantly reappears the tendency to revert to the original democratic type, and the dispersion of so much of the centralized power as is not needed to hold the state together. This is the condition of many of the more advanced nations to-day.

It is a broad generalization, however, and not always, nor entirely true. The development may be arrested, as it seems to be in China, or imperfect, as in France. But China, Hindostan and Russia, three of the oldest and least changeable countries upon the globe, still show the remains of former local self-governments

in their towns and villages. In these three instances, we seem to arrive at the oldest known remains of the ancient local self-governments, arrested and stunted, however, by their being as Lieber expressed it, "no union of these many isolated self-governments, and no organic state government, and therefore no liberty." Greece, Italy, Iceland, Norway, Sweden, Switzerland, France, Hungary, Holland, Germany, Spain and England, each in its way, originated and in very different degrees has perpetuated local self-government.

The peculiarity and advantage of our own country in this respect, was that it had no political past, and that its governments were organized by the English and their descendents who were the most advanced in constitutional freedom of any race. Our forefathers brought here the more advanced ideas of an advanced people. They found no existing government or precedents of any kind to hamper their freest movements. The traditions of the Old World from its remoteness lost much of their influence.

Hence, we have the otherwise wonderful results of political development in this country; first in New England, and later throughout the country. The compact signed in the cabin of the *Mayflower* in 1620, the body of liberties of the Massachusetts colony in New England, enacted by the general court in 1641, with their causes and consequences, bore their proper fruit more than a century later in the declaration of independence and the constitution of the United States. Never was a nation more favored in the conditions of political and material progress. Using the vantage ground of colonists, from old and civilized nations, we entered at once upon the third stage of development as a constitutional republic.

This brings me to a consideration of the

CONSEQUENCES OF AMERICAN POLITICAL THEORIES

upon our people, and upon our political and social life.

So far as the primary and essential rights of person, property, contract and family are concerned, the United States did little more to start upon than to adopt the existing and conceded doctrines of older nations; but subsequent experience and conviction have done much to qualify these Old World views.

"American liberty," said Lieber, belongs to the great division of Anglican liberty * * * There are, however, features and guarantees which are peculiar to ourselves, and which, we may say, therefore, constitute American liberty. They may perhaps be summed up under three heads: republican-federalism, strict separation of the church from the state, greater equality and acknowledgement of abstract rights in the citizen, and a more popular or democratic cast of the whole polity." Guyot, the author of *Earth and Man*, regards religious freedom as the great contribution that America has made to civilization. Lieber attached much importance to what he called republican federalism, or our union of separate states under one national government.

Accepting these as general expressions, let us examine in detail, the results of our republican democracy.

I—AS TO THE INDIVIDUAL,

"All men are created equal. Government derives its just power from the consent of the governed," said the Declaration. Before declarations like these, which have been a constant force in the succeeding years of the republic, the privileges that make one person the superior to another before the law must, of course, be abolished. They could not be explained away. Slavery must fall, or the declaration be denied; and you know the result. The question of suffrage came next, and the distinction of race was abolished. There remains the abolition of the distinction of franchise for the man and none for the woman; and I can see but one result. Suffrage should be limited only by the ability and the will to use it rightly. All, except persons of immature age, the idiotic, the insane, the criminal, the pauper, or the person owing allegiance to a foreign government, are, or will be, participants in the government of the state and nation. This is not only a legitimate consequence of the Higher law expressed in the declaration, but it is demanded by the best interest of the country, which requires the judgment of every person capable of forming an opinion upon the men and laws by which he or she is to be governed. "The law of equal freedom," says Herbert Spencer, "is of higher authority than all other laws;" and, looking to results, we may say, with Theodore Parker, that a state without

woman's equal political action is almost as bad as a house would be without a mother, wife or sister.

This right of universal suffrage—of deciding what and who shall govern us—carries with it the obligation of intelligently and properly exercising it: hence it is the duty of the citizen to seek for his children, and the policy of the state to gratuitously furnish, education. "The right of suffrage," says Playfair, "has for its corollary the duty of instruction." Jefferson's "bill for the more general diffusion of knowledge" was the formal expression of this idea, which had already been acted upon for more than a century in New England, and to which Old England has arrived nearly a century later.

The duties of personal service to the state as juror, soldier, and in filling the many petty offices of township and other municipalities, are more common, and perhaps more imperative in our republican democracy, and do much to identify the masses of the people with the government, which is their creator: hence their great skill and readiness in self-government. Ten average Americans, on a desert island, could organize a government in two hours.

II. AS TO THE FAMILY,

It is still more affected by our republican democracy. The idea of equal and exact justice to all men led Jefferson to strike an early blow at primogeniture and entailed estates. De Tocqueville dwells upon this subject at length, and attributes important consequences to it. It secures greater equality of conditions within the family, both between children and parents, and among the children themselves. The relation becomes more one of affection and confidence, and less of fear and pride. There is less struggle to build up families by the acquirement of large estates, and a greater disposition to found public institutions of learning and charity.

A graver question, of more difficult solution, is the effect of our democratic ideas upon the institution of marriage. The whole common law, concerning the rights and obligations of married women, is in conflict with the fundamental idea of American liberty. That a woman, because of her marriage, should lose her personality, should lose control of her own property, and

even of her own earnings, should be liable to physical restraint, and to moderate physical correction, and, finally, should have no control over her own children, were ideas too monstrous to endure, even in less advanced countries than our own; hence there has begun, is going on, and will go on, an agitation on this subject which can end only in placing husband and wife upon an exact equality before the law.

III. AS TO SOCIETY,

Calling by that vague name the result of the friendly and occasional association that comes from a community of residence, pursuits, worship and the like, the influence of the democratic idea is producing curious and contradictory results. The struggle for wealth as the speediest, most obvious and easiest form of social distinction, becomes desperate, where rank does not result from birth, and where intellect and learning have not asserted their mastery. But this wealth, to be known, must be shown; and hence fine houses, extravagant furniture, costly dress, and expensive habits at variance with the genius of our republican-democracy. We have not fully accepted the logical consequences of the equality of the race. This costly life cannot be led in a republican country without inordinate profits for which some one must suffer, without the personal service of hordes of servants, whom even money cannot procure, in a country where personal freedom is so prized, and without weariness and exhaustion on the part of the wife and mother.

"Even," says the superintendent of the census, "when we count all ages and conditions of domestic servants, we find the increase in the northern states to be considerably less than the increase in population, showing that, while social requirements have largely increased in respect to dress, equipage and entertainment; while the appetites and tastes of our households have been rendered more difficult and exacting through the diversification of the national diet and the increasing consumption of spices, fruits and game; while the eastern states, especially, are assuming the semblance of greater leisure and luxury, the wives and mothers of the great middle class, and nowhere so much as at the east, are discharging their domestic duties and maintaining their conformity

to the demands of society with a diminishing rather than an increasing body of hired help."

Office-seeking, for a like reason, becomes almost as inveterate as the pursuit of wealth, and a desire for personal popularity, in consequence, detracts somewhat from personal independence and decision of character. Our most popular men float on the current of popular opinion, and do not properly avail themselves of the advantages given them by position to do the most service to the people. They simply drift. On the other hand, I find, and particularly among our farmers, an intolerance of differences of belief that tends to mark and proscribe those who have opinions of their own, and dare own them. In other words, there is too much tyranny of public opinion. Our wives are afraid of Mrs. Grundy beyond computation; and our respect for party and caucus is not less intense. Again, as a better result, an increasing sense of justice and consistency, combined with the spirit of equality, is enlarging the sphere of woman's employment and increasing her wages. An increasing desire for personal independence is seen in the unwillingness to perform domestic service, or engage in other employments looked upon as menial. This, again, produces a tendency in the cities towards hotel life, to co-operative housekeeping, and, in the country, a drift toward village and city life. The outcome of this we cannot yet foretell; but it is fraught with important social consequences.

4. As to the organization of labor, which is the result of the instinct of self-defense on the part of the working men of the country, it would have no place in a republican-democracy as a means of defense, provided we were entirely consistent with our political principles. The individual wealth of the country has, comparatively little power, and is redistributed in one or two generations. But corporate or stock wealth is a perpetual charge upon the people, and upon none so much as upon the laboring class, by which I mean the men dependent upon their daily, manual labor for support. Our laboring men have not only an undue share of the national debt to support, as consumers, but of the corporate stock of banks, insurance companies, railways, and other forms of fixed capital that must have its interest, whoever holds it. Corporate wealth, moreover, is strong and unscrupulous, compared with the

individual, and is more exacting; hence the laboring men even of America must combine to strengthen themselves, to expose the abuses to which they are subjected, to co-operate in the purchasing of food, clothing and fuel, and, under favorable conditions, in production, and to mutually improve and help one another.

The need of some reform in our country which shall make the condition of the laboring man more tolerable, is seen in the present condition of the class. The condition of the laboring men in our large cities, this winter, shows an increased inability to lay up money. Everything earned is demanded to meet immediate wants. Mr. Wells, in his speech before the Cobden club, asserted on the authority of the returns of the Labor Bureau of Massachusetts that, in "the wealthiest portion of the United States, where labor is nominally better paid than in almost any other section, the earnings of the head of an average family, engaged in manufacturing industry, are not sufficient for its support; and that the deficiency must be supplied by the industry of females or minor children." He showed, further, that, "in respect to the ordinary necessities of life, the purchasing power of labor has decreased in the city of New York, since 1860, 19 1-2 per cent., whilst, in respect to what might be termed luxuries—wines, precious stones, articles of ornamentation, cashmere shawls, etc.,—the purchasing power of labor has actually increased." This means, simply, bad political economy somewhere, and the laboring men should organize to correct the abuse. "Labor," said Lincoln, "is the superior of capital, and deserves much the higher consideration."

V.—AS TO THE ASSOCIATION OF CAPITAL,

Our republican democracy seems to have shown itself more complacent and facile than wise. Recognizing the undoubted impulse given to industry and trade by large amounts of capital, skillfully managed, we have granted corporations for nearly every possible purpose, giving special privileges and powers of making money to organized capital, without much thought of the great masses who must make their money, if they made any, by earning it. Now, what is the result? In the first place, a sum exceeding our national debt, and probably equal, or nearly so, to all our public indebtedness, has been invested in railway stocks, on

which we are expected to pay ten per cent. interest, and on which we actually did pay, for 1872, as Mr. Poor tells us, 5.2 per cent. on the so-called cost of \$3,159,423,057, which is nearly double the capital stock. Next, \$350,000,000 in national bank stock, an unknown amount in the stock of other banks, insurance companies, etc., upon all of which it is essential to their good standing that a good rate of interest be made; so that, in addition to public debts amounting, in 1870, to \$3,271,874,768, the people of this country have to carry as much more in the shape of corporate stock. The evil of this stock is perpetuity. The persons who own it may change; but the stock remains, a perpetual incubus; men may come, and men may go, but it goes on forever. This is not so with private capital. The unsuccessful merchant, or mechanic, or farmer, simply gets a low rate of interest, or sinks a part of his capital; but capital stock must pay, and I believe does pay about double the interest that the farmer makes from his farm. The result, unless the tendency is checked, is the absorption of private capital by capital stock. In the words of a writer in the *North American Review* (Jan., 1873), "It is evident—for it is a mathematical proposition—that this movement of property from the many to the few, if unchecked, will, sooner or later, make the few the possessors of all property, while the masses will be necessarily impoverished, and virtually enslaved. The ratio of relative increase on the one hand and diminution on the other, will make the time required for this consumation proportionally longer or shorter; but it cannot change the result."

Thus far I have spoken simply of what I may call the legitimate results of the association of capital in corporations—of what they can do and actually effect under the management of honorable men. But there are even worse phases than this. Capital, in the hands of a few, is organized with facility, handled rapidly, and may be used unscrupulously. It may do more mischief in a democracy than elsewhere. "In democracies," said De Tocqueville, "statesmen are poor, and have their fortunes to make." He could not have put it more scathingly had he seen the "credit mobilier" in a vision.

Associated capital, again, takes a most oppressive form in the shape of monopolies. These are the result of conspiracies against

the public's welfare, effected sometimes by obtaining exclusive national or state legislation or grants, and sometimes by buying up, crushing out, or combining with rivals, so as to destroy the legitimate workings of the law of supply and demand. Our transportation by rail, and even by water, is largely done in this way. Each railway, to start upon, has a practical monopoly of the country through which it runs, except, possibly, at the few points where it is crossed by roads with which it has not combined. The routes from the interior to the seaboard are dominated by a railway despotism as lawless and rapacious as the robber bands of the ancient Rhine. The commerce of the upper Mississippi is practically monopolized by a single steamboat line. The whole railway system of California and the navigation of her rivers are in the hands of a legalized band of robbers. The very transportation of the Columbia river is given up to a corporation; and wheat, worth \$1.15 per bushel at Portland, has hardly a market value on its upper waters. Elevator "rings" infest our lake cities, a tow-boat ring the mouth of the Mississippi, and producer and consumer must pay heavy toll for the privilege of transit.

I might lengthen this list with showing the monopolies afforded by what are called protective tariffs, and by patents wrongly granted, or injudiciously extended; and I might name the well-organized monopolies in school books, in plows, that are not to be sold to clubs and granges for less than retail rates; but I forbear.

All these evils of corruption, monopoly and extortion, though found in many forms of associated capital, are peculiarly and specially the work of our railway corporations. The most threatening danger to the liberties of Americans to-day lies in the dangerous power now held and wielded by our railway corporations. Vast monopolies dominate our thoroughfares to the seaboard. Their chartered powers are great: their financial strength is enormous. These, in their turn, are controlled by a few men, often of brutal instincts, who desire and appreciate only the power that money gives in our wealth-thirsting communities. They are monied aristocrats, the basest form of nobility—a nobility that compels no nobleness. They are mainly unscrupulous in their

means, and entirely selfish in their action. Bribery and corruption are their custom, when dealing with the governments; extortion and brutality mark their conduct toward private persons. They lavish their ill-gotten wealth, with a varied taste, on horses, harlots and the theological seminaries. They enrich their confiding constituencies of stock holders with "watered stock," and plunder them again in the guise of "legal services." They wantonly disregard even the time-honored precept of "honor among thieves," and turn traitors to one another, if it will only pay. Well may we say, with Geo. P. Marsh, our present minister to Italy, that "the example of American states shows that private corporations—whose rule of action is the interest of the association, not the conscience of the individual—though composed of ultra democratic elements, may become most dangerous enemies to rational liberty, to the moral interest of the commonwealth, to the purity of legislation, and of judicial action, and to the sacredness of private rights."

Railway corruption exists and is regarded with apprehension in other countries than our own. But the negligence, that permits all kinds of corporate schemes to get on foot without duly guarding the rights of the citizen, has intensified this evil in the United States. We find ourselves now, face to face with a dangerous corporate power, created to subserve the interests of the people, but used to inordinately enrich a few, at the expense of the many. There can be but one result. It is not in the nature of republican-democracy—the spirit of our age and country will not permit this base invasion of our rights as citizens and States. The railways of the country must be made in practice what they virtually should be—public highways—on which law, and not extortionate or capricious managers shall fix the tolls, and our railway magnates made to understand that the government of State and Nation is to be run in the interest of the people. *Salus Populi Suprema lex.*

And even as to other forms of incorporated capital, I incline to the opinion that we have made a mistake in giving special privileges of any kind in the shape of pecuniary corporations. They are not working out good results. They give undue advantages to those who hold them over those who do not; and the

result is that the poor, who cannot be corporators, grow poorer and the rich, who can, grow richer.

VI. AS TO THE AGRICULTURAL CLASS, OR CAPITAL AND LABOR COMBINED,

In one interest, we find our republican-democracy less propitious than might be desired in these latter years. DeToqueville believed that agriculture improved more slowly among democratic nations, because, though more certain in its ultimate results than other pursuits, it is less rapid; and consequently the man of many wants and small means will seek some hazardous calling where the remuneration is greater. Admitting the loss of this class of men, it may be doubted whether it is an injury to the calling. "This hard work," says Emerson, "will always be done by one kind of men; not by scheming speculators, nor soldiers, nor professors, nor readers of Tennyson; but by men of endurance—deep chested, long-winded, tough, slow, sure and timely. The class of men who farm from choice will be those who love country life, personal freedom, cattle and trees; and these will improve agriculture quite as rapidly as they who haste to be rich. But certainly our republic favors the farmer in this: it endeavors to secure a homestead to every family and prevent tenant life, which, in a sense, puts one man in the power of another.

But the farmers of this country, comprising about one-half of its population—from 12 per cent. in Massachusetts to 81 per cent. in Mississippi—holding a diminishing yet large part of the wealth of the country, at once the great producers and consumers of the country, engaged in an industry, whose gains are slow and small, and demand continued attention, isolated upon their farms, have from their isolation, their lack of any common purpose, or efficient organization, been made the prey of intentional and unintentional spoliation on the part of other industries and occupations, and even on the part of their own representatives. Here is a general statement of the case by General Francis A. Walker, Superintendent of the Census, whom we may regard as an unprejudiced witness. "When it is considered that the staple export products of northern agriculture are little, if at all, higher even on the seaboard, than before the war, while the articles which the agricul-

turist has to purchase for consumption in his business, or in the support of his family, have been increased from forty to eighty per cent. in the interval. When, moreover, it is considered, that of the corn, wheat, pork or beef, thus produced at a disadvantage, one-third, one-half, or two-thirds, according to bulk or location, must go to pay the charges of transportation from the farm to tide-water, it will not seem strange that, despite our extraordinary agricultural endowment, this great department of industry should have made such scanty increase during the constitutional decade just closed." David A. Wells, late special commissioner of revenue, a more partizan, but reliable witness, adds another cause: "The grain power of the western, and the cotton planter of the southern United States, receive for their entire product the gold price which Mark Lane, in London, is willing to give on the one hand, and Manchester on the other. If now the American agriculturist were able to purchase all his labor and commodities at the current gold prices of London and Manchester, he would experience no detriment. But this is the very thing he is not allowed to do, or in other words, he disposes of all that he has to sell in accordance with a foreign standard of prices; but he buys all that he consumes—his implements, boots, shoes, clothing, sugar, tea, etc.—in accordance with a domestic standard, artificially enhanced by an average tariff of forty per cent. on all imports, and a depreciated fluctuating currency regulating exchanges." Returning now to General Walker's figures, we may add two other facts that have had an influence to weigh down and discourage the farming class. There has been in the last decade a marked falling of in the number of common laborers and an increase of *forty* per cent. in the trading class. On the one hand the demand for farm labor exceeds the supply; and on the other, the farmers, as part of the people of the "United States," in the words of General Walker, "are maintaining a body of persons not less numerous than the standing army of the British Empire, and with a far greater number of dependents in the way of wives and children, than are charged to the officers and soldiers of that army, all in excess of the legitimate demands of trade."

Here then are what men who do not belong to the agricultural

class pronounce great evils under which we labor: A depreciated currency, extortionate rate of transportation, a high protective tariff, an excess of middlemen and a scarcity of labor. There are other causes of complaint, but these especially affect the farming class. A depreciated currency is not felt nearly so much by the manufacturer whose products are made and sold under the same currency. High rates of transportation do not particularly affect the commercial class. A protective tariff is a bounty to manufacturers; but for all of these the farmer must suffer. The reason is obvious enough—he has had no influence, and has even been forgotten, possibly intentionally plundered, in the legislation affecting currency, transportation and tariffs. The conspiracies of traders and manufacturers to keep prices up are necessarily against the men who compose half of the consumers of the country. They are scantily represented in the halls of legislation, unknown and unheard in lobbies and committee rooms. What wonder that more glib and graceful men “fixed things up” in the interest of banking, railway and manufacturing corporations, and the men who only grew the food were forgotten! It is the reaction from this state of things that gives power to the so-called farmers movement. Large bodies move slowly, but when they do move the momentum is irresistible. Hence the efforts at organization now making by the agricultural class throughout the country, and which must result in checking and repealing the class legislation that has been permitted in the interests of capitalists. The venerable Josiah Quincy said at Washington the other day, that when a boy he asked old John Adams, when he came to the conclusion that we should shake off the authority of Great Britain, was it when the tea was thrown overboard, or when you met delegations at Philadelphia? “Oh no,” was the reply, “it was long before that; it was when I kept school in Worcester and heard the *farmers talk*. I knew there was a ground swell rising that would topple King George from his throne.” My life is not a very long one, but I have heard the farmers talk once or twice myself. The farmers talked a good deal between 1856 and 1860. They commenced talking again in 1873. I know how some of the men who read Tennyson regard their talk.

“A tale of little meaning, tho’ the words are strong;
 Chanted from an illused race of men that cleave the soil,
 Sow the seed, and reap the harvest with enduring toil;
 Storing yearly little dues of wheat and wine and oil.”

But you and I know better. The question is, whether you and I are to be freemen or the serfs of corporations; whether these states and this nation are to be governed by the capital of corporations or by the unbought votes of the men who create wealth. It is an irrepressible conflict, and the Higher Law, the Declaration of Independence, and the Grangers are all on one side.

VII. I have spoken thus far of individual, social and class conditions under our republican democracy. I wish now to speak of our different grades of government, commencing with

MUNICIPALITIES,

Under which I include township, town and city governments. Municipal governments have acted very opposite parts in history. On the one hand, the experience of New York and other of our larger cities, where there is a great mass of ignorance and vice, has struck the patriot with profound discouragement and made him despair of free government when great cities multiplied among us. Yet even in New York, after a long and unwise system of legislative interference, the body of good men rose and put down, for the time at least, the terrible corruption that had resulted from their own neglect of political duties. On the other hand, free cities of the middle ages were bulwarks of civil liberty. Our New England towns, organized between 1630 and 1640, and more than a century old when the revolution began, were “schools and nurseries of freedom.” John Adams, Jefferson, Webster, Kent, DeTocqueville, Bancroft, Hildreth, Choate, Sumner, Eliot, Palfrey and Greeley, all unite in extolling their merits as giving practice in public affairs, ensuring thorough political organization, and awakening, fostering and perpetuating an interest in civil affairs by committing the management of their own roads, bridges, taxation, etc., to every little body of citizens. Particularly is the township system of value to our agricultural population. We find in our counties, under township organization, not only a better opportunity for acquainting and educating ourselves in public

affairs, but that the rights of the rural districts are better protected.

VIII.—COUNTY GOVERNMENTS,

Come next in the ascending grade; but this division of our government has had less important functions assigned it than we might have anticipated. In New England, the townships were the original form, and still absorb nearly all the local public business. In New York and our western states, where a county legislature, in the shape of a board of supervisors, is made a part of the township system, the county becomes a better defined part of the body politic, but still has less legislative power than either township or state.

In the Southern, and a few of the Middle and Western States, the county system was the original, and even the present practice. It came of large plantations, a sparse population, slavery and the lack of an educated and intelligent yeomanry. There is something pathetic in the struggles of Jefferson to rid old Virginia of slavery, and to introduce the free schools and towns of New England into his own commonwealth. Speaking of the impotence of counties against the towns in the time of the embargo, he said: "What would the unwieldy counties of the Middle, the South, and the West do? Call a county meeting, and the drunken loungers at and about the court houses would have collected, the distance being too great for the good people and the industrious generally to attend. The character of those who really met, would have been the measure of the weight they would have had in the scales of public opinion."

IX. IN THE STATE,

We find a very important and well compacted part of our governmental machinery, for to the state is left a large part of the legislation affecting the citizen. Of this, the powers of taxation, eminent domain and police, are of most general interest, although of less fundamental importance than protection of personal liberty, property and the liberty of the press and religion. Direct taxation is of special importance to the rural districts, because the property there is generally visible. Lands and houses are gen-

erally assessed, whilst other forms of property, less tangible, remain unassessed and untaxed. The farmer is liable to undue taxation when assessed on valuation of property, because its value is better known and understood. In 1870, for instance, the railroads of Illinois were assessed only \$19,000,000, whilst the horses were valued at \$25,000,000. The indiscriminate manner in which the power of eminent domain has been vested in railway and other monied corporations has also made this a subject of special interest. The power to condemn right of way, and the like, has been given to corporations that now deny their liability to perform a public function at legal rates. Undoubtedly our state legislation has generally been vicious as regards corporations, in that legislators have not kept a clear line of distinction between the person whose liberty we do not desire to restrain more than is essential, and the corporation on whose immortality and aggregated wealth, should make it always an object of suspicion, and prevent us from granting it undue and endless powers. This abuse has been one of the marked effects of our democratic ideas when not clearly understood and applied.

But side by side with this vice we find a zeal in the cause of general education, public charities, and public improvements, that will go to the verge of its power and limit, and even invade the rights of the citizen to advance what it believes will be for the general interest. This is peculiarly an idea of American growth, and has been used and abused, to a great extent. It has been used profitably to tax the property of all, to educate all; to provide for reform schools, and for asylums. It has been abused to subsidize irresponsible railway schemes, as I have just intimated.

This zeal for popular welfare, will necessarily carry us somewhat farther. Legislation must interfere with and regulate, perhaps dissolve, the great corporations it has created, or they will oppose the citizen. Our Illinois constitution recognizes this fact, especially in the case of railways. It may need to go into other fields, gas companies, water companies, elevators, telegraph companies, all have similar tendencies, and their rapacity is not checked by competition, or any practical working of the law of supply and demand, as John Stuart Mill long ago declared: "There are many cases in which the agency, of whatever nature,

by which a service is performed, is certain from the nature of the case, to be virtually single, in which a practical monopoly, with all the powers of taxing the community, cannot be prevented from existing."

X.—REPUBLICAN-DEMOCRACY IN OUR NATIONAL GOVERNMENT,

Has presented at least one peculiar phase in what Lieber terms Republican-Federalism, a form of political organization which has attracted much attention from political thinkers in other countries, and which has been imitated by many as the best practical compromise between local and general co-operative governments. The republics of South America, our elder sister Switzerland, and to a certain extent, other less democratic countries have imitated us in the adoption of this principle which Lieber asserts to be "the chief American contribution to the treasures of political civilization."

There has been a good deal of disagreement in our country, however, as to the nature of this Republican-Federalism. Pomeroy, in his constitutional law, classes three theories as having been held by different American statesmen. 1. The complete national theory of Hamilton, Jay, Marshall, Story and Webster, which regards "the United States as a nation and its constitution as the organic fundamental law of that nation." 2. The complete state sovereignty doctrine of Jefferson and Calhoun, which "does not regard the constitution as an organic and fundamental law for a single body politic, but as a compact; as an instrument in the nature of a league, treaty or articles of association between the separate, independent and sovereign states;" and 3. The partial national theory of Madison and Jackson, which "regards the states as originally independent sovereign commonwealths, but as having surrendered to the United States a portion of their sovereignty to be held, not at the will and pleasure of the single states, but absolutely and irrevocably."

The first of these theories has been the one generally accepted, and this preference has been strengthened by the necessity felt during the rebellion for a strong government; as well as by the conviction that the opposing doctrine of state sovereignty gave strength to the rebellion. In long continued peace, however, and

in the lack of necessity for a strong, central government, there will probably be, as De Tocqueville shows there has been hitherto, a continual encroachment by the states upon the central power; an encroachment so great that De Tocqueville supposed our national government could endure no violent attack upon its authority; but the last words, nearly, of Bulwer were, "the American republic is the only one worth studying; for it has lasted."

The complete national theory gains strength again, however, in the fact that steam, telegraph and press are condensing, as it were, our people into a smaller space practically, than New England occupied a hundred years ago. Trade, transportation, news, business of nearly all kinds is confined no longer by state limits, but goes from lakes to gulf, and from sea to sea. The extreme doctrines of state rights are abolished, not by statesmanship, but by steam and electricity. National legislation becomes a necessity where it would once have been an absurdity. National officials must control and perform functions that in the days of Hamilton and Jefferson were not even dreamed of, not because we have lost our liberties, but because more than ever before we have become one, *E Pluribus Unum*.

The American's devotion to the idea of national union is more intense than ever. It has been a perpetual marvel to foreigners, that so practical a people should cling with such fanatical fervor to an abstract idea. But it is easy for us at least to see that this is a natural result of our form of government. Our loyalty clings to no man or set of men. The union is the state. It binds together what else would be shattered fragments, and the allegiance of the citizen attaches itself not to the divinity that lodges about a king, but to the solemn compact of perpetual union made by Washington and his associates in 1787. But the devotion of the American to the idea of liberty, to the principles underlying the Declaration of Independence, is stronger than even his love of the union which was made to maintain and perpetuate that liberty. In the light of this, whether we would or not, we construed the constitution, and in its light we must construe it to-day and in days to come. When men tell us that the prohibition against passing any state law impairing the obligation of con-

tracts, means that we are handed over to a corporate power within the state to do with as they list, they are as false teachers as the men who pronounced the Dred Scott decision. The freedom of the citizen, whatever be the fate of African slavery or railway despotism, must and shall be preserved.

Our national, as well as our state legislation, has been tampered with, and is too much in the interest of capitalists, and too little in favor of the people. Tariffs, so far as they are protective of industries that employ but a small portion of the population, schemes of finance that depreciate currency and leave it without any certain value, are profitable to men of capital and to shrewd speculators, or rather gamblers in stocks; but they are a heavy tax upon that portion of the population that is not speculative and must earn its living painfully by manual labor. The farmers, the mechanics and the laborers of this country should have specie payments, a fixed and unwavering currency, and low taxes on articles of necessity.

Still more discreditable, if not more injurious, is the influence that has sought and gained enormous grants of land for railroad corporations, and has interested itself in the election of senators of the United States who were known to favor its iniquitous schemes. The leading railways of the country are the real constituency of more than one of our congressmen. You or I may do the voting, but we are too often the machines; back of us are the powers that elect. It is not a republican or a democratic crime. When Jay Gould was asked how he manipulated the elections to the New York legislature, he answered: "In a republican county I was a republican; in a democratic county I was a democrat; in a doubtful county I was doubtful." There is not a shadow of doubt but that both of the great parties in the country—that is the representatives of the whole people—have thus been, wittingly or unwittingly, made the tools of corporations.

"Eternal vigilance is the price of liberty." We have neglected the duties of freemen, and we are getting a fit reward. But with political institutions that express the Divine purpose and formulate the result of our latest civilization; with political theories that have not only revolutionized the past, but stretch forth into

the dreamland of the millennial future, our mission is not accomplished, our hope is not abated, our faith in republican-democracy abides, strong and steadfast.

But before us impends a contest with chartered privileges, entrenched in statutes that are called contracts, fortified by decisions that, it is dimly suggested, are too sacred to be questioned. It is a contest in which you, the men of the west, must lead. To you the nation looks. Nine years ago, as our civil war drew near its close, the *North American Review* paid this honorable tribute of New England brain and culture to western ability: "No friend of democracy, who has watched the course of the west in this war, can help feeling his blood stirred and his hopes strengthened by the vigor with which it has thrown itself into the strife, and the great richness of the blood and brain which it has sent into the arena. All the great generals of the war are western men. No higher capacity for organization, for conceiving great enterprises and conducting them with courage and fortitude, accuracy and punctuality, has been displayed than in those mushroom communities which, yesterday, were not. And, if we turn from the military to the political field, we find everywhere the most striking proofs of the sagacity, foresight, patriotism and tenacity of their population."

And in a sermon delivered at the Broadway Tabernacle church last May, I find that earnest patriot and christian, ex-president Woolsey, uttering such words as these of the agricultural class of the west: "They are placed in that condition in which men see that labor is the source of all production; they are likely to have simple tastes; they are independent and manly. Our farmers in the west were saviors of the land, more than any other class, in the late war. * * * I hope to hear loud voices from them, which will make men of evil, east and west, quail: We abhor you, ye political corruptionists! ye men of bribes! ye managers of parties, who want to see knavery in high places of trust, that you may be respectable! We can stand changes of party, but we cannot stand falsehood and want of principle. We must have good men for our leaders, or we will overturn all existing parties and consign you to your appropriate disgrace.' "

At the conclusion of Mr. Flagg's able address, Secretary Field

stated that Hon. W. R. Taylor, Governor of the state, and President of the State Agricultural Society, had been announced to make brief remarks on this occasion, but that he had that day tendered his resignation of the latter office to the Executive Board, then in session, and respectfully declined to appear before the convention, although urgently solicited by the officers to do so.

J. S. Stickney, President of the Horticultural Society, was then introduced, and spoke as follows :

LADIES AND GENTLEMEN: The horticultural fraternity as compared with the agricultural, is very small ; but like most small people we feel quite large, and are impressed with the idea that we are favored with more than an average of the luxurious and beautiful , that ours is the music and poetry of life, while the labors and cares fall more heavily upon others. With our conceit and egotism, however, we also are large hearted and generous. So anxious are we that all should share our good things, that we keep constantly in the field a large force of *missionaries*, as we call them, but sometimes an unappreciative public call them *rascally tree peddlers*. These men are earnest and persistent, as doubtless many of you can testify, and if the choicest fruits and flowers do not abound, it cannot be their fault. Unfortunately, our homes and their surroundings are not such models of skillful planting and careful culture as they should be. This, however, is but another illustration that theory and practice may differ widely, and should be no excuse to him who would make the most of his rural home.

Seriously ; our interests are much the same. We all depend upon mother earth for every good. We all need a better knowledge of the capabilities of the soil. To most fully develop the resources of our farms, to make our homes most beautiful and attractive, to interest and engage the largest possible number in these things, is work for us all to do, and work that in the doing will increase our wealth and enlarge our minds and hearts. Let us each and every one seek to do this with all our might, mind and strength.

Adjourned to 9 A. M. Thursday.

The State Agricultural Convention finding the agricultural rooms too small to accommodate them, met in the Court Room, by the courtesy of the clerk of the court, at 9 o'clock A. M., Thursday, and was called to order by Secretary Field, who stated that at the request of President Stilson he would preside over their deliberations. He congratulated the farmers upon this auspicious gathering for the advancement of the industrial interests of the state, and for bettering the condition socially and mentally of the agricultural classes. He said that he would have preferred a delegate convention, composed wholly of representative men of the state, district, county and other industrial organizations, including granges, clubs and other kindred associations, but that in consultation with members of the executive board of the state society, under whose auspices it was to be held, it was thought advisable to invite these societies to send delegates, and also to ask leading agriculturists and intelligent farmers of the state who felt a direct interest in agricultural pursuits to attend this convention and actively participate in its proceedings. Hence, while no credentials would be required, but all were invited to take part in the work, he would thank those who were present as representatives of any organization, to hand in the names of the delegates, with the name of the society represented, that they might be published with the minutes of the convention.

On motion, O. S. Willey, Esq., was elected secretary, and Hamilton S. Wicks, assistant secretary.

The following societies, granges and clubs were represented:

State Agricultural Society.—President, Eli Stilson; Ex-President, B. R. Hinkly; Vice President, Rufus Cheney; Ex-Vice President, Chas. H. Williams; Dr. C. Loftus Martin, member of the Executive Board, and Secretary, W. W. Field.

State Horticultural Society.—President, J. S. Stickney; Secretary, Geo. E. Morrow.

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

Minnesota Horticultural Society.—President, John S. Harris.

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

Oshkosh Horticultural Society.—Vice President, Jas. Brainard.

Beloit Industrial Association.—J. N. Chamberlain.

COUNTY SOCIETIES.

Marathon County.—Hon. W. C. Silverthorn.

Kenosha.—Jas. M. Kellogg.

Waukesha.—E. Beaumont, W. R. Blodgett, E. Porter, Daniel Brown, J. Johnson.

Richland.—Hon. Wm. Dixon, J. H. Carswell, John Winn.

PATRONS OF HUSBANDRY.

Sherman Grange.—John Town, A. M. Carter and H. Johnson.

Columbus.—E. Sherman and P. B. Richmond.

Du Lac.—Hon. S. C. Carr, L. T. Rogers, John Stockman, J. G. Carr, J. J. Dennett, J. C. Plumb and C. H. Greenman.

Rock County Central Association.—Hon. A. Sherman, Hon. A. M. Carter and Seth Fisher.

Somers.—I. W. Rhodes.

Galesville.—Isaac Clark, H. French.

Leroy.—E. H. Benton.

Ladoga.—Chester Hazen.

Lodi.—S. Ranols.

Janesville.—Silas Ward.

Oregon.—J. C. Kiser.

Badger.—V. S. Hollister.

Greenbush.—J. Stoddard.

Burr Oak.—Joshua Rhodes.

FARMERS' CLUBS.

Prairie Farmers' Club—John Isaacson, Christian Iverson, Edwin Burgeson and N. Jenson.

Union—R. J. Paynor and C. Paynor.

Utica—R. W. Brown, W. H. H. Coon and W. B. West.

Spring Valley and Magnolia—Wm. Alcott, N. N. Palmer and C. F. Dickey.

Mount Horeb—Geo. Beatty, A. Levendson and Edward Noon.

Scotch Hill—Wm. H. Cole.

Lowell—J. M. Scovill.

Leeds—J. W. Robinson and S. J. Scott.

Windsor—Col. C. E. Warner, H. Perry, W. Blancher and J. E. Carpenter.

Rosendale—W. J. Jennings, W. T. Innis, G. C. Hill and Wm. Scribner.

Norwegian—S. O. Onsgard.

Live Oak—R. T. Roberts.

Hingham—Charles Rogers.

Bristol and Paris—L. W. Thayer.

In addition to the above mentioned delegates, the following named gentlemen were present and took part in the convention: Lewis McHahan, Monroe; T. S. Powers, Tomah; Alfred Palmer,

Boscobel ; John Dinsdale, Fennimore ; Professors W. W. Daniels and S. H. Carpenter, of the University of Wisconsin ; the Morrow Brothers of the Western Farmer ; O. S. Willey, Madison ; Prof. T. C. Chamberlain, Beloit College ; Dr. R. P. Hoy, Racine ; Hon. Alex. Graham, Janesville ; Hon. Hanmer Robbins, Platteville ; J. D. Wood, Baraboo ; Hon. Levi Alden, Madison ; and many other leading educators and practical agriculturists of the state, including several members of each branch of the legislature. The first paper read was upon

CURRENCY, TAXATION AND TRANSPORTATION.

BY HON. M. ANDERSON, CROSS PLAINS.

These are subjects that we as farmers are more deeply interested in at present than any other questions, and as they are now being discussed, not only in the halls of legislation, both state and national, but throughout the whole country ; therefore, we, as farmers, assembled to take council of each other, should discuss and thoroughly understand those questions, so as to enable us to unite in an effort to right the wrongs we have suffered from legislation and want of legislation.

I believe that history will sustain me in saying that upon the financial condition of a nation depends, to a great extent, its prosperity. If this be true, it is of the utmost importance that our government should look well to the financial affairs of our country, and in every legal way control the same to the best interests of the whole people. But more especially should our finances be regulated so as to do the greatest good to the productive energy of our country. A large majority of our population being employed in tilling the soil, manufacturing and mechanical pursuits, it would appear but just and reasonable that their wants and interests should be first of all other classes taken into consideration. I believe that every intelligent man will acknowledge, that upon the productive industry of a country depends mainly the welfare, success and prosperity of every avocation. If all wealth comes from the soil, and from productive labor, I think it is but just for those engaged in such labor to demand of our government

that the financial affairs of the country shall be made to conform to their wants and necessities, so far as can be done in justice to other interests. This will lead us to inquire what those wants are and how they can be best supplied. They cannot be supplied by contraction, but may be by that much feared word (to those who worship the golden calf), *Inflation*. In other words, we should demand, that so long as our government control the currency, we should have a sufficient amount of it furnished to transact our business to the best advantage, and reduce the present exorbitant rates of interest to a rate that our business can afford to pay.

This, I claim, we have a right to demand of those we send to legislate for us, as the farmers, not the capitalists, will have to redeem and make good all the legal tenders, and pay them in gold. It is the farmers that have to create nearly all the wealth, and furnish all other classes the raw material to work upon, and, finally, they have to pay for all. Therefore it is not unreasonable to ask that the legislation shall be such as to give us the best facilities to accomplish that upon which the prosperity of all the people so much depend.

What I conceive to be one of the greatest wants, of not only the farmers of the west, but also of the business men, is more money at low rates of interest. The state of Wisconsin, outside of Milwaukee, has only \$2,000,000 of bank circulation, or only two dollars to each person. Boston has \$26,000,000 of circulation, or about \$104 to each inhabitant, and has loans to the amount of \$84,000,000, or about \$316 to each person. It will be seen that Wisconsin has but a small portion of the \$700,000,000 of currency said to be in circulation. In the New England states, where nearly all the business is done in cities and villages, and can be done through bank checks and exchange, they do not need as much currency to do the same amount of business as we do in the west; but they have got what may be called the lion's share of the present bank circulation. The west and south ought to demand their proportion of the banking capital. The legislation of the country, however, has been under the control of the eastern capitalists, and the laws have been made to enrich them at the expense of the producing classes of the west and south.

There are so many currency tinkers at work that, for me to give a plan would seem useless; but, whatever plan is adopted, it ought to reduce the rate of interest to five per cent., as that is all the producing classes can afford to pay, and is more than they make out of their capital invested in farming. There is no good reason why strips of paper, called money, should bring a larger income than the same amount of money will bring when invested in almost any productive industry. So long as money-lenders receive a larger income on loans than can be realized out of real estate, there will be a dull and declining market for our farms.

Among the most feasible plans that I have seen, is for the government to issue bonds convertible into currency, and currency into bonds at the pleasure of the holder. Interest to cease on the bonds when given as security. This is called an elastic currency. If currency accumulates it can be converted into bonds, and if a stringency occurs, bonds can be changed into currency. Any plan that will furnish good money and enough of it to prevent the people from being bankrupted when a panic occurs by reason of one of the stock-gamblers failing to make his pile out of some scheme for a railroad that is to begin and end nowhere. Our present, and I might say all previous, system of banking has failed to furnish relief to the business men when most needed. Instead of banks being able to furnish money when there is a sudden panic, they have to call in their loans, thus adding to the embarrassment of the business men, and frequently causing heavy loss and ruin to many of the best business interests. We have a right to, and should demand in the most emphatic terms, that our law-makers so amend the present plan of distributing the currency as to place it where it is most needed to move the produce of the country. There is no good reason why a few men who have by some means combined and got hold of and control the circulating medium called money, should be allowed to use all the working classes as their slaves—compelling them to work hard year after year and give all the profits of their earnings to pay for the use of those strips of paper called legal tenders. The people are being convinced through the discussion of this subject, that such men as Amasa Walker

and others are making a fundamental mistake in considering our present currency like that of old mixed bank currency, founded on promises to pay in gold. The people know very well that there is not gold enough in the United States to be a basis of the currency we have, and the currency we need. Yet, that they consider the currency perfectly sound, is evident from the fact that during the late panic, instead of trying to get rid of it, they hoarded it. The basis of our currency is not gold, but the nation's honor, guaranteed by the national loyalty and the general interests of its members.

The people value it because it will buy and pay for anything they wish to purchase in the union. They value it because our highest courts have decided that it is lawful money for the payment of all debts. The reason why farmers have to take gold prices for their produce, while they have to give from 25 to 50 per cent more for all they buy, is not on account of the depreciation of the currency, but on account of its appreciation and scarcity, and on account of the tariff, which taxes the goods sent in exchange for our products from foreign markets where they are sold. Farmers ought to know that if it were not for the tariffs, manufactured goods here would have to compete with those from abroad—as our products must.

There is no protection on what the farmer produces; he has not only to compete with those engaged in his occupation in our country, but also with the low priced labor in Europe, after paying freights on his products for 4500 miles to reach foreign markets.

When the people get to understand how they have been compelled to pay tribute to the capitalists, and how the capitalists have controlled the legislation of this country by bribery and corruption, and by munificent gifts to men whom they expected to work in their interest, when in power; when the toiling millions get thoroughly aroused to a sense of the way they have been controlled, and swindled by the capitalists, through national legislation, the driving out of the ancient money changers from the Temple, will be a mild affair in comparison to the kicks and cuffs they will receive from an outraged people.

Taxation is a subject that farmers are interested in, and one

which ought to be investigated, to see whether we are paying more than our just proportion. I believe nearly every farmer has felt, that we have been heavily taxed, while the wealth of the country has escaped. Our present mode of levying and collecting taxes is but a slight modification of an old scheme devised to make labor pay all public burdens, and is little less than legalized robbery of the laboring classes. In this matter of taxation we farmers are more outrageously imposed upon than in anything else, we are not only taxed upon every farm implement we buy, and upon all our household purchases, but a levy is made by trade upon every dollars' worth of our sales or purchases to pay the city's tax, however exorbitant it may be, so that in fact we bear the whole public burdens, from the road tax to the army budget. And men that fatten upon these taxes will never release their grasp upon our purses, until a farmers' earthquake shakes the ground beneath their feet.

What should be thought of the intelligence and honesty of those who compose a large majority of the voters of our country, who have cast their votes in favor of permitting themselves to be used as pack mules to carry the burdens which ought to be borne principally by the wealth of the country.

The excuse for exempting bonds from taxation was that it was a war measure, and that we had to hold out some inducement to have capitalists invest their *depreciated currency* in bonds bearing six per cent. interest payable in gold. So patriotic were the people at that time, that the word war measure caused them to submit to paying the rich bondholders taxes. But that excuse will not do now, and cannot be used to palliate the gross wrong inflicted upon labor, by exempting from taxation the new bonds, which have been issued to fund the 5-20s. Our guardians whom we elected to take care of our interests, and transact our business at the national capital (many of them bondholders), agreed that they would compel the producing classes to pay both principal and interest in gold, for the bonds that were payable in legal-tenders, and that they should be exempt from taxation, thus permitting the wealthy capitalists to go untaxed and compelling us to pay not only our proportion of the taxes, but the rich man's also.

Thus we have not only to pay the bond-holder's losses, but also to pay about \$800,000,000 in gold to the holders of these bonds more than we received in gold for them. Thus agreeing that such a large sum shall unjustly be transferred from the pockets of the people into the coffers of the bond-holders. If the already tax-ridden people will patiently submit to this outrage, there will be no hope for them being aroused hereafter, for they may be expected to bear any burden that may be piled upon them. How long will farmers submit to being misrepresented by such men as now control our National Legislation, in the interest of eastern capitalists? We ought to turn out every one of the old political hacks, who have been misrepresenting us, and send intelligent working men who will represent our views and our interests.

I need not tell this intelligent audience that the consumer pays the duties on imports, or that the farmers have to pay the whole of the tax collected on railroad iron, and upon all material imported and used in constructing and equipping railroads. If we consider that the expense of building and running the same comes principally out of the pockets of the farmers, it will be some excuse for us being interested in their management, and for insisting that they shall be our servants, not our masters.

But when we add to this list of taxation, another tax which the late secretary of state (Mr. Breese) recommended, to wit: that we should pay all the state tax collected in this state. Many farmers thought it was a bright idea of Mr. Breese, to make the railroads pay at least \$1,000,000 a year, and save all other classes from paying state taxes. But nearly every dollar of that million would come out of the pockets of the farmers by increased freights on the produce shipped over the roads. We think Mr. Breese was only joking, when he recommended in effect that we should pay every man's state tax, as well as our own. I have no doubt but a large number of farmers believe that our state legislature ought to pass a law to tax railroads the same as other property. Such a law appears to those who have not investigated the matter, to be what in justice we ought to demand. But when it is known that all such taxes instead of coming out of the coffers of the railroad companies, come out of the pockets of the farmers, whose produce is shipped over the roads, (in legal parlance, the

case being altered, alters the case) as every dollar that railroads pay out they must collect of those who use their roads.

That under whatever pretense or mode taxes are levied on these commercial facilities, they are nevertheless ultimately a tax on transportation, to be paid in fact by the owner, producer and consumer of the property transported, and therefore it is not the interest of the farmers to have railroads taxed for local purposes, as it would compel us to pay a portion of the local taxes of every town, city or village through which a railroad passes. A few cities where there is a large amount of railroad property, and where there is a heavy local tax, would be benefited by such a law. But I do not wish to have farmers compelled, either directly or indirectly, to pay any portion of the local taxes of any city, town or village where they do not reside. What I do want, and what our law makers should attend to is, to as far as possible, compel an honest and economical management of railroads, under a board of commissioners, who shall adopt such restrictions and regulations as are necessary to render them most beneficial to all the people. If we could tax capital invested in railroads, express and telegraph companies without having it added to the present exorbitant rates charged and collected of the people, I believe it would be but just to do so. But if such tax has to be paid by the already over burdened farmers, for the benefit of others, I am opposed to such tax.

We paid in this state last year, a tax amounting to \$7,395,131. This was about seven dollars for each person in our state, and yet we are one of the lightest taxed states in the Union. The income tax was the only tax that reached accumulated wealth, and that is now abolished. I think it ought to be renewed; it taxed those best able to bear it. If every one was taxed two per cent. upon his net income over \$1,000, it would raise a large revenue. If the farmers were only taxed upon their income over \$1,000 I think there would not be much tax collected in my section of country. We farmers ought to demand that every class of property, especially accumulated wealth, be taxed as high as our lands are. We are taxed on what we owe as well as what we own. If I buy a farm for \$10,000, in payments of \$1,000 a year, I have to pay taxes on the farm, and the man who holds my notes has

to pay tax upon the notes, thus taxing our property twice. This is unjust and ought to be remedied, as it is a heavy burden on the debtor class, and raises the rate of interest on those purchasing real estate. But I must turn from this unpleasant subject, for if I were to figure up the hundreds of millions collected of us every year in the shape of national, state and local taxes; if I were to show that our national government collected of us during the last ten years eight billion eight hundred and eighty-five millions of dollars, or an average of \$885,000,000 a year, some of you might begin to think that our republican form of government had become an expensive luxury; therefore, I will speak to another subject that we, as farmers, are interested in.

Cheap transportation to the markets of the world, is one of the greatest wants of the present age. Not only is this true as regards the interests of the farmers, but all other classes are interested in having cheap rates of freight. The consumer as well as the producer, will be benefited. But whatever increases our exports, so as to bring into our country large sums of money, will be beneficial to every one. If this was generally understood and acted upon, I think there would arise a call from all over the land, that would awaken to a sense of his duty the most obdurate old bourbon that now holds a seat in the halls of our national legislature, who opposes legislation on this question.

How to accomplish cheap transit between the western states and the Atlantic seaboard, is attracting the attention of some of the ablest minds in every section of the union. Self-interest will lead men in different localities to favor schemes beneficial to themselves. The improvement of the Mississippi river is advocated by those interested in its commerce. The Wisconsin and Fox river improvement, has many advocates in our state. But by far the largest number of our people would be but little benefited by that improvement, even if it should prove practical, which I very much doubt. The various water routes from the lakes to the Atlantic have their advocates. It has heretofore been considered that canal transportation was the cheapest for heavy bulk freight, which is not liable to be injured by heating or moisture, which is sometimes the case with new crops of grain, or grain which has

began to heat in elevators, as was the case with corn in Chicago elevators two years ago.

In such cases, long voyages by water would be ruinous to the cargo. Therefore it is best not to be dependent upon one route or means of transportation. The Erie canal has been one of the chief routes from the lakes to tide-water for carrying grain, but within a few years the railroads have shot far ahead of it in carrying freights. Since 1861 the average yearly business on the Erie canal has only been 19 per cent. greater than for that year, whereas the business of the railroads in that state has been 89 per cent. greater. New York, and especially the Erie canal, is losing its former proportion of the commerce of the west. The average amount of grain carried by all the canals in New York, for the last five years, was 48,000,000 bushels. This amount, as large as it seems, could easily be carried from Chicago to New York by a double track freight railroad in 100 days, running forty-five trains a day, thirty cars to each train, ten tons to each car. If all the freight passed through the canals in the state of New York, was wheat, it could be carried as above stated. But in the year 1872 the amount of wheat carried by canal was less than 11,000,000 bushels, the balance was corn, oats and barley, so that forty trains a day would be nearer the number required to move it.

For the last six years the rates of freight on wheat from Chicago to New York by lake and canal has averaged \$7.23 per ton and on corn \$6.92½. Mr. Vanderbilt has said that he can carry grain at a profit on an all freight railroad, at the same rates that the Erie canal has charged. I want to show that wheat can be carried from Chicago to New York for less than the above charges, and in one fifth of the time by railroad, and avoid the risks and insurance of lake navigation. Josiah Quincy who has had 25 years experience in railroading, says that a freight train of 20 cars, 10 tons to the car, can be run 1000 miles for between six and seven hundred dollars. The above rates of lake and canal charges would amount to \$72.35 per car of 10 tons, or \$1,447 per train of 20 cars. As the distance from Chicago to New York is about 900 miles, it will be seen that the lake and canal freights are more than double what Mr. Quincy says it can be carried for.

But on a well graded road with the best class of freight engines, thirty cars of wheat can be hauled. If we count 30 cars to a train each train would amount to \$2,170. It will take no more hands for a train of thirty cars than for one of 20. The difference in fuel and the wear of the extra 10 cars would be small in comparison to the extra amount received.

Mr. Hurlbut of Illinois, introduced a bill in congress a few weeks ago, to incorporate a company to build a double track freight railway from Council Bluffs, Iowa, to New York, which limited the charges on bulk freights, for a distance less than from Chicago to New York, to one-half cent per ton per mile. This would be but little more than \$4.50 per ton from Chicago to New York.

It is but reasonable to suppose that Mr. Hurlbut knew that amount would be a fair compensation, or he would have laid himself liable to the criticisms of railroad hirelings in congress. Should any better showing than this be asked to convince any reasonable man that freight railways are what we need to carry our crops to market? The old fogies who still believe that we should depend upon lakes and canals that are frozen up nearly six months each year, to carry the vast products of the west and northwest to the Atlantic, remind me of some old wagoners that I was acquainted with when a boy in Pennsylvania, who thought they could haul freight from Philadelphia to Pittsburg in opposition to the railroad and canal. They tried a few trips with their six horse teams, but soon discovered their mistake. So it will be with the antedeluvian sticklers for canals, when freight railways have been constructed between the Mississippi river and the Atlantic—it will only be a few years until the most obdurate old bourbon will be converted in favor of freight railways.

The constitutionality of the power of congress to regulate commerce between the states, is now acknowledged by the best legal talent in our country. The committee in congress on railroad transportation, with Mr. McCrerey, of Iowa, at its head, has made an exhaustive report and argument on this subject, and shows, beyond all reasonable doubt, the power by congress to regulate freight and fares on railways traversing more than one state. That it is not only right but just and expediant, for congress to so reg-

ulate transportation as to prevent extortionate charges, there can be no question. I am pleased to see that some of the ablest men in congress, advocate the building of freight railways from the Mississippi to the seaboard, and the control by congress of through lines already built. This is the only hope we have of speedy relief from the extortionate rates of freights we now have to pay.

Let us insist that our state legislature shall pass a law creating a board of railroad commissioners, with full power to correct abuses by bringing suits in court in the name of the state, for unjust discrimination, or extortionate charges, by railway or express companies. This, with a good *pro rata* freight tariff, on the roads within this state, would relieve the farmers from some of the burdens which now exist. There is no law in this state to prevent railroads from charging what they choose, or charging double rates from one station over another at a greater distance, thus placing it within their power to ruin the business of any station, and consequently be an injury to all property in villages at such stations.

"WE CAN AND WE WILL"

was the language used by Vanderbilt, when he was expostulated with against the increase in freights at the beginning of this year, when a combination was entered into between the main lines from the west to the east to raise freights from Chicago to New York, which they did on some classes of freights, five dollars per ton.

How long will the farmers submit to being robbed by the Vanderbilts and the Scotts and their co-workers.

I believe our only hope of obtaining justice of railroad companies, or laws from our state and national legislatures that will regulate railroads, is to make our power felt through a thorough organization of farmers who will stand shoulder to shoulder, in defense of our rights.

The stockholders of our railroads during the summer ascertain through their agents located in every county along the line of their roads, the probable amount of the crops to be shipped. They sit in their office in New York, figure up how much they will take of our crop to carry it to market. Senator Oglesby of Ill., in a speech in the United States' senate, said that the charges imposed by railroads, steamboats, warehouses and middlemen ex-

ceeds three fold the amount paid to the producer. The people of this state in common with the people of the whole Union have now a grave responsibility forced upon them. While I concede the necessity of railroads, and I believe our prosperity is most intimately interwoven with that of the railroad system, yet I believe they should be controlled by the state. They collected from the people last year in this country, \$455,000,000. This large sum came largely from the producing classes.

Let us be united in a common brotherhood, and stand together until these gigantic corporations who have been grinding us as between the upper and the nether millstone, shall be compelled to serve the whole people honestly, and acknowledge that the farmers have some rights which they are bound to respect.

Mr. Carswell desired to know whether Mr. Anderson was in favor of more currency and lower rates of interest, and also whether he favored abolishing all laws upon the subject of tariff and supporting the government by direct taxation.

Mr. Anderson said that he was in favor of the first proposition, but did not favor the abolition of tariff, nor did he favor direct taxation.

Mr. Robbins, of Grant, stated that the views of the writer were not in harmony with his experience in railroad transportation, and that the average cost per ton per mile, was much below the figures given, and did not exceed one cent.

President Stilson advocated the improvement of the Fox and Wisconsin rivers and other water routes, as water transportation would ever be a competitor of railway lines, and that it had been pretty fully demonstrated that water communication was much the cheapest. With great national highways of water communication open during the season of navigation, he said that freights would be kept down and vast sums saved to the producers of the state and to the whole northwest. Said he should be glad to give certain facts and figures relative to the improvement of the above named river, but did not have them at his command; believed in the work being pushed vigorously forward, as it was, in his judgment, one of those great enterprises which

would, when completed, benefit alike the producer of the west and the consumer of the east.

Mr. Anderson thought the Wisconsin river never could be made navigable for boats of sufficient size to be of practical value to our people on account of shifting sands, etc. He thought railroad transportation preferable to water, and he believed the people would come to rely almost wholly upon the former mode, as it could be done as cheaply, much quicker, and with greater safety. He believed the old foggy notion of water carriage, closed as it was for more than half the year in this state, dull and slow at best, would be in time abandoned for the iron horse and the steel rail.

Hon. A. A. Boyce remarked that he believed the navigation of the Fox and Wisconsin was entirely practicable, and he referred to the opinion of the United States engineer, whose report fully concurred in this view.

A valuable and highly interesting paper was then read by Vice President Cheney, upon a subject of vital interest to the state. I give it in full.

THE IMPORTANCE OF MANUFACTURING WITH THE PECULIAR ADVANTAGES IN WISCONSIN FOR SUCH BRANCH OF INDUSTRY.

BY VICE PRESIDENT RUFUS CHENEY.

Mr. President and Fellow Citizens: The wisdom which inaugurated these annual meetings was fully demonstrated by the address, essays and discussions of last year, to which we all listened with so much interest, and which form so important a part of the volume of Transactions, which volume, in my opinion, is not excelled by any similar publication in the United States.

The discussion of agricultural and manufacturing subjects is of the greatest importance, and should receive very much more attention than is ordinarily devoted to it. Especially is this true of the great and paramount interest of manufacturing in our state, so plentifully supplied with raw material of almost every kind. As a state, we are among the youngest of the sisterhood, our popula-

tion forming only about one-fortieth part of that of the United States.

True, there are many articles of luxury and some of utility which we cannot expect to produce, but our deficiencies in this respect are by no means discouraging, as the progress of the past ten years clearly shows, having nearly trebled both in capital and products, and yet there remains a sufficient amount of undeveloped power to drive the machinery of the nation. To prove this, I need only mention the Fox with its almost unbroken water power from lake Winnebago to Green Bay, with lake Winnebago serving as an inexhaustible reservoir. And I may add no better or more available water power can be anywhere found in this country than this same irresistible Fox. Then, too, there are such others as the St. Croix, Wisconsin and Rock. Another fact should not be forgotten, and that is, the general education which is the natural outgrowth of all manufacturing.

A variety of industries would give employment to a much larger number of persons, mentally and physically, thus increasing the general intelligence of the people. Thousands of the youth of our state now growing up in idleness, ought to be engaged in some honorable and useful employment, and what can serve this purpose better than manufacturing? All are not born for the professions, nor all for the plow, but to produce something both new and useful should be the ambition of each.

The first question is, or should be, the economy of material. What can be made of it, and what will it pay?

In this way will be found the value of every material used or produced in the state. Let too many follow one branch of trade and the whole will be seriously affected, and in many instances will bring calamity upon the entire community. But multiply machinery, invoke the aid of the inventor, utilize our native forces, and the home of the laborer will be made attractive as well as instructive. Give to some of our European brethren the machine shop and they will work their way to independence. No one doubts that the introduction of manufacturing increases the general wealth, giving greater value to lands and homes, uniting men of small means and often bringing money from abroad, thus making money subservient to the wants of the laborer.

Acquired ascendancy is often the result of skilled labor. Especially has this been true in the case of Great Britain. At the shrine of skilled labor the nations of the world have been compelled to bow, and if the workman be true to himself and his family, he will find that the treasury of *our* country is at his command, and he will cease to be called a "hewer of wood and drawer of water."

The acquisition of mechanical skill should occupy a prominent position in the education of the young, securing all the advantages usually awarded to the professions, by opening to the studious and the ambitious a field of labor no where excelled, a field so diversified as to give constant employment to the races of earth for ages. The question arises, How may this be accomplished? We answer, Let a school of mechanical arts be established in connection with our State University. Let as much effort be expended in the education of first-class mechanics as in the production of first-class lawyers, physicians and clergymen, at least effort enough to produce a first-class workman. This would do much to place the mechanical arts where they belong, on a par, so far as honor is concerned, with any of the so-called learned professions. Heaven speed the day when the educated laboring man will be considered the peer of any man who walks the footstool of the Great Master Mechanic of the Universe.

With our present facilities, there are few if any of our towns, and none of our cities, which do not possess peculiar advantages for manufacturing. With our great lakes on the north and east, affording a direct communication with the eastern states and the Atlantic; the Mississippi on the west, making a grand highway to the southern states and the Gulf, and with our lines of railways uniting these and visiting in their course most of the accessible points for this class of industry, thus affording a cheap and rapid transit for the raw material as well as the manufactured article, who can determine the future of this already great state?

With the abundance of our ores, instead of shipping them in such vast quantities, paying a profit to the eastern manufacturer and the tariff for the return of the manufactured article, there ought to be in our midst the furnace, the rolling mill, the iron and nail shop, the lead and copper works. Along our water

powers should be heard the hum of the spindle, the chatter of the loom and the din of the more important machinery for the manufacture of useful articles. The woolen mills now in active operation in Wisconsin have long since proven the foolishness of exporting our wool and then importing the manufactured fabric, and with so great advantages, such cheapness of raw material and the already glorious results, we know of no reason why scores of such establishments should not furnish employment for thousands of hands, and Wisconsin manufacture woollens enough to clothe the northwest.

And yet our greatest need is manufacturing. Our commercial, mining and lumbering interests are growing in importance, but manufacturing is not keeping pace. Pennsylvania with her oil, coal and iron is fast becoming a wealthy state and shall we not in Wisconsin, with our vast amount of raw material, profit by her example?

New England, with her sterile soil, producing but a small proportion of the agricultural products needed for her use, is able by her manufacturing to buy our produce, transport our raw material and return to us the manufactured goods for consumption. This ought not to be, and the lack of manufacturing establishments is the only reason why it is so. Few if any of the states possess greater advantages than Wisconsin—a healthful climate, imparting vigor both to mind and body, its mines of ores of untold wealth, only awaiting development to make one of the greatest possible sources of wealth, its lumbering interests unsurpassed, and its water power of inexhaustible capacity. With these advantages, what can prevent her future greatness if only the machinery be set in operation? If our young men will only direct their attention to this honorable, useful and remunerative employment, it is to be hoped that neither the attractions of the learned professions nor the wealth of the merchant, will longer blind them to these, so important interests, which contribute so largely to the education, social culture and material wealth of this our adopted state. It would be interesting, had we the time and statistics to show, both in Wisconsin and other states, the importance of this branch of industry as compared with others, but I must content myself

with the mention of a few well known establishments, all of which prove beyond a question the truth of our statements.

Prominent among these are the Reliance Works of Milwaukee, conducted by E. P. Allis, which challenge comparison with any other establishment of the kind in the northwest, and of which every citizen should be proud. The shops of J. I. Case & Co., of Racine, established in 1842, are now the largest, if not the best, manufactory of threshing machines in the world. Janesville is doing much to convert the raw material into the useful article. Kenosha, too, has its manufactories, giving life and energy to its inhabitants. Fond du Lac extensively makes its sash, doors and blinds. Oshkosh deafens you with the sound of its saw mills, while along the Fox are mills and machinery both important and useful. Beloit, with her iron, paper, wood, boot and shoe manufactories, has already risen to the proud eminence of the second manufacturing city in the state, and its education, moral culture and general intelligence is cheerfully admitted.

Even Whitewater sends out the machine to scatter the seed broadcast, the reaper to cut the ripened grain, and the wagon to transport it.

Such instances might be mentioned by the score, all showing the good effect socially, morally, intellectually and financially, to the towns and cities where they are located.

To prove that manufacturing in Wisconsin pays, we have made the following rough estimate for the year 1873:

Probable number of establishments.....	9,000
Number of hands employed.....	58,000
Amount paid in wages.....	\$18,000,000
Cost of material.....	62,000,000
Value of products.....	103,000,000

Which, after deducting the enormous amount of 20 per cent. for incidental expenses, yet leaves nearly 25 per cent. on the capital invested.

If the facts be as stated, we appeal to the educator and the inventor, nor will the appeal be in vain. The increasing desire for knowledge indicates not only the magnitude and importance of skilled labor, but a determination to be victorious in the strife.

The untiring energy of the inventor is fast demonstrating that

machinery for agricultural purposes will soon become as perfect as that now used for the mechanic arts.

If you would estimate the progress in this branch of industry, strike out for a single year their use, and return to the implements of our fathers—the scythe, the sickle, the wooden plow and the flail.

In this strife let not Wisconsin be behind. Riches, honor and intelligence are the prizes to be gained, and with our ample facilities, success is certain.

Young men upon whom very soon will rest the future of this great state, prepare yourselves for the various responsibilities, and see to it that

On our prairies, in our forests,
In the valleys rich and fair,
Along our rivers, at our fountains,
Factories greet you everywhere.

Mr. Anderson said that the general ideas advanced by Major Cheney were good, but that to make them available and practical we must have more capital and at a much lower rate of interest.

Mr. Cheney remarked that association in manufacturing and the proper encouragement would bring capital to the state. That we had sufficient water-power to drive the machinery of the world when fully utilized, and that every town and city of the state ought to encourage manufacturing of some kind. That this branch of industry was one of the greatest needs of the state, and was worthy of the most careful thought and consideration.

Secretary Field then read a brief paper by Prof. I. A. Lapham upon the Relations of Geology to the Agriculture of the State, which was listened to with marked attention. The intimate relations which exist between geology and agriculture in respect to soils, disintegration of rocks, artesian wells, supply of water from springs, etc., will make a perusal of this paper not only interesting but highly instructive.

ON THE RELATION OF THE WISCONSIN GEOLOGICAL SURVEY TO AGRICULTURE.

BY PROF. I. A. LAPHAM, CHIEF GEOLOGIST.

The law providing for a geological survey of the state of Wisconsin, includes also, and very properly, provision for some work for the special interest of agriculture; it being now generally known and admitted that these two subjects are so intimately related that whatever is done to increase our knowledge of the local and special geology of any district, tends at the same time to promote the interest of the farmer cultivating land in the same district. The underlying rocks are examined as to their chemical composition and surface arrangement or geographical extent—they are the sources from whence is derived the very soil into which the farmer annually intrusts his seed. Their dip, order of succession, depth beneath the surface, their porous or impervious nature are investigated,—these are the data for deciding about Artesian or other wells, often the only resource for a permanent supply of water for farm purposes; and as the forests become reduced in extent, the necessity for such wells will be gradually increased. The Drift phenomena, gleaned from a study of the loose materials covering and concealing the more solid rocks, left here by the glaciers of the Ice Period, the study of which is so interesting to the practical and speculative geologist,—they have been the means of diffusing and spreading the soil over the rocky surface, commingling and mixing the various clays, sands and pebbles derived from the disintegration of the rocks, in such a manner as to render them best suited for the growth of vegetation. The mineral and other native resources are discovered and made known—they are the materials for various manufactories; and their development creates a home market—the best of all markets—for farm products, thus deciding the great question now so much agitated relating to cheap transportation, by avoiding the necessity of *any* transportation of these products.

The barometrical measurements of the heights and depressions,

required of the survey, will show in many cases the sources of water supply upon which we are dependent for this life-giving element. These are taken as data in the topographical survey, which is to show the general contour of the ground, the extent, elevation and slope of drainage basins or river valleys; the amount and value of water power afforded by these rivers; the proportion of timbered, open and prairie land; the uplands, the swamps and marshes. All such detailed information is of importance to various interests, and especially to the agriculturist.

The geodetic survey, which it is hoped may, through the instrumentality of the geological survey, be extended into Wisconsin by the general government, will also aid in the development of the topographical features of the state, and will show with greater accuracy the exact position of the principal lines of the government land survey, from which are derived and established the boundaries of farm lands, thus often preventing litigation and neighborhood quarrels. It is made the further duty of the survey to search for and properly examine all mineral fertilizers that may exist in the state; to analyze the clays, peats, marls and other natural products, useful either in maintaining the richness of the soil, or of restoring it when exhausted by the injudicious management of ignorant and selfish men. The soil and subsoil are to be made subjects of study, and observations are to be made on the animal and vegetable products with reference to their agricultural interest. Specimens are to be collected, illustrating and exemplifying the geology of the state, which are to be deposited with the various institutions of education, from which the youth of our state may hereafter acquire that definite knowledge of our local geology that will enable them to prosecute their future labors in farming with greater advantage both to themselves and to the country.

It is now very generally admitted that the chemical analysis of soils does not lead to all the beneficial results that were formerly anticipated from this source. The healthy growth of farm crops is dependent upon too many varying conditions, besides the mere quantity of plant food that may exist in the soil, to enable the chemist to detect the cause of any given failure by soil analysis. It was once supposed that we had only to analyze a soil before

and after a crop had been taken from it, to detect the substances that had been abstracted, and thus indicate what should be artificially supplied to stimulate the growth of the next crop; but such is the minuteness of the quantity of plant food, compared with the mass of the soil that chemical science has not yet, except to a limited extent, been able to accomplish this task. Consequently no general effort will be made to analyze the soils of the state; but if any are found that from any special peculiarity, or other reason, seem to require it, such analysis will be made.

Geology is now very properly included among the studies to be pursued in agricultural colleges with a view to its special advantage in the proper cultivation of the soil—a cultivation which shall, without the least diminution of its annual product, perpetually maintain its fertility. Every farmer should know whether his land is underlaid by rocks whose disintegration is beneficial or otherwise; whether these rocks are of the granitic kinds, or whether they consist of sandstone, limestone, or shales. He should also be able to determine the nature of the pebbles, large and small, abounding in his fields, the gradual decay of which from year to year, by reason of exposure to weather changes, frost, rain, sunlight and alternate exposure to heat and cold,—will add useful, or useless, or even deleterious qualities to the soil.

Limestone pebbles especially, by their gradual disintegration, are of the greatest value, by restoring fertilizing substances to the soil that would otherwise soon be exhausted by continual cropping. If these pebbles are of such quality as to be thus beneficial, the land possesses additional value; if otherwise, a larger annual expense for fertilizers will be required. The system of farm management suited to the one case would require modification for the other. Hence it is sufficiently apparent that some knowledge of geology is quite essential to the intelligent farmer, and that it is wise to include it in a course of studies to be pursued in our agricultural colleges.

The several reports to be made to the Governor annually, in January, though chiefly intended to make known the progress and results of each year's work, will be found to contain much that is of interest and value to the farmer. The publication and general

distribution of reports of geological surveys, always prove beneficial by calling public attention in an official and reliable manner, to the resources and advantages of the district surveyed, for the agricultural, manufacturing and other interests.

The next paper was by Hon. C. K. Dean, upon "The best means to secure the legitimate ends of the Wisconsin State Agricultural Society."

The ideas advanced were, that the society had too broad a field to make their labors effectual; that it should be confined to more definite and practical points. That the annual fairs should be held at the state capital, and that grounds and buildings be provided by the city of Madison. He repudiated horse racing at fairs to the exclusion of more legitimate and profitable purposes, and to the schemes of chance and other games of immoral tendencies that were annually admitted to their grounds. Said that the state had an agricultural department connected with the University of Wisconsin, an experimental farm, and that these interests should be turned over to the State Agricultural Society, that they might be quickened into new life and made of value to the great producing classes; that the society should issue a weekly or monthly paper, to be edited by the best minds in the country, men of education and high attainments in the science and practice of agriculture, and be circulated throughout the state. He pointed out some of the advantages which he thought would be realized to the industrial interests if this was done.

Ex-President Hinkley said that this paper evidently had been written by a gentleman who knew but little of the work performed by this society, and less of practical value relative to the work to be done, to secure good and profitable results to the people. Some of the suggestions made were well enough if they could be reduced to practice, but you cannot force each farmer in the state to subscribe for a weekly or monthly agricultural paper, if such an one should be published by the society. This was a private enterprise, and could be conducted far better by those who made it a special work than by a state society.

CORN RAISING.

BY N. E. ALLEN, FOX LAKE.

In the agricultural economy of our state, corn should occupy a prominent place. Not only because it is a profitable crop to raise, but if properly cultivated it will clean the land of weeds, fitting it well for crops of grain that may follow.

The first requisites for a good crop of corn are, good *land* and good *seed*.

Here let me say, the best possible condition of land for corn is a *clover sod* turned in the fall or late summer, upon which plaster has been sown previous to breaking, and if the spring before, all the better. Why? The clover makes the land loose and friable and gives to it that peculiar fertilizing quality that will make *ears of corn* as well as stalks.

The importance of sowing plaster in the spring is, to make a vigorous growth of clover during the summer, not only, because it may be cut for hay the first crop, but that the land may be thoroughly shaded or mulched. Another very important fact, for I believe it to be a fact, which I think observation will demonstrate; the *cut worm* will not injure the corn if thus treated the year previous to planting. Why? Because the plaster keeps the land moist, making a strong growth of clover, leaving none of the land exposed to be dried up, so as to furnish a place for the insect to deposit its larvæ or seed from which the worm can grow. Whereas, if the land was an old pasture, or a meadow thinly seeded and a light growth, there would be abundant opportunity for this purpose. So thoroughly am I convinced of this, I will say if the above course was pursued, not one-twentieth as much corn would be destroyed by the worm, as is usually upon sod ground as at present practiced.

A single instance may be well to relate in this connection. Two of my neighbors each plowed a sod that had been seeded to clover in the fall. Each piece had been mowed in the early part of the summer, and after that pastured until it was plowed. One

had plaster sown in the spring upon the clover, in other respects they were treated alike, and the natural condition of the land was alike. The corn was planted the usual time in May. Now, the result—the one was all destroyed, not worth cultivating; the other, scarcely a hill missing. Since which time I have noticed many other pieces, corroborating the above. The antidote then, consists in keeping the land *mulched*, or *shaded and damp*, so the *insect will find no place to deposit its eggs*.

Common stubble ground, designed for corn, would be better plowed in the fall, so as to have the action of the frost upon the soil. To secure the greatest benefit from manure, in my experience, it has been from being spread on clover in June, or after the first crop of clover has been cut for hay, and let the young, second growth, grow and shade the ground and manure, enabling the land *to absorb the ammonia of the manure*, instead of being evaporated by the heat of the sun and the drying winds. If the manure is spread upon stubble, it should be plowed, if possible, in the fall. If in the spring, the ground should be well packed with a roller and thoroughly harrowed.

The saving of seed corn is an important matter in corn raising, and should always be done before the corn becomes frozen, and should be thoroughly dried before *hard* freezing comes, and kept dry. So well is this matter understood that further comment is unnecessary. One idea that has been talked and written about from time immemorial, and repeated in the papers, is, that you must select your seed corn from stalks with two ears or more on each. I want my seed corn from stalks with only *one ear on a stalk*, and that a *large, well developed one*, well filled at butt and tip. I would rather husk one *big ear*, if it contained *as much corn*, than two or three nubbins; and then I think it looks better in the basket, the stock like it full as well, and there can be *more corn raised from an acre with the large ears*, or from corn thus selected.

The next important thing is the

PLANTING.

First prepare the ground by making it mellow, and working both ways, making the *rows 3ft. 2in. each way between the hills*. Just here, I imagine I see some of the old farmers draw on a

doubting face. I guess I know better than that say they. Yes; and right here I want to take issue with the *whole people of the state* who plant their corn 4 feet apart. In the one case, the square rod would contain 17 hills, and the other 27. But, says some one I want my corn to have a chance to ear, and have big ears too. So do I, and a good many of them. But, says one, your corn will all grow to stalks. Yes, there will be a good many stalks and a pile of corn too, if properly cultivated.

Here then we come to the next important thing as a success in raising corn,

CLOSE PLANTING, THOROUGH AND DEEP CULTIVATION,

and cultivate it close to the hills.

My plan in cultivation is to commence harrowing as soon as the corn is planted, and continue until it is 4 to 6 inches high. Then use the cultivator; cultivating *close to the hills* and *cultivate deep*. This is the secret of success. A pony and a green boy are a *poor team* to cultivate corn. I have never owned a horse so large and strong but I could use all the strength he had in cultivating corn.

In the one case the boy could manage to scratch along in the middle of the row not getting nearer the hills than 8 inches to a foot, while in the other case, if properly controlled, the cultivator can be run near enough to *clean the land of weeds* and stir it close to the hills, so the corn roots would not have to penetrate the stiff compacted soil for nearly a foot before they could find loose fine soil to nourish the plant. All the intervening space between the rows will be found *filled* with fine roots. But, says one, perhaps you break the roots in your cultivation, and will thus injure the corn. No; the corn has a remarkable power, where the roots are broken, in supplying new ones, and multiplying then indefinitely, in proportion as the soil is loosened and is fertile, so as to stimulate the growth. Here again, the person who is curious in these matters, if he will examine the *broken roots* within 12 hours after cultivation, will find them striking out a perfect net work of young rootlets, and so rapid is the growth that in less than three days they will be found to occupy all the loose ground between the rows.

So, it is of the utmost importance that the ground be made loose close to the hills, that the stalk will not have to draw nourishment through a *few long roots* that have succeeded in penetrating the hard soil.

A skilled cultivator with a well trained horse, should be able to cultivate near enough to the corn to *clean it of weeds*. I mean *what I say here, clean the corn of weeds*, for no man can afford to hoe corn in this fast age. Yes, *clean the land of weeds*, for no man can afford to raise weeds in a corn field. A skilled man can surely do it. Yes; says some incredulous individual, and dig up the corn too. No, sir; just let any man make an effort for one whole day in trying to cultivate near the hills and not dig them up, and he will be surprised how near he can cultivate and not injure the plant. Let me give a method practiced by me: As the horse advances, try to have him walk close to the row you wish to cultivate—if a right-handed man, near the right hand row. As the cultivator passes the hill, the last tooth of which should be run as near as two inches of the hill, press on the *left* handle, which will throw the cultivator to the right, and as it nears the next hill, press upon the *right* handle enough to throw the last cultivator tooth *around the hill*; in this way proceed through the field. It is not by any means a difficult thing after a man becomes accustomed to it.

With a two-horse cultivator the case would be somewhat different, but still, if the corn is well marked, it can be cultivated close to the hills. Corn should be cultivated as long as there are any weeds to be killed—even if until the tassels and silks appear. Such cultivation will very materially aid in developing the ears, and bringing them to maturity. The last cultivation, the ground should be turned toward the hill, so as to *hill the corn*, for the reason that it will make the corn stand better, and it will cause it to ripen sooner, because more of the land surface is exposed to the heat of the sun than if left level. Corn treated as above will yield from 100 to 140 bushels per acre if the land is good.

HARVESTING.

Corn should be cut before the stalks become ripe and dry, or as soon as the corn is glazed, and put in shocks of 100 hills to

the shock. The large shocks will stand better, and the stalks will be more protected from the weather.

I do not believe it pays to husk corn more than enough to feed teams, much less to shell and grind. Corn may be fed to stock with more profit than any other way it can be disposed of. With good three or four year old steers, the corn can be fed without husking; if old cattle, they would not do as well; but no man can *afford to have old cattle*; he should dispose of them *before they are old*.

When we have mixed farming—raising grain, hay and corn—there would be no excuse for not making the stock comfortable. With good bedding and good protection from storms, together with the straw, from which cattle and sheep will pick a large amount of feed, and *corn* with a *little* hay, cattle can be made fat during winter, ready for the high price that can usually be obtained in April or perhaps in March, and then, too, it enables one to make the straw and coarse feed into manure, a necessity in successful farming in this or any other state.

Hogs should follow after the cattle, at least one hog for each steer, and they will become fat from the droppings. If the cattle are stabled (a matter of economy), the hogs should have access to the stable after the cattle are turned out before the droppings become frozen. Good, warm bedding of straw for the cattle to lie on, which will become mixed with the droppings, and thereby composted and made into the best of manure, is important. Straw should be scattered daily over the yard, not only because it will be convenient for the stock to pick over, but that it may be *made into manure*. The prudent farmer will use all his available means to maintain the fertility of his soil by returning to it an equivalent for what he has taken from it.

The hogs, too, should have a good comfortable place to sleep, not in the manure heap, not in the side of the straw stack or other cold place where they will all pile up, but a shed high enough for a man to walk in, and covered over thick with straw, so they will be warm. Simply make your hog as warm and comfortable as you would make yourself, only let his bed be straw instead of wool. Finally, the whole secret of success in feeding cattle and hogs is summed up in three words, *make them comfortable.*

Corn fed in this way will bring from 30 to 40 cents per bushel of ears, and you have the satisfaction of knowing that you are not selling your farm, by the bushel as is too much the practice at the present time.

Mr. Anderson did not believe in the idea advanced by Mr. Allen, of planting corn on clover sod, and advocated spring plowing for corn ground. Had tried plaster upon corn, but saw no good effect from its use.

Mr. Scoville said he was a corn grower and had raised at the rate of 100 bushels per acre in a field of 30 acres—did not favor the idea of the writer that corn should be planted but three feet and two inches apart. His experience had been that wide planting and generous manuring produced heavy crops. He favored pulling out suckers so that the corn should have plenty of room. Mr. Fox believed in deep plowing and thorough cultivation, fine pulverization of soil was essential in corn raising anywhere. Where he lived they found that a thorough harrowing, making the soil fine, suited for plant food, was much better than the same labor given in rolling the ground.

ROTATION OF CROPS.

BY J. D. WOOD, BARABOO.

The question of furnishing the world with food is one of the most important ones which can engage human attention. It is not only important to-day, but it grows in importance as we look to the future. A hungry dog will be a thief—a hungry ox will tear down a fence, and hungry men are as much more dangerous as their intelligence exceeds that of the dog and ox. The fierceness of the French revolution was in a great measure occasioned by hunger, and the Chicago communists, because of their hunger, aim to overthrow our laws for the protection of property and seize upon that which other men's industry has accumulated. Hunger never reasons, but clamorously demands and seizes food.

When we look at our decreasing yield per acre on the one hand and our increasing population on the other, it is the part of wis-

dom to hunt carefully for methods which will preserve a balance between these two forces, and avert as long as possible the disastrous consequences of famine.

Neither England nor France have raised their necessary food in the past year. Were there not gigantic means of transportation at hand, and a surplus in other countries, famine would result. We wish for ourselves to postpone the evil day as long as possible. Our western agriculture is exhaustive, and is sweeping over our virgin soil like a prairie fire, leaving an increasing population dependent upon worn out lands for support. We must try to reverse this order of things, and, if possible, adopt some method which will meet our present necessities and leave our land in condition to respond to the heavier drafts of the future. It may be true that, in our convention to-day, we are moved chiefly by a desire to make more money from our farms, but if we do this by increasing their productive capacity per acre, we are conferring a lasting benefit. These interests are too important to be neglected, or to be trusted to men who follow methods which have proved their inefficiency. Science and intelligence must be called into the field and wide-spread interest must be awakened.

It is easy enough to observe that in our common course of cropping, our lands are worn out, and our farming does not pay. This must happen, either through the carrying off with our crops of the original elements of fertility, or the introduction of unfavorable conditions for the growing crops, or these two may combine in causing the diminished yield. When wheat has failed, corn may still be raised, and, as a last resort, we may take to rye and buckwheat. We have land in our county already in the buckwheat stage, and some that has dropped out of cultivation entirely. A pile of straw or manure, if left undisturbed, will gradually disappear until, perhaps, a wheelbarrow will carry all there is left of many tons. The great bulk of it has escaped into the air in the form of gases, and we might reasonably infer that, inasmuch as this process of decay is continually going on, the air will become a vast storehouse of fertility of which we may avail ourselves if we can but precipitate it upon our land.

Scientific investigation supports this view.* DeSaussure

*Johnston, page 147.

found, by actual analysis and calculation, that there are seven tons of carbon in the form of carbonic acid suspended over each acre of the earth's surface, and he found not only carbon, but all the organic elements of plant food. These elements are not only brought to the roots of plants by rains, but they enter into the circulation by absorption through the leaves.

There is no fact in vegetable physiology better established than this, and now what we want is to discover a plant which may be profitable as a crop and yet excel all others in its power of catching and holding these elements which are afloat. Clover has been found to be this plant, and the only theory by which clover can be a source of permanent benefit, is, that it does catch and hold these floating elements. If it is, simply, that its deeply plunging roots improve the surface at the expense of the subsoil, then that source will gradually fail and our land will only become exhausted to a greater depth, but it is found that clover enriches both the surface and the subsoil.

Boussingault's experiments ought to conclusively settle this question. He transplanted young clover plants to a soil which had been deprived of all organic matter, protecting them from rain and dust and watering them only with distilled water. He says, "For some days they seemed to languish, but by and by they became remarkably vigorous. In a month the clover had grown to twice its original height, and the leaves were of the most beautiful green; the plants had in all respects as fine an appearance as the clover of the same age which had been left growing in the field."

After giving the table of his analysis of the plants,* which I will not introduce, he says: "Thus in two months' growth at the cost of air and water, the clover had, so to say, tripled its quantity of organic matter, and the weight of nitrogen contained in it was very nearly doubled."

I dwell upon this because I am of the opinion that unless a man believes that his clover does absolutely enrich his soil by adding to it that which it does not already possess, he will see no sufficient inducement for planting it.

*Boussingault, page 47.

If a man can see hovering over his land, no matter how poor it is, all the elements necessary to give it abundant fertility, he will be likely to make some effort to secure a portion as it passes. The rain does doubtless bring down a portion of these elements within reach of their roots, and every crop will receive an equal portion in this way, but with wheat, oats or corn we observe that the land will wear out. Clover alone will furnish a profitable crop of itself, and still lay by in store a supply for the crops which succeed it. I want this to be clearly understood as an inducement for sowing clover. It is our only fertilizing crop. Any one seeing this can see the prosperity of a short rotation on land that is already worn. I am talking in the interest of such land, and shall advocate and practice a short rotation until my land is so improved as to exhibit abundant ability to carry a longer one. All the crops between the clover are exhaustive—that alone, is restorative; and at the same time it may afford as much annual profit as any crop we raise.

One of the results of scientific researches is the discovery of wonderful systems of compensation in nature's operations. The flowing of our springs and rivers would in a single season drain our continent and leave it a desert, but we see the air constantly taking water from its great reservoirs; the wind is sweeping it over the earth's surface, where it falls in the rain, thus sustaining the flow of our rivers, and slaking the thirst of every living thing. It is found that all animal life depends for its existence upon a supply of oxygen, which, coming in contact with the impurities of the system in the lungs, converts them into gases, so that they are expelled in respiration. This process continually performed without compensation would, in time, exhaust the supply of oxygen, and animal life would become extinct. This would have been the case had a bungler been engaged in the work of creation. But we find that the functions of vegetable life are the exact counterpart of those of animal life. Plants are continually withdrawing the carbonic acids and other impurities from the atmosphere and breathing into it a fresh supply of pure oxygen for the support of animals.

Again, the indulgence of all animal wants would have a tendency to pile up and withdraw from the great storehouse of na-

ture, but decay comes to the rescue and these elements are again scattered to the four winds. Our cities would become far more disastrous centres of waste than they are, were they not volcanoes, continually belching forth large columns of carbonic acid. We pile straw in our fields and manure accumulates in our yards. If some law of compensation was not established, the laying by in store of these elements would eventually destroy vegetable life. But we find our straw and manure gradually disappearing. It is taken up by the air and swept again over the continent, thus carrying back to the remotest points that which it had lost. Now, if it was only precipitated by the action of rains, two-thirds of it would fall into the ocean and be lost to vegetable life; but it is wanted on the land where vegetables grow, so we see they are provided with means of catching and holding it as it passes. Plants possess this power in different degrees. Some will grow upon a naked rock; many will live a long time without roots, or will grow by absorption at the tops until they have made roots to assist them at the bottom. In this way we propagate by cuttings. Many plants possessing this power in an eminent degree are used in Europe; but for the American farmer nothing has yet been found equal to our common red clover. With our present knowledge it is the sheet anchor of our husbandry, and this because it does absorb from the air the productive elements found there.

[By a proper system of manuring, land may be kept indefinitely productive. And all the manure we can make must be judiciously used; but while we sell off our coarse products we cannot possibly make enough to keep up our land. A few farms near our large towns, where manure can be had in plenty, may be kept up; but it is at the expense of other regions. The great majority of farmers are dependent on their own resources and cannot enrich their land at the expense of other land. This fact compels thinking men to refine their products. Instead of selling corn, they will feed it and sell beef and pork. Instead of selling hay, they will sell wool, butter and cheese. This is a far higher grade of farming than that which sells off coarse unfed products.]

Our average farmer has not achieved success thus far. Many are aiming at it, and are making improvement, but in the mean-

time we must find the best method which our circumstances will permit.

One of the first and most important steps to be taken in any attempt to elevate our agriculture, is to secure some system which will present to each crop in its order, the conditions most favorable to secure its growth. The course most generally pursued, lacks any such system. Wheat has followed wheat, or alternated with oats or corn, according to the whim of the farmer, and there are pieces of land in the older portions of our state, which for twenty or thirty years have undergone this process without having once been seeded, or even manured, and such pieces are often pointed at as proving the inexhaustible fertility of our soil.

A goodly system will determine by little less than absolute necessity, the order in which crops shall be taken. It may require years of intelligent action and observation to gain such a system, and even if we knew what one would be the best, it would require years to get it into successful operation. The farmer must look ahead. It would be essential that it should occupy all the land, and that it should produce equal annual results. It must be adapted to the ends aimed at by the farmer, whether dairying, stock raising or general farming; being engaged in general farming, my remarks will apply more particularly to it, but I am persuaded that the best stock farm in the world is the one on which the most grain can be raised.

The mechanical condition of the soil has much to do with the success of the crop. Its wealth must not be locked up in clods, nor must the land become so compact as to render it difficult for the roots to penetrate it. It is found also, that time itself, with the freezing and thawing of winter, the absorption and retention by the soil of the elements brought down by the rains, and the chemical decompositions which take place in it, will gradually restore its fitness for another crop of the same kind. This fact would point towards a long rotation in which as many kinds of crops as might be profitably cultivated should be introduced, separating as widely as possible the period of return of any particular crop.

Nature itself gives us periods of rotation on a grand scale, for it is well ascertained that our forests gradually change their char-

acter, one kind of timber giving place to another, thus gradually passing through great cycles of rotation.

I conceive, however, that our present interest lies in the direction of a short rotation, returning as frequently as possible to our clover, for it is found that clover roots are the very best of clod crushers, keeping the land in good mechanical condition. The shortest one possible which will involve the whole farm and allow the growing of a crop of corn, is a three years course—clover, corn and small grain, reseeding to clover. This, according to my experience, furnishes each crop in its order with favorable conditions for its growth.

Corn doing well on clover sod, plowed either in the spring or fall, and wheat, oats or barley doing well on corn stubble plowed in the fall and sowed early in the spring. It is claimed that wheat and clover may alternate with each other and the land be improved, but this method will give no place for corn. Can we farm successfully without a good corn crop? It is desirable in all stock raising and indispensable in any system involving fattening. In many parts of the east where they cannot afford to raise it, they are compelled to purchase it of our western farmers. Ought we not to farm in such a manner as to have none to sell them? Exclusive grain production, be it ever so successful, is not a high grade of farming. Our annual necessities may compel us to it, but we want to fix our eyes on higher forces and grow into them as fast as possible. We will now see what points we can make in favor of some proper system of rotation.

The exclusive pursuit of any specialty in farming, even if it be wheat growing, will bring with it evils which can only be corrected by a diversified system. I would instance the chinch bugs, which seem to be a scourge intended to whip men into better methods. We can only escape their ravages by following some system which will introduce unfavorable conditions for their propagation. Wheat after wheat, on ground plowed in the spring, will be the best conditions possible to encourage them. We must plow our ground in the fall, after they have gone into winter quarters. The rains of fall and spring will beat down the ground so as to effectually bury multitudes of them. If the surface of such ground be stirred just enough to cover the seed, and then

sowed to clover, it will be hard for them to prosper. The young clover, growing with the wheat, shades the ground and helps to keep them in check. The next years' clover will give them the most unfavorable conditions possible, the ground will be kept cool and moist and they will be destroyed.

A short rotation persisted in will effectually destroy weeds. They will sprout up among the clover, but before they can mature seed they will all be mowed down. The second crop of clover takes immediate possession and in due time it is again mowed. By parting the clover and looking closely on the ground that has been weedy, thousands of immature weeds may be seen. The seeds have sprouted but perish without bearing fruit. The manure made will also become free from foul seeds, the whole farm will be subjected to the same process in its turn, and in a few years the land will become clean. Under some judicious system of rotation, the productions of the farm would be as nearly uniform as possible, subject only to the contingencies of the seasons. A man would soon learn what number of hogs and cattle he could safely keep. He might not attain to any astonishing success in a single season, nor would he be liable to disastrous failures. Taking a series of years together, the results could hardly fail to be satisfactory. It might be objected that a third of the land in corn would be too large a proportion; but it must be remembered that our corn crop has sustained itself better than any of our small grains, and that in proportion to its exhaustive effect on the land, it yields us the greatest profit. It is our cheapest fattening grain, producing the best quality of beef, pork and mutton, and it is not probable that the reputation of our western beef and pork could be sustained by the use of any other feed.

The corn-ground will receive the coarse manure of the farm, which by a seasons culture will become thoroughly rotted and incorporated with the soil, and so fitted for the crop which is to follow. The year of cultivation in corn, will stand in the relation of a summer fallow to the crop which succeeds it, and would as nearly answer its purpose as anything could and still give a profitable crop. Experience has taught us that wheat does not do well on a freshly turned sod. The roots of the grass must have time to rot before they can nourish the growing crops. Wheat in

our latitude must make its growth and ripen within four months from the time of sowing it. Corn will be filling its ears for a month after wheat is harvested, and by that time the sod will be quite well rotted and in good condition to push it forward. We often hear it said that corn on sod will be backward in the spring, but will ear heavily in the fall. It has to wait for the rotting of the sod. Wheat has no time to wait. As a natural result men learn to plant corn on sod, then follow with wheat or some other crop which must make rapidly.

If my suggestions, based upon a short experience, shall prove of any service to my brother farmers, I shall be satisfied.

It must be borne in mind that in farming, experiment is the crucible in which all theories must be tried. How many pet notions have been torn from us by failure. Agricultural interests fill so important a space in the world, and have, for so long a time occupied the thoughts and hands of the human family, that it would seem as if its leading facts and practices might by this time have been reduced to the terms of an exact science, but yet in nothing is the human mind more afloat. How few are the points which we have settled to our satisfaction. We deal with such varied conditions of soil, climate and seasons over which we have no control that our best matured plans are overshadowed by uncertainties. Who can measure the subtle influences which will rust our wheat while still in the blade, or tell us why in the following season, from the same ground we will harvest a satisfactory crop. The most hopeful sign of the times, is the spirit of inquiry which is so widely awakened. Our increasing wants and decreasing productions compel us to search after better methods. It is the day of small things, but the difference is very wide between the method which grabs for every thing which can be turned to immediate account and that which consults the future well being and productions of the soil.

Co-operation is the great watchword of the day, and it would be difficult to over estimate its importance, yet in nothing is it so indispensable as in gaining intelligence. We may as individuals, be wearily plodding along in our rude experimenting, hunting for some item of experience which our neighbor has already obtained, and which he would gladly give us did he but know that

we wanted it, and I conceive the permanent benefit of this convention will be largely measured by its co-operative influence in imparting our varied experiences. These experiences must become our own, for while it is said that "knowledge is power," it is doubtful whether any knowledge not made our own by actual experience can amount to a quickening power in our hands.

Our present farmers' movement, in so far as it aims to justly regulate and control monopolies, is defective in excluding multitudes from co-operation who are as clearly interested in the accomplishment of these results as themselves; and in so far as it involves secrecy, and shuts us up into an exclusive ring, it is unworthy both of the persons and interests involved. These interests are great, and we want to stand squarely before the world and advocate them. Agricultural prosperity must underlie all other prosperity. Where farmers prosper, all lawful interests can prosper with them; where they do not, no other honorable industry can. The world may learn this yet, and become reconciled to seeing a little ready money in a farmer's pocket.

The great question of prices no man nor set of men can control, they may agitate it, and crowd prices temporarily, up or down, but the great facts of supply and demand and transportation will assert themselves and obtain the ultimate control. There is much in our popular oratory which but deceives the people. Men often set prices and hold produce to their loss. No values are absolute, they are merely relative; many things go to modify them and they necessarily fluctuate day by day. The great remedy for monopoly is free and open competition. It is proper for farmers conjointly with all others to assist in placing them under healthy control; but our profoundest work, that which will accomplish in us, and for us, the most desirable and enduring results, is an open co-operation which excludes no one, but gives to each one the greatest measure possible of that practical knowledge which is power. I will surrender all my interest in the reduced price of machinery and sugar, for that knowledge which will increase my wheat crop by one bushel to the acre. This is the direction in which to seek for the best results.

I like such co-operation as is presented in this meeting; where

men who are workers in this great field meet together on common ground and speak freely of their experiences, whether failure or success has crowned their efforts. In fact, the history of failures are as deeply profitable to us as that of successes. I may have projects in my mind at this moment, which if fully laid before my hearers, I could get counsel which would lead me to abandon them at once; whereas, they will cost me time and labor, and disappointment in the end. I do not think that the influence of this convention would be widened nor improved by closing our doors and extorting pledges of secrecy. In all true scholarship there is brotherhood, not with a select few who have mouthed a formula of secrecy, but with the world, with every man, woman or child who is moved with a desire to make progress in anything which tends to elevate themselves or the human race. No useful facts in husbandry or science can be taught grips or signs by which they can reveal themselves only to a select few. If the ends which we aim at are honorable, let us not place a guard at our door and the seal of silence on our lips, for all this is characteristic of the retreat of imposture and quackery. Let us not try to persuade ourselves that we have any interests which flourish best in the dark. All the legitimate work of the husbandman is best done in the broad light of day, and for its full fruition needs abundant exposure to the warmth and light of the noonday sun, the free course of the restless winds, and the rains and dews of heaven.

This paper was carefully prepared, contains many excellent facts and suggestions, and will pay a careful perusal. The writer claimed that prices could not be controlled, but production could, and that co-operative effort could secure this; but rather repudiated secret societies.

Mr. Anderson thought the granges were doing much good, that their benefits were extending, and that they would aid the farmers in many ways; that the signs and grips were necessary to guard against imposters, and that secrecy was the very foundation rock upon which to build substantial and beneficial results to the farming interest. That if you desired to put down monop-

lies, you must not let them know *where* or *when* you intended to strike.

Mr. Robbins said that farmers who owned large farms were the worst kind of monopolists, and admitted that he was one, that he had more land than he could cultivate, but that by good management, care and labor,—such as had to be given to all avocations if successful,—he had made money farming.

Adjourned until 2 P. M.

Afternoon Session.

Convention met at 2 P. M. Secretary Field in the chair.

Col. Warner moved that a committee of five be appointed by the chair on resolutions, which was agreed to, and Col. C. E. Warner of Dane, R. J. Burdge of Rock, V. S. Hollister of Walworth, Eli Sherman of Columbia, and W. M. Dixon of Fond du Lac, were appointed.

Secretary Field read a short paper upon the subject, "Are we Consistent," by Mrs. P. Putnam of Dodge Corners.

This paper contained many good thoughts and suggestions, but was mainly devoted to a criticism of the rule adopted by the Patrons of Husbandry admitting girls to their order at the age of sixteen, and excluding boys until eighteen. "This institution," she said, "had been created for the especial benefit of the farming classes and with the utmost apparent sincerity." "Then is it important to enquire why this discrimination." She thought if young ladies could be benefitted at the age of sixteen, young gentlemen who were their seniors would be proper companions, especially their brothers; but if they accompanied them to the grange meeting, they could not be admitted, and hence must find entertainment in the hotel or saloon with vice and immorality staring them in the face, and where they were continually breathing a debasing and demoralizing atmosphere. She would not deprive the girls of sixteen of those social and educational privileges, but she would most respectfully suggest and urge upon those exercising power in these orders to give like opportunities to boys of the same age, that all may have the benefits and enjoy the pleasure and blessings which the institution can bestow.

Secretary Field then read the following letter from J. C. Plumb of Milton, Mr. Plumb being unable to attend from illness. Its perusal is commended :

MILTON, Wis., Feb. 3, 1874.

Hon. W. W. FIELD, *Sec. St. Ag. Soc.*, Madison, Wis. :

DEAR SIR: I am compelled to say that a severe illness of three weeks has prevented the completion of my promised paper for the convention, and will also prevent my attendance upon the meetings.

This is a great disappointment to me, as I have been looking forward with great interest, and with anticipation of much pleasure and profit to the annual convening of the most intelligent and practically useful class of men which compose the body politic. Please accept my apology, and the following sentiments—the æsthetic portion of my chosen theme: Horticulture as necessary to the farm as hat and bonnet to the head; as spring and top to the carriage; as veranda and vestibule to the house.

These are shade and comfort, relaxation and rest, which are all necessary to our happiness, as food and clothing.

Horticulture is the wine of the feast, the poesy of the prosy farm life.

It is the silken haired, light hearted and joyous ones of the family circle. Pomona and Flora are sisters of Ceres, and the mothers of many virtues. Horticulture is the highest expression of rural art. Its value to the farm cannot be measured by dollars and cents—as well measure the mental and moral nature of the farmer by the bushels and pounds of the produce of his farm. Its practice calls out the higher qualities of the mind, draws largely on the faith and develops a spirit of inquiry in all who earnestly follow it.

Farmers—cherish horticulture, not alone for the food for man and beast it may yield you, most healthful food though it be—but as a means of perfecting the scheme of productive industry in which you are engaged, of making the farm the paradise of the family, that sons and daughters may grow up with higher and more refined surroundings than mere farm life can give, that they may find the homestead so much a home, that only the calls of

duty and the inevitable changes of social life shall draw them from its endearing associations.

Farmers—if you thus measure horticulture as an important adjunct of the farm, you will see less to appall and more to encourage in this work; you will reach out after the helps so abundant now; you will call on Downing or Vick; on Warder or Briggs; you will not do without our most practical *Western Farmer* or some of its cotemporaries in the west, and you will rightly estimate the value of the individual and combined experience of the growing horticultural fraternity of our own Wisconsin.

Yours, truly,

J. C. PLUMB.

THE MUTUAL DEPENDENCE OF ALL HUMAN INDUSTRIES.

BY C. D. FOX, BELOIT.

“They helped every one his neighbor, and every one said to his brother, be of good courage. So the carpenter encouraged the goldsmith, and he that smoteth with the hammer, him that smoteth the anvil, saying, it is ready for the solder, and he fastened it with a nail that it should not be moved.” That is my text.

Here are two pictures in one, both teaching the same lesson, viz, *mutual dependence*. First, several workmen, mechanics and artisans, are engaged in erecting and ornamenting an edifice. The mason so performs his part as to accomodate the carpenter; the carpenter the joiner; the joiner the painter, and the painter the goldsmith. They are all in good humor and hearty, and lighten each other's burdens and relieve each other's toil by cheerful words, saying “be of good courage.” “So the carpenter encouraged the goldsmith.”

The next picture is of a smithy. Walking in the lower part of town this morning, my attention was directed to a long range of low buildings with several glowing smoke stacks, and I was informed by a friend at my side that it was a plow factory. Let us go in and see what we can see, and hear what we can hear.

There stands the foreman of the forge intently watching his fire.

He is preparing to take a weld. Behind the anvil is stationed a stalwart man, a very Vulcan, with ponderous sledge in hand, and near by the solderer, ready with chemicals to be applied when all is ready. Now the masses of red hot iron are brought to the anvil in rapid succession, and the foreman with hammer, and Vulcan with sledge plying, but for a moment, telling blows, quickly bring the irons to the proper shape. They are then returned to the fire; brought to a white heat, just right, again laid upon the anvil with precision and care, and "it is ready for the solder, and he fastens it with a nail, that it should not be moved,"—a finished job, and all done in less time than I have taken to tell it, and why? Because they recognized their relation of mutual dependence, and worked in concert and perfect harmony.

How like this the relation of mutual dependence among all human industries; and how necessary to the commonwealth that these relations be preserved. Surely, nothing short of the most terrible necessity would justify a family quarrel here. And feeling thus, I cannot enter with any heart into the unnatural contest, the guerilla warfare that is being waged so relentlessly between farmers and those of other branches of industry. But inasmuch as thousands of my brother farmers enlist in this contest with the zeal and with the same honest devotion to the common prosperity as I keep out of it, it will be no more than just and reasonable that you demand of me my reasons for holding back. Well here they are.

1. The end sought can be more easily, certainly and permanently secured by peaceable means.

The end sought is a leveling up of certain real or imaginary inequalities in society, growing out of a social or financial advantage that one branch of industry may have acquired over another.

So far as it respects social inequality between callings alike honorable, "it is all in the eye." We may, yea, do belittle our calling in our own estimation, and it may be in the estimation of others by these invidious comparisons. The fact is, *success* is what gives tone and character to a calling and not the calling itself. This is the spontaneous verdict of every one whose judgment is entitled to respect, and whose respect is worth having.

But, financially, how about that? The answer is ready. The fact is, sixty-five per cent. of the population of any extensive district is too large a proportion to be profitably engaged in any one branch of business, farming not excepted. Then what is to be done? Plain enough. Quit the business. Go at something that pays and suits better. This is a free country. Every one is entitled to life, liberty, and the pursuit of happiness. Every one has the right to do as he pleases, so long as he does not please to interfere with the rights of his neighbor. In other words, legitimate and honorable competition is the true remedy.

The great trouble in the northwest, as it respects its material prosperity, is, we want more consumers and less producers in proportion. (I use the term *producer* here loosely, as applied to agriculture.) I do not know why this change may not be brought about in a way perfectly consistent with good humor and the kindest regard to the rights and best interests of all concerned. I have faith to believe it will be.

Recent geological discoveries in Iowa, Missouri, Kansas, Nebraska, Idaho, and here and there throughout the northwest, together with the inexhaustible supply of water power everywhere, that the absence of other motive power renders desirable, are to my mind prophecies as well as geological and topographical facts, indicating that these immense and inexhaustible mines of iron, fields of coal and tumbling water-falls, the bones, sinews and muscles of mechanical industry, furnishing at once the arm that strikes, the motive power and the fabric wrought, were placed there by the great Disposer for a purpose.

And being thus unmistakably reminded of our possibilities, I for one have faith to believe the hint will be seized upon by the indomitable energy and unflagging perseverance of the last quarter of the nineteenth century, that this perpetual invitation to develop the mechanical as well as agricultural resources of the country will be heeded; that we shall soon prove to the world that the universe has more than one *hub*, and that it is not necessary to freight bread and pork by rail two thousand miles when all nature invites the needed industry to consume it in the immediate locality where it is produced.

I believe the time will soon come when there will not be a

bushel of corn or wheat, nor a pound of pork or wool shipped east from the west side of the Mississippi; when all that vast expanse of country drained by the Rio Grande, the Red river, the Missouri, the Columbia and their tributaries, will consume their own bread, and manufacture their own products; and I know of no good reason why Wisconsin and Illinois, Iowa and Minnesota might not immediately inaugurate measures that would profitably dispose of a large part of their surplus products in the same way, thereby quietly saving an immense cost in transportation to the Atlantic states, much of it to be returned at great expense to find a market here where the raw material for the same was produced. I am glad to know that these facts are already attracting attention, and are being largely acted upon. These long hidden mechanical resources of the northwest are being rapidly developed and set to work, both of matter and of mind. The *entire* Mississippi valley will soon be all resounding with the hum of machinery, as it already is in many localities.

Should the traveler of to-day, after the lapse of twenty years, revisit the shores of the Fox, Wisconsin and the Rock, he would be perfectly surprised at the Lowells, the Pittsburgs and the Wheelings he would encounter now everywhere up and down these streams. And these are but in their infancy, time is on the wing, enterprise is on the war path. These manufacturing facilities will soon be doubled, trebled, quadrupled.

Then, farmers, what is our duty in the premises? *Encourage* them. Use all kinds of machinery on the farm that can be used to advantage (no others). Pay for them. Take care of them. House them. Make them last as long and do as much work as possible, thereby commending them to your old foggy neighbor. And still farther; if you have a son or daughter, or a friend that manifests a taste for mechanics, for art, or for trade, set them at it. Don't allow yourself to be wheedled into the silly notion that the farm above all other parts on this earth, is consecrated ground; that the home of the mechanic or the artisan is not as sacred as the home of the farmer. God makes no difference, and we should not. Success gives tone to an enterprise. It does not make so much difference what a man goes at, as how he goes at it, and how he sticks to it. Then, out on all this patronizing way

that some have fallen into in speaking of other callings! As a farmer, all I ask is, that I be allowed to stand on my own merit as such; and that is my only standard of respect for others. In this respect we are all on an exact horizontal level.

The fact is as already stated, we have altogether too many farmers in proportion to the population. Here is the great difficulty. Rectify this mistake and a terrible pressure is taken off. Continue as we are, and any amount of scolding and fault finding will not effect permanent relief. We must have a large increase in other industries. We must have a larger proportion of mechanics and artisans, traders and manufacturers. Nothing short will affect a permanent cure.

But it is said it will take too long to even up in this way. Not so. It is the quickest way it can be done and at the same time make a good job of it, and besides I do not believe this surface work, this family guard, this guerilla warfare will ever secure any permanent good to any one. At least it can afford but temporary relief. The causes that produced the difficulty, the forces that have brought about this upheaval of the social crust are deep; and if they are untouched by those who labor for social amelioration, as soon as these bustling yet inefficient endeavors are allowed to cool, as cool they certainly will, there is nothing to prevent a fresh bursting forth, furious as ever.

These faint spasmodic endeavors, that were conceived and born in spasms, and are sure to die in spasms, are impotent to meet an emergency so overwhelming. A medicine that cannot by any possibility reach the seat of the disease, is worse than no medicine at all. No, let us rather dig deep and lay a firm foundation for the mutual and permanent prosperity of all interested; leaving all minor difficulties and differences to the sure and thorough and safe and good natured arbitrament of *free competition*.

"So the carpenter encouraged the goldsmith."

It is a matter of paramount importance that we husband our resources and concentrate our energies at one single point, viz; a hand to hand tussel with *transportation monopoly*. Here is a common foe. All are equally interested in rectifying this evil. This is the giant evil, and it will not do to fritter away our ener-

gies on side issues and matters of secondary importance until this matter is disposed of.

All must admit that in a country like ours, free and cheap transportation is a necessity to the commonwealth. All will admit, too, I think, that the question of transportation is now so tangled that the general government alone is capable of unraveling it. This implies political action. Political action must be popular to be successful. In this movement all industries being equally interested, must stand shoulder to shoulder.

This I say is the giant evil, an evil, too, that has attained such power in brains and money that it threatens to break down and crush out every other interest that crosses its track. It has attained this power, too, by means and agencies over which we seem now to have no control.

How is this evil to be met? Appeal to the legislatures of the states, says one. We shall soon see, I think, here is the great trouble. We have had too much state legislation already. We have legislated ourselves into a perfect snarl. We are bound hand and foot with all sorts of statutes and enactments; statutes prospective and statutes retrospective.

Gentlemen, I speak with all deference when I declare I do not believe there is a brain, nor any combination of brains within these legislative halls that can conceive of a solution of the difficulty by legislative enactment, but that it would remain a two sided question after all; so much so that gentlemen of the bar would cheerfully undertake the defence of either side, being governed simply by the amount of retainer's fee that may be slipped into their pocket. For one, I frankly confess, more in sorrow than in anger, I have no faith in state legislation. They themselves have tied a Gordian knot they cannot cut.

Litigate, says another. I answer what is the use of going to law with a party of unbounded wealth, and who, at the same time have the statutes to which we appeal for decision, all on their side? For the last decade or more we have been busy emptying our pockets into theirs, and so far as the railroads of the northwest at least are concerned, they have made their own statutes for the last twenty years. Every railroad committee in the general assembly of Illinois, and in the legislature of Wisconsin during the time specified

have been made up, by a large majority, of railroad men; with generally a railroad king as chairman. It is as if the people had said to them, gentlemen, we must have railroads at any cost. We will vote state bonds, county bonds, city bonds and town bonds. And we did it. We will mortgage our farms and our homes, city, village and country. And we did it. And besides you may make your own railroad laws. And they did that. And now I say go to law with them under such circumstances, we have not the ghost of a chance for anything only to get whipped.

Tear up the track, says another. Do that, I answer, and we shall find ourselves just where we were a quarter of a century ago; and, most likely, would travel the same road that we have traveled and gladly grant the same exclusive privileges and immunities that we have granted to arrive again at our present position. I judge so from the fact that we to-day, together with Missouri, Iowa and Minnesota, and all the country west and south of us, are building railroads on substantially the same plan and by the same means that we always have built them.

Railroads are a necessity. We must have them, more or less. And we had better keep what we have, than to destroy them, that our children may have to build them over again.

Then are we completely at the mercy of this transportation monopoly—this crushing incubus? We are not. Is there a remedy? There is. Is it consistent with justice and the rights of our neighbors, the railroad men? It is. What is it? *Flank them.*

It is no part of my purpose in this short paper to discuss all the details of this flank movement, but I will briefly consider a few of the leading points, and trust we shall all come to see by and by, eye to eye, that it is practical, consistent and fair.

It is the opinion of many of our ablest jurists and statesmen, that it is competent, under the constitution of the United States, for the people to enter the list of competitors for the transportation business, as well by rail as otherwise, through the general government.

The authority is found in the reserved right to "regulate commerce with foreign powers and between the States," and "to make all laws for the general welfare." The idea is gaining strength in

the popular mind every day, and the main idea once struck, the difficulties that first may seem to be in the way, will one by one give place. For example, General Jackson's Maysville veto, which, when this matter was first broached, was thought by almost every old time democrat to be an insuperable barrier. So also the old whig notion of protection was thought to be interfered with. But it is found by a careful analysis that neither are in the way. We are now shaping our course to an entirely new emergency, at least one that has never been so sensibly felt, nor was ever presented as a question in the old political schools. And, besides, the veto and the articles of political faith referred to were directed to meet questions entirely different from this.

Is the question then asked, is not the constitution in the way? Common sense answers no. The lawyers of course are divided. But suppose it is. What of it? Is not a seventeenth or an eighteenth amendment just as much in order as a sixteenth? President Lincoln, of hallowed memory, recommended, and Congress sanctioned measures incompatible both with the letter and spirit of the constitution on the ground of war necessity, and all the people said Amen. Has not peace, necessities as imperious as war?

A thousand and one objections will be raised, no doubt, by men of fruitful imaginations, but I think they will be found on careful examination to be capable of satisfactory solution.

This view necessitates political action. Our appeal is to the government of the United States. The pressure of public sentiment must be brought to bear on congress.

What may we reasonably expect congress to do? First inaugurate a system of water communication, including rivers and canals, for the double purpose of facilitating transportation and developing the mechanical resources of the country, by rendering more available the water power. Thus the proper improvement of the Wisconsin and Fox rivers would not only tap Minnesota, and drain northern and central Wisconsin, thereby taking off a tremendous strain on the transportation facilities further south, but also open up on these two rivers alone, and their tributaries, a water power sufficient to drive half the machinery of the nation.

I refer to this case simply as one of many; a representative

case. There are scores of others if not as important, yet just as national in their character, for it will be seen that the opening of every new avenue of commerce, by just so much takes off the strain from all the rest. So then, as one by one these cheap highways of commerce are opened and government throws in here and there a double track railway, the work is done.

But to conclude, you say it will take too long. Of course time is necessary to such an enterprise. With such an object before us we can afford to take time, and as the work is step by step advancing it may seem to us with slow and wearisome tread, it will afford us a splendid opportunity to cultivate the christian graces, especially of patience and forbearance towards our brethren of other callings.

It will be well for us in this connection to keep in mind that there may be such a thing as asking too much even of a railroad. Were I to demand of the station agent at Beloit to freight pumpkins for me to Chicago, one hundred miles, at a rate that would make me a fair return for my labor on the crop, every one would say I was most unreasonable. No more so than to expect so crude an article as corn can be transported by rail from Iowa to New York, or wheat from Montana to Boston. Such unreasonable demands bring us into contempt, and will surely produce a reaction. Still you say it will take too long. Not so. We can secure permanent results in no other way half so quickly.

Gentlemen, we are doing work not for a day, or a month, or a year, but for the ages. Not for any one locality but for our country. Not for ourselves alone, but for our posterity. Let none of us say with the merry and improvident Irishman, "and what has posterity done that I should bother my noddle about him," but rather with an eye to future rather than the present, to the grand possibilities and probabilities of this vast continent, let us strike hands for a long pull, a strong pull, and a pull all together, and make an honest, earnest, persistent effort to secure an object at once worthy of our generation, and which we shall be proud of as a legacy for the generations yet to be.

"So he fastened it with a nail that it should not be moved."

FARM LIFE—ITS HARDSHIPS AND PLEASURES.

BY MRS. HELEN M. BRITELL HUNTLEY, APPLETON.

Incident to every business pursuit, there are pleasures to enjoy, difficulties to be overcome and hardships to be endured. The merchant will talk of bad debts and constant confinement to his store; the physician of exposure to cold and storms; the mechanic will tell you of no opportunity for his labor; men of salary fear another day will find them without employment, and all these will talk of the constant claims of society, that they have none of the quiet and independence of farm life. The farmer, with a different experience, finds the chief objection to his calling is, too much work, no society, and that he cannot support his family handsomely.

Somewhere there must be a cause and a remedy for this bad state of things. Much of the hardship of farm life is in no sense the legitimate result of farming. Often it is the neglect of the farm for some other pursuit, which proving disastrous, brings debts and privations, and to farming is attributed the cause. Too many are the instances, particularly in our western villages, where men of more or less property make farming an experiment. They are only half in earnest about it; perhaps have kept some city property to return to in case of failure. If they can make money they will remain on the farm, but the money comes slowly and does not come at all without labor, and they go backward in the path of life, to the city or the town where they can enjoy pleasures and privileges they have done nothing to create.

Others will plan to have hardships, and it may be the only thing they have any plan about. They will say "we expect to have a hard time of it on the farm." These will surely realize all their expectations. Hardships and privations will grow without culture, and a wonderful crop may be obtained without care or rotation. It should be remembered that failure exists in this class of persons and not in the calling. To be a successful farmer, there must be a love for the calling that will not be satisfied with

any other pursuit. There must be a thorough knowledge of all the various industries of the farm. It is business in its broadest sense, and must be followed with ceaseless energy and untiring industry. Work must be the one accepted thing in the farmer's creed.

Never yet was anything good or great accomplished without work. The success that crowns the labor of years brings its reward, and when this is met the hardships through which it was won are all forgotten. Many were the faithful workers in the past who never gave over, but conquered every difficulty till the object for which they labored was reached, and to us and to future generations is left the results of their toil. Long did that patient son of poverty, Elias Howe, contend with difficulties and privations till at length the little bar of steel was made to do the work of five swift needle women. Through discouragement and failures did Cyrus W. Field work on till two hemispheres were united by the little cable beneath the sea, and now two nations greet each other with the quickness of thought. Faithfully did the lamented Agassiz labor to lift darkness from the science he loved. With no thought of wealth, with "no time to make money" he has left his discoveries to the world, a better legacy than gold. Farmers must expect there will be difficulties and hardships connected with their occupation. If the industries of the farm are numerous there will be more of work and care, but if successful, there will be more pleasures also, and like others, they too may leave lasting benefits behind them.

Among those who have no wish to exchange the labors and pleasures of farm life for any other pursuit, there is sometimes too much said about the hard work, and the pay received. It is not well to take a gloomy view of any condition. The sunny side is always the best. They who make most of the pleasures, say least of the hardships, and do most to remove them, are wisest and most successful in the end.

The question of payment is one of much latitude. It pays the true farmer to see his wheat whitening for the harvest; his cattle and sheep feeding in green pastures; his orchard loaded with ripening fruit, while bonds, and stocks, and bank notes, would pay another man much better.

There are many things which we might do to increase our pleasures and make our farming pay us better than it does. There can be constant improvement in all the various labors of the farm. Failing to understand the requirements of any calling is a fruitful cause of discouragement and failure. It is very hard to do successful work when one does not know how it should be done, but a knowledge of one's business banishes the difficulties and often makes success certain.

Parents can do a good work for growing sons as they are about to assume the responsibilities of business men, by studying with them all the various sources of information in regard to soils, climate, location and all the different industries of the farm. This would prepare the young farmer for his work, do away with many of the hardships pertaining to the new farms of the west and prevent changes of location so fatal to success in farming.

There is no occupation which receives so much attention from the press as does the pursuit of agriculture. Every newspaper for the family is adding to its columns something of interest to the farmer. Every topic is discussed; many interesting experiments explained. If we will, we may learn by the experience of others, and go across lots as it were to success, yet we are told that there are hundreds of farmers who are hoping for success in their calling who take no agricultural paper. Of all the truths stranger than fiction, this is the strangest. A few only appreciate as they should, how much it is to secure weekly, many pages of instructive reading pertaining to the business that occupies the thoughts and claims the labors of the whole household, and those who do, will tell you their success and their pleasure in farming, is owing largely to the books and papers they have read. "I never could have endured my farm life patiently," said one farmer's wife, "without the periodicals and papers that come to my home, but with these, my husband, my children and my flowers, I have thought little of the privations."

Every farm house should be a school of instruction, where all things useful and necessary for the duties of coming years should be taught and practiced. Daughters have something to learn concerning many of the farm industries, and still more in the very important matter of housekeeping. It is a sad mistake somewhere,

that the young women of our time care so little for a knowledge of domestic duties. The mother who does not instruct her daughter in the mysteries of housekeeping, for mysteries they surely are, is laying up for that daughter a lasting store of hardships. "I blame my mother," said one young housekeeper of our acquaintance, "that she did not teach me to do the house work which she so well understood."

A practical knowledge of housekeeping will make these duties pleasant. Housework will not be drudgery when skillfully performed. Artists and chemist's work may be done even in the kitchen, but this is not to be learned the day that it is needed. If it does not require education and skill to run the domestic machinery successfully in a modern household, says that accomplished woman, Emily Huntington Miller, "then we do not know what does." In no place is this knowledge needed more than in the farm house.

Woman has her full share to do in making farming successful. If the pleasures of home are satisfactory, the business which supports it is quite likely to be satisfactory also. Those who tell us most about the hardships of farm life give to farmers' wives their full share of commiseration. Many are the gloomy pictures drawn by friendly writers—not as beneficial we have sometimes thought as a few suggestions about remedies would have been—yet in too many cases true, no doubt, but circumstances, education and natural temperament have much to do in the case. Where one has the happy faculty—happy for the possessor—of banishing care, which men possess more largely than women, the burden of care is quite likely to fall on the latter; but where all interests are mutual, and love has not grown cold with increasing years, and the happiness of the wife and mother receives due attention, this matter of hardships is pretty evenly divided.

It is something to know that a strong arm and willing hand is ever ready to provide the creature comforts, and to look interestedly after all the growing wants of the family. There was much good sense in the reply of one noble woman, a tireless worker in her city home, to her neighbor, who remarked that men knew very little about hardships, when she said "I do not know about that;

circumstances have made it necessary for me to assume the responsibility of man and woman in my family, and I have come to the conclusion that the men have their full share of hardships."

The privations which a farmer's family must sometimes endure, isolated as they are from society, must necessarily be felt most keenly by the farmer's wife. "Many times" said one working woman of the farm "has my winter clothing laid all the year in its summer retreat, while I never once left my home or my children, but cared for all their wants, performed all the varied labors of the household myself." "This" she added, "I then thought was much like as many years of prison life, but time has given it a different coloring. I now see they were years of pleasure and profit." Well might she say this. Many thousands could not purchase the farm where she toiled. That mother sits to day in her luxurious home, honored among women; her children first in their profession, are better to her than a crown of diamonds, and a beautiful old age is crowning a useful life. There is many a mother who has only reached the other side of forty, who in looking backward over the years of her farm life, if she has been successful in her home making, and see her children inclining to ways of wisdom and industry, will take a far different view of the case now from what she did then. She will realize there is something better to live for than the pleasures of society; there are things harder to be endured than the daily round of domestic cares.

We remember now a prosperous eastern farmer, rich in this world's goods, with many acres of green pastures, with fleecy flocks and gentle herds. From his farm went out tons of creamy cheese, quantities of golden butter. The farm house was clean as polished silver; but no shrub or tree ever shaded it; no flowers ever bloomed by the doors. There was no time for books or papers. The sons grew to manhood with no interest in the farm or in their studies. The mother rode daily in her carriage. The daughters became wives and presided over other homes much like those of their childhood. The sons, clamorous for their birth-right, squandered the father's wealth, and those parents went to their graves in poverty and sorrow.

Within the sound of the same church bell, on a rocky hillside

farm, toiled a fond father and a loving, gentle voiced mother, performing her household duties with no help but her young children; struggling with privations, knowing little of society outside her home, seldom leaving it except for the house of worship. Time passed on and growing children made increasing demands on the mother's time and the father's purse. There was little money for improvements, but the trees were planted, the roses bloomed, the peonies reared their crimson heads and scattered their gay colored petals to the winds, the vines yielded their purple fruit, the orchard its treasures, and the seedling pear tree hastened to add its fruit. There was no thought of adding more acres to the farm. The children must be clothed, schooled, and fed. Daily bread and intellectual food must be had. Books and papers were there. The little seven year old boy, whose arms could scarcely span the columns of a newspaper, would talk intelligently of the news of the day. The years went by, and seven dutiful sons and three daughters, each with a spotless reputation, went out from that humble home into our own beautiful west, to fill places of honor and trust. The daughters became teachers and wives, and presided over tasteful, beautiful homes, and those parents, now in the late evening of life, with only its simple comforts, are giving to the world the example of successful lives.

There is no good reason why farmers' wives should become rusty and faded before their time, a by word, as they often are, for those who know little of a useful life. The cultured brain can live without the appliances of wealth or the pleasures of society. Years of sickness and almost solitary confinement to her chamber did not destroy the gifted mind of that sweet woman, Elizabeth Barrett Browning; neither did the poverty nor humble home of Frederika Bremer make her songs less sweet or her company less charming.

The causes of premature old age and worn out nerves are not so much in the outward surroundings as in the spirit of the place. The hand of affection and taste can do much to lighten the privation and labor, but in country homes where there is much of this, too little thought is given to that better part of life, and this is why we so often hear it said that women do not like farming. Many a man will tell you that he has tried farming but his wife

did not like it. There was too much work, too many privations and no society, and he left it for other business. This may be very considerate on the part of a husband, but we deem it a relinquishment of many advantages and pleasures for the love of ease.

There is no woman of intelligence and ability who finds herself settled upon a farm, but will accept the situation and go on with her home making and home keeping, if there is shown a proper regard for the pleasures and adornment of her home; if she can have a rightful apportionment of time, money, and help to make such improvements as taste and skill would suggest. In this there must be the same progression that attends the farmer in his fields. The farmer's wife must find her joys and pleasures in her home, or she finds it nowhere in the wide world.

Women will like farming if there is anything onward and upward about it, but, as that spicy writer, Gail Hamilton, would say, it must not be "one uninterrupted flat." She will like farming, if it gives her that high, pure pleasure so dear to women — the opportunity to make her home delightful to her husband, her children, and her guests.

Nowhere can woman make her home attractive so easily, with so small an expenditure of money, as she can in the country. Beneath her skillful hand flowers will come in their loveliness and fruits in their excellence, and while Flora's treasures give beauty and fragrance from the bosom of every blossom, myriads of busy bees will gather and store in waxy cells of curious workmanship delicious sweets for the table. Fruitful vines trained to some rustic trellis, may adorn her garden, and mingled with the rich green foliage of luscious grapes in color of amber, or faintest green, or royal purple, will wait in massive clusters to deck the festive board. The splendid trees that give shelter and shade, will yield their varied fruits: the forests will give their mosses and ferns, and pleasing ornaments made by skillful fingers will add other charms to her tasteful home.

In her humble dwelling she may spread an intellectual feast as rich as though her's was a home of wealth. From the *Review* down to the child's paper, she may select the choicest reading for her family. The beautiful pages of the *Aldine* will afford amuse-

ment; while Harper's and Scribner's will add rich stores of knowledge. Papers will come weekly with their instructive teachings. Poetry and music, the language of the skies must be there, and far back in the country, earnest, faithful workers may rear the beautiful temple of home, that dearest, most sacred thing on earth; where dwells that etherial something that is felt and seen, which wealth cannot purchase nor privation destroy.

Whether we think of it or not, the whole labor of life, the object for which men toil, for which governments are founded and sustained, discoveries and improvements made, is to secure to the people better and happier homes; and whether we know it or not, the most fruitful source of all the much talked of hardship and privation of farm life is the partial or total disregard of the pleasures of home; putting off till some future time all the simple luxuries, the tasteful adorning that makes country life so charming, saying there is no time or place on a farm for tasteful apparel or nicely prepared food, or sociability, or refinement, or intellectual pleasures. It is this, more than hard work, that saddens and discourages, and makes the heart sick with hope deferred.

It is human to think we are fettered by circumstances; that we have no opportunity; that if we had influential friends, a good location, or money to make money with, we could do something. But there should be no waiting for these desirable conditions. Opportunities must be made and success will come to him or her who makes them. They were only men and women who won it in the past, or are seeking it with persistent industry in the present, and we of the farm should never be content with anything less than the best that can be done in the circumstances and the situation. We may not make money like railroad kings, but we may have cultivated farms, beautiful homes and happy firesides.

There is work, much and varied work, to be done by the intelligent farmer and his family. The thoughtful brain must plan for improvements, sales, profits, and losses, while the active hand guides the plow and gathers in the harvest; but in the great march of progress, a grand army of workers will come up from forest and prairie, from hill side and valley; every interest of the farm will receive due attention; wrong will be righted; hardships will be lessened; pleasures will be increased, until to

be called a farmer, will be the one name for a life of plenty, peace and prosperity.

This paper was admirably read, and was a beautiful treatise on the family, the home and fireside of the American farmer, and should be read by every farmer and farmers wife in the state, as it will tend to increase a higher love for the pursuit of agriculture and elevate all to a higher plane of usefulness and happiness.

Vice President Cheney said that he had listened to this paper with delight, and moved that it be published in the *Western Farmer*, *State Journal* and *Madison Democrat*, and sincerely hoped it would find its way to every household in the state.

Mr. Robbins proposed a sentiment "That true happiness was only to be found at home," which, on a suggestion of secretary Field was responded to by three hearty cheers.

Secretary Field read a communication from Hon. John E. Thomas, of Sheboygan Falls, announcing that he could not be present to give his paper "The Farmer and his Home" as expected, and take part in the proceedings as he had hoped.

OUR BOYS.

BY MRS. H. P. TUCKER, NEW LONDON.

We have a problem to solve, a question to answer,—or whatever you may see fit to call the subject which forces itself upon our consideration; a subject of vital importance to every farmer, and to every farming community. Around the hearth, filling the district schools, and from thence to the distant colleges—are the children of the stern tillers of the soil. Their young life over, their morning of preparation completed, where are we to find them in the noontide of labor, and the evening of a spent life, and what shall the training be, that that life may at its close receive the "well done, faithful servant," from the Lord of the great vineyard. The agricultural papers from all sections of the country are profuse in their advice as to the adorning of homes, and making farm life attractive to the young; and although much has been said and written, the half has not been told. I will not at-

tempt a subject so prolific in beautiful suggestions, but look for something more homely, and perhaps from the wilder and neglected fields of experience I shall be able to quarry out some stone in the rough, which the master hand of the great future can fashion into the shapely structure, although it may not become the chief corner. A homely old maxim tells us that "honesty is the best policy," and I sometimes find myself wondering if men of good moral and religious principles—men who with their fellow men are strictly just,—ever for a moment consider that the principles of their lives will apply as well to their own families, to the little boy of perhaps only 10 months, as to the whole outside world. And perhaps I shall be better understood if I draw a practical illustration.

A cold rain in March found a little lamb, bereft of its mother, lying apparently dead in the fence corner. Its feeble bleating reached the ears of Johnny, the farmer's youngest and much loved son. The tender heart of the child responded to its cry, sought it out, bore it tenderly to the house, and in a far corner of the woodshed made warm by the child's ingenuity, it was cared for, loved, cherished and finally reared to strength and size by its kind foster parent. *Of course* it was Johnny's lamb. Father and mother both said so, and the older brothers and sisters gladly acknowledged the ownership. Summer passed and the foundling became a sheep—the largest in the flock—and took its place in winter quarters. The village butcher called one day while Johnny was at school. His practiced eye at once discovered the extra pounds wrapped up in the soft fleece, and the extra few shillings offered won the prize. And when Johnny next looked for his pet it was nowhere to be found—it was Johnny's lamb but *father's sheep*—and although the young heart was sorely smitten it could not be comforted, because the lamb *was not*. Where was the money? Gone to help pay the taxes. And what was in Johnny's heart? A wounded, bleeding sore, and a stern resolve that "when I get to be a man I'll go away, I won't live on this farm, I'll go where things which are mine—*are mine*." Laying aside all higher motives of justice, would not honesty have been the best policy? Although the idea may seem a strange one, and perhaps far fetched, I firmly believe that many a farmer's boy is

driven from home, and into other walks of life, simply by the injustice of those that love him better than can be told, and whose last hours would be crowned with gladness if blessed with his presence. I will not admit that a child is selfish because he recognizes the right of property. Why should he not practice early in life, what he will surely claim later, and learn generosity with his own, for it is hardly generosity to give what belongs to another.

And the matter of compensation. I will pause a moment if I am a surprise to any when I mention compensation in connection with the labor rendered us by our own boys. I acknowledge that a large share of mankind eat their bread in idleness; but it is not farmers or their families. That "children cost more than they come to," is often sounded in our ears; but it is an argument so weak that I will not give it a moment's thought. If one receive labor at the hands of a stranger, be it ever so unsatisfactorily rendered, we expect to pay for it. Yet how many a farmer's boy works early and late, bearing with him the cares and responsibilities of half the farm, for his is interested labor, and receives in return three or four months schooling in the winter (during which time he does the chores, cuts the wood and stays at home an occasional day to help father draw hay), his clothing (which is none the best), and a few shillings (reluctantly given). Perhaps during the summer he attends 4th of July, and a circus, and during the year a few sabbaths see him at church. On his occasional trips into town he sees boys of his own age, well dressed, passing to and from school, or carelessly enjoying life. If he troubles himself to inquire, he is informed that they are the sons of mechanics and artizans whose parents are far less able than his to support them in this manner. Now, what is the effect upon his mind? A dissatisfaction with farm life, and a determination to leave the farm and try the town. As this is the very thing we do not wish him to do, shall we not seek a remedy? It is easily found. When your boy faithfully renders you his service, and saves your hiring some one else, pay him at least *half* what you would the stranger. If you consider him already in your debt, I advise you to keep him so. It is a good investment upon which you may wish to depend when strength fails you—in the winter

of old age. Give him an education and dress him respectably. Give him recreation for both mind and body. Convince him with facts—arguments so easily understood—that the farm is not only a pleasant, healthful, noble place to live on, but that *it pays, and he will not leave you*, but will be to your declining years a pillar of strength.

Besides adorning our homes, is there not a large field of heart adornment open before us. We have constantly above and around us the most gorgeous scenery in the world,—the scenery of cloud-land. Nature's mysteries are hid from us by only the thinnest of coverings, and if young hearts are taught to study into the deep recesses, they will not long for the husks of frivolous pleasure. Education is its own reward, and by properly storing the minds of our children with the knowledge of animals and plants—and how they grow, we shall find them contented and happy in its vast laboratory. Uneducated toil is like machinery without the lubricating influence of oil. The weary routine of incessant labor must be brightened by thoughts of the wonders contained in the great storehouse beneath and around us. The world moves on, and our boys move with it. Because our grandfathers and great grand fathers toiled on without thought (if they did, which I doubt), the generation of the present day will not, and have we not a labor before us to teach those thoughts the right channels in which to find healthy food to sustain a vigorous, mental growth. In reading the history of great men, we are astonished at the frequent record, "he was the son of a farmer." With pride we scan these lines—and our thoughts seek out the mothers of these men, and with them we review deeds of self-sacrificing honor and years of ambitious labor. And in the annals of crime and shame we are saddened to find the same words occasionally before us, "he was the son of a farmer;" and again thought takes a backward flight and we realize the heart aching 'til it breaks the weary hours of pain, and finally the rest that knows no waking, of her who gave life to one whose conduct has saddened and blighted hers. Had the erring son been kept upon the farm his feet had not found the paths of vice. In the brightest walks of life there is room for the sturdy integrity born and reared in nature's arms. And it is not grudgingly that we send out men to fill legislative halls, council cham-

bers and pulpits, but we want our ranks well filled with those who are no less noble and gifted because the world does not applaud their sayings and doings. Stores and shops have no need of our help. Cities are full and more than full of their own offerings to supply their demands.

As we open our doors to let in the pure air, the sunshine and the melody of God's chorus singers, in the glad spring days that are soon coming—so let our hearts be open to the beauties that are so lavishly spread around us as to make us ignorant of their very existence. And as we till the soil deep to receive the seed for the coming harvest, let us not forget the young minds and hearts dependent upon us for daily food. In many instances our life is not only one of labor, but of cares and deprivations. We need to watch our own minds, that they do not get narrowed and dwarfed by circumstances, which we shall surely conquer if we meet obstacles with patient endurance and uncompromising determination.

And will my words reach any of "our boys." Let me advise you; look well to yourselves; look well to the life before and beyond you before you leave the home sheltered from vice, walled in from temptation, and covered from the storms of sin.

This paper was read by Miss Hattie Bacon of Manitowoc, a student of the University of Wisconsin. The paper and the very fine delivery of Miss Bacon, merited and received hearty commendation from the convention.

Mr. Robbins said from his experience hard work never hurt boys, and referred as a living example to his son, a healthy and intelligent young man present.

Mr. Phelps thought labor gave physical strength, but that severe application of the physical powers without some time being devoted to mental culture tended to dwarf the intellect.

President Stilson said that he had listened with unusual interest to the paper just read, as he was well acquainted with the author. He commended it highly, and regretted that there were not present more of the wives and daughters of the representative men of the farming interest, who had convened here. He hoped that these interesting and valuable papers written and read by ladies

at this convention, would stimulate others to "do likewise," and that at future gatherings of this nature we should be blessed with the presence of numerous ladies, who would participate in our deliberations and add to their interest.

Dr. Martin said that the convention was taking such an interest in the boys that he feared they would lose sight of the girls. He was a young man once—now he was old. He had never been a woman's rights man until to-day. These papers from the ladies had nearly converted him. He moved that a vote of thanks be tendered to the authors of the two papers just read, and to the young lady who had so beautifully read the last one, which was unanimously adopted.

Mr. Anderson said that the granges were educating both boys and girls, and in his opinion had done more for the families of farmers, than any organization ever instituted. The social feature was of vital importance. Its tendency was to cause them to look upon farm life from a more cheerful stand-point; was elevating and refining to the young; and was laying a foundation for better men and more noble, useful women for the coming generation. Mr. Graham said that he was in favor of educating and lifting up the sexes together, and referred to his legislative course as upholding and maintaining that idea. Mr. Carswell remarked that the twin stars of the two sexes were rising, and it was now conceded that ladies had rights that even men were bound to respect. Hon. Alexander Graham then read a paper upon "labor," which contained much useful information, and many practical thoughts worthy of consideration. The paper being lengthy, a synopsis only is given.

LABOR.

BY HON. ALEXANDER GRAHAM, JANESVILLE.

Mr. President, Ladies and Gentlemen: On that bright and beautiful morning, first in the calender of time, when the heavens and the earth were finished, and "man became a living soul," the mandate went forth, "let the earth bring forth grass; the herb yielding seed, and the fruit tree yielding fruit, after his kind." Adam was placed in the Garden "eastward in Eden to dress and

to keep it;" but he, like a great many other young men, who inherit farms, without knowing their cost, or appreciating their value, "kept not his first estate" and incurred the unalterable decree: "cursed be the ground for thy sake; in the sweat of thy face shall thou eat bread all the days of thy life"—thus by his great transgression entailing labor and toil for all time to come upon the sons of men. Yet sometimes when in midsummer we look out over these broad, cultivated prairies, and discover that the greatest happiness of our race is associated with the cultivation of the soil, we are irresistably led to the conclusion that if this decree was ever severe, much of that severity has been revoked, and that this Providence has proved a blessing rather than a curse to mankind.

Looking at man in his present condition, it would seem as if his greatest misfortune would be idleness and inactivity. Under the present dispensation, to obtain our choicest, richest blessings, requires the greatest exertions.

Labor is defined to be the efforts of human beings to produce objects of desire. It may be divided and subdivided a great number of times—as physical or muscular labor, and into mental labor, which occupies the energies of the mind—into productive and unproductive labor—into agricultural, mechanical and commercial labor, and so on.

There is no distinction in labor that is entirely separate from all the rest, as the most stupid laborer must give some heed to what he is doing, and the profound thinker do some muscular labor in order to give to the world the benefit of his investigations.

Productive labor returns to society and the state more than its equivalent, and unproductive labor less than cost. Hence, unproductive persons and employments must be supported by those who produce more than they consume, and is the same thing as throwing away the amount of useful articles which might have been produced, had it been directed in proper channels.

Productive labor is the only source of wealth to the state. Nature has furnished spontaneously all the matter of which all articles and commodities are made, but until labor is applied to that matter to prepare it for use, it is not considered any part of wealth. If, then, labor is the true source of wealth, he that has muscle

and industry, possesses all the chief elements of riches. To the young man or the young woman who possesses these essential elements, wealth stands ready at your bidding, provided you will intelligently apply your powers.

Again, labor is said to be the power used to appropriate matter, and convert it into some peculiar shape, or convey it from one place to another, and make it administer to our necessity, comfort or luxury. The coal and wood used in our fires is buried deep in the bowels of the earth, or lies in the forest, and are absolutely worthless, until by labor they are brought forth and converted to our use. The stone, brick and mortar in our dwellings, and the lumber in our barns lie in shapeless masses in the earth or stands in the interminable forest, until by labor they are brought together, and by labor and skill fashioned into tenements of comfort.

And the same is true of all our agricultural productions, our domestic animals, our mechanical devices,—these would all be as nothing without labor. By labor the earth is plowed and sowed with grain, by labor harvested and threshed, by labor conveyed to market or to mill, by labor converted into flour, and by labor of fair hands converted into bread for the sustenance of man. Labor is the purchase price, the only valuable consideration we pay for every article possessed by man, whether of comfort, necessity, ease, luxury or elegance.

Technically, money is not wealth, but the mere representative of wealth. Adam Smith says, "it is not by gold or by silver, but by labor that all the wealth of the world is purchased."

Just then in proportion as a people are industrious and frugal, and just in proportion as a nation is intelligent in the use of means to appropriate matter and convert it to its use, will it increase in wealth and prosperity.

The first step by man to appropriate matter to his use was to hunt wild animals. and feed himself with their flesh and clothe himself with their skins. The next step was to tame and domesticate these animals, so as to have them ready in times of necessity for his use. The next advance in the progress of civilization was when man learned to produce the necessities of life by the cultivation of the soil, and manufacture of the comforts and conveniences of life.

From this period in the history of our race, the advancements made, and the means of producing all the necessities and luxuries of life have greatly multiplied. By labor we produce food, and by labor we build railroads and ships to convey it from one part of the globe to another; by labor we make iron and steel, reapers and mowers, lime and bricks, cloth and clothing, hats and shoes, vessels and vehicles; in short, everything used by man. Labor is the sole source to wealth and the sole means of exchanging the products of one section for those of another. Labor is the only source of wealth and consequently of national greatness and independence.

In presenting labor as the only source of wealth to individuals and to the state, let it not be understood that we refer to the labor of the hands only. This class most naturally comes under the head of labor, but we include mental labor, as the hand is not more necessary to execute than the head to contrive, plan, and direct. Indeed, it is questionable whether the labor of the muscle is more valuable to us as a people, than is that distinguishing characteristic of the American mind called genius, by whose skill new implements of husbandry, new modes of travel and transportation, new machines for manufacturing, new steam power printing presses, new means of communication, swift as lightning between distant parts of the world, are created, thus cheapening production, facilitating commerce, improving manufactures and increasing in a compound ratio all the comforts, conveniences and luxuries of life.

About a century ago, a Scotch mother, according to Sir Walter Scott, objected to her sons using a new fangled machine for separating the wheat from the chaff, thus impiously thwarting the will of divine providence, by raising the wind for her ladyship's own use, by human art, instead of soliciting it by prayer; but now there are few Scotchmen or Americans who are unwilling to avail themselves of these labor saving machines. There is now and then one who is constantly saying "things arn't as they used to be," and croaking about "new fangled machines," and saying, "there is nothing like the good old way." But the good old way of going to mill on horseback with the corn in one end of the bag and a stone in the other end, when the oxen were compelled to

draw the plow with a device attached to their horns or their tails; when nice old ladies who happened to have homely faces and black cats were drowned in the river as witches, is about played out, except with now and then a bundle of bones and muscles that "lives where his father lived; dies where his father died, and thinks the moon that rolls above his head is no larger than his father's shield."

But very few farmers however, merit this description. Some one has said that "the cultivated farmer is better than the cultivated farm." The cultivated farmer is one who uniting science and intelligence with practical experience is enabled to expand the prolific field of agriculture and add almost infinitely to its resources.

He takes advantage of the metaphoric transformations wrought by change of climate, by hybridizing, by culture, by which the poisoned almond has been changed into the luscious peach; the bitter sloe into the delicious plum, and a whole tribe of barren weeds into nutritious grain, and shows how completely the properties of plants may be ameliorated and changed in their natures by these processes of science and how infinitely this almost boundless field of research may be expanded into a never ending subject of inquiry. The laws of science which apply to every branch of agriculture, the extraordinary development and discoveries which are making in every part of agriculture and horticulture, and which aid in their advancements; the abandoning of old processes and baseless theories for the adoption of facts drawn from "logical and scientific deductions" may be regarded as some assurance that most desirable results have already been accomplished.

The cultivated farmer is one who investigates all the laws of nature; for in his farm he finds a great volume spread out before him, and learns from it "how nature in all her statutes, is a many stepped pyramid, from whose top man looks out and sees the great mechanic and agriculturist entering into a higher and more subtle domain—the spiritual, where he may express his wisdom, benevolence and power."

And right here we want to say, that the farmer has reason to find fault, not with the implements that inventive genius has brought out, but with the monopoly by which designing men have contrived to control the manufacture and sale of many of

the labor-saving machines, and also they have great reason to complain of the laws that constantly subject them not only to exorbitant and extortionary prices, but to constant imposition from the vendors of useless and fraudulent patents. These things should be speedily corrected by a modification or repeal of all patent laws that protect monopoly and imposition.

As civilization has advanced, and the laws that govern labor become better understood, the division of labor has done much to facilitate and increase the power of production. One person engages in agriculture, another in horticulture, another in tanning of hides, another is a cabinet maker, a blacksmith, a tinsmith, a silversmith, a merchant, a weaver, a tailor, a machinist, a printer, a doctor, a lawyer, a minister or a book-binder, and so on. By this division of labor, not only the convenience but ability and wealth of all are greatly argued.

And by this division of labor, trade and commerce is gotten up and carried on between all crafts and sections of the world.

Commerce is the exchanging of the productions of one section of the country, and of the various employments, for those of another, and this calls for the labor and capital of those engaged in providing commercial facilities and in operating railroads and steam or sail vessels, and various other modes of exchange and transportation.

This habit or practice of exchanging, is the stimulus to labor, and is the vivifying power that quickens each department of industry to its utmost production, because it enables each to exchange whatever portion it produces over and above its wants, for other commodities which will contribute more to their comfort and enjoyment.

Farm labor being the most necessary that a populous country possesses, ought to have every encouragement that is consistent with the general welfare. A class so essentially necessary to the community should not be compelled to submit to the exactions of a privileged few who are engaged in carrying on the trade and commerce of the country.

Heretofore every other interest has seemed to combine to promote class interest and obtain class legislation, while the farmer has neither protected his own interest or been protected by those

who have claimed to represent him in the councils of the state and nation.

A few words in reference to the relation of labor to capital. We have shown some of the processes of labor, but as a general rule, in order to make labor remunerative we must have some capital to begin with, or else we must labor for some one who has. Some classes of business can be commenced with a comparatively small amount, while others, as railroads, require the combination of a large sum of money. But whether large or small, it would seem that labor and capital are each dependent upon the other, and that neither long can get on without the other, and therefore the natural conclusion is that they being mutually dependent ought to be the best of friends. But if either has the advantage, the chances are in favor of capital, as capital is more easily combined, is more overbearing and tyrannical and can no longer subsist without labor than can labor without employment. Moreover capital has the advantage in having obtained laws that enable it, for the time being at least, to extort a portion of the price of labor.

That legislative reform is needed, and must be had to break up combinations of capital and prevent its absorbing the profits that justly belong to labor, no one can successfully deny.

If government is but an extended system of co-operation, wherein each man is to furnish his full share of labor or capital to promote the general welfare, it follows as a matter of course that each man is entitled to his fair share or profit in the dividends which result from the diversified employments in which parties are jointly engaged. This is a case where *equality* in profits is *equity*.

Therefore, if any man or combination of men by idleness, intemperance or profligacy, fail to contribute their part, or if they obtain more than their fair share of profits, laws should be passed to punish or restrain, as the case may be, all such persons, or combination of persons, from thus injuring society.

It is time that the producer, and the consumer as well, make an effort to counteract the evil effects everywhere complained of, growing out of combinations that manage the commerce of the country, and measurably absorb the profits on labor.

The farmers appear to have just learned the wonderful power that lies hidden in the concentrated efforts of association by the organization of granges.

In these granges such questions will be considered and discussed, and mind will grapple with mind, and these collisions will sharpen the intellect, and you will soon learn what minds are capable of accomplishing when acting in harmonious combination. If we understand the object of these granges aright, it is primarily, to labor for their mutual improvement in agriculture, and in house culture; for social and mental improvement and to this end admit to membership in the order both men and women. And as incidental objects of this organization they propose to consider and discuss questions of political economy, with a view to correct the abuses that have grown up of late through legislation that has fostered and built up immense monopolies that are leaching out of the producers, all the profits and productions of the country—thus amassing great fortunes in the hands of the few at the expense of the many. This system is not in accordance with the genius of our institutions. They propose to correct it. A waiting world is watching the result in feverish anxiety.

Their success will be a noble dispensation for our country, a triumph for equity. It is the object of our institutions to build not monopolies but men, to exalt not the few but to raise up general humanity, not to build palaces, but to lift up assiduous industry to competence, to make our country known not so much in individuals, as in the elevation of the great mass—by raising all to the highest possible level, by universal education to honorable distinction, comfort and prosperity.

We come now to speak briefly of mechanical labor. If there is one thing more than another that will tax the human mind to its fullest extent it is to master the mechanic arts. From the earliest history of our race down to the present time, the best minds of every age have been employed in developing the arts and sciences. Strike from the world's history the labor and achievements of the mechanic and the balance would scarcely be worth recording. Do this and you and I would be houseless and hatless. It is to the mechanic's labor that we are chiefly indebted for

many of the essential comforts of life. He builds our cities and villages, and constructs our churches and school houses. He erects the pleasant cottage and the elegant mansion. He manufactures your reapers, and the other implements of husbandry are the labor of his hands. If the Niagara is to be spanned, or the Alps are to be tunneled, who but the mechanic is summoned to accomplish it.

Our plow shares and pruning hooks for peace, and our implements of war are all the result of his labor and skill. He builds our steam vessels, our steam printing presses, our locomotives, our railroads, our ships, our telegraphs, and our mills and manufactories. I know it is the habit of some persons to undervalue and look with indifference upon the laboring man, the farmer and the mechanic, but in my judgment if there is one class of persons more than another that tends to develop our resources and add wealth and competence to the country, it is the laboring people.

And will the ladies allow me to remind them how great obligations they are under to the laboring mechanic. If you want a sewing or knitting machine to relieve your constant wearying toil, you apply to the mechanic. Do you want a "love of a bonnet" or a tiny slipper, you go to the mechanic. Do you want a carriage for your comfort and pleasure, who but the laboring mechanic is to build it. Do you want to send messages of love or mercy on the wings of the lightning, the mechanic has supplied you with the means.

Let labor, then, be more and more regarded as honorable, because indispensable, whether in the field or the workshop, engaged in commerce or in the schoolroom, and let the rights of honest toil be protected and fostered, and let capital be compelled to divide fairly with the peaceful pursuits of industry, and let our country's history be not the plunder of the many by the few, but apply fair and even principles to labor and commerce, and let our *motto* be honor to every man and every business, or craft in proportion to merit, and our country's greatness will be the sure and happy result.

In conclusion let us not be understood as asserting or promulgating the idea that the highest object of government is to simply promote material good; civilization has or ought to have, higher

objects in view than the mere amassing of wealth. But to gain those higher ends, it belongs to legislation to aid each man as far as practicable to retain for his own uses, the legitimate results of his own labor and providence; to place barriers in the way of the wiles of the more crafty but less laborious, thereby preventing them from obtaining an undue share of the general results of industry.

In short, little more is wanted in legislation than to protect each individual in such honest pursuit as interest or inclination shall induce him to pursue. If this principle be correct, how much of all former legislation, of which the principal object has been to give the majority of the profits on labor to the privileged few, would have been by this rule avoided. Who can calculate the amount of moral evil which resulted from the present gambling, speculating spirit, superinduced by partial injudicious class of legislation.

Mr. Robbins asked the gentleman what occupation he pursued.

Mr. Graham said that he was a man of all trades.

Mr. Robbins said he should judge so from his career. In the state legislature he—Graham—was on the banking committee and had killed banks as dead as a mackerel. As author of the Graham Law, bill No. 7, he had killed the republican party, and if now he was to be a leader of the grangers that order too would go down.

Mr. Graham, in reply, said: True, true, I did what I could to destroy the wild cat banks to keep them from destroying us; and so far as the republican party is concerned, I am free to admit that I was at its birth and believed in its doctrines; and I want to say to the gentleman that the causes of its defeat lie deeper than that suggested by him. If the people had felt that all was fair and honest at Washington, you might as well have undertaken to dam up the Niagara with a bundle of straw, or storm Gibraltar with a popgun, as to have beaten the republican party with a stringent license law.

INDUSTRIAL EDUCATION.

BY S. H. CARPENTER, LL. D., OF THE UNIVERSITY OF WISCONSIN.

There are two essential requisites to success in any trade or profession:—a knowledge of the principles forming the science of which the profession is the practical application; and skill in the application of these principles. The one requires cultivated mind; the other cultivated muscle. Every profession presents these two sides, but notably those which are largely dependent upon mechanical operations for their success.

The question has been much discussed lately as to the proper scope of education in its application to those callings which require a physical training as well as a mental discipline. The recognized aim of collegiate instruction was, until quite recently, to confer mental culture and discipline sufficient to enable a man to prosecute successfully any chosen pursuit, leaving a practical acquaintance with the mechanical duties of his profession to be gained in the unsatisfactory and costly school of experience. This aim was purely fundamental. It did not seek to impart technical knowledge, but only those general principles which underlie all professions and arts, without making any special application of them. In so far this aim was narrow, but at the same time it sought that which was of the widest practical application. The knowledge thus gained was purely generic, and before it could be rendered of any practical use, it required a supplemental specific training. Being generic, its scope was almost wholly intellectual, and the material presentation was wholly left to the private efforts of specialists. That this is the highest aim possible to a system of education, we think there can be no doubt, but that it is almost entirely inoperative unless carried further, and these principles applied in the solution of problems that meet us in every-day life, admits of no question.

Starting with the recognized fact that the intellectual constitution of all men is the same, but one course of study was laid down

as being the best to secure the desired discipline. The individual differences between men in mental grasp and power were neglected, although by defining the amount of preparation necessary to enter upon the prescribed course, an attempt was made to equalize these differences. While this secured an even start in the collegiate race, it did not confer equal powers of endurance upon the students, and in a year or two all the original differences of intellectual endowment were more than ever manifest, because of increased intellectual activity secured by this discipline. Thus while the average student was worked up to the full measure of his ability, superior men, through lack of sufficient employment were apt to form habits of mental irregularity, if not of physical dissipation; while inferior men were so overworked as to lose heart, and being carried forward more rapidly than was compatible with thoroughness, formed habits of loose, superficial thinking, which, in a great measure, unfitted them for the business of real life.

The question has been lately raised, whether this system of exclusively intellectual education was not insufficient to meet the popular want, and to satisfy the ideal of popular education; and it has been strenuously urged by many that physical culture and discipline should go hand in hand with intellectual development, if the common pursuits of life are to feel the benefits of universal education.

One class of reformers has endeavored to remedy the evils inherent in the established college course, without materially changing its general character. To remedy the difficulties arising from the natural inequality of men, the favorite plan has been the selection of optional courses of study, wherein one natural aptitude may offset another, so that all students will average together, although pursuing different studies. It may be that this, like other proposed reforms has been carried too far, and the general average of scholarship reduced by this substitution of taste for application, rather than elevated, as was the original design: but it has at least had this one good result; it has called the attention of our educational men to the fact that it is of more importance that students graduate with an equivalent amount of mental discipline, than that they begin their course with an equivalent preparation.

The second and most important effort of educational reformers has been to widen the aim of education. Instead of this general merely fundamental discipline, the simple intellectual culture, which fitted a man to begin the study of any profession with no particular advantage for any one, they have sought to add or incorporate a partial technical training, which will fit the student for some particular calling, giving him the advantage of instruction in overcoming the practical difficulties he will meet in the active discharge of the duties of his chosen profession. This effort at reform has led to the establishment of Agricultural or Industrial Colleges, which aim to teach the applications of science as well as its fundamental principles. And although it may be too soon to form a correct estimate of the real value of these efforts, we think we are safe in saying that the sanguine expectations of their advocates have not been fully met. It will be our endeavor to give some of the reasons for this partial failure.

The first and most important error is that these Schools have attempted too little. Nothing can ever take the place of thorough intellectual discipline. A technical school must be considered as a supplement to a college, and cannot be made by any means to take its place. Courses in applied Science must succeed, not take the place of courses in general Science. An Agricultural College ought to mean a College based upon and superior to the ordinary college. Agriculture cannot be made to take its rank with the other professions until the attainment of it costs an equal amount of time and money, and the successful practice of it demands an equal grade of talent. The aim of these schools has been to change the farmer and the artizan from being mere mechanical imitators to thoughtful scientific workers, by placing in their hands the results of scientific discovery. The partial failure in which these attempts have resulted has not been due to any fault inherent in the plan, but to the fact that insufficient time was allowed for the complete working of the plan, and to compensate for this want of time, the attempt was made of teaching the applications of science, before a sufficient knowledge of general science had been gained. Such attempts must always prove futile because applied science can be taught only after the general principles of science have been mastered. A real Agricultural

College, then, instead of requiring less preparation and less severe study, with a lower course, will, if it do anything more than duplicate our High Schools and Colleges, require more time than the ordinary college course, more thorough preparation and severer study, just in proportion as it fulfils its proper function.

It is plainly a waste of time to attempt to teach agricultural chemistry before the principles of chemical science have been mastered. Nor will a mere superficial acquaintance with these general laws answer here as well as in a classical course. The fact, that these principles are to be applied renders an accurate and thorough knowledge necessary. The same may be said of the application of botany to agriculture; it requires a thorough previous knowledge of botanical science. So, if stock-raising is to be pursued upon scientific principles, the sciences whose principles are to be applied must first be mastered. In any other calling, lack of thorough mastery will be less injurious than in this. Anything less than this thorough knowledge leaves the farmer a mere empiric, doing what he does without knowing why. We are far from saying that scientific principles cannot be successfully applied by men ignorant of science, but men thus ignorant do not scientifically apply these principles, they are guided wholly by imitation. The whole agricultural world is benefited by the discoveries of Liebig, while not one in ten thousand of those benefited knows a single law of chemistry. But it does not require an agricultural college to teach men to do what they are told to,—to empirically employ the discoveries of others.

The failure of agricultural colleges to fully meet the expectations of their friends finds its main explanation in this fact: They gave too little and they demanded too much. They have attempted the impossible task of making men proficient in applied science, while leaving them in comparative ignorance of the general principles of science. Instead of lengthening the time of their course to correspond with the increased demand made upon the student, they have actually diminished it. This must inevitably result in a shallow and superficial education, which will, unless prevented by wise and timely action, bring this class of institutions into deserved contempt.

But in these very failures the way to success has been indicated.

It must be understood that an agricultural course imparts additional instruction, that technical schools are intended to supplement, not supplant, colleges and universities. And, further, it is self-evident that no amount of mere theoretical knowledge can ever make a man master of any calling which is largely dependent upon skill. For this, muscle must be trained as well as mind; but muscle cannot be trained in a school where the main business is intellectual discipline. The resistance to be overcome in the discipline of mind is the truth involved in some problem, all the data necessary to the solution of which are given in the problem itself. The difficulties to be overcome in the discipline of muscle are manifold, partly due to natural temperament, but mostly lying outside of us, and manifesting their presence in such various ways that no rules could be given for the solution of the problem, even if we could by any possibility collect the necessary data. The chemist in his laboratory selects at will the circumstances under which he will try his experiments; but the farmer cannot thus determine the conditions according to which he will raise his crops; he cannot foresee the meteorological influences against which he must guard, or of which he must take advantage. Nor will any number of years spent upon an experimental farm give him any advantage in this particular over his illiterate neighbor who has learned all he knows by observation. It is true that a scientific man can take advantage of these circumstances, but it is his science that teaches him this, and not the experimental knowledge gained upon the model farm; it is as a scientific man that he judges and not as a farmer. Nor is it the teachings of applied science that guide him here, but the fundamental principles that underlie all science.

Again, the discipline of muscle cannot be contemporaneous with the discipline of mind without great loss of time. Skill is nothing but habit; it is doing well what we attempt without that painful consciousness of each step, which marks inexperience. The skilful musician manipulates the keys without any conscious mental effort in translating the notes from the printed page into the sounds of witching melodies or swelling harmonies. This is skill; but mental culture can never render the mind automatic; its processes must be known to the consciousness to be of any

value. Unconscious thinking is at best but a sort of reverie, of no more value than a dream.

And further, the process of study is too exhaustive if followed closely to admit any further exhaustion in physical labor, particularly when demanded in that period of life when growth is also making large demands upon the system. Such a course makes both work and study an unremitting drudgery which soon begets a hearty distaste for both. It is estimated that four hours of study exhaust the physical system as much as ten hours of labor, and less than four hours of study per day would not suffice to keep up a healthy interest in the class room. There may be cases in which an ambitious youth has studied as though he did not work, and worked as though he did not study, but if he succeeded in either, it was because the circumstances under which he was placed were so peculiar that no general rule can be deduced from his experience. This mastery of muscle which confers skill must be given at home on the farm, especially during the years of boyhood, and physical labor be omitted, except incidentally, during the months devoted to study.

The economy which most farmers are obliged to practice forbids this attempt to combine manual with intellectual labor, as by so doing the time during which the services of the student are lost, as well as heavy expenses incurred, is more or less extended. The time spent in getting an education is so much time taken from productive manual industry. While the head is at work, the hands are idle, and strict economy requires that this unproductive period be reduced to the lowest practicable limit; it is certainly bad policy to extend it, for any merely temporary advantage. Aside from the necessary distraction of attention, the student labors at a disadvantage. The result of education is invariably to enhance the value of educated labor, as the wages of the skilled workman are always higher than those of the mere laborer. A student is obliged to dispose of his labor at the lowest rate, while, after his education is completed, he receives remuneration for his skill as well as his labor, and it is manifestly bad policy to postpone this latter period for any meagre immediate return.

But not only is the time spent at school to be taken from productive manual industry, but most farmers' sons while getting

their education are subjected to a comparatively heavy expense for board and lodging. It is manifestly good economy to reduce this period of expense to its minimum. Few farmers would feel like paying five dollars a week for the board of their sons while learning to plow or sow. These manual operations can be learned better and cheaper at home. It is evident that whatever time is spent in manual labor must be added to the time during which the student is on expense for his board. One thing at a time is the best economy. Necessity knows no law, and there may be cases in which the only alternatives are ignorance or an education secured under disadvantages. Under such circumstances there can be no question as to the proper course—the education must be secured at any reasonable outlay of time and money, but such exceptional cases do not afford the basis upon which to found a general rule.*

Agricultural colleges cannot afford young farmers a place in which to serve out the years of their apprenticeship. Their aim is higher; it is to place scientific principles within the reach of the great body of farmers, first by instructing young men and women who are to follow the profession; and, secondly, by securing to the agricultural community the advantage to be derived from a series of careful and exact experiments, conducted by competent scientific men. This latter benefit is by no means the least that can be conferred, as it gives even those who cannot attend the instruction given within its walls the material benefits of the investigations there carried on. We must not then

*Since writing the above I have read the address of Professor Goldwin Smith of Cornell University, which he delivered before the Trades Union Congress of Sheffield, last summer, from which I extract the follow paragraph bearing upon this subject:

"Mr. Cornell had a scheme very much at heart for the combination of manual labor with university education. That scheme has not borne as much fruit as I expected. It has not failed, but it has succeeded in a less measure than its founder hoped. The reason of its partial failure is not that there is any feeling whatever against the combination. Whatever may be the faults of our society in the New World, labor there is sincerely honored; there is no man in the highest society of the United States or Canada who does not feel proud of having sprung from the ranks of labor, and glad to point to it as his escutcheon. At Cornell University I have had students at my history lectures in their working dress, and when they have taken honors at the university I have observed with pleasure that they were greeted by their fellow students with enthusiastic applause. The reason why the scheme did not succeed to the full extent intended is simply this, that you cannot, except in very rare instances, effectually combine hard manual with intellectual labor. Labor of all kinds draws upon the same fund of nervous energy, and when you have exhausted yourself by working with the hands you need recreation. You cannot pass to the superior work of the brain.

measure the good secured by an agricultural college by the number of students that may be found in attendance, for its most beneficial influence is exerted upon the great body of farmers who put into practice without knowing the scientific reasons therefor, the principles deduced by men who have devoted their lives to purely scientific investigation.

The course of study to be pursued must be determined by the wants of the farmer, in so far as it differs from the course usually adopted in colleges. Men do not go to college to learn how to work on a farm or in a shop. That training of the muscles which gives skill can be acquired only in actual labor in that employment in which the skill is to be exercised. The business of the college is to give discipline of brain, and culture of the intellectual powers, which, in the farmer's profession as well as in every other calling must direct and control the physical powers—mind always rules; muscle always obeys.

What brain-culture will best fit the farmer or mechanic for his calling?

I. Every farmer and mechanic is a Man, and needs to know:

1. What man is, - - Mental Philosophy.
2. What men have done, - History.
3. What men are doing, - Language and Literature.

II. Every farmer and mechanic is a citizen, and needs to know:

1. The duties of citizens:
 - (a) towards each other. - Moral Philosophy.
 - (b) towards Government. - Constitution, &c.
2. How to express his views. - Rhetoric.
3. How to defend his views. - Logic.

III. The business of the farmer is to develop to maturity, two classes of germs:

1. Vegetable - - - Botany.
2. Animal - - - Zoology.

His means are:

1. Soil - - - Chemistry & Geology.
2. Atmospheric and Chemical Forces - Physics & Astron'my.
3. Vital Forces:
 - (a) Vegetable - - Botany.
 - (b) Animal - - Zoology.

IV. The business of the mechanic is to change the form of substances so as to fit them to supply the wants of man. These substances are:

- | | | | | |
|--------------|---|---|---|---------------------------------|
| 1. Mineral | - | - | - | Geology. |
| 2. Vegetable | - | - | - | { Mechanics and
Mathematics. |
| 3. Animal | - | - | - | |

His means are :

- | | | | |
|----------------------|---|---|---------------------|
| 1. Mechanical Forces | - | - | Natural Philosophy. |
| 2. Chemical Forces | - | - | Chemical Physics. |

V. The farmer and mechanic should understand the laws of trade which govern the exchange of products and the investment of the proceeds. As the commercial value of manufactured articles depends largely upon the taste displayed in their design and execution, the mechanic needs especially to be instructed in *Æsthetics* or the Science of Formal Beauty.

The following conspectus of a five years' course embraces the foregoing studies :

First Term.	Second Term.	Third Term.
	PREPARATORY YEAR.	
English Grammar. History, United States. Arithmetic.	English Analysis. Physical Geography. Commercial Arithmetic.	English Composition. Physiology. Book-keeping.
	FRESHMAN YEAR.	
English. El. Algebra. Book-keeping.	English. Elementary Algebra. Book-keeping.	English. Plane Geometry. Botany.
	SOPHOMORE YEAR.	
Solid Geometry. Rhetoric. Chemistry.	Higher Algebra. Physiology. Agriculture.	Plane and Spher. Trigon. Zoology. Agriculture.
	JUNIOR YEAR.	
Conic Sections. Agriculture. English Literature.	Mechanics. Chemistry. History.	Physics. Chemistry. Constitution.
	SENIOR YEAR.	
Astronomy. Mental Philosophy. Political Economy.	Logic. Moral Philosophy. Geology.	Aesthetics. Economic Geology. Reviews.

Latin, German and French may be pursued as optional studies throughout the course.

This paper is worthy a careful, thoughtful perusal by all, but more especially by the agricultural student who desires to know *why* his work should be conducted in a certain manner to insure success; by those who desire to know the principles which underlie their calling and to farm scientifically and profitably.

Mr. Tubbs said that he was glad the Professor had given us such an able paper. He believed that better mental culture was of the most vital importance to the farmers of Wisconsin, and that if the advice given in this paper was heeded the most beneficial and happy results would follow. He believed in muscle culture also, as well as mental.

Mr. Robbins did not fully agree with the Professor relative to labor and study. Thought physical development and mental culture could go hand in hand; that the boy could labor daily a certain number of hours, and apply himself to study a given time daily also, with more rapid development of the physical and mental powers than if each were trained separately. Said that the principles taught could often be reduced to practice when fresh in the mind of the student, by labor and application, and thus the perfect man and woman be developed.

Mr. Anderson said facts showed that students could study and work alternately a certain number of hours each day with the best results. He believed the brain and hand should be educated at the same time when practicable.

Prof. Carpenter said that the whole attention of the student must be given to one subject at a time if the highest progress was to be attained. He had followed the plow, and performed general farm work, and considered himself privileged to speak upon agricultural subjects from actual experience in the business.

Mr. Williams thought farming should be regarded a profession as well as law or physics, and that young men should be educated with a view to its pursuit the same as for other avocations; that the idea entertained that anybody could be a farmer, however uneducated or stupid he might be, was very erroneous, and that the sooner this idea was exploded, and farmers learned that educated brains were necessary to success in their calling as in others, the sooner would true progress and advancement be seen in agricultural pursuits.

Mr. Eaton said that two desires were called up by the Professor's paper. 1st. That the entire agricultural community might be able to appreciate and realize the beauties of the ideas and suggestions which the Professor had so clearly advanced. 2d. That the Professor could fully comprehend and understand the condition of the practical farmers of the state. The results were not perhaps fully attainable, but he believed each would better comprehend the others position by the discussion of this valuable paper, and the educational and practical men present would be alike benefited.

Mr. Fox was glad to learn that the writer of this excellent paper was connected with the University of Wisconsin, and that he took a lively interest in the education of the industrial classes. He believed that this institution should be so conducted as to give its students an education in those branches which should be of practical use in the varied industries of the world. Said that he thought the schoolroom was the place to lay the foundation upon which to build all professions and avocations, but that the practical farm work or other industrial labor was the only proper place for training muscle.

EDUCATION OF FARMERS' SONS.

BY HON. LEVI ALDEN, MADISON.

My subject is to be,—The Education of Farmers' Sons—a field, you will say, that has been too well considered by abler minds to allow my unskilled and unpracticed hand to bring out any product; but if, with my blunt plowshare, I can stir up the inert and well-worn soil, and may be, add some stimulant to quicken it into a new life—to direct for a moment the public attention to a subject, hackneyed though it be, which must be the very starting point and foundation to all future assured success, your time and my effort will not be entirely lost. It must be admitted, that commonplace as it may be, there is still so much ignorance and diversity of opinion upon the subject, vital and all important in every step of the farmers' progress in his calling, there is ample excuse for repetition and reiteration—line upon line and precept upon pre-

cept, till the popular mind is stirred up and educated to some practical and common point.

But in the outset of the discussion, there are so many preliminary and modifying questions, that we may well despair of arriving at anything like an invariable rule of action to be adopted and used without discretion. Let it be admitted that the average farmer sees and feels the importance of educating his family, not only in a general way, but with reference to his own particular calling; here at once comes in the question of his ability to do so. He must reflect whether the family exchequer will honor the drafts that will, from time to time, and for a long, indefinite time, be drawn upon it to pay expenses. There must be access to good schools, somewhere in his neighborhood; the terms of admission to these schools must be such as he can meet. Then comes up a more perplexing question, and one much harder to determine. How many of his sons, if any, led by his own success in his calling, or disheartened by his failure, are going to follow in his footsteps, and choose farming as their life-work? Or, what calling or profession will they finally adopt and pursue? And here let me say, parenthetically, that no son of wealthy or of poor parents; of farmer, artisan, doctor or divine, should be suffered to reach the years of manhood without a knowledge of some kind of trade, profession or calling, by which he can start out into the busy world, independent, self-reliant and without further parental aid, and if need be, become at the moment of his majority, a self-supporter—a master of the situation. Fortune is too fickle and worldly circumstances are too fluctuating for anybody to become entirely dependent upon the savings of the past. Those who can live without work of some kind, either of body or brain, are the mere exceptions in society, not worth considering in any philosophical view of life. How many young and middle aged men, and women too, are to-day bitterly lamenting as they seek access to the pitifully paid but over-crowded clerkships or more beggarly political places, that their younger days were not spent in learning some trade or studying some profession by which they could win an honorable living in spite of the reverses of fortune or the defeats or success of political parties.

Considering all preliminary questions settled; that the farmer

has decided that his sons are to be his successors in his own calling in life, and that he is possessed of means to educate them properly and liberally, what is to be the agricultural curriculum for general adoption? In these days of high and graded schools, and of the more improved condition of our common schools, not large enough to be graded, a great advance has been made upon the old course, which embraced the three sciences—"to read, write and cipher," so that the attendant of the modern common school may be presumed to have some knowledge of elementary works of a much larger range of the sciences, and even to get beyond elementary works. In most of the schools now, the classes take up algebra, geometry and trigonometry; they study the higher grammars, physical geography, physiology—the latter a most useful study, and should be more generally and thoroughly taught—and some even pursue the ancient and modern languages, particularly the Latin and German. Having acquired these, and any others that I have failed to mention, as embraced in the common school course, what now shall the young farmer take up that we may regard as peculiarly useful and important to him before he finally passes from theory to practice? I am quite certain that you have anticipated that I will mention chemistry as first in importance. And I doubt whether the most persistent opponent of book farming will question the correctness of the conclusion, and yet how few who follow farming have ever read the simplest elementary work upon that science, much less made it a study. The tradesman, mechanic and artisan, who should pursue his work without any knowledge of the nature and strength of the materials which he handles and shapes into the products of his art, would be no more inconsistent than the farmer who looks upon the soil in which he digs as only common dirt,—a simple element only made to prop up the plants which he raises through some mysterious and misunderstood agency, instead of that composite substance that forms a copartnership with sun and atmosphere, heat and moisture, to germinate, nourish and finally ripen his products. It may be replied that the great majority of mechanics understand as little of the scientific principles upon which their trade is based, and from which it derives its use and

efficiency, as the farmers do; that they follow it simply as artisans, working by established rules, determined by mathematical demonstrations and corollaries, even of the existence of which they have not the slightest knowledge; they blindly follow the rule, not knowing why they follow it. If we are pressed to admit this, we claim that it furnishes the reason why there are so many blunders and failures in the practice of their arts and trades. It is the cause of that platform (not political) falling and maiming the unhappy beings standing upon it, and crushing to jelly the not less unfortunate individuals reposing under it. It is why that bridge gave way and precipitated hundreds of men and women, unsuspecting any danger, into the insatiate waves below; the waters to finish the painful and destructive work the falling timbers and iron braces had failed to effect. It is why those solid-looking piles of brick and mortar come crashing down, burying alike their builder and the innocent passer-by in an undistinguishable heap of debris, from which the task of extracting them alive is hopeless! And, further, it is why that chimney emits its smoke at the wrong end, and it is why the air in this very Capitol is at times unwholesome and intolerable, and which, if the dear people were to take in too large doses, will prove hurtful and finally destructive.

The strength of materials can be determined with mathematical precision, and the weight that any structure will sustain can be well established without any destructive experiments with human life and well being, by the less expensive demonstrations of philosophy. The chemical and mechanical cohesion of brick and mortar rests no less upon the immutable laws of matter. Smoke and bad air owe their presence or absence to the invariable force of equilibrium. If the architect and the mechanic and the mason had understood these first principles, all these destructive and painful accidents and hurtful inconveniences might have been avoided, and they furnish a reason why even the hod-carrier should be raised to the dignity of a professor of his art.

Will not an understanding of the laws of matter, of the composition of soils; of the structure of plants; of the nature and effects of stimulating substances and composts; of heat, of moisture and electricity, be alike useful and invaluable to the farmer? Shall

he stumble and blunder along through a life of unprofitable labor and experiment, untaught even in the alphabet of his calling? It is true, he must experiment; but to profit by it, he must do it in accordance with scientific principles. He can succeed otherwise only by mere accident; or if he practices only by the experience of others, a little change of conditions will upset all his calculations and disappoint his anticipations. I do not contend that every farmer shall keep a laboratory, and undertake the analysis of organic substances, but he should have sufficient knowledge of the science to understand the formulas of practical and experimental chemists, in order to profit by them, and turn them to practical use.

Let us turn over a leaf, and consider a near relative of the science we have first touched upon; cognate, at least so far as the purposes of the farmer are concerned—botany. And in this, if not in chemistry, real interest and pleasure are mingled with profit. The classification, properties and structure of plants are surely right in the way of the scientific farmer; the characteristics of the flowers, by which they are christened as well as the family name of each is determined, their myriad shapes and shades, as they are fashioned and colored by the creative hand and pencil of infinity; they are the poetry of his profession—the *utile dulci* in his course of study. With a thorough knowledge of botany, when he sees an unfamiliar plant in his field, he need not be at any loss, whether to foster it as useful or ornamental, or to pluck it up as noxious and hurtful. And, for one, I doubt not that if the practical botanist and the chemist could put their heads together, they could concoct from the medicinal plants furnished them by the vegetable kingdom, a panacea more potent to cure the aches and ills that flesh is heir to, than all the mineral drugs named in the medical dictionary, with the artesian magnetic waters thrown in as solvents.

We must hasten over geology, not because it is not an important and indispensable part of the farmer-student's course of study, but because time will not admit of an elaborate exposition of its advantages. Its practical lessons would go hand in hand with chemistry to instruct him in the nature and properties of the soil and of the various layers underneath it; to show him the

strength and durability of the stone he may have to use for building purposes, and direct him somewhat in the sinking of wells to obtain good and durable water.

Meteorology does not as yet seem to be susceptible of classification among the fixed sciences, whose principles are demonstrated by mathematical induction, but "Old Probabilities" has given it a new interest, and, under his professorship, it is expected to become of vast advantage and benefit to the whole world. Though imperfect, it is of great antiquity, for it was said eighteen hundred years ago, by the very highest authority, but not to the most respectable individuals, "When it is evening, ye say it will be fair weather, for the sky is red; and in the morning, it will be foul weather to-day, for the sky is red and lowering."

How it is useful to the farmer, does not need much elucidation. In ever so fair a morning, if he could see in the perturbation or depression of the column of mercury in his barometer, that a violent storm was approaching, would he be likely to "drive his team afield," with reaper and mower, to prostrate his hay and grain and expose them to the hurtful effects of the drenching to which they would be exposed? I expect that sometime men may be able to predict with approximate certainty how much fuel they will need to provide for the consumption of the coming winter, and can vary the quantity to suit the exigencies of the case, by their foreknowledge and ability to prognosticate. Storms, wind, heat and cold are governed, like matter, by natural and immutable laws, and when the series of observations that have been recorded by scientific men come to be sufficiently extended to fix upon the weather cycle, and we come to understand modifying causes, we may not be able, indeed, like Professor Espy, to manufacture a storm to order, but can foresee one with tolerable certainty. I commend the study of this curious and interesting subject to the young farmer. The cost of a set of instruments for observation would not be great, and he could be his own professor, with nature with its sunshine and clouds for his text book, yet availing himself of the cotemporary and recorded observations and experience of others. The time, trouble and expense would be trifling, compared with the advantages derived, both in pleasure and profit. Besides, he would also be contributing his

part towards causing this new science to take its place among the older and better established sciences, especially if he should keep, as he surely ought to, a daily record of his observations. And the near connection of meteorology with astronomy would open up to him a still more extended and interesting field of study, expanding his intellect and stimulating his veneration for that great First Cause that has hung up in the firmament these myriads of shining worlds, all of them constituents of an illimitable universe, created and sustained to accomplish an infinite purpose.

The last study to which I wish to call attention, and one which I would place in the senior year of the young student's course, is Political Economy. When we begin to make an inquiry into the causes of the failures and successes of the agriculturist, we shall not be likely to find them confined to the failure or abundance of production. It may often happen that when he has the lightest crops, he will receive the greatest income from them; and in a most abundant year for crops, he may not be able to meet the cost of production out of his net income. Trade and commerce, international and domestic, are governed by laws about as fixed and certain as the law of gravitation, and he who ignores these laws, entrusts his success to chance, and places his failure in an even scale. He should study the rule of supply and demand—of production and consumption. He should understand the philosophy of trade. He should be well posted up in the state of the home and foreign markets, the cost of transportation, the gradation of products, the cost of exchange and every particular that can affect prices. He should be able to understand something about "corners," and every other speculative device by which a fictitious value may be placed upon the articles he is to sell. He should look into the subject of risks and insurance. He should try, as far as might be, to foresee what product would be most in demand, and the best time to place that product in market.

How many men daily meet with heavy losses because they have too much of that which everybody else has to sell, or because they have sold a really marketable product one day too early or too late. They had not sagacity enough to seize the golden moment when the market had reached its height and was about to com-

mence on the down grade. In a superstitious age, amongst an ignorant people, a philosopher once gave out that he could tell what every merchant and business man in the city was thinking about. When they were going to put him to death for a sorcerer, and pressed him to make known his secret, he said every man was studying how he could buy cheap and sell dear, which was at once decided to be no witchcraft, but good common sense. It does seem, sometimes, as though the way some men prosper and grow wealthy, through every fluctuation of trade, was compassed by a sort of magic, and that luck was more to be desired than learning, but when we come to understand the secret of their success, we find it to be in the possession of good, shrewd common sense and forecast, and that they act upon the suggestion of these qualities. Of course, some will blunder into good fortune, but they are just as liable to blunder out of it, and like Tittlebat Titmouse, only enjoy their ten thousand a year for a brief period. It is the aggregate success that we must look at—the rule and not the exception—the average and not a single isolated case or two; and when we so look, we shall see and be assured, that it is the man who knows his business best, who has studied it in all its bearings; who knows the first, the intermediate and the ultimate principles which govern it, and by which it is in any way affected, that will succeed best. There is no chance about such a man's success. He must win—not perhaps, always, and in a limited time, but ultimately and in the main, because he acts upon a finally determinate rule that cannot fail.

I have thus, in a hurried and imperfect manner, touched upon some of the branches of science which may be deemed as peculiarly requisite for the young student-farmer to study and understand, not claiming to have embraced everything that may in some incidental and even important particular be of service to him in his calling; but these are, in my judgment, the principal and most important; and in the acquirement of these, his taste and inclination will guide him in making good the deficiencies of my selection. There is certainly no danger of his knowing too much, and though his tastes may cause him to select the less important branch, he must profit in some degree in the acquirement of that. A little learning is *not* a dangerous thing to the practi-

cal man, though it may be to the pretender and the empiric. But the deeper he drinks at the Perian Spring, the more he will profit by the draught. Too many farmers have practically studied only how they can soonest exhaust their lands past recuscitation, by constant cropping from year to year, and themselves and their soil have been bankrupted by the same improvident and ignorant act. Hard manual labor and brute force must give place to mind and machinery. Calculation must succeed chance. The forces and obstacles of nature are only to be rightly controlled, utilized or overcome by science.

If the young farmer will adopt some system for the division of his time; if he will apportion the hours of study and amusement, of work and repose, he can enter upon this ample field of study with the foreknowledge that to pursue it to its ultimate results will ensure him a grand success.

I thank this indulgent audience for the patience with which they have endured the tedium, not in the length, but in the style of my address, but trust, if I shall have been the means of inciting inquiry and discussion upon this topic, that their time and attention have not been entirely thrown away.

This paper contains many wise and thoughtful suggestions, and is cordially commended to the readers of this volume.

Secretary Field offered the following resolution which had been handed him by a delegate, whose name was not obtained.

“Resolved, That in the opinion of this Convention the prosecution by the state government of the geological survey of our state, and the publication of the facts and observations already acquired, will not only tend to develop our industry, but will directly and indirectly subserve our success as agriculturalists.”

Mr. Rogers said that every farm possessed a diversity of soils, and that if we could have reliable information how best to utilize the lands and make them more profitable to the farmer by the results of this survey, he for one was in favor of it. The resolution was adopted.

Mr. Flint offered the following:

“WHEREAS, Great damage and destruction has come to our flocks of sheep from dogs and wolves, and that said damage and destruction is constantly increasing, rendering the keeping of sheep almost impracticable; therefore

"Resolved, That the enactment of a "dog law" at the present session of the legislature, similar in its provisions to that of 1862-'65, will furnish a much needed protection to this great and important interest of Wisconsin, and that this convention does hereby express its conviction on the subject, and recommend its consideration to our legislators."

Mr. Eaton said that dogs had done more damage to sheep, in his locality, than all the dogs in the state were worth. He hoped that an efficient law upon this subject would be enacted at this session of the legislature, and thought it very proper that this convention should give its expression by the passage of this preamble and resolution. He hoped it would be adopted.

Col. Warner asked Mr. Eaton if he knew dogs killed the sheep; that wolves often committed such depredations.

Mr. Eaton responded that he did know that dogs killed his sheep, although wolves had killed many in his county too. His experience was that dogs were unprofitable and worthless, and should be taxed out of existence, or exterminated by other means, if farmers expected to raise sheep.

Mr. Anderson said that he was in the assembly when this dog law was enacted, giving each county the right to retain or reject it, as they believed their interest required. He was not in favor of repealing this provision, as it suited his views, and had, in the main, worked well.

Judge Bryant said he had two objections to this resolution. 1st, a tax of one dollar was now imposed on the kid-gloved gentry. 2d, wolves were allowed to grow and rear their young unmolested. Mr. Stoddard opposed the resolution; said he believed in the utter extermination of the whole race of dogs, and thought the best law was a good revolver. Mr. Flint said that he had listened with surprise at the arguments of his friends relative to this question, and thought the supervisors of each county were fully able to decide this matter in their respective counties. Since the abolition of the dog law, dogs and wolves had wonderfully increased, both of which were a great source of annoyance to the sheep raisers, and they ought to be thinned out. Mr. Porter said that he was a dairyman and he wanted the wolves preserved to kill off woodchucks that damaged his clover.

Mr. Sherman and Mr. Dickey also made brief remarks urging

that stringent laws should be enacted and then enforced, and that dogs were a nuisance generally.

Mr. Fox favored a law taxing dogs and providing for keeping them muzzled.

A vote was taken and the resolutions were defeated.

Adjourned to 7 1-2 P. M.

Evening Session.

Convention met in the Assembly Chamber at 7 1-2 P. M.

Secretary Field in the chair.

Address upon Production and Consumption, Transportation, Population and Taxation, by S. D. Carpenter, of Madison.

This interesting and valuable address, full of facts, statistics and arguments, the preparation of which occupied much time and great research, giving elaborate tables of the relative cost of carrying freight by water and by rail, may be found under the head of "Appendix A," in this volume, and will be found replete with information touching these important subjects.

Adjourned to 9 A. M., Friday.

FRIDAY, 9 A. M.

Convention met. Secretary Field in the chair.

GENERAL INTELLIGENCE IN FARMING.

BY J. M. SMITH, GREEN BAY,

President Northern Wisconsin Agricultural and Mechanical Association.

Mr. President and Gentlemen of the Convention:—Many years since, my now aged father, made his first trip west. At that time all the country west of Ohio was a vast territory, or wilderness, or both. Just fifty years later he made another western journey and visited me at my home in Green Bay. One day while conversing with him about the vast improvements in the west, I said to him what would you have thought if some one had said to you fifty years ago when you were traveling on foot about the country where Chicago now stands, that you would live to see the day

when you could leave your home in New Jersey, and come there in 36 hours, and find a city of 300,000 inhabitants. "Well," said he, "I should of course have told him he was a fool;" and in all human probability, and to all appearances, he would have been justified in thus speaking. Suppose that fifty years ago some man had stood upon the summit of this park, and proclaimed to the world the great improvements of the next fifty years, only such ones as have actually been accomplished, what would have been thought of him? His friends, if he had any, would have cared for him as a lunatic. The world would have said he was half knave, the other half fool. And yet the actual results of the last half century have changed the condition of society throughout the entire civilized world.

And thus it is in almost every branch of the arts and sciences, every year, and almost every day in the year, brings us some new discovery in the sciences, or some farther development in those long known, and something that will eventually add to the general happiness of civilized man wherever he is found. And now comes the question, are the cultivators of the soil keeping pace in the science of agriculture, with the other arts and sciences? Is the science of agriculture, to-day, as far in advance of fifty years ago as the other sciences are? I think that you will agree with me that it is not. If this is so, why is it, and what is to be our remedy in the future? Let us spend a few minutes in looking at this matter fairly, and if we are behind in the great work of our life let us know it, and then we shall be better able to point out the remedy necessary for a more rapid advance in the future. Fifty years ago scarcely one man in a million would have admitted that there was such a thing as science in agriculture, or that it was necessary for a man to have any scientific knowledge whatever, and in fact but very little knowledge of any other kind to be a farmer. If a man had brains, he must be educated for a lawyer, a doctor, or a minister. If he was active of body, and skillful with the work of his hands, he must be a mechanic. If he was good looking, and had a pleasing address, he was fit for a dry goods merchant. If he could play a few tunes upon a violin, and was nimble with his feet, he might make a dancing master. But if he had none of these accomplishments, and in fact no

others, if he could slave and toil from morning till night, with but little more thought beyond supplying the common wants of life, for himself and those around him than the oxen he drove, then he would do for a farmer. Gentlemen, let us thank God that those ideas have passed away. But do not think me drawing entirely a fancy sketch. I remember well, and it was less than fifty years ago, that my father subscribed for his first agricultural paper, and I believe it was then the first and only agricultural paper in the United States, "The Cultivator," published at Albany, N. Y. And I remember too, that the neighbors laughed at the idea of his being a book farmer.

In short, for hundreds of years the real cultivators of the soil throughout nearly all of Europe, and in a large part of our own country, had been either slaves or serfs, and as a matter of necessity must be kept in ignorance, for no educated people were ever kept in slavery. And in this country, and within the recollection of most of those who hear me, it was said by a man who had held the high position of Vice President of the United States and member of a Cabinet, and for many years a United States Senator, that the hands that guided a plow should never be permitted to touch a ballot. These and many other prejudices honored with the belief of centuries, handed down from father to son, and from mother to daughter, some of them hoary with age, had to be uprooted and destroyed before even a beginning in scientific agriculture could be successfully made. But for a farmer to take an agricultural paper, or a dozen of them, is no longer a disgrace to him, even in the eyes of those who are unwilling to follow his good example. And it has come to be an almost universally acknowledged fact, that no man can now attain any prominence either as a stock grower, a dairyman, a grain grower, or in fact in any branch of farming, without having some considerable information upon the particular subjects to which he is devoting his attention. And the more perfect is his knowledge of his business the more successful is he in it. Knowledge is his great lever. His farm is the fulcrum upon which he moves, and his knowledge of his business is his lever by which he makes himself successful. Gentlemen, knowledge *is* power, and in no business is it more so than in the cultivation of the soil. The great want of our culti-

vators of the soil is a more thorough and scientific knowledge of their business. It is *not* enough that you should know how to work, and to work well. Most, if not all of you know that now. And right here is, I think, one of the greatest faults of our farmers. They work too hard, and do not give themselves sufficient time for study, and for obtaining the information they so much need. You can hire men to drive the mower and the reaper as well as you can, to hold the plow as steady as you can, to seed a field as evenly and as well as you can. In short, there is but very little hard work upon the farm but what hired men can be taught to do and to do well.

If farmers cannot average more than 13 or 14 bushels of wheat per acre, 31 or 32 bushels of oats, and less than 35 bushels of corn or 2,900 pounds of hay, which is the case to-day in Wisconsin, then I am ready and willing to admit that you cannot afford to hire your work done, and more than that, that the time will come when you cannot afford even to stay upon your farms and do the work yourselves. Gentlemen, farms have a very quiet way of getting rid of their owners in such cases. Let me illustrate this. When I was a boy, there was a farm in my native neighborhood, which my father and others said was the best grain farm in that part of the township. But the owner of it always insisted and argued that farming did not pay. He could make more money at anything else, than he could at his farm, and he acted upon this belief. I do not think he ever planted or sowed a crop either in good season or in good order. His cultivation was still worse than his planting. As to his harvesting, he had but very little of it to do. When his barn-yard became so bad that either the barn or the manure must be moved, he succeeded in getting the manure put upon the land in such a manner as to double or triple his crop of weeds, which was always large, even in the poorest of seasons. The result of the whole was, that years ago his farm utterly refused to support him even in poverty, and he is to-day an old man of 95 years, totally blind, without one dollar in the world, and living entirely upon the charity of his friends. Forty years since, most of his neighbors adopted a system of improvement in their farming, and the result is, that where it has been followed up, to-day they are all of them either

rich or in comfortable circumstances, while the farm of the old gentleman first mentioned is in such a wretched condition that I would not take it as a gift, if I must put it in good condition, although it lies near a railroad and within less than thirty miles of New York City. Do not say that there is no danger of such a result here. The only difference is in the time. In your case the farm will not run down as fast as there, but the final result will be the same in both cases.

What shall be done to make the farms average 25 or 30 bushels of wheat per acre, and other crops in the same proportion? Where barn-yard manure is plenty, and can be had for a moderate price, the question is comparatively easy of solution. But there are very many, and in fact the most of the farmers are not so situated, and they must rely upon some other fertilizers. Many of them are also so situated, that all things considered, it is not best that they should enter largely into stock growing, but should confine themselves principally to grain growing. This makes the matter still worse, and demands that the owner of such a farm should exercise good sense, and intelligence often of a high order, to keep his farm in first rate condition. Still I claim that it *can* be done. First, as a means of so doing, I would place the compost in a heap. Valuable as a heap of compost manure is, I do not think that I have ever seen one in this state, except upon my own ground.

If you will take the straw from the yard, commencing in the spring, and then during the season employ your spare time in gathering refuse to put with it, and if you have a swamp of muck to go to, you may readily make it the foundation of your fortune. If not, haul the wash from the road side, the leaves from the forest, the contents of the privy, the scrapings from the hen roost, the soap suds and the refuse of the house, the weeds and the refuse from the farm, in fact anything and everything that can be made available and useful in increasing the heap. All of these should be mixed together and occasionally worked over. If the heap gets to heating to any extent, a sufficient amount of water should be put on it to check it, but not enough to drain from it. But very few farmers have any idea of either the amount of ma-

nure that may thus be gathered, or of its real cash value upon the farm when once made.

Next in value (and I am not certain but that in some places it should come first) is the use of plaster and clover. The value and the use of these are well known, and so almost universally acknowledged, that I will not dwell upon their value.

Lime and finely ground bone dust will be found very valuable, more so probably for wheat than the other crops generally grown in this state. Wood ashes I consider the most valuable for some crops of any manure that I have ever tried—they are good in any place that I have ever tried them, and I have used nearly 10,000 bushels during the last few years. When put upon potatoes they have never failed to give me a large crop. I would never mix them with other manures, as they are said to release the ammonia, and permit it to escape instead of absorbing it as the earth and straw does in the compost heap. Next in value comes the manufactured articles of poudrette, superphosphates, etc., relative to which your own good sense and judgment must be your guides. By posting yourselves upon the subjects of manures, their application and uses, you will in a few years be able to double the crops of your entire farm, and in many cases do much better than that. But it requires some knowledge of manures and the best mode of application to get the full benefit of them after they are obtained.

Gentlemen, my own experience tells me that when we do our own part, and do it well, it is a rare thing that a kind Providence does not so arrange the seasons as to give us at least, fair crops, and it is but seldom that I fail of a crop but that I can see something which I might have done but neglected to do, and which if done, would have very much improved what proved to be only a poor or moderate crop. Remember that all plant food must be reduced either to a liquid or gaseous form before it becomes available for use. Hence, the hard lumps, buried six inches or more deep, are of little more use than so many lumps of pig iron would be in the bottom of your furrows. Do not be afraid of some extra expense, and do not be uneasy if it does not come back the first or even the second year. If you work with intelli-

gence as well as with good practical common sense, you are sure to win in a few years.

I have not an acre of land that paid its expenses for the first two, and some of it not for three years. But I have none but what has paid handsomely since that, and I am very sure that the same principles which apply to my land, will apply to yours. Poor crops do not pay. You cannot afford to hire them grown, neither can you afford to grow them yourself; but first-rate crops will pay for hired help and leave you a nice annual surplus beside.

It is not enough, gentlemen, that you should be able to raise good crops. It is not sufficient that you should even keep your farms constantly and steadily improving. But you should know when to sell, where to sell, and how to sell to the best advantage to yourself and your family.

In the summer season, when you are looking over your waving fields of wheat and anticipating its probable yield, do you know what the prospect is in Germany, or upon the plains of Hungary, or upon the shores of the Baltic sea in Russia? You might ask, why should I care about the crops in those countries across the sea, and 5,000 miles away from me? And yet the yield there does affect you here, and we cannot help it if we would. The partial failure of the crop in those countries, as was the case last season, enhances the price throughout this country. On the contrary, an extra large crop there depresses the price here. At first view this may seem strange, and yet the truth is easily seen. Your wheat in this county is worth *not* what the millers here will pay for it, but what it is worth to ship to Milwaukee. In Milwaukee the millers must pay for it just what it is worth to ship to New York or Boston. But suppose one of those large eastern manufacturers goes to the flour dealer in New York and says to him, "I want 1,000 barrels of flour, and will give \$10 per barrel for it." The merchant replies, "No, sir; that flour is worth \$10.50 to ship to Liverpool, and I shall not take less for it." The miller goes to the wheat dealer, and tells him that he wants 1,000 bushels of wheat, and cannot afford to pay more than \$2 per bushel. But the dealer says, "Well, I am sorry for you, but that wheat is worth \$2.25 to ship to Liverpool, and I cannot take

less than that for it." Thus it is throughout nearly the entire list of our staple crops. Now, if you knew about the crops in Europe, what their condition is, what was the yield of their last crop, also if you knew the condition of the crops in our own country; the portions of it where there are extra large ones, the places where is a deficiency, and in what that deficiency consists, and about to what extent it exists; also, whether the large manufacturing cities are in a prosperous condition, and will need a full supply. If you are posted in these matters, you are not in a position to be frightened by any stories that may be told you for the sake of getting some crop from you at less than its value, or at a time when it is very low, but is just upon the point of going up in price. You know its real value as well as the would-be buyer; you know the probabilities of a rise or fall as well as he does, and are master of the situation and need not be influenced by him in the least degree. Here let me say, that just as long as farmers remain in ignorance upon these points, just so long will there be shysters and speculators who will be willing and ready to take the advantage of it.

Do not say that you cannot afford to take all the papers, magazines, etc., that would be necessary to keep you fully posted on all these matters. I tell you as your friend, that you cannot afford to do without them.

Let me illustrate this. Last fall a friend of mine had a fine crop of early onions. I called upon him one day and asked him how he was selling them. Said he, "I have been selling for one dollar, and have just sold 100 bushels to-day at that price." It was just 50 cents per bushel less than they were worth at that time, and 50 cents less than I had been or was then selling for. Here was an absolute loss of \$50, upon that one sale, just about what I pay for one year's reading matter. Yet if I had told him to invest \$50 per year in reading matter, he would have thought me insane. (I did tell him what they were worth, and then he was angry because I had not kept him posted as to price.)

There is another thing to be considered in this connection. It is this. Sometimes there are vast combinations formed among moneyed men and speculators, to control the market and the price of some staple commodity of the farm. Sometimes the effort is

for the time being to depress the price, until they can get a sufficient quantity to enable them to dictate prices. Sometimes prices are inflated entirely beyond what either reason or common sense would dictate. Now if you are as thoroughly conversant with the real facts in such a case as you may be, and ought to be, you are able to judge correctly whether the depression that is taking place in a certain product, is in consequence of an actual over supply, or whether it is only the result of a *bear* movement among some shrewd speculators, and to be followed by an opposite or *bull* movement as soon as they think they can dictate prices. If it be the former, you will refuse to sell, and quietly wait until the proper time arrives.

Gentlemen, it is not necessary that I should follow these topics farther. You will readily see that other things being equal, the more intelligence a man has, the more certain is he to win success. And this rule will hold good in every branch or department of the farm.

In closing let me say, as industry is better than indolence, I would have the farmers industrious. As temperance is better than drunkenness, they should be temperate. As virtue is better than vice, they should be virtuous. As truth is better than falsehood, they should be truthful. As a pleasant, comfortable home, is even better than the cheerless abode, where ignorance and poverty reign, I would that your homes should be the abodes of peace, happiness and plenty. And as the right is ever nobler, as well as better than the wrong, I would have you ever in the right. And that you may attain these ends I would have you truly intelligent.

This paper was somewhat lengthy, and owing to want of space is not given in full. It was listened to with that marked attention which its merit deserved, and is worthy a careful perusal.

FACTS CONCERNING FARMERS' CLUBS.

BY H. L. SKAYLEM, NEWARK.

In contributing my mite to the success of this convention, I bring neither brilliant eloquence nor flowery language, neither have I time or ability to discuss the laws of supply and demand, or the complicated questions of transportation and middlemen. But as a farmer, speaking to farmers, I hope to be able to give you a few interesting facts. As practical farmers you have long ago learned that one fact is better than a dozen theories. Let others then discuss theories and give us their speculative views on the many questions of the day. I shall deal only with facts as they have appeared to me, and only with such as concern Farmers' Clubs. Time is precious and I shall not occupy your attention by giving my ideas on what may be accomplished, but shall endeavor to briefly state what has been done by the organization of Farmers' Clubs in certain localities, leaving you to decide whether or no you can "go and do likewise."

The "Newark Farmers' Club," of Rock county, was organized before we heard anything about the Farmers' Movement or Patrons of Husbandry. Organized by a few practical, intelligent farmers, on a broad and liberal basis, not only for their own individual benefit but for their friends and neighbors as well, the club has steadily increased in numbers and usefulness. When first organized it could not tally a dozen members. Now it has a membership of over one hundred. Other clubs have sprung up in the neighboring towns and these again have been organized into a county association, and now the southwestern part of Rock county is in all probability the most thoroughly organized farming community in the state.

But what has been gained? What have we accomplished by this organization?

This apparently simple question is not so easily answered. We have already gained; we have already accomplished so much, that the value thereof cannot be computed in dollars and cents. The

increased intelligence already apparent in the community is beyond the mere value of money. When you hear a farmer say, "I have no time for mental culture—no time to read my newspaper," tell him to join the Farmers' Club or Grange, if there be one in the neighborhood, and if not, let him help organize one and become an active member thereof, and I will guarantee that he will find many a spare moment to read his newspaper, as well as time to develop, cultivate and train that—

"Majestic power of mind, unfettered thought,
Essence of Life, from throne's supernal brought,
Jehovah's silent voice, which fires the heart
And forms of man the nobler, greater part."

A farmer has less excuse for being an ignoramus than a merchant or mechanic. No trade, profession or vocation among men is more independent, and no class of laboring men have better time for mental improvement than the average farmer. It is not the lack of time as much as the lack of a stimulant—a something to rouse the mental faculties, to create a desire for knowledge, to awaken an ambition for something nobler, higher and of vastly more importance than dollars and cents, that makes so many farmers and farmers' sons and daughters mere machines, performing a certain amount of physical labor every day, without ever inquiring why this should be so, or the other thus.

The action of mind upon mind, the discussion of questions with which you are or should be familiar, or at least interested in, the many, various opinions, suggestions and experiments of your neighbors, all tend to stimulate, to awaken thought, to create a desire to know more and to inquire into the whys and wherefores of things. All this, yes, more than this, you have at the Farmers' Club. Editors (especially those of agricultural papers) will tell you that wherever a Club or Grange has been organized, their subscription list has increased. Is not this evidence of increased intelligence, or at least an increased desire for knowledge in that community? Accompanying, and as the result of this higher intelligence, we also have better morals in our community. Keep the mind constantly employed, active and eager for improvement, and vice and immorality will be strangers in your home.

With increased intelligence and a better morality, the Club must necessarily exert a beneficial social influence. Farmers as a class live too isolated. There is often too much of this "every one for himself and the d—l take the hindmost" in the farmer's social life. The Club brings the whole neighborhood together; old acquaintances are renewed, and new ones formed; and an occasional friendly call at neighbor A, B, or C, is the result, and you will not be nearly as apt to have a "spat" with your neighbor about his cattle breaking into your cornfield or *vice versa*, as you were when the only time you called on each other was when some such accident had transpired.

Yes, brother farmers, if you have no Club or Grange in your neighborhood, go home and help organize one. Let it be properly conducted, and in a short time you will be astonished at the social improvement of your neighborhood.

But with the intellectual, moral and social improvement, we can not be expected to let politics entirely alone, and here we also have an advantage in organized association. How can we expect any reform in the transportation question, or be able to check the unscrupulous politicians or monopolists if we "let politics alone;" and here I believe a Farmers' Club has the advantage of a Grange, if what the grangers tell us be true, viz, that they "don't meddle with politics." You all know something about party politics; how the slate is very often made up; how much "rings inside of a ring," "wire pulling" and "ax grinding" has to do with the election of our state and national servants. Yes, even our town and county politics are "run" by "court house rings" and "town cliques." And the farmers must let politics alone! No, sir. Gentlemen, it is our duty as men, as American citizens, as well as farmers, to "meddle with politics." It is our duty to do all we can to get the "right man in the right place," and not let the party lash whip us into mere voting cattle. Henceforth let the man, rather than the party, direct our votes, and to the existing political parties we will say, "If you want the votes of the farmers give us the right man as a candidate, and unless you do so, we do not regard the party lines strong enough to hold us."

At the meeting of the club you become well acquainted with your fellow-townsmen; you know more of their ability as well as

their political ideas and opinions; you know who will the best represent your principles and can therefore act intelligently in the selection of your delegates or representatives to caucuses, conventions and the like. And here is just where we can do the most. By attending to the primary caucuses, by getting the right men from the start and fully instructing them, we may also expect to see good men selected for the higher positions.

But even with the intelligence, the moral, social and political advantages of Farmers' Clubs, we must not forget the "Almighty Dollar," the direct pecuniary benefits of such a society. Several facts concerning the latter and I am done.

The Newark Farmers' Club has, the past year, actually saved something over \$600 to its members in the purchase of farm implements, nursery stock, groceries, clothing, etc. It is true, we met with stubborn opposition at first. Some manufacturers of monopolistic tendencies refused in toto to deal with us, believing that by the aid of their howling agents and a few one-horse newspaper concerns, assisted by second rate bread and butter politicians, they could easily squelch those "impudent farmers" and, as Nasby says, reduce them back to their "normal condition." But despite the jeers and sneers of these "smart men" the farmers were fast learning the use of a, to them, new but powerful weapon. They were learning the powers of combination and unity of action. The would be monopolists were left to "kick against the pricks" whilst the farmers coolly went about their business, giving their whole patronage to the manufacturers who were willing to give fair terms, buying where they could buy the cheapest, and always dealing on the cash system.

The result has been even better than at first anticipated. Some of those that at first ridiculed our propositions, now court favors and are anxious for our patronage, and the farmers have learned a lesson which will not soon be forgotten. They have tasted the sweets of combination and learned that by concert of action only, can they hope to successfully contend against monopolists and their allies.

In summing up then we have these facts concerning Farmer's Clubs:

First, increased intelligence.

Second, better morals.

Third, social improvement.

Fourth, political independence.

Fifth, direct pecuniary advantages.

Would that a Farmer's Club or Grange were organized in every agricultural township in the state, and these again into county societies, and the counties into a state association! Let the Clubs and Grangers work in harmony and assist each other all they can. There is enough to do and room for all. We know that many object to the Grange on account of its secrecy. Let those organize themselves into clubs, and have their county and state organizations. Then with the co-operation of these clubs and granges, county and state organizations, we may hope to accomplish our object, and make "agriculture the most noble employment of man," and the "tillers of the soil, Nature's true noblemen."

Prof. Daniells desired to know the mode of purchase of this club—whether they bought at wholesale or retail, and whether for cash or on time.

Mr. Skavlem said that they purchased by an agent for cash and that he had discretion to buy as he thought to be to their advantage. He said that the cost of belonging to the club was 25 cents the first year, and \$1.00 each year thereafter. That their work was open; no secrets or passwords; that any farmer could join who desired to, and hence he thought the organization preferable to the granges.

PATRONS OF HUSBANDRY.

BY CHESTER HAZEN, MASTER OF LADOGA GRANGE, LADOGA.

In this age of progress and co-operation for mutual benefit in nearly every branch of industry, such business occupation or profession as does not associate together for the purpose of thoroughly investigating the questions that have a special bearing on its business, must necessarily suffer more or less.

The farmers who far outnumber any other profession and in this nation all others, who furnish the material to feed and clothe

the world, seem to be the class that many powerful corporations and associations have waged war against, and it has been prosecuted to that extent that farming is about the last resort for enlightened, intelligent citizens to secure an honest living by.

I will mention some of the heavy burdens that are imposed on the farmers by corporations. First, the exorbitant prices we are compelled to pay for farm machinery—such as harvesters, reapers, mowers, seeders, threshing machines, etc. Manufacturers of such machines have combined under forfeiture not to sell below a fixed price to any parties except their general or special agents, whom they require to sell at prices which in many cases are from two to four times above actual cost.

Selling farm products is a question for consideration. Instead of being sold and shipped direct to the consumer as they ought to be, they pass into the hands of speculators, and are made a matter of speculation and gambling by the capitalists, who often combine to get in their hands a sufficient amount of any one kind of produce to former a ring or corner and force prices up to exorbitant rates, compelling the consumers to pay such price as they choose to ask, or starve.

When one pork packing house in Chicago can co-operate with other houses throughout the west to that extent that they can get a corner on the pork trade so as to clear \$1,000,000 on the rise of pork in a very short time, it seems to me as though there was great injustice being done to both producer and consumer. \$1,000,000 would pay 5,000 farm laborers at the rate of \$200 per year for one year's labor, or it would pay 200 men their wages for 25 years.

Railroad companies are compelling the husbandmen to pay higher freights than they can afford to, and I think unjustly so. The cost of getting our produce to market is so much that in many cases it leaves no profit for the grower. When railroad companies demand an income on their capital stock sufficient to pay them a good interest on their estimated capital of \$38,000 per mile in Wisconsin, \$45,000 in Iowa, and the actual cash cost of such roads does not exceed perhaps \$19,000, they are demanding an income on \$19,000 per mile of estimated or imaginary stock. In many cases throughout the west, such railroad companies have received

land grants from the government, and bonuses from cities, towns and counties, to the amount of one-half of the actual cost of the roads.

The question now is, how shall we help ourselves? I answer first by co-operation or organization for our mutual benefit and protection. The order known as Patrons of Husbandry seems to be especially adapted to our wants.

The order is national in its character, organized as follows:

1. Subordinate granges, which have organizations in the several counties, called County Councils.

2. State granges, the members of which are the master, past master and their wives, of subordinate granges.

3. National grange—composed of masters and past masters of state granges.

Our system of receiving and imparting information to state and national granges is through the secretary of subordinate granges, whose duty is to communicate any information that we may consider for the good and welfare of the order. When such information is received at the national grange, if considered of sufficient importance, it is communicated to secretaries of state granges, and from state secretaries to secretaries of all subordinate granges on the continent.

Through this system we expect to derive great benefits. For instance, should the order think best to collect crop statistics, it can be done more accurately and in much less time than it can by any other process. This matter of crops and farm produce statistics is of great importance to the farmer. Who has a better right to be thoroughly posted in regard to the supply and demand of the products of the farm than the producer? (The dealers may claim it.) The Patrons of Husbandry have it and can exercise that right and have the means in their hands to put this system in operation. Millions of dollars can be saved by the tillers of the soil annually through this channel alone. It would give the producer just as good an opportunity to decide when to sell his crops as the buyer has, and more, this system, thoroughly prosecuted, would, in a short time, enable the farmers to make some estimates before crops are sown, of the probable acreage of the different crops, and arrange them on his farm, accordingly.

All of our farm products ought to be shipped as direct to the consumer or the principal markets of the world as possible. This the Patrons of Husbandry are doing in some states, and soon will be in this, by selecting one of their number, who is a good practical business man for an agent, and locating, say one in Milwaukee and one in Chicago, which would be all that would be necessary to sell the farm produce of the state, thereby saving the margin that scores of dealers make by handling it.

By shipping produce in large quantities, we make it an object for the transportation companies to get our trade, and they can, if they will, make it an object to us to ship in that way.

We are not organized for the purpose of waging war against any corporation, association, or business firms that are doing an honorable, legitimate business. And to all that are associated together for the purpose of creating monopolies we say, "Our motto is live and let live. Deal with us on a fair, honorable basis, and we can deal with you."

Cheaper transportation to the seaboard is necessary in order to make farming a very remunerative business in the West, at least the production of wheat, oats and corn. It costs too much to get it to market, to leave the farmer a reasonable profit on the money invested.

A better water communication between Lake Michigan or the Mississippi and New York is very much needed. The through lines of railroads from Chicago to the seaboard are not sufficient to transport the products of the West to the East, providing a very large portion was to be shipped by rail. To make up this deficiency, there is already a bill prepared to go before congress, asking the general government to build a double track railway from Council Bluffs to New York for the purpose of carrying freight alone. The estimated expense of building, equipping and running such a road at rates that would pay running expenses, and pay for constructing the road in a reasonable length of time, would fix the freights on wheat from Chicago to New York at not to exceed 12 1-2 cents per bushel. This subject is being agitated through the land, and in my opinion such a road is one of the things soon to be.

Through the educational feature of our order, farmers have much

better opportunities for acquiring something of a business education, as far as it relates to the business of the farm, than from any other opportunity offered them. The great necessity of the common farmer is a better knowledge of business transactions in connection with the same. Nearly every grange in the country has some members that are tolerably well posted in this direction and capable of imparting much valuable information to their brothers and sisters. In the grange is just the place to do it. There is no danger of people being too well posted in their own business.

We often hear the inquiry about an individual, "Is he a farmer or a business man?" Just as though it was not necessary for a farmer to be a business man. The facts of the case are that every farmer, in order to succeed, ought to be a thorough business man, so far as the business of purchasing his supplies, selling all kinds of farm produce, keeping himself posted in regard to supply and demand of everything connected with the business of the farm.

Our system of buying supplies, selling produce, shipping to markets and associating with the grange meetings, will give many of our western farmers the key that will unlock and open out to their view many of the secrets and mysteries of business transactions, that will in my opinion be of great value to them.

Patrons, we are in a great measure responsible for the unjust burdens we have to bear. Business men, corporations, and associations of nearly every occupation and profession, have taken advantage of our ignorance and previously disorganized condition, and we have no good reason to think they will not in the future. They will make the most they can out of their business and professions, and it is our business and duty to protect ourselves.

We have a powerful organization, in good working order, and it seems to me that if whatever we attempt to do, we strive to do well, there is but little doubt but we shall succeed.

We are not alone in this work. The press, the mighty lever that moves the world and the great educator of men and nations, has already taken great interest in our cause. Many of the editors of our agricultural and best general newspapers in the country, are shoulder to shoulder with us in our work. We need their assistance. Every farmer in the land ought to take at least one good agricultural and one good general newspaper, in order

to keep himself as well informed as the business men we are daily brought in contact with.

If farmers do not succeed in this great enterprise, I shall be forced to believe it is because they are not sufficiently educated up to the necessity of the times, to make the right application of the opportunity now offered.

I do believe that farmers, as well as any other class can co operate for mutual benefit and protection, and by so doing they will be abundantly rewarded for making the effort.

Mr. Carswell wanted to know whether, if a brother of the grange was poor, the order furnished him the cash to buy with.

Mr. Hazen said that the cash system was the true system, and that the granges, prepared by education, forethought and good management, would enable each of its individual members to take advantage of the reduction in price by cash payments.

Mr. Carswell said he wanted a system by which the poor boy as well as the rich could come up and take care of himself, regardless of granges or other associations. Did not believe in secret societies, but wanted each and every man to learn to be economical, buy only what he could pay for, and only what would be of service and profit to him. He was opposed to the credit system, and if these secret or open societies awakened the farmers of the state to the importance of living within their means, they would accomplish great good. He hoped that such would be the result. He had been trying to teach this by precept and example all his life.

Mr. Tubbs said that there had been barriers between the manufacturers and the farmers in the purchase of machinery which the granges would be able to overcome. The agent of this order could now go into the market and buy largely, and for cash at wholesale rates, while the individual purchaser heretofore had not been able to get this great reduction. He believed that when the purchasing of all needed articles for the granges and clubs was reduced to a proper system, as it soon would be, that members of the orders would be able to buy at first cost of the manufacturers, with, of course, living profits added, and that

the enormous per cent. now made by special and general agents would be broken down by this sharp competition.

Mr. Graham said that the only secret society he ever joined was when he got married—that every man had to look after his own interests in this world, that no man, club, grange or other organization could do that for him, or furnish him with brains to manage and direct his business. He had started in the world without a cent and had held his own pretty well, but that he had gone on step by step from one occupation to another, feeling his way by thought and study, and he believed that the secret of success lay in a full knowledge of, and close application to one's business, with economical, frugal living. He believed these discussions would do much good, as they stimulated thought and inquiry which were the very foundation of better things.

Mr. Stoddard said that the paper read had given the objects and aims of the society, which was to better the condition of the farmers of the state; to make their calling pay better; and hence render it more honorable and make it an inducement for our educated young men to follow the pursuit of farming as a profession. He thought there should be no superstitious feeling against the order. The secrets were necessary, in his judgment, to the effective working of the society, and the prejudice now existing, he believed, would soon be entirely removed.

Mr. Sherman, of Rock county, said that all other trade interests were combining to protect themselves, and it was a matter of self protection for farmers as a class, to organize and combine, or this great producing interest would be trampled in the dust, and the workers of the soil would be mere vassals and slaves to other pursuits, when in fact, farming should occupy the highest place among the avocations of the world. He gave a list of the trades and business interests in the state of New York, with the number of each society, and showed that their social and financial condition had been much improved by their co-operative and combined efforts, and that a like healthy and bettered condition was in store in the near future for the tillers of the soil, if they persevered in the good work so auspiciously begun by these industrial societies.

Mr. Allen thought that association was one of the best modes of culture and for improving the mind; that these were times of

sharp competition and combination, and that only the best results could be obtained in any of the active duties of life, but by education, and a better understanding of the business pursued, and he felt confident that these industrial societies were to be channels of communication, thought and inquiry, that would be fraught with the most happy results to the agricultural classes, and would also exert a beneficial influence upon all other industries of the state.

Mr. Jennings said he came to the convention as a representative of a farmers' club, but believed there should be entire harmony between the clubs and granges, that they should co-operate and work together for the common good of the farming community. He thought the clubs gave every advantage claimed by the granges, except that the latter organization was much the larger, and hence might extend to its members greater benefits. One advantage he thought the clubs possessed over the granges was, that the former could invite those outside the society to take part in their deliberations, whose experience, observation and knowledge would be of great value to them, while the latter could have only those participating in their proceedings who were members of the order.

Mr. Burdge wanted to have facts. He was a member of a club which started with only a few members, and now numbered over 700, and represented a capital of millions. He said their expenses had not been over \$300, and that they could obtain all the advantages possessed by the granges or other societies in buying and selling; that their meetings were open to all, and no secrecy or obligations were enjoined upon the members. Socially, he said, the granges might have the advantage, as ladies were admitted to their order. He believed in the utility of both societies; hoped they would both prosper, and lift up the farmers of the state to higher citizenship and to greater usefulness and happiness.

Mr. Keillogg of Kenosha county said that when he attended the agricultural convention one year ago, in this city, there was but one agricultural society in his county, and that he resolved at that time that he would go home and aid in organizing these farmers' associations. That the fruits of his and others' labors

had been the formation of two clubs and nine granges, and that they were in good working order, doing much to improve the social, intellectual and financial condition of the members. Farmers, their wives, sons and daughters, were coming together at these society meetings. The beauties of farm life were being developed, and much valuable information was being acquired. The movement was popular, and would increase in favor as it was better understood and its benefits appreciated. The secrecy connected with the granges was no objection in his mind. He thought if the farmers' profits were being reduced below a fair living price by the secret workings of other interests, they should be met on common ground. All the plans of clubs could be known to monopolists, while in the granges all was hidden, and the capitalists and monopolists feared them. He dwelt at some length upon the social feature of the granges, and said that the presence of ladies made it a more social institution than the clubs, and in fact he believed it to be the most ennobling and elevating order which had ever been instituted in this country.

Mr. Smith of Sheboygan, thought there should be no collision between these two organizations; believed the farmers needed the aid of both to successfully carry on this great farmers movement and to place the pursuit of farming in the front rank of the professions where it rightfully belonged. He hoped harmony would characterize the proceedings of each toward the other, and the general good of all be secured.

Mr. Griswold, of Waushara county, did not belong to any society or order, but would, if he lived where he could. Thought these societies were doing great good, not only to the members, but to those who did not belong to the order. The proceedings of clubs and granges were published in the papers, and all read them, and if they did not believe and adopt all their views, they at least were stimulated to think of the causes which were at work in building up these co-operative and protective associations. He took six papers, and tried to keep himself posted in the improved methods and modes of farming, and thought no farmer could afford to do without an agricultural paper, every number of which contained a fund of information of many times its value.

Mr. Anderson wanted to say that he was a member of a farm-

ers' club and grange too, and thought both had their mission. The difficulty with the clubs had been that the interest in them soon died out, that others were not organized, and hence their usefulness was not wide spread and general. This was not true of the granges, as they had increased in numbers and membership from their first organization until now, and with an increased zeal and interest. The social feature was admirable, and the financial benefits were all that the most hopeful and sanguine could expect. He said that the state grange had saved \$100,000 in the purchase of implements alone last year.

President Stilson said that Mr. Anderson was in error when he gave the impression that clubs soon died out. He knew of several live clubs that were doing a noble and good work. Rosendale Farmers' Club was an example of this kind, and he believed it was as social as the granges were. Organization was going forward all over this country, and would advance our interests and education, and our power would be felt as it never had been before.

Mr. Ball of Monroe said in the language of one of old: it was certainly good to be here. He thought the granges had this advantage at least, that they could meet with the clubs, but that members of clubs could not meet with the granges; said that the formation of these societies was of the first importance; that the social and intellectual advantages could not be estimated in dollars and cents—the young people were interested in these gatherings; they furnished them an evenings entertainment and amusement, encouraged them in intellectual pursuits, in the reading of essays by both gentlemen and ladies upon agriculture, horticulture, dairy, household and other kindred topics, and created within them a desire for higher associations and more noble impulses, and aspirations.

Secretary Field said that he had listened to the discussion with much interest; that he had never been a member of a club or grange, but if convenient for him to join one, he should do so—possibly both. He believed in these societies, and thought both could do more good than either alone, if they kept the same end and aim in view—the elevation and advancement of the farmer's interests. Said he did not concur with the views advanced by

some of those who had spoken upon this farmers' movement, that those engaged in other pursuits were enemies of the farmers. He did not think they were enemies, but they were such warm and firm friends to themselves and to their interests, that in the division of the profits of labor they took the larger share. Of this we have no right to complain. This is as natural as for water to run down hill, and if the farmers of this country, for lack of unity of effort and combined action, choose to let the minority rule and govern them, reducing the results of labor upon the farm to a bare living, then they ought to be slaves, and not complain if they are allowed even to eat the crumbs that fall from their master's table. In these days, every man and association was working for their own interest, and farmers must do the same thing. If one thought he could do better work for himself and his calling by joining the clubs, do so; if, on the other hand, his inclination and duty led him in the direction of the granges, join them, and then work with a will for the good of all. Secretary Field said God speed the clubs and granges in the work of educating the farmers to see the relation which they bear to the other industries and work of the world, and their true position to society and to the government of the country. He said he had heard much said against the granges because they were a secret organization, and that much danger might be apprehended if they became a political power, but he thought the country would be in no danger of immediate dissolution, even if so improbable a thing should occur, and that the affairs of both state and nation would be quite as prudently managed, in his judgment, if more persons were placed in power whose occupation had compelled them to live economically and frugally. He hoped a club or grange would be organized in every town in the state, and such organizations work together harmoniously, and, in connection with the county, state and national societies, so protect the farming interest, that farmers could be generous to themselves and then just to all others. Intelligent, enthusiastic, persevering, personal effort would accomplish it. Let the good work go on.

Prof. Daniells said, let us go ahead in our work in both orders. We need not discuss their differences. Organize, and advance yourself in your calling by all the educational means at your

command. Educate your children that they may have a foundation upon which to build their life work, whether farming or other avocations.

Col. Warner thought there should be no conflict between the societies, but both should work for the common good; that great caution and care were necessary to prevent humbugs which were continually on the wing to entice the unsophisticated; that these societies would no doubt do much good, but that farmers should not expect too much, if so, they would be disappointed and discouraged.

Mr. Flint was in favor of the widest discussion in this matter, and wanted to see the merits of each society brought out. Let there be toleration on both sides. We need both of these industrial societies to carry on the work so well begun by the farming, producing interest.

Mr. Palmer of Rock had tried to form a grange in his county, but was met with much opposition; but found favor among the people in the organization of a club; thought both societies had been successful in diffusing information and intelligence among the people, and were of great value to the farmers of the state.

Mr. Stoddard moved that clubs, granges and all who are friendly, join hands in advancing the interests of the agricultural classes.

Mr. Anderson offered as a substitute for the above motion the following resolution, which was accepted by Mr. S., and unanimously adopted:

Resolved, That it is the sense of this convention, that there is not, and should not be any conflict between farmer's clubs and granges, and that both should work together in harmony.

DAIRY FARMING AS AN EXCLUSIVE OCCUPATION.

BY HON. HIRAM SMITH, SHEBOYGAN.

Mr. Smith showed the improvement that had taken place in the manufacture of goods by companies organized for the production of a single article. The idea of co-operative effort in the manufacture of cheese had its origin in Oneida county, New York. The receipts from cheese making with him had averaged \$50 per cow. He believed in exclusive dairying, but had not much faith

in mixed farming. Had tried both, and gave his experience, which was largely in favor of the former. The best results in dairying could only be attained on lands well adapted to grass. White clover, June or blue grass he had found excellent for cows, and if properly treated would last many years. A top dressing of stable manure, harrowed in once in three or four years, would keep it in good condition. Said that the best pasture he had was one which had not been plowed in 18 years. He had used half a bushel of plaster per acre annually, with marked benefit. The main object was to make all the resources of the farm contribute to the production of the greatest amount of milk.

Mr. White, of Kenosha, said he had tried grain raising for sixteen years, but not succeeding in making a good living, resolved to try the manufacture of cheese. He commenced with twenty-three cows; purchased a cheese vat and began on a small scale. His neighbors predicted a failure in the enterprise, and told him he could not sell his produce. Believing, however, that he could manufacture a good article, and that such product would sell, he persevered, and after a few sales he found no difficulty in marketing his cheese and at remunerative prices. At that time there was a prejudice against Wisconsin cheese, but he soon dispelled it by the manufacture of as prime a brand as purchasers had been receiving from Ohio. He had never seen the time since, that he could not readily sell all he could make. Said he had now 75 cows, and made 600 lbs. of cheese per cow annually.

He claimed that it would pay to feed cows, even when upon the best pastures, as it increased the product of milk and enabled one to keep more cows upon a given number of acres, thereby increasing the profits. For feed he preferred rye middlings to any other he had ever used. In the autumn, fed corn from the field, stalks and all, and when he desired to dry up his cows, fed the poorest hay only. Never allowed his calves to run with his cows, but fed them at first new milk, then mixed some skimmed with it and some oat and other meal in such quantities as their age and condition seemed to require. His receipts the last year averaged \$70 per cow—some cows gave 50 lbs. of milk per day, and he said he wanted to live long enough to see them average that amount.

He preferred graded to full blood cows for milk, and said he could realize better profits from cows raised himself than from those purchased in the markets. He thought there was a difference in the milking qualities of the various breeds, but that the great cause of poor milkers was the fact that they were not properly fed and cared for from birth to maturity. He advocated early breeding, and believed that cows could be made valuable or worthless milkers at pleasure. Good, generous feeding and treatment would almost invariably produce excellent milkers. The organs and glands were so developed and distended, that milk was the natural result under the proper conditions.

SUGGESTIONS TO FARMERS.

BY EX-VICE PRESIDENT, C. H. WILLIAMS.

Farmers, as a body, grow very slow in a knowledge of their business. As a rule, they farm very much as their fathers and grand fathers did before them, and are, consequently, more behind the present progressive age than is best for themselves or the community in which they reside. The great majority of them, in their farm management, look only to the present time—to the crops of the present season—without regard to the condition of the soil, but drawing on its fertility year after year, making no return therefor. A short time before seeding, it may be during the winter, they determine, as they did many times before, to sow wheat, or they may make a change, to sow or plant that crop which paid the best the past season, without reference to the crops grown on the land in former years. The result to be expected under such management, would be very short crops and, perhaps, not good prices. Short crops, because land has been exhausted by a long continuation of that kind of farming. Low prices, because the majority of farmers are farming in a similar way, growing the same crop and producing in the aggregate a surplus, and consequently depressed prices, notwithstanding the short crops of individual farmers.

Again, in looking only after the present, leaving the future to care for itself, farmers in keeping stock, if they keep any, grow

only those animals which mature in one year and furnish an annual crop or profit, as the pig and the sheep, and only go into them the year after pork paid a good price and wool brought 60 cents or upwards per pound. Going into hogs or sheep under such circumstances, they of course pay large prices for the animals to stock up with, especially the sheep. When prices go down, they sell off the flock at low prices, as soon as they can find buyers, quit breeding pigs, except for home use, and go back to wheat; thus, making a loss in the purchase, in the sale and in the return to wheat. This constant effort to grow the paying crops and breed those animals which are the most profitable, and assuming that those which paid the best last year are the crops and animals to produce that result, is very much in practice with many farmers, and is largely instrumental in causing the small profits and no profits, which some farmers realize year after year.

The progressive and thinking farmer, the man who takes care of to-day and provides for the future, has learned from the experience of others, *printed in books and the agricultural papers of the day, and his own practice of the knowledge so acquired.*

The true theory and practice of farming is to adopt a system or plan to run through a period of years, and follow it closely without regard to prices paid each year for the crops and stock grown; and to pursue mixed farming, and grow largely the animals bred on the farm, making more of a specialty of some one kind. The teaching of the age to these men is, that farming cannot be successfully and properly followed without systematic rotation, making it largely a business of flocks and herds.

The early fathers of the world and their immediate children were shepherds and herdsmen. We farmers should become tenders, in a small way, of flocks and herds, by means of which we could, among other things, keep up the fertility of the land, so as to produce the required amount of grain and vegetables for the consumption of the country, on much less land than they now grow upon, requiring much less labor and time, thereby enabling us to devote ourselves the more to the mental and social culture required, absolutely required, to fit us to live in, and take our share in the management of the affairs of, this enlight-

ened age, and to cultivate the minds and social qualities of our children, so that they will be able to take our places and continue to perform the farmer's share in the management of public matters, in the years to come, when a still further progress and enlightenment will have been reached.

I wish to emphasize particularly this idea—in my judgment it is one of the places wherein the general farmer fails largely in keeping pace with the growth of the times. An experiment made by one of his neighbors or some other farmer, and communicated to him orally, no matter by whom, he will accept, and sometimes practice on it—but if the same experiment should be reported through an agricultural paper, he will have none of it, because it is book farming. He will not therefore take and read an agricultural paper, and he and his children fail to receive the light which would shine on them if permitted.

These general statements, are, I believe, correct, and if so, it will be largely for the interest of the community, if farmers generally would make the change and adopt the improved method as soon as it can be done. With most farmers it must be done gradually and slowly. First decide on your crop rotations, which can be put in practice almost immediately—then determine what kind of animals you can grow to the best advantage, making a specialty of that kind, but growing some of all, as fast as your circumstances will admit.

Some farmers are better calculated for breeding horses, others for breeding cattle, others again for breeding sheep, and others prefer to grow the hog. Some farms will answer better for one kind than for another. Whichever can be bred to the best advantage and is pleasing to the farmer, should be made the specialty, for they will all pay, if properly bred and cared for.

The generality of farmers are more successful in growing cattle and sheep than horses. It seems to require a peculiar fitness for a farmer, or any body else, to become a successful horse breeder. The genuine horseman seems to possess a knowledge, a faculty or gift to manage the horse, which the majority of men do not have. President Grant is one of that kind, and if he was a breeder of horses would make it a success, but as we are not all President Grants, we cannot all breed horses successfully, but we can grow

cattle, sheep or hogs as a specialty, keeping a few horses, and make it all profitable.

In breeding stock of any kind, keep the best or as near the best as your means and circumstances will warrant—You should in all cases as far as it can be done use the thoroughbred male. There should be owned in every county one or more thoroughbred stallions, good ones, and it would be well if all the mares in the county or vicinity could be bred to them. In speaking of thoroughbred stallions in this connection, I use the word thoroughbred in its broadest sense as applied to horses. If individual farmers have not the means sufficient, or have not the enterprise to buy suitable stallions, let two or more unite and make the purchase, or if necessary form joint stock companies and buy them—buy them in some way, and you will never regret it.

Those counties or neighborhoods which organize in this way, and use largely the stallion so obtained, will at the end of four to six years draw into their vicinity horse buyers from all parts of the state, and from other states, who will pay them from fifty dollars to one hundred dollars, and in some cases much more, above present prices, for all the horses they are willing to spare. Those counties or neighborhoods, who neglect to do this, will in time find it difficult to sell even at present prices, and finally as the improved horse stock increases throughout the state, the poor horse stock will decrease in value and readiness of sale. I state these facts, and they are facts beyond a question, in regard to the horse, and the principle holds good equally in breeding all other farm stock.

Cattle are more easily and safely bred than horses; are subject to fewer diseases, and much less liable to accidents; are of more ready sale, and are, therefore, a much better stock for farmers generally to breed as a specialty. The short-horn, in my judgment is the best and most profitable of the cattle kind for the farmer, all things considered. There is no question about the pre-eminence of the short-horn for beef purposes. As milkers, when that quality is desired, and a proper effort made in that direction, they are quite equal to any other class of cattle in their yield of butter and cheese, and for milk dairy purposes they surpass all others.

The various classes of cattle now in use among the farmers of this country, the Short-horn, Devon, Ayrshire and Alderney, came originally from England. The butter and cheese of that country, and the milk furnished the cities therein, comes largely from short-horns. In the United States, the people called Shakers, who are among our best butter and cheese makers, and among our most successful farmers, breed and use short-horns only.

The noted breeders of short-horns in this country, those whose cattle sell at the highest prices, the fancy prices, if you please, those who are the most known as short-horn breeders, as a rule pay but little attention to the milking quality of their stock, making no effort to develop it. They are thus careless and negligent of this quality, because there is much more money at this time in the way they are breeding, and then it would be very unwise and unprofitable to pay \$1,600, or more, for a cow to make butter from, when one at a cost of \$50 to \$75 would yield just as much. At the same time many of the animals bred and sold at very high prices by the more noted breeders, are very fine milkers. Throughout the country there are farmers who are engaged in breeding a class of thorough-bred short-horns, whose milking qualities receive much more attention, who by selecting their best milkers and breeding them to bulls from families of equally good character in that direction, are producing short-horns of very desirable milking qualities, and will continue to do so to a much greater extent when there is a call for such animals.

In advocating the breeding of short-horns by farmers generally, I do not wish to be understood as recommending all farmers to breed thoroughbreds. A few only, in every town or neighborhood, or more in populous towns, could breed thoroughbreds with profit to themselves and great benefit to all within their vicinity. As a rule, a person entering on this business should do so in a small way, buying at first one or two females and a bull at moderate prices, and growing into the business by the natural increase, until in time, when they have become known as breeders, and have by reading, observation and experience, become better acquainted with the business, they can, if it is likely to prove a success, buy more and higher priced animals.

In making these first purchases of pure-breed animals, or any future purchases, buy only from men of character, in whose statements you can fully rely; for there is no business in which a fraud and a cheat can be so readily practiced as in breeding pure bred cattle, or in fact any other pure-bred stock. A pedigree, however good on its face, recorded in the American Herd Book, or the Short-Horn Record, unless backed by a man of undoubted character and care in his breeding, may be entirely worthless.

The majority of short horns bred, would of necessity be grades, for the reason that farmers generally cannot afford to own and breed the pure breeds, and more particularly so because the well developed grade short horn, steer or cow, for beef and milk purposes, are very nearly, if not fully equal to the pure bred. Choice grades are fully equal to pure bred for all purposes except that of reproduction.

In the production of grades, the first cross is a half-blood, the second three-quarters, the third seven-eighths, and so on. It frequently happens that a half-blood looks as well and is equal to a much higher grade, or even a thorough bred, for beef purposes, but the more nearly you approach the pure bred animal for breeding purposes, the more certain you are to produce the well formed and more valuable animals for market.

These improvements in general farming (which must be based on stock-growing, if to be successful), and the consequent better condition in all respects, of the farmer and the community at large, cannot be brought about without some effort on the part of those to be benefitted. The successful farmers in each neighborhood, those who have accumulated a reasonable share of this world's goods, are the persons to do it. They should do so on their own account and for the general good, which, in the end, will be for their benefit. We all owe a duty to one another and to the community in which we reside, and we owe it in proportion to our ability to perform. The man who neglects that duty and works only for himself and family, to develop true and noble manhood, fails. Some of these successful farmers in each county should start a small short-horn herd, and grow into a large one—others should provide pure-bred bulls for their own use and that of their neighbors. In neighborhoods where the men of mean

and enterprise cannot be found, two or more should unite in the purchase of a thoroughbred bull.

Others should provide the thorough-bred stallion the Percheron, the Norman, the Clydesdale, the Morgan or the thoroughbred running horse. Others again, should introduce the pure bred Merinos or Cotswolds, or other valuable and popular pure bred sheep, and others the pure and improved breeds of pigs. When this is done, the farmer of small means, if he takes and reads an agricultural paper, can commence at the bottom round of the ladder and gradually go up, with an outlay not beyond his means, a profit reasonably satisfactory and to the ultimate benefit of himself and family, and the better do his share in the management of matters of public interest, and his part towards the upward and onward progress of the age.

When that time comes, as it will sooner or later, it will not be necessary to form secret associations to protect the interest of the farmer. Then he will understand better wherein his interest lies, will be able and willing to look after his own welfare, and at the same time do his part in the general management, which he now very much neglects, for the good and well being of his own and all other classes.

Then he will come to the front, take his share in the management of the government, state and national, and in connection with the good men of other callings, through the *primary meetings* and the *ballot box*, the only true way to correct wrongs against the farmer and against all other classes of the people; send to the legislature and to the halls of congress, men who will look after the interests of the people, all of the people, without regard to occupation.

This paper was well received. It contained many facts and suggestions which the reader will find to his advantage, especially if stock raising is his pursuit.

Adjourned until 2 P. M.

Afternoon Session.

2 P. M.

Convention met. Secretary Field in the chair.

SWINE.

BY HON. B. U. STRONG, SPRING GREEN.

There is no class of farm stock in which there is so wide a range between the good and the poor, the profitable and the unprofitable, as the class I am to speak of to-day. But it is not my province to enter into any lengthy statement of the value of the many eminent breeds in the country, but rather to endeavor to impress upon the minds of those who breed, in the anticipation of profit or to improve their stock, that to attain success we must breed from those families whose marked superiority is apparent in the power to transmit their peculiarities of character to their offspring. If we wish to breed a standard hog, as reported by the committee at the National Convention of Swine Breeders at Indianapolis, we should breed with the desired object in view; we should look for the parent boar coming the nearest this standard, and breed from him. I am not here to advocate this standard of hogs, or any particular breed, but to tell what I know about swine and how to improve the breed, and shall keep close to facts as I understand them. My observation teaches me that the most important part of our subject to consider, is the power of the parent to transmit its peculiarities of character to its progeny. As one instance in support of this power of transmission, take the evidence of the celebrated Eclipse stock of horses, how famous they were to impart their valuable characteristics upon their progeny, but no more so than the celebrated Sir Henry and other celebrated sires. Further evidence is seen in the uniformity of color transmitted by the Devon sire and the Short Horn, imparting equally as strong their marked peculiarities of the breed, also on through all the different breeds of animals, not even varying in any instance, but following out that great fundamental principle that "like produces like." I might well add, it would be unfortunate if it were not so.

In the human race, as distinctly as in the animal, this law is recognized. The breeder is an artist, and in order that he may obtain success it is absolutely necessary that he should possess a perfect idea or type of that which he would produce or create, and have an eye single to that law that like begets like. Every breeder has observed marked peculiarities in his animals, a want of uniformity, a great difference in the intrinsic value, and the object of the intelligent breeder is to search out the rules which gives the results he seeks to obtain, and ascertain what system he can adopt to make sure of obtaining such results.

In order to breed with certainty, it is essential that the qualities we desire to obtain should be inherent in both parents. We all know that animals bred for a length of time with care, have a tendency of transmitting their good qualities in the highest degree for several generations, or in other words, it becomes more fixed from generation to generation when the respective parents possess similarity of character.

Take a thorough bred Berkshire boar and cross with native sows that have no fixed characteristics, gives the sire advantage of transmitting his good qualities in a higher degree than in well known breeds. Here we strike the key note to improve our stock.

The ordinary farmer cannot afford to create improved breeds and must avail himself of the labor of others. Yet as a rule he cannot afford to buy an entire stock of the pure bred. But he can afford to buy a pure bred male to be coupled with his best females, and the only way to bring up your stock is by thorough bred sires and the best dams you can get from your own stock, and by following up that system, getting rid of your bad animals and taking the best dams to breed from, you will soon have the animals you ought to have. But I have a question, and it is a proper one in this place, what age females would you use? If the sires are of some fixed, well established breed like the Berkshire, and the intention is to continue the stock pure without special reference to modification of form or characteristic, it is safe and often best to retain them as breeders so long as they produce good size, healthy litters, and are careful mothers. When they have ceased to do so from any cause, they should be turned over to the butcher.

If they are of mixed blood or belong to any of the recently formed breeds, and there is a purpose to improve the stock, or at least to prevent deterioration, they should not be allowed to bear more than two litters, unless for some special reason.

Crosses can be made more frequently, and therefore desirable modifications can be effected in much less time by breeding exclusively from young females. It is taken for granted that only well bred males, of good points and type you desire to obtain, are used, and that they are changed at proper intervals. If, therefore, there are no females among her progeny as perfect as the dam, she is clearly not worthy of being kept longer; if there are, what reason is there for retaining her? But the produce of the cross should be an improvement of the dam, and hence a selection from the litter should take her place as soon as possible. It is a matter of fact within every breeder's knowledge, that this is the only rule upon which rapid development can be produced with certainty. It is well known that the Berkshires impress their likeness with great certainty upon other breeds. I have observed, in different neighborhoods, that the introduction of Berkshire boars for mixing with their native sows has substantially improved their breed of hogs. In many sections of country it is hard to find poor looking hogs, so general has been the improvement. Many are half-bloods, some more, but commonly either less, or so mixed up on both sides that it is hard to say how much improved blood they contain. Such crosses make better pork, the hogs cost less to keep for the same amount of food, and they sell readily when the raw bones go a begging.

I have known instances where the use of the Berkshire boar with common native stock has given pigs and older hogs that would sell at once for double price and in a much quicker market. I think it is safe to say that the improved value of this stock is full forty per cent. over the old native breed. I say nothing about the other improved breeds, simply that I have not had the opportunity of witnessing the results.

Here comes in one of the great errors, forgetting the great fundamental principle of breeding with no particular type in his mind. He is struck with the beauty of a half blood that he has raised from a cross of a full blood obtained of his neighbor; he

uses him with poor success, forgetting that deterioration is strong in the old scrub stock when in the ascendancy, thus proving the progeny of a common stock. These bear a close resemblance to their parents and to each other in general appearance, length of limb, shape of carcass, peculiarities of color, disposition, habit and diseases, and here we see the great natural law, that like produces like, is as applicable to faulty and disproportioned, as to beautiful and symmetrical, to disease and debility, as to healthy and vigorous constitution, and clearly establishing the hereditary tendency for good or bad qualities in the offspring, and I might add, it is doubly severe when both parents are affected. The science of breeding is so perfect and the rules so well established, by adhering strictly to current laws or principles of breeding, it is comparatively an easy matter to establish an improved breed. In breeding, therefore, the most important rule is to breed only from the best, not merely the best looking, or the animal that fills the eye most completely, but from one that has the capacity of transmitting his given qualities in the highest degree to his progeny. The best evidence of this is the knowledge of his ancestors for several generations, unless some of his stock can be seen by an experienced breeder and a good judge of stock. A sure sign of pure breeding, is a litter of pigs all alike, or take three sows of one litter, use one sire, the three litters of pigs being alike is a proof sheet.

My experience and observation for the last twenty-five years in breeding has fully proven to me that the few rules and thoughts advanced here are correct, and if you will use only those breeds which have steadily been bred in a line resulting in the establishment of a fixed type, capable of transmitting itself with uniformity, using the care necessary in breeding, you will soon establish a breed of marked superiority. By breeding in this way you cannot make a mistake. The success in breeding proves that if the same sagacity and business talent that is applicable to the commonest mercantile transaction, be devoted to a thorough and complete system of breeding, ample reward would be the certain results.

This brings us to the most important part of our subject, that of growing the stock. The subject of feeding is of great import-

ance, that the best results may be obtained from the material expended. This skill or success is dependent on many things, such as the selection of good well bred stock, the kind of food used or employed, the mode of preparing it, and particularly the kind given to the stock when young, and many other things, all of which we should consider and investigate. I have been astonished by my own experience, the very short time it required to fatten stock for market on prepared food with good care. Whatever method is adopted, and of course modes will differ with different individuals, enough should be given that the animal may develop progressively and become in the end all it is capable of becoming according to the laws of its being. The old recipe is milk, boiled potatoes and corn meal stirred in with the potatoes when warm. This kind of food will give development to the stomach. To be a successful feeder this important point, when animals are young, cannot be overlooked. I believe it is acknowledged by all who have attempted the breeding and feeding of swine, that to arrive at a correct rule or principle upon which one can rely to feed breeding sows, and a safe plan to establish for the growth of a pig to four months old is the secret of success. My own opinion is that when a man understands this part of agricultural science, he can graduate at any of our agricultural schools in this department.

Every one has noticed the immense difference that often exists between animals in regard to the progress they make upon the same sort of food. You may have two hogs shut up in the same pen, getting food and treatment precisely the same, and one will remain obstinately lean while the other will get as round and as fat as an alderman. It is evident there is a great waste of food on the one compared with the other. Both may consume the very same quantity, but they differ greatly in the way they dispose of it. The object of the farmer is to convert the products of his farm, the slops of the house and the dairy into pork for profit, and what he wants, is a hog that will do it to the best advantage. He may have a good hog or mill for that purpose, but he does not understand feeding it. My experience has taught me a lesson, and not a cheap one either, that there is an irresistible craving for something besides the inevitable corn which is too concentrated and too

heating for an exclusive and continuous diet, hence we must feed some kind of slops and vegetables as well as corn, giving wholesome varieties and sufficient bulk, exercising ordinary care and discretion in its use.

The art of the breeder may mould the type of hog suited to the purpose for which it is kept, but it requires the skill of the feeder, with great care, to develop those qualities to any degree of perfection. A sow with suckling pigs should have free access to grass, and a generous supply of rich slop. Corn alone contains too much oil for growing pigs; light grain, bran and shorts with grass and succulent vegetables should constitute their food. During the summer before fattening, a clover or timothy pasture is indispensable to the economical production of pork. The next best mode is soiling with clover, timothy or other succulent grasses or vegetables. Confining in small pens and feeding corn is the most expensive practice.

I have no faith in a sick hog. The best way is to turn him loose where there is plenty of water and leave him to nature and his own instincts. A mangy hog is worthless and should be knocked in the head at once.

There is another branch of our subject that is not less important than the one we have just considered. Cleanliness. Hogs should have a dry bed, and absorbants such as straw, saw-dust or leaves should be used freely about hog pens to take up all the liquid manures, and free the premises from disagreeable odors. This course is especially desirable when hogs are kept in villages or in the vicinity of the farm dairy. In addition to the benefits resulting from absorption and in keeping the air free from bad odors, another important advantage is gained in the increased quantity of manure. Add to cleanliness the law of kindness, which is the key stone and must be in the building, and you have secured a proper foundation upon which to base practical experiments in the rearing and general management of swine, and I believe the field is as wide and promising to-day as it has ever been for the intelligent, enthusiastic perservering breeder.

This paper contains many valuable thoughts relative to breeding, feeding, care, etc., and will be read by those engaged in this branch of stock raising with much profit.

THE BEARING OF SOME OF THE WORK OF THE GEOLOGICAL SURVEY UPON AGRICULTURAL INTERESTS.

BY PROF. T. C. CHAMBERLIN, BELOIT COLLEGE.

[NOTE.—This subject was presented to the convention in the extemporaneous style, the use of maps making it desirable to do so. The following written out several weeks afterwards, will not be found a very faithful report of what was then said, as no attempt has been made to make it, in any sense, verbatim.]

There are two kinds of scientific farming, so-called. The first is scientific in its data, the second is scientific in its methods. The farmer of the first class has at his command large stores of technical, scientific knowledge. He knows the mineral and organic constituents of the soils. He understands their physical properties. He has learned the chemical constituents of the atmosphere. He is familiar with the structure of plants and the functions of their various organs. In short he possesses an ample store of technical knowledge of its scientific facts that are related to his profession. But his success is not commensurate with his knowledge. He may be more successful than his neighbors. He may be less so. He will at times be brilliantly successful, at others, as brilliantly unsuccessful. The fault is not in his scientific knowledge. That is well, is admirable, is indeed necessary to the highest possible success. It is not in his industry, for that is unquestioned. It lies in his method. He makes an unscientific use of scientific facts. It is said of a certain prominent lawyer, that he makes very bad use of good law. So this farmer makes a very bad use of good science.

The farmer of the second class is scientific in his methods. As nearly as it can be stated in a word, that method is experimentation; is precisely the method adopted by the scientist in the development of truth. The scientist carefully ascertains all the conditions under which his experiment is to be performed. He notes all the influences brought to bear upon it during its progress. He

analyses its results, and refers each, so far as possible, to its cause. He then repeats, under new conditions, and notes the new results; and so, by repeated and continued tests, he develops its controlling law, and shows the effect of varying conditions upon the result. So the farmer of this class ascertains carefully all the conditions under which he is to labor, the nature of the soil, of the climate, of the crop, of the exposure, drainage, and all other circumstances. This involves all the knowledge possessed by the farmer of the first class. But this knowledge is to him a preliminary, not a dependence. All the varying circumstances of the season and the culture of the crop are carefully noted, and the results, instead of being capriciously referred to some insignificant circumstance, are attributed with studious caution to their probable causes. And so he continues from year to year, until accumulated results demonstrate the principles that must guide him. *Intelligent trial* is his reliance. That intelligent trial necessitates all the scientific knowledge that he can command, and all the scientific culture in observation, invention and reasoning that he can summon to his aid.

This is our ideal farmer. Indeed, this is the method pursued to a greater or less extent by most of our really successful farmers, though they might be surprised at being termed scientific. Their methods are those of observation, experiment and induction, and this is nothing more nor less than the method of scientific inquiry.

The service, which it is the duty of general science to render to agriculturists, is then evident; 1st. To supply him with the preliminary knowledge he may need. 2d. To assist him in observing the conditions under which his work is being prosecuted. 3d. To foretell, so far as possible, the changes that may take place. 4th. To assist him in judging of his own results, and especially of those of others.

The preliminary knowledge which a farmer needs is not simply a knowledge of soils in general and of his own in particular, of atmospheric conditions, and of the peculiarities of his crop, but he needs also to know the results of previous trials, the experience of the past. A successful farmer of New England will not neces-

sarily be a successful farmer of Wisconsin. His New England experience will not fully take the place of Wisconsin experience.

Two series of crop-raising have been carried on in Wisconsin, the one extending over thirty years, more or less; the other, over thousands of years. The one has been performed by man, the other by nature. The one has been as capricious as man's will, the other, not more varying than the conditions of nature. The shorter course is well known to you, and furnishes an indispensable guide in your operations. A knowledge of the results of the longer series cannot fail to be of value to the farmer who takes a comprehensive view of his profession. This, the survey is attempting to furnish.

In the region which it has been my privilege to study during the past summer, viz., the east central part of the state, nature as the result of the experience of these thousands of years, has seen fit to raise at least four distinct crops upon the uplands, and about an equal number upon the lowlands.

These crops do not consist of a single plant, but of a group of plants so related as to flourish together, and indeed to a greater or less extent to be dependent upon each other for their mutual well being. Some plants grow only in association with certain other plants. Nature's method, then, is to raise mixed, not simple crops. How far it may be profitable to imitate her in this respect can only be determined by trial. It is a very common impression, and doubtless a correct one, that wheat grown among oats is both better in size and quality, and less liable to the attacks of its enemies, and that other crops may be associated at least without apparent injury, if not with real benefit to both. How far any advantage of this kind may be offset by the practical difficulties of the method, must be decided by experience.

The four groups above referred to as occupying the uplands are the well known herbaceous vegetation of the prairies, the openings and forests in which the oak predominates, the maple and their associates, and, as occupying the wet lands, the grasses and sedges, the mosses, the cranberries, and the tamaracks. [The areas occupied by each of these groups were shown in color upon a map constructed for the purpose. Attention was called to the useful-

ness of such a map in studying the adaptabilities of these areas and in drawing correct conclusions from the experience of others.]

The significance of the native vegetation is illustrated more decidedly perhaps in some of the marsh vegetation, than elsewhere. A marsh covered with certain classes of plants is very readily improved, but only with difficulty if covered with certain other kinds. Certain plants indicate a suitable bottom for the culture of cranberries, certain others that the conditions are altogether unfavorable. The natural distribution of this plant, the cranberry, may be taken as a well marked illustration of what is taught in a greater or less degree by every plant, and will indicate what I desire to enforce in this connection better than any abstract statement, and it has the further advantage of being a subject concerning which interest is just now awakened.

It should first be stated that the elements required for the successful culture of the cranberry seem to be the following, briefly stated: First, a suitable bottom, a good bed of peat is the best, that being the principal food of the plant. At the East, cedar swamp bottoms are preferred. Our tamarack swamps would doubtless prove equally satisfactory. Secondly, complete control of the drainage, so that the marsh may be drained or flooded as may be demanded. Thirdly, a sufficient supply of silica. "Silica plants" differ from "peat plants" in the appearance, mode of growth, and in a much superior yield.

Keeping this last requirement in mind, let us examine their native distribution. The chief marshes that lie within the district inspected by me during the past summer readily arrange themselves in three groups and show an interesting relationship to the geological formation. Those at the north form one group and rest upon the Potsdam sandstone. Those in Oconomowoc, Delafield, Concord, Summit, Ottawa, Eagle, Richmond and Sugar Creek, form a numerous group of small marshes lying in the sandy district, that seem to have had its origin in the arenaceous layers of the shode. The third group comprises those in the western part of Jefferson county which lie upon or near the St. Peters sandstone. The demand for silica is thus shown in the natural distribution of the plant. But more is indicated. Their growth is limited to certain latitudes, or more strictly, to certain climatic

zones. Nature has made experiments on this subject, and has found it possible to raise them from Virginia to the British possessions. Wisconsin lies centrally within this zone.

The value of studying the natural distribution of this plant, to all who engage in this industry or possess lands suited to it, is then evident. A similar, though less conspicuous value attaches to the study of the native areas of our other plants. The geological survey is attempting to put information on this subject in an available form.

From the vegetation, much may be inferred in respect to the soil. But this does not diminish the value of direct operations upon its nature. These observations, to be of permanent value, should be made upon subsoils rather than upon soils proper—or, at least, the purely surface characters should be set aside. This should be done for two reasons; first, because the surface soil is subject to so many local and changeable influences, and has been so much modified by cultivation and other artificial causes, that observations upon typical or “virgin” soils is scarcely possible, and secondly, because the future of our agriculture depends, not upon the present soil, but upon the subsoil, for winds, waters and cropping are rapidly sweeping the surface away, and but a comparatively few years will pass before our present subsoil will be at the surface, and for the further reason, that the power of the surface soil to retain the strength it has, and to draw mineral resource from below is most evidently dependent upon the subsoil. A series of such observations has been made during the present season and the results embodied in this map. [The map showed in colors the areas occupied by the prairie loam, the lighter marly clays, the heavier marly clays, the real clay, the sandy soils, and the peaty soils.] If we compare the areas occupied by these various soils with those covered by the several kinds of vegetation, we shall find a marked correspondence between them. The heavier marly clays, with a portion of the real clay, are covered, in general, by the maple and its associates. The lighter marly clays and a portion of the red clay are covered with oak openings and forests. The sandy soils, chiefly by pines to the northward, and by oak openings and prairie elsewhere. The prairie loam, by the well known vegetation that gives it its name, and the peaty

soil by the several classes of lowland vegetation already named, among which the sedges and tamarack predominate. This correspondence adds to the significance of the native vegetation already insisted upon, and clearly shows the dependence of the one upon the other.

If we compare these areas with the geological formations (a map of which was used in the presentation) we shall find in the western portion, where the drift thins out, a noticeable correspondence, while in the eastern portion, where the drift is deep, the relationship is more obscure. The Potsdam and St. Peter's sandstones give rise, as would be expected, to a sandy soil. The Trenton, Galena and Niagara limestones form either prairie loam or the lighter marly clay soils. The mixed drift, where largely calcareous, produces the last named class of soils, but where largely aluminous, gives rise to the heavier marly clays. The assorted drift produces sometimes one and sometimes another. It seems then that a knowledge of the geological formations is necessary to a comprehensive and philosophical study of agricultural science.

[On the map of soils, three sets of isothermal lines had been drawn, showing the average temperature for July, for January, and for the year. Attention was called to their peculiarities and to their bearing upon the conclusions deduced from the foregoing facts.]

It is scarcely necessary to dwell upon the value of such maps and observations, when extended over the entire state, and made accessible to the thinking farmer, who is not content to simply follow the methods of his forefathers and "the way he did down east," but who desires to know the conditions under which he labors and how they agree, or how they differ from the conditions elsewhere, that he may apply the principles of his profession understandingly, and that he may make all necessary modifications in his reasonings upon the experience of others. It seems to me that in no other way can we furnish a practical basis for a true system of intelligent farming in our state. The instruction given in our agricultural colleges is necessarily deficient in these respects for the want of knowledge that cannot be obtained from the usual sources of information. By means of such facts as these observa-

tions are designed to supply, the entire state in a certain sense, may be made an experimental farm. The more important conditions, under which the crops in different parts of the state are raised, being known, the causes of success or failure will become more apparent, and much needless expense in experimenting with new varieties or new methods in unfavorable localities may be saved. As it now is, if a new crop, or some new form of stock raising or dairying proves successful in one locality, it is apt to be rashly tried in all other localities, regardless of the difference in their natural adaptations. And if a new enterprise in any department of the business fails at one point, the question is too apt to be regarded as settled for the entire state. The object of these observations on the part of the geological survey is to furnish, as has already been said, a reliable basis for comparing the results of experience in different regions, for forecasting the results of new enterprises and for drawing correct conclusions from them. It is not to be expected that anything like perfection will be, or can be, attained. The observations of the survey cannot be more than general. The problem is complicated. Much will remain to be done. But if something can be contributed to the more perfect success of the greatest industry of the state and nation, it will abundantly justify the labor and outlay necessitated.

The act establishing the survey provides, very properly, for observations upon animal life with reference to agricultural interests. While all observations upon the animal kingdom have a direct or indirect bearing upon farming, those of the survey have been planned with direct and special reference to the interests named.

The problem presented for solution is a complex one. It involves the manifold aspects of the conflict of animal life. Popularly, we have scarcely got beyond the sweeping and unjust generalization, that the birds are our friends and the insects are our enemies. Because a certain bird lives upon insects, it does not follow that he is therefore useful to us, for he may be devouring our insect friends. Nor if he is found to live upon vegetation does it follow that he is our enemy, for the vegetation may be noxious. What is needed is exact and specific information. The present state of the problem, even

with the well informed, may be illustrated by the following: I examined the digestive organs of an oriole and found, among other things, fragments of a beetle termed cincindela. I afterward saw a cincindela capture and devour another small carnivorous beetle. This beetle lives upon some other insect. Possibly it may also be carnivorous, but, sooner or later, in the series of victims, we shall probably find an insect that lives upon some form of vegetation. Now the whole series depends upon the nature of this last term. If the vegetation is noxious, then the insect living upon it is our friend, and the one that preys upon him is our enemy, and the bird that preys upon him again is our friend. But if the vegetation is valuable, then it is just the reverse. But the case is not so simple even as to this. The oriole lives upon other food than the cincindela, and the cincindela, on its part, does not chiefly live upon carnivorous beetles. The food of birds also varies more or less with the season, and that of insects with the state, whether larval or perfect. This case may be taken to illustrate the present state of the whole question; the something that we do know and the something that we do not know on this important subject. That which agriculture demands of zoological science is a list of mammals, birds, reptiles and insects that are our friends, and of those that are our enemies, and sufficient information concerning them to indicate how they may be fostered on the one hand or exterminated on the other. We have cats and dogs to prey upon troublesome mammals. Why not have cats and dogs among the insects for a similar purpose in their order of the animal kingdom?

The observations of the past summer have not been as numerous as could be desired, owing to the pressure of the more strictly geological work, but have been directed by the foregoing considerations. They relate chiefly to the food of birds and insects. The former were ascertained by examining the contents of the digestive organs, noting the time of day, as well as the day of the month.

Of the birds examined, 46 $\frac{2}{3}$ per cent. were found to be exclusively insectivorous, while only 6 $\frac{2}{3}$ per cent. were found to be ex-

clusively herbivorous, making that term include those that live upon grain, seeds and fruits, as well as green vegetation.

Those that were exclusively or chiefly insectivorous reached 66 $\frac{2}{3}$ per cent., against 33 $\frac{1}{3}$ per cent. that were exclusively or chiefly herbivorous.

Of insects, those found feeding upon valuable plants, compared with those feeding upon valueless or noxious plants, stood in the ratio of 53 to 47. Those feeding upon valuable plants, or attacking our friends, in other words, our enemies were 52 $\frac{1}{2}$ per cent. of the whole, there being 47 $\frac{1}{2}$ per cent. that either fed upon valueless plants or preyed upon our enemies.

It should be borne in mind that the times and localities of these observations were controlled by the demands of other work, and that they may not, and probably do not, represent the true proportions as they would be shown if the observations were exhaustive. But here, as with other topics, I have only designed to show the nature and bearing of the work done and the ideas that have controlled it. Little more than a beginning has been made in any direction, but it is hoped that the nature of the work is such as will best subserve the interests of agriculture, and that in the progress of the survey valuable results will be attained.

This paper was listened to with great pleasure, as the Professor showed the beauties connected with the geological survey of the state and their intimate relations with agriculture. It will pay a studied and careful reading.

FISH OF WISCONSIN.

THEIR ECONOMIC VALUE AND ARTIFICIAL PROPAGATION BY
MEANS OF WHICH OUR INLAND LAKES AND RIVERS COULD
BE ABUNDANTLY STOCKED.

BY R. P. HOY, M. D., RACINE.

Fish are cold blooded aquatic vertebrates, having fins as organs of progression. They have a two-chambered heart; their bodies mostly covered with scales, yet a few are entirely naked like cat-

fish, eels, etc.; others, again, are covered with curious plates, such as the sturgeons. Fish inhabit both salt and fresh water. It is admitted by all authority, that fresh water fish are more universally edible than those inhabiting the ocean. Marine fish are said to be more highly flavored than those inhabiting fresh water; an assertion I am by no means prepared to admit.

As a rule, fish are better the colder and purer the water in which they are found, and where can you find those conditions more favorable than in the cold depths of our great lakes. We have tasted, under the most favorable conditions, about every one of the celebrated salt water fish, and can say that whoever eats a whitefish just taken from the pure cold water of Lake Michigan, will have no reason to be envious of the dwellers by the sea.

Fish are inconceivably prolific; a single female deposits at one spawn from thirty thousand to the prodigious number of *thirty millions*, varying according to species.

Fish afford a valuable article of food for man, being highly nutritious and easy of digestion; they abound in phosphates, hence are valuable as affording nutrition to the osseous and nervous system, and they have been termed, not inappropriately, brain food—*certainly a very desirable article of diet for some people*. They are more savory, nutritious and easy of digestion when just taken from the water; in fact, the sooner they are cooked after being caught the better. No fish should be more than a few hours from their watery element, before being placed upon the table.

For convenience, I will group our fish into families as a basis for what remarks I shall offer. Our bony fish, having spine rays and covered with comblike scales, belong to the *Perch family*—a valuable family, all take the hook lively, are gamey, and spawn in the summer.

The *Yellow Perch*, and at least two species of black, or striped Bass have a wide range, and are found in all the rivers and lakes in the state. There is a large species of fish, known as *Wall-eyed Pike* (*Scomperca Americana*), belonging to this family, which is found sparingly, in most of our rivers and lakes. The Pike is an active and most rapacious animal, devouring fish of considerable size. Although the flesh is firm and of good flavor, it would

not probably be economical to propagate it to any great extent under ordinary circumstances.

The *White Bass*, *Centrarchus aeneus*, is a species rather rare even in the larger bodies of water, but ought to be introduced into every small lake in the state, where I am certain they would flourish. An excellent fish, possessing all the good qualities and as few of the bad as any that belong to the family.

There is another branch of this family, the *Sunfish*, *Pomotis*, which number at least six species found in Wisconsin. They are beautiful fish, and afford abundant sport for the boys, none of them, however, are worth domesticating (unless it be in the *aquarium*), as there are so many better.

The *Carp Family*—*Cyprinidae*—are soft finned fish without maxillary teeth. They include by far the greater number of fresh water fishes. Some species are not more than one inch, while others are nearly two feet in length. Our chubs, Silversides and Suckers, are the principal members of this happy family. Dace are good pan-fish, yet their small size is objectionable; these are the children's *game fish*.

How many of our old hearts respond to these lines of Dr. Holmes:

Oh what are the joys we *perish* to win,
To the first little *shiner* we caught with a pin.

The *Cyprinidae* all spawn in the spring, and might be propagated profitably as food for the larger and more valuable fish.

There are six or seven species of suckers found in our lakes and rivers. The red horse, found everywhere, and the buffaloe, inhabiting the Mississippi, are the best of the genus *catostomus*. Suckers are bony, and apt to taste suspiciously of mud; they are only to be tolerated in the absence of better. The European carp, *cyprinus carpio*, have been successfully introduced into the Hudson river. I have no doubt that it would thrive and be much at home in our small lakes, as the transatlantic members of the "genus homo" flourish on our broad prairies.

The *Trout Family*—*Salmonidae*—soft finned fish with an extra dorsal fin without rays—adipose. They inhabit northern coun-

tries, spawning in the later part of fall and winter. Their flesh is universally esteemed. The *trout family* embrace by far the most valuable of our fishes, including, as it does, trout, whitefish and siscos. The famous speckled trout, *salmo fontinalis*, is a small species which are served at the restaurants in Chicago, at a charge that almost equals their weight in silver. It is humorously said that they charge by the speck, and if you do not count the spots yourself you are sure to be cheated. These beauties are to be found in nearly every stream in the northern half of the state. Wherever there is a spring run or lake, the temperature of which does not rise higher than sixty five or seventy in the summer, these trout can be propagated and reared in abundance.

The great *Salmon Trout*—*Salmo Amethystus*—is a magnificent fish weighing from ten to sixty pounds. The Siscowit of lake Superior is about the same size, but not quite so good a fish, being too fat and oily. They would no doubt flourish in the larger of the inland lakes, like those in the vicinity of Madison. The genus, *coregonus*, includes the true whitefish, or lake shad. In this genus, as now restricted, the nose is square and the under jaw short, and when first caught they have the fragrance of fresh cucumbers. There are at least three species found in lake Michigan. In my opinion these fish are more delicately flavored than the celebrated Potomac shad, but I doubt whether they will thrive in the small lakes, owing to the absence of the small *crustacea* on which they subsist; yet it is possible they would find some substitute in the large lakes, on which they could thrive, at least it is worth the trial. The closely allied genus *Arggrosomus* includes seven known species inhabiting the larger lakes, and one, the Sisco, which is found in several of the lesser lakes. The larger species are but little inferior to the true whitefish, with which they are commonly confounded. The nose is pointed, the under jaw long, and they take the hook at certain seasons with activity. They eat small fish as well as insects and *crustaceans*. There is at least one of these species, the Salmon Herring of lake Michigan, that would do well in lake Mendota, and surely it would be well worth a trial to secure the luxury of catching and eating these excellent fish. At Racine alone, during the entire season of nine months,

there is on an average, one thousand pounds of whitefish and trout each, caught and sold daily, amounting to not less than sixteen thousand dollars.

The Pickerel Family.—We have three or four closely allied species of the genus *Esox*, armed with prodigious jaws, filled with cruel teeth, and they lie motionless, ready to dart, swift as an arrow on their prey. They are the sharks of the fresh water. The pickerel are so rapacious that they spare not their own species. Sometimes they attempt to swallow a fish nearly as large as themselves, and perish in consequence. Their flesh is moderately good, and, as they are game to the backbone, it might be desirable to propagate them to a moderate extent, under peculiar circumstances.

Siluridae.—The catfish have soft fins, protected by sharp spines, and curious fleshy barbels floating from their lips, without scales, covered only with a slimy coat of mucus. The genus *Pimelodus* are scavengers among fishes, as vultures are among birds. They are filthy in habit and food. There is one interesting habit of the catfish—the vigilance and watchful, motherly care taken by the male over the young. He defends them with great spirit, and herds them together when they straggle. Even the mother is driven far off, for he knows full well that she would not scruple to make a full meal of her little black tadpole-like progeny. There are four species known to inhabit this state, one peculiar to the great lakes, and two found in the numerous affluents of the Mississippi. One of these, the great yellow catfish, sometimes weighs over one hundred pounds. I saw one caught in the Missouri, which weighed one hundred and fifteen pounds. When in good condition, stuffed and well baked, they are a fair table fish. The small bullhead is universally distributed, and nearly worthless.

Sturgedae.—The sturgeons are a large sluggish fish, covered with plates instead of scales. There are at least three species of the genus *acipenser* found in the waters of Wisconsin. Being so large and without bones,—*cartilaginous*,—they afford a sufficiently cheap article of food; unfortunately, however, the quality is decidedly bad. Sturgeons deposit the most enormous quantity of eggs; the roe not unfrequently weighs one-fourth as much as the entire

body, and number it is said, over one hundred millions. The principal commercial value of sturgeon is found in the roe and swimming bladder. The much prized caviar is manufactured from the former, and from the latter the best of isinglass is obtained.

The *Gar-pikes*—*Lepidosteus*—are represented by at least three species of this singular fish. They have long serpentine bodies, with jaws prolonged into a regular bill, which is well provided with teeth. The scales are composed of bone covered on the outside with enamel, like teeth.

The alligator gar, confined to the depths of the Mississippi, is a large fish, and the more common species, *lepidosteus bison*, attains to a considerable size. There was one brought to me last February, caught in a small lake in Kenosha county, which measured 46 inches in length, head $14\frac{3}{4}$ inches long, body 14 inches in circumference.

The *lepidosteus*, now only found in North America, once had representatives all over the globe. Fossils of the same family, of which the gar-pike is the type, have been found all over Europe, in the oldest fossiliferous beds, in the strata of the age of coal, in the new red sandstone, in oolite deposits and in the chalk and tertiary formation; being one of the many living evidences that North America was the first country above the water, the first dry land.

For all practical purposes, we would not regret to have the gar-pikes follow in the footsteps of their aged and illustrious predecessors. They could well be spared.

There is a fish—*Lota Maculose*—which belongs to the codfish family, called by the fisherman the lawyers, for what reason, I certainly am not able to say, for the fish is worthless, and lawyers, you know, are ——. Well, I am only speaking of fish now.

There are a great number of small fish only interesting to the naturalist, which I shall omit to mention here.

Fishes of northern countries are the most valuable, for the reason that the water is colder and purer. Wisconsin, situated between forty-two thirty, and forty-seven degrees of latitude, bounded on the east and north by the largest lakes in the world, on the

west by the *great river*, traversed by numerous fine and rapid streams, and sprinkled all over by beautiful and picturesque lakes; with physical conditions certainly the most favorable, perhaps, of any state for an abundant and never-failing supply of the best of fish providing the state secure the advantages of artificial propagation. In the summer of 1859, Prof. S. F. Ward, of the Smithsonian Institute at Washington, and now U. S. Fish Commissioner, Prof. J. P. Kirtland of Cleveland, and myself, armed with all sorts of nets, spent nearly a month traveling over the state, capturing fish. Governor Farwell stopped his mill at Madison, and let the water run down that we could the better study the fish in the outlet of Lake Mendota. Recently, Prof. Baird said to me, "why don't Wisconsin appoint a fish commissioner; those beautiful lakes that jewel the state all over, should be made to produce something better than those fish we found in them." "I will promise to come and look over the ground and consult you about the best fish to be introduced in each case."

The advantages to be secured by employing a competent commissioner of fish would be great, in return for the trifling cost. Most of our eastern states have employed a commissioner of fish, and what has been the result? For many years shad were so scarce in the Hudson river that they commanded from fifty cents to one dollar a piece; during the past season they retailed for *fifteen cents*, and thousands of families that were not able formerly to indulge in such a luxury, now have an abundance. The results in the Connecticut and other streams is quite as gratifying.

The members of the present legislature were elected by the people for economical purposes; good reasons, certainly, providing former legislatures have been extravagant. Economy consists in husbanding the resources of the state, and expending only where the best interests would be secured. If the expending of one dollar will secure results worth two dollars, it would certainly be economy to invest the dollar. A competent, energetic fish commissioner for the state would return in benefits more than a hundred fold. Wisconsin cannot afford to neglect interests of such importance as the cultivation of fish. There is no longer any uncertainty about it. Fish can be raised with the same certainty as grain or stock. One acre of water can be made to pro-

duce as much food as an equal amount of good land ; and superior kinds of fish can be selected and a given number produced, just as you raise domestic animals ; for fish are remarkably susceptible of domestication.

The natural supply of fish diminishes just in proportion as the country becomes settled. Insects, on the other hand, increase just in proportion to the cultivation of the soil. The Colorado potato beetle will illustrate this proposition. Until a few years ago but few entomologists had ever seen this beetle, and were not able to procure specimens for their cabinets. I collected insects in Wisconsin eighteen years before I saw a specimen of the *Chrysomela 10 lineata*. Would that that those years might again return.

If an invading army were to overrun the state and trample down and destroy crops and fruits to the same extent that the hosts of insects do every year, every man would fly to the rescue and the invading foe would be exterminated. Is it not strange how quietly we look on, with folded arms and see the work go on that will cost the producers millions of dollars? Wisconsin should have an entomologist to study the nature of the insects and the best mode for their extermination, and a fish commission to see that our beautiful waters are stocked with the best varieties of fish.

Secretary Field asked whether, in his opinion, the inland lakes of Wisconsin could be successfully stocked with the salmon trout and other choice varieties of fish.

Dr. Hoy said that he believed it to be entirely practical.

Secretary Field said, will not the fresh water shark—the pickerel—destroy them in such numbers that their successful propagation would be impossible?

Dr. Hoy said that many would be eaten by this rapacious pickerel, but that a large supply could nevertheless be obtained, and this difficulty overcome.

THE DUTY OF WISCONSIN FARMERS.

BY CLINTON BABBITT, ESQ., HEMDOKA FARM, BELOIT.

Ladies and Gentlemen: Well may we indulge love and pride for our noble state. Her scenery unsurpassed, over which our eye is accustomed to range; her vast lakes—inland seas—sufficient to float an empire's commerce; her majestic rivers and trackless forests—all inspire devotion and patriotism. Beneath our very feet are inexhaustible mines of lead, copper and iron, and an arable soil not surpassed by any portion of the civilized globe. This to us is the dearest spot of earth, for it is home. Here, for many years, we have lived; and here, too, at last, we hope to sleep in peace.

In answer to the call of the heart, come up to us from the past endearing memories. But in order to understand

OUR DOUBLE OBLIGATION TO STATE AND NATION

in the light of a broader and more refined culture, we must remember that the United States is our country, and its highest titled knighthood the appellation of American farmer. Citizenship entitles to protection. It also demands unyielding obligations. We cannot shrink from the responsibilities it imposes. If we have bad laws to govern us, we cannot say we are guiltless. If oppression grinds, we cannot say we might not have checked the power that warmed it into life. This gathering indicates that Wisconsin farmers are awaking to their duty. Thought and reflection are demanded by the times. Concert of action and thorough organization, will surely achieve the results for which we labor. We complain of oppressive and bad laws. We mean repeal, we mean reform. It is our duty to demand from our public servants at Washington, and our legislature at home, a fair representation of our sentiments and opinions. Economy must be adhered to in the disbursement of public money.

TAXATION SHALL BE LESS BURDENSOME,

and government throughout its various branches less expensive.

Money is raised by indirect taxation, and for every million put into the national treasury, two more are lost through improper tariff laws, expended on tax gatherers and protected monopolies of various kinds.

We must demand that the laws imposing heavy duties on what we require for daily use, or must have for national development and improvement, enabling us to belt the land with iron bands that aid in creating cheap freights and easy transit, be repealed.

We have a right to demand an honest profit on capital invested when we come to sell the products of the farm; and to demand, also, payment for them in money—a currency at par in any portion of the world.

Is it our duty to enforce public justice, if need be, by an irresistible concert of action, through the influence of a thorough political organization pledged to execute the will of its constituents.

I am aware the prevailing disposition shown for the past few months has been wholesale fault-finding. The scrutinizing watchfulness indicates the overthrow of corrupt legislation. It foretells its extermination. It will cause the people to rise in their conscious might, and enforce, even from arrant monopoly, obedience. The ballot is more powerful than the sword; and with that, the controlling power is yours. None know their strength better than the gentlemen of the granges know theirs—than you know yours, farmers and horticulturists. Oh! what a mighty change! Once you were almost slaves. Self-preservation—that law which knows no master—with one sweep of its wand, has raised from the dead, monotonous routine of daily life the toiling producer of the world's wealth, and agriculture, and the Patrons of Husbandry will, to a great degree, be responsible for future events.

The world is progressing in every department. We are marching to the front. Perfection in grains and tillage; faster time and more strength in horses; weight unequaled, with beauty and purity of blood, in Short Horns and Southdowns; art hitherto triumphant, and still to be surpassed. Manhood, universal brotherhood, is at hand. The three great lights of American civiliza-

tion are burning and stand round the altar. Agriculture, manufactures and progressive knowledge blend their glorious rays to cheer the world. But history asserts the fact that

HUMAN NATURE IS APT TO OVERREACH ITSELF,

And that the oppressed in time become oppressors. Intelligence and virtue constitute the bulwark of safety. Beneath their influence monarchies crumble and republics thrive; intolerance and corruption, both in religion and politics, vanish forever.

Wisconsin farmers, duty demands of you such economy and such legislation as will bring to your homes a full, sound education and all its attendant blessings; for, from these quiet retreats, your homes, must come our national strength and defenders. We may then reasonably hope that reforms begun by us will be perfected and maintained by those who come after us.

I am not one of those who would willingly array myself against railroads and all other internal improvements. These great equalizers and annihilators of distance, the means through which producer and consumer shall be brought into closer relations, must remain, be fostered, constructed where needed, curbed and controlled in a proper degree by that sovereign will which knows no superior above the constitutional rights of free men. Time, the great leveler of human opinion, will utter its decision, and the principle and policy of a liberal but honest legislation will be incorporated in the history of this country.

American farmers never can afford, nor do they desire, to be mercenary, or to adopt a policy that shall subserve their own personal interests alone. Whosoever votes for self, or party, against public and general good, is a corrupt voter; and, if you give your influence to any political movement opposed to the public welfare, I stand here to charge you with corruption.

No political party should be narrowed down to professional lines, excepting in cases of most imminent danger to national prosperity. I am sorry to admit—would I were not obliged to—that the time has come. A quarter of a century ago, all the wealth of monopolies in this country did not exceed \$10,000,000. But, incalculable as it may appear, this prolific source of discord and strife has already swallowed up over \$3,000,000,000 of the people's

money, and with impudence peculiar to gluttony, asks for more. Prompt action is demanded; guided always by intelligence and virtue.

SPEED ON THE GRANGE!

Speed on the Club! Speed on Reform! "For God shall punish the world for its evil, and the wicked for their iniquities. He shall cause the arrogance of the proud to cease. He shall lay low the haughtiness of the terrible: for he will make a man more precious than fine gold, even a man than the golden wedge of Ophir."

It has been my privilege to visit many of our flourishing states, among others the champion wheat-growing state, Minnesota. There I saw, by the posters of the Northern Pacific Railroad, advertising its bonds, that their value was predicated on a grant containing more land than is contained in the whole of the New England states, with Maryland added, and this immense domain is free from taxation until disposed of by the railroad company. I also visited the best portions of land on the Minnesota line of the St. Paul and Pacific, with its land-grant of twenty miles in width, and became intimate with many of the farmers who had purchased on time, expecting to make that fair land their home. Many indeed were the cases—not the exceptions by any means—where, after repeated efforts to meet the obligations to the railroad, and the taxes incident to new countries, they were at last compelled to abandon their claims and turn their faces toward the setting sun. Under such disadvantages, what is true of one place is true of nearly all. Now, if there is a class on earth who ought to be befriended and not crippled by government, it is the actual settler on the frontier who takes his life in his hand, faces mercenary savage and rigorous climate, and converts wilderness and desolation into independent states; who, with courage, power, and might of manhood, bids farewell to the things that are behind, and presses forward his country's destiny. I submit, is not his claim far superior to that of a railroad company which builds roads where they are not needed, but whenever and wherever it can get good land without paying for it?

Revolutions never go backward. Duty of more than ordinary

significance rests upon you, gentlemen, to the nation itself. You are the vanguard in this reform. Throw down, then, all barriers to fraternal union, and clasp hands across the continent, with those who need your magnanimity. Assist to annihilate and abolish the offices of customs; and, in your policy and relations with the world, as it is with each other, incorporate a system of universal reciprocity. Agriculture never was overstocked with laborers, and never will be. She extends her open arms across the waves to other countries and to other climes. She invites their skill and labor, and offers in return, competence, homes and family-altars. She spreads before the eyes of downtrodden humanity the reward of labor due to men. We offer franchise, free schools, American civilization and citizenship. Forever they are safe,

PROTECTED BY VIRTUE AND INTELLIGENCE.

Here, in America, the germ of liberty and equality among men was planted by the fathers. Revolutions defended and enriched it with blood, and now it spreads its luxuriant foliage, an asylum to all. He who would be one with us, and leave old and dangerous issues behind to perish with the ages that nurtured their life, is a friend and brother. To him we offer a national emblem, protection, and national character. Republicanism and true Democracy unite in common interest and fraternal union Labor and Capital; and I utter the meaning and abiding sentiment of every true American when I say: Here we have no room for such as would subvert good and wholesome laws and trample upon civil rights, or for him who would parade our principal cities with incendiary mottoes under the red flag of the Communist, flaunting in honest men's faces that arrant, infamous lie: agriculture refuses bread.

This paper was carefully prepared, well delivered, and contained ideas and thoughts worthy the consideration of the farmers of the state. Want of space compels an omission of several valuable portions.

THE RELATION OF SMALL FREEHOLDS TO THE
PROSPERITY OF THE STATE.

BY E. H. BENTON, LEROY.

The subject we propose to investigate lies at the threshold of every student of political economy, and associates itself with every question discussed to its close.

Superadded to the natural right of every human being born into the world to the *products only* of the soil, we find in all civilized governments a civil right conferred by statutes, of permanent proprietorship in the *soil* also. That this distinction of natural and civil right to the products of the soil, or, to the products and soil, is vital to right conclusions in our present investigation, will appear as we proceed.

That we may approximate to some degree of definiteness in our conclusions, we assume that the highest degree of prosperity is attained in any state where an individual owns just that amount of land which, by usual diligence and skill through the whole year, he can cultivate thoroughly without direct assistance, except from his own family.

The principle upon which this standard is based is one which all agree to apply to all avocations of life—namely: That the highest degree of success in any employment is reached by him who devotes all his talents exclusively to it; or, to state the matter still stronger, he *only* reaches success in any occupation who gives to it any thing less than *all* his time and faculties. Assuming these preliminary propositions to be sound, we are prepared to advance to the central one.

Take any definite extent of territory, and the less the size of freeholds or proprietary estates the greater the accumulation of wealth, and the higher the character of its civilization; while, on the other hand, the larger the estates, the nearer to barbarism and poverty will be the condition of the bulk of the population. Without going beyond the boundary of the United States we

have a clear case of the working of this principle in political economy as between the Southern and Middle States and the Northern and Eastern States, and in Europe as between Ireland and the Netherlands. Had congress confiscated *all* the land and properties belonging to *all* who held office under the confederate states, and divided it into small portions, putting such a price and terms upon it as would have made it accessible to the laborer, and prohibited its sale to all but actual settlers, a large fund would have gone into the national treasury to have reimbursed largely the expenditures incident to subduing the rebellion, and what was far more desirable, would have solved immediately the problem of the pacification and recuperation of that section of our common country.

The Autocrat of the Russias emancipated twenty millions of serfs that they might become citizens and proprietors, be educated and civilized, so that he might hold an equal race for power with the states of Western Europe.

The astounding spectacle witnessed within the year just passed, of a nation across the Atlantic, after being engaged in a bloody, exhaustive war, paying an indemnity of billions to her conqueror within a space of two or three years; and the most remarkable thing about it is that the mighty stream of gold which flowed into the coffers of Germany was made up from millions of rivulets having their rise in the small peasant properties of ten, fifteen, twenty or more acres.

But refraining from citing further from the history of nations, which is full of striking examples to confirm our proposition, we will proceed to indicate the direction which laws affecting the securing of titles, the levying of taxes, testamentary disposition, and all laws which affect the distribution of land among its citizens should take.

While it might not be practicable to fix a limit to the number of acres which individuals or corporations might purchase of government lands, it might be eminently proper to fix the amount which one deed should convey; and also fix a graduated scale of prices, making the maximum fee commence with the largest amount conveyed, diminishing pro rata to the minimum of 40 acres. The same principle should apply to fees for recording and

all other fees allowed by law in any wise affecting the transfer of landed properties. The law should always discriminate in favor of the actual settler and against the non-resident in all burdens imposed on land already sold, to at least double taxes for local purposes, such as schools, &c.

Neither should the law permit such complications or irregularities to obtain in settlements in probate courts, that the state should deem it necessary in loaning her trust funds, to discriminate unfavorably towards such real estate as has been administered upon. It might not be out of place here to express our conviction that had congress made it a condition of the gift, that the land grants made to railroads to aid in their construction should be sold at the same price per acre of government lands lying contiguous, it would have been a powerful plea in mitigation of the stupendous robbery of the peoples' patrimony, to build up a Credit Mobilier and corrupt monopolies. The only valid plea ever put in for the grant of land by congress to aid in the construction of the Pacific Railroad was, that at that particular juncture of events it was of vital importance to secure rapid communication with the states on the Pacific coast, to prevent the spirit of secession from growing into actual rebellion, and we are willing to grant to that plea just force enough to justify the granting in that particular case. But laying aside the discussion of the desirableness of correct principles being embodied in all laws affecting the disposition of landed properties, we turn now to investigate the educational forces involved in the relation of ownership in land and the character which is thereby developed.

In a widely diffused population the means for education can hardly be said to exist, and it has always been the case in our southern and southwestern states, that educational institutions have scarcely existed at all, and the contributions of the benevolent, with generous aid from government, have been indispensable to keep them alive where existing. The idea of any system of common schools existing at all where individuals own whole counties or townships, is simply absurd. It is the universal testimony of history and observation, that where large landed properties prevail, the condition of the bulk of the population is but little removed from that of beasts of burden.

It is one of the most obvious truths of political economy, that virtue and intelligence are essential requisites in founding and perpetuating a republic. But history shows that a republic has never existed, except in name, wherever the system of large estates has prevailed ; while on the other hand, as a general rule, wherever the subdivision has been quite small, there, even without any special form of government, may be found the privileges of free institutions, in proof of which we cite, among many, Switzerland, The Netherlands and our own New England Colonies. But if the possession of a home, surrounded by the adornments of natural objects, by fruitful fields and the ministrations of the seasons, with the consciousness of security in enjoying the fruit of his labor, and bequeathing them to his children, affect most favorably the virtue and manliness of their possessor, the greater the number of such small freeholders in any state, the nearer will it attain to the highest and most enduring prosperity.

It needs but a moment's reflection to convince an unbiased inquirer that the highest and most potent educational force is the reflex action of our own doings—we do not mean habit as it generally is understood, but a certain independence essential to virtue. Let a scholar apply to his teacher for help in solving a problem in mathematics ; in one case the work is done for him, in the other by suggestions and encouragement to more rigorous application, he is put in the way of solving it himself—the latter is educated forward, the former backward—so that he works his own estate, makes his own plans, manages his own affairs, and by the stress of necessity solves the thousand and one problems of life out of his own resources, and by the common interests in which his whole family by common labor are involved with him, trains them also to self-helpfulness, receives an education of far more value to him and them than can be given by any institution of mere learning.

On the other hand, the mere day laborer, dependent on others to plan, arrange and direct for him, becomes a public burden when not in employ, and is often a vicious or criminal member of society. But when the day laborer is a tenant subject to ejection on the first failure to pay his rent ; and his trade, if he has one, is already overstocked with employment, we have a condition of

things to which, by contrast, that of the humblest possessor of a small freehold is king.

If the spirit of Horace Greeley could indite the editorials of all the journals of our land, fostering the true manhood of relying on your own exertions for a living, and to despise nothing so much as a cringing subserviency to the beck of others to gain your daily bread, and if this advice was backed by a consistent example, we should hope for a vast improvement in the rising generation.

Wealth is not so desirable as the faculty or ability to produce it; but this faculty is without value unless it can command the sources of wealth, and these are not so much mines of gold and silver and precious stones, as they are of muscle and mind coëxisting with intelligence and virtue. There may exist a highly prosperous state without the aids of commerce and manufactures other than what may be carried on under the home roof; but where will you find either the commercial or manufacturing nation which could exist a twelvemonth without the aid of agriculture to feed its laborers.

From these considerations we draw a few final conclusions :

1st. That the United States possesses in her public domain a source of untold wealth if properly guarded and disposed of.

2d. That the disposition of the public domain, in which is wrapped up the greatest good to the greatest number, is in small portions, say forty to one hundred and sixty acres to actual settlers, at the minium price of two dollars and fifty cents per acres.

3d. No grants of public lands by congress for any purpose whatever, and all grants now pending, the conditions of which have not been complied with, to be immediately revoked.

As a corollary to the foregoing, we might say that the benefits which have been sought for by grants of land to the states for educational purposes and internal improvements, might in the future be reached by gifts of monies derived from the sales of public lands, in such amounts as should be deemed wise in each particular case, always holding in view this essential condition, that help is to be given only to those who help themselves, excepting always the helpless.

4th. There should be an article in the constitution of every

state *absolutely prohibiting* the voting of any tax, for any purpose, which should lay a burden on landed properties.

5th. Exemption of 40 acres, as a homestead, from sale for debts, and its equivalent to those owning less than 40 acres.

It is a safe principle to follow in all taxation, scrupulously to avoid laying the burden both in place and quantity where it will impair or diminish the ability to bear it, or, in other words, "never kill the goose that lays the golden eggs." There is a suggestion of some vicious principle at work in the body politic, when congress votes tens of millions for the maintainance of a standing army, and only thousands for the Agricultural Department; when railroad presidents and directors own whole legislatures, and carry senators and representatives in their breeches pockets; when the consumer pays so much and the producer gets so little; when legislators and agents ride on free passes and the farmer pays double rates for himself and treble for his freight; when the dogs run tax free, and the sheep must be kept shut up, or be killed by the 100,000 a year!

But with this mass of bribery, extortion and corrupt legislation, has arisen a nemesis clothed in the garb of a farmer, whose tread is heard from the Atlantic to the Pacific, and from the lakes to the gulf. As the insane madness of the slave power precipitated a war which resulted in its entire and final destruction, so the arrogance and lofty mendaciousness of bribery, monopoly and extortion have dug their own graves, over which no tear will ever be shed, unless it be of joy for the burial; and the earnest prayer of millions is, that no Gabriel's trump may ever sound their resurrection, unless it be to a second death in the lake that burneth with fire and brimstone.

There is a light ahead—to-day there is the din and smoke of deadly combat, and though it may seem inopportune to shout victory, yet we feel it in our bones, we breathe it in the very air, and to the sons and daughters of toil we augur at no distant day a dominant voice in the legislative hall, and a controlling hand to guide the ship of state into a peaceful harbor.

The paper was highly commended. The author believed in

small farms, gave his reasons therefor, and had a cheerful hope in the farmer of the future.

Assistant secretary Wicks offered the following sentiment, which was heartily responded to, and adopted as the judgment of the convention :

Sentiment: As education leads the mental faculties and grows great thoughts, so scientific and skillful agriculture brings bountiful harvests and beautiful homes into being as the trophies of the conquest of human labor.

Col. Warner, chairman of the committee on resolutions, then submitted the following resolutions, which, after brief discussion, were adopted :

Resolved, That we recommend the organization of granges, or farmers' clubs, in every township in Wisconsin to advocate the mutual interests of farmers.

Resolved, That the law for the license of dogs should be so amended as to be uniform throughout the state.

Resolved, That it is the sense of this convention, that monopoly and extortion as charged against manufacturers, is due to a great extent to the unjust extension and protection afforded by the patent laws, and we demand that such laws be so amended as to permit any one to engage in manufacturing any article by paying a royalty to the patentee, or assignee.

Resolved, That the convention fully appreciates the importance of the manufacturing interests of this state, and will cheerfully do all in its power to fairly and rightly advance the same.

Resolved, That in our judgment the present legislature should pass an act providing for the appointment of a Board of Railroad Commissioners, to investigate the affairs of the railroads of this state, and report facts upon which to base future legislation.

Resolved, That the true interests of labor and capital are identical, and that any system of laws which seems to array one against the other is wrong, and that mutual forbearance and an earnest effort to arrive at a settlement of these vexed questions should be encouraged.

Resolved, That we believe the interest of manufacturers, as well as our own, would be best subserved by a disposition on their part to deal directly with our agents on as favorable terms as with their general agents.

Resolved, That in the opinion of this convention the prosecution of the State Geological Survey, and the facts and observations acquired thereby, should be disseminated, not only for the development of our mining and mechanical industries, but to aid, both directly and indirectly, in the success of agriculture.

Resolved, That the present bird laws on the statute books of Wisconsin are a humbug, gotten up for the kid-gloved hunters, and should be repealed, and

that the chickens that feed on our wheat and corn are as much the farmer's property as the chinch bugs and potato bugs.

Resolutions were offered by R. J. Burdge of Rock county, requesting members of clubs, granges and other societies, to refuse to deal with certain named plow manufacturers who had entered into a contract declining to deal with such orders or societies on the same liberal terms as with their own general agents.

After some spirited discussion by several members of the convention, mostly in favor of their passage, the resolutions were adopted.

Secretary Field made brief remarks, stating that he regretted that the convention could not continue another day, that the interest manifested had been very great, and he hoped that all would leave for their homes stimulated with an increased desire and determination to better educate their sons and daughters in those practical branches of farming and household duties, that the former might make better farmers, and the latter better farmers' wives, and both better citizens of the commonwealth, and that they might exert an ennobling and elevating influence in advancing society generally, to a condition of greater usefulness. He also said that on behalf of the convention he desired to thank the railroads of the state for their generosity in conveying delegates to the convention at reduced rates. By his request, they had without exception, cordially extended this courtesy. The officers of the State Agricultural Society appreciated the favor, as he doubted not all present did.

Adjourned until 7 1-2 P. M., to listen to an address by Gen. H. S. Lansing, of the Centennial Board of Finance, in the Assembly chamber.

Evening Session.

7 1-2 P. M.

General David Atwood, one of the Board of Centennial Commissioners, was present, and on being called to preside by secretary Field, made brief remarks upon the importance of this meeting and the subject of the National Celebration, urging the necessity for united and definite action by our people in pushing forward this enterprise, and that Wisconsin could not afford to be behind her sister states in furnishing material aid to make its success worthy

of such an occasion. He then introduced General Lansing, who spoke at some length of our beautiful state, with its rich soil and healthful climate; its thriving villages and cities, the educational, commercial and industrial advantages; making altogether a state of unparalleled prosperity, and which he said should stimulate all her people to be fully represented at the Nations Jubilee in 1876. The General gave a somewhat detailed account of the desire on the part of the people for this Exposition, and that this wish had been carried out by congress in the preliminary steps which had been taken for the grand celebration, and hoped that a hearty and prompt response would be made by the people of Wisconsin, in pushing this patriotic and noble work forward.

At the close of General Lansing's remarks, Secretary Field said that it seemed fitting and proper, after the able and interesting address we had listened to, that resolutions expressive of the sentiment of the representative men of the various industries of the state who were present, should be adopted, and he would therefore offer the following for the consideration of the convention:

WHEREAS, By an act of Congress, approved March 3, 1871, provision was made for celebrating, in a manner fitting and becoming a great nation, the One Hundredth Anniversary of the Declaration of Independence, by holding in the city of Philadelphia an International Exhibition of Arts, Manufactures, and Products of the Soil and Mine, and

WHEREAS, The President of the United States, in accordance with said act, issued a proclamation announcing this national celebration, and commending it to the people of the United States, and to all civilized nations of the world. and

WHEREAS, His Excellency, Wm. R. Taylor, Governor of this state, in his annual message delivered to the Legislature in January, 1874, commended it to the people of Wisconsin, in the following terse and appropriate words:

"It seems fitting that such a celebration of this important event should be held, and it is hoped that it will be carried out in a manner worthy of a great and enlightened nation.

"Wisconsin should not be less interested in this matter than her sister states. She has vast resources that should be represented. The Centennial Commission has indicated, through circulars sent to the Executive office, that the greatest success in this work will be attained through state boards of managers, appointed by state authority, each to be composed of men thoroughly familiar with the capabilities of the state it represents, and responsible for the exhibition made under its direction. It will have to care for the interests of its own state, and of its citizens in all matters relating to the exposition. Such board of managers would seem well calculated to effect the object in

view, and the subject of providing for its appointment is respectfully submitted to the careful consideration of the legislature;" and

WHEREAS, As members of the State Agricultural and State Horticultural Societies, and representatives of the numerous county, town and other industrial organizations, including Patrons of Husbandry and Farmer's Clubs, and as citizens of Wisconsin, proud of our young state, rich in her varied and numerous resources, we desire the success of this grand national celebration; therefore,

Resolved, That we, as representatives of the above mentioned organizations, and as citizens of the state, do most earnestly commend this International Exhibition to the Congress of the United States, to the representatives of the state now here convened in Senate and Assembly, and to all the citizens of Wisconsin, believing the occasion worthy the best thought and labor of each individual citizen, and the combined wisdom of industrial and other organizations of the state.

Resolved, That the grandeur and magnitude of the enterprise are worthy of, and demand our earnest aid and co-operation, and with a view to obtain such facts and information relative to this exhibition as shall show its importance, magnificence and benefits to our people, we hereby request the chair to appoint a committee of three members of the State Agricultural Society to disseminate information regarding this Exposition through County Societies, Patrons of Husbandry, Farmers' Clubs and other Industrial organizations, and to take proper measures to secure subscriptions to the stock of the Centennial Board of Finance through the same channels.

Resolved, That we believe it to be the duty, as we doubt not it will be the pleasure, of the press throughout the state to forward this noble enterprise by publishing from time to time suggestions and facts bearing upon the importance and progress of this national work, that the people may be educated to properly appreciate this anniversary, and give it their earnest and cordial, moral and financial support.

Mr. Bennett, of Appleton, moved the adoption of the resolutions, and said that the importance of the proposed Exposition to our state and nation could not well be overestimated. The growth and development of our country had been wonderful in the last hundred years, and he deemed the enterprise worthy of the highest efforts of all the people, and hoped that each individual state in the Union would do what she could to make it a grand and glorious success.

Dr. J. W. Hoyt, who had just returned from the Vienna Exposition, and from an extended travel in Europe, said that he thought these resolutions were timely and appropriate, and he seconded their adoption heartily. He said action could not be had too soon by our people, if they expected to make this anni-

versary a success worthy of a great nation like ours. The Professor said that one of the principal causes of partial failure in these celebrations had been the want of time to properly complete the preparations; that we ought to learn from the experience of other nations and commence this work now, and push it vigorously to completeness. He hoped our young state would do her full share in the work, and be fully represented in her agricultural, mining, manufacturing and other industries, works of art, educational advantages, and all other interests which tend to advance the state's prosperity and the happiness of each individual citizen.

Brief remarks were also made by Mr. Woodard and Mr. Tubbs, favoring the resolutions and urging the necessity of early action by the state and by our people. That what was done, should be well done, and the state be given that prominence in this national work which her vast and varied resources justly entitled her.

The resolutions were unanimously adopted, and the chair appointed as a committee contemplated in their provisions, Eli Stilson, President, and W. W. Field, Secretary of the Wisconsin State Agricultural Society, and Hon. Harrison Ludington, of Milwaukee.

Adjourned *sine die*.

UNIVERSITY FARM.

IMPROVEMENT OF SOILS BY MECHANICAL MEANS.

Extract from the Report of Prof. W. W. DANIELLS to the Board of Regents of the University of Wisconsin, 1873.

This experiment was begun in 1871. Four adjacent plats of an acre each are 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 each of the three years since the beginning of the experiment.

Plat 3 was plowed in 1871 to the depth of twelve inches only; in 1872 and 1873, it has been plowed 17 inches deep, which is as deep as it has been practicable to plow.

Plat 4 was plowed and subsoiled in 1871 to a depth of 16 inches, and in 1872 and 1873, 17 inches in depth.

The cultivation of these plats has been the same in all other respects than those mentioned.

The soil is clay, with a stiff clay subsoil; the land is level and rather low.

These plats have been in cultivation to corn during the entire three years. The following table gives the results that have been obtained in bushels of ears of 75 lbs. each:

Method of cultivation,	1871.	1872.	1873.
Plowed 5 inches deep	55.40	43.52	53.4
Plowed 12 inches deep	50.65	50.32	52.9
Trench plowed 17 inches deep	44.95	54.74	51.3
Subsoiled 17 inches deep	42.21	56.77	51.1

An acre adjoining these plats was plowed to the ordinary depth of cultivation, about seven inches, planted and cultivated in the same manner, the yield of which was 56 bushels. The results of this experiment appear quite contradictory, yet they are not so, when the circumstances of soil, season and cultivation are taken into account. In 1871 the shallow plowing yielded most, as in the other plats a heavy clay subsoil had been mixed with the soil. All the plats were fall-plowed in 1871, and again plowed in the spring of 1872. The soil and subsoil had then become quite well mixed, and the subsoil, by exposure to the frost and air, had become quite thoroughly pulverized. This decomposition was aided by the addition of 60 bushels of unleached wood ashes in the spring of 1872. The season was a very dry one, and the deep plowed plats, being better able to withstand the drought, gave a better yield.

In 1873, rain fell on eleven of the thirteen days from June 22 to July 4, inclusive, and during this time five inches of water fell. There is a slight descent of the ground from the shallow to the deep plowing across these plats, with no drainage but that over the surface; so that while the deeper plowed plats received the water from those plowed more shallow, the water that saturated the subsoil of those plats to the depth of 17 inches had no outlet, except as it was evaporated from the surfaces, or percolated through a heavy clay subsoil, which is very slowly indeed. The corn on the deep plowed plats was badly injured by these heavy rains on this account, and this injury was plainly visible in the smaller growth and sickly color of the corn. The lighter yield of these plats is then a natural consequence of the heavy rains of early summer, and of the location and composition of the soil. Drains have now been laid that will prevent a recurrence of the same unfavorable conditions.

PRACTICAL PAPERS.

EXTRACTS FROM

TWENTY YEARS' EXPERIENCE IN GROWING RED CLOVER AS A FORAGE AND RENOVATING CROP.

BY HON. A. A. BOYCE, LODI.

[Written for State Agricultural Convention, February, 1874.]

The different opinions I have heard expressed in regard to red clover, has induced me to give my experience in growing it as a forage and renovating crop. My experience confirms me in the belief that it is the cheapest and best manure that we can apply to our lands—"the one thing needful" to restore the exhausted fertility of the grain fields of Wisconsin, and to those who intelligently cultivate and manage it, it will prove a mine of wealth.

Our yield of grain, the supplies of meat, wool and dairy products, will depend largely on the clover plant and the place we give it among our crops.

In my experience, I have known but two varieties that are cultivated in Wisconsin for hay, pasture or manure. The large and the small. The large clover is of slower growth. It does not start as soon in the spring. It has coarser stalks and fewer leaves than the small variety. It seldom produces two full crops in a season; that is, a hay crop followed by a seed crop. This variety is preferred by many for pastures and manure. For a mixture of clover and timothy for meadows it is preferable to the small variety, as it matures with the timothy.

The small variety of red clover commences its growth early in the spring; starts into growth sooner after being fed off or cut for hay. It has finer stalks, with more branches and more leaves than the larger kind. It blossoms nearly two weeks earlier, and when

sown alone makes better hay than the large clover. It can be cut for hay by the middle of June, and after that, mature a full seed crop the same season.

QUANTITY OF SEED.

The quantity of clover seed required to seed an acre depends much on the quality of the seed and the time of sowing, but more on the condition of the soil as to fineness and mellowness so as to secure proper covering of the seed and perfect germination. The best results on my farm have followed sowing eight pounds of seed per acre; but thicker seeding is generally recommended, and is advisable unless all the attending circumstances are favorable for perfect germination of the seed, and the protection of the young plants.

For several years I have practiced seeding with clover nearly all the ground sown with wheat, oats or barley. I think it holds both the weeds and chinch bugs in check, besides furnishing a large amount of cheap manure, even though it be plowed under the following fall.

"WINTER KILLING."

Winter killing of clover on the prairies, so much complained of, is undoubtedly due more to the treatment the plant receives, than to the severity of the winters. I think red clover is a biennial plant, and like many other biennial plants may live more than two years when the plants are prevented from maturing seeds. What many farmers regard as winter killing I believe is only the result of natural decay—that is, after a clover plant matures its seed, it dies.

Years ago I examined a clover field in the spring, from which I had taken my first crop of clover seed the fall previous. I found most of the plants dead—and many that appeared to be alive, were, upon a closer examination, found to have the tap roots dead, and only some of the lateral roots alive. Those plants soon followed the others. I had relied upon that clover for the principal part of my next hay crop. Its loss was a positive damage as well as a great inconvenience. A better knowledge of the habits of the clover plant would have saved me much inconvenience. That

the loss of the clover was due to the natural decay and not to winter killing, was evident from the fact that young clover sown the spring previous in the same field, equally exposed, came through the winter all right. Since then I have seen a number of such instances, and heard farmers complain of the loss of their clover from winter-killing, and when told that it was because they had taken off a seed crop the fall previous, they would not believe it.

I doubt if two seed crops have been taken from the same plants of red clover. I am inclined to the belief, that the second crop of seed was taken from new plants that had not matured seeds before.

I have suffered little loss from clover plants winter-killing. Sometimes in dry, open winters, patches of clover will freeze out, and I have used half-rotted straw as a mulch to prevent it.

VALUE FOR PASTURE.

The value of red clover for pastures is well understood. The only objection to it is, that it occasionally produces hoven in cattle when turned on to fresh clover. To prevent or lessen the danger from hoven, the clover should be free from dew or water when cattle are first turned to pasture. Cattle should not be turned in with empty stomachs. They should not be salted within a day previously to being turned in the first time. They should be gradually accustomed to the change of feed by keeping them in only a few minutes the first time, a little longer the next time, and so on until they are accustomed to the change. After that, they may be allowed to remain in. I do not consider it safe at any time to turn cattle with empty stomachs on to fresh clover.

I know of no other forage plant equal to red clover in nutritive qualities. The cheapest pork I ever made was from a lot of late fall pigs kept in thrifty condition, and turned on to clover in the spring, pastured on clover entirely during the summer, fed corn a few weeks in the fall, and sold when about a year old. The cost of that pork was about three and one-half cents per pound, calling the corn fed to the pigs worth forty cents per bushel.]

AS A RENOVATING CROP.

The very great value of red clover as a renovating crop is

admitted by all who have tried it. The system of rotation in crops that I have adopted with the view of increasing the fertility of the land, is to have the land in clover one year in three; follow the clover with corn, applying nearly all the manure made to the corn crop; follow the corn with spring grain and seed with clover; sometimes varying with two crops of small grain, wheat, oats or barley after a clover crop.

When a crop of clover *seed* has been taken off with this system I think the land grows richer, and the weeds are held in check by the frequent use of the cultivator and mowing machine.

EXTRACTS FROM

HUMAN MATERNITY

BY MRS. ORRIN GUERNSEY, JANESVILLE.

[Written for State Agricultural Convention, February, 1874.]

I recognize agricultural and all kindred societies, as based upon the grand philanthropy of human betterment; and this betterment through improved conditions. And, in justice to their workings, would congratulate the world upon the success already achieved, and yet, I find some, aye, many things to be done, before man's happiness can be complete. As I understand the genius of your society, the principle of commencing reform at the very base of things, was the incorporating idea — hence the improved condition of every thing touched by or attempted through its workings.

To improve the apple, you do not attempt changing or modifying it, after the fruit "becomes set," but, in the very roots or germs of its being. In like manner, the animal creation, that part for which we feel more particularly responsible, or, rather, in which we feel a greater interest as they serve our pleasure or our need.

If, as is desirable, we would have the fleetest, strongest, kindest, or in any manner an improved horse, we do not begin with the colt of a month old, or a week, even. The most unthinking are not so absurd. But, through the recognition of the "laws of descent," and conditions, that nature never shrinks from, or ignores;

but ever demands as the price of excellence. She *never* fails in her protests, nor her approvals; observation from experiments has so convincingly taught every scientific worker, else your convention to-day might most properly adjourn *sine die*, go home and be thankful to the "*fates*" for the poor, mean, dwarfed apology for a colt, calf, pig or chicken, complacently content to feel that you have no mission behind the fact." Instead of which conclusion of the dark ages, you recognize the propriety, aye, the *necessity* for this interchange of thought and experience, to bring about this most desirable millenium, when no dwarfed, mean thing shall cumber this earth, made so fair, with the prophetic word good, or God, written over everything animate and inanimate.

All this thoughtful, intelligent care for the lower creation, challenges my gratitude, and—envy. Envy! you say; yes, perhaps that is the word; not that I love a horse less, but that I love man more. For really, in my observations, I have thought were half the care, the anxiety, or real interest manifest for the nobleness, the grandeur of our sons and daughters, that there is for the horses they may ride, we should be most surely attaining the highest, grandest and noblest results.

Inasmuch as we must have "sound bodies" for sound minds to work in and through, as well as to enjoy, my argument may be brief to convince you that though last, it is not the least important consideration how so desirable an end may be obtained.

I would not forget in these few hints that I am not in a medical lecture room, or that in a paper of this kind, for this occasion, I could more than suggest by statement, rather than through argument. Instances innumerable could be cited of the baleful influence exerted upon offspring through careless, reckless mothers, some, perhaps, through wantonness, but the large majority victims themselves of circumstances that the parents should be held responsible for. And when it is, as in my opinion it ought to be, held a crime to bring into this world of "immutable law," a child incapable of manly development, then, and not till then, will this question find its place in every school or association for learning, "what can we do to be saved?"

In the case of animals, we contemplate them in the light of rea-

son and law, and in the human family, as some "Providential arrangement" that we mortals have little to do with as results.

"Know thyself!" is advice ever pressed home by experience; and yet no part of God's creation is so much neglected by scientific philanthropists in their search for ill's remedies. Man, as an organic being, having functions subject to law in precisely like relations as the whole animal kingdom, is practically ignored; seeming to forget that to be "well born" is possible, while to be "born again" is at least problematical, and that the conditions for good, noble offspring are equally in our keeping with at least our domestic animals, and ever will be neglected, until there is an aroused consciousness that "human improvement" is the "corner stone" of all true progress. Hence in some fitting manner this should be recognized as a *legitimate* theme for discussion in an organization devoted to bettering the conditions of life.

I will offer no resolution or further suggestion, but commit this *hint*, as in trust, hoping some resolution from your influential body may help to widen the conviction that our bodies should be made "fit temples for the Holy Ghost to dwell in," and that we *can* so make them.

TRANSPORTATION AND MANUFACTURING.

BY T. J. EATON, MONROE.

Written for State Agricultural Convention, February, 1874.

When any great evil exists it is the common error of mankind to look for a remedy in a single direction. When the emigrants were crowded out of the more densely populated districts of the older states and found homes in the northwest, where the virgin soil only awaited the plow share to reward the husbandman with the most bountiful crops, when they had been accustomed to see more than a half a lifetime spent in preparing the soil for the plow, the most natural result was that the whole country was supplied with a superabundance of food, with the prospect that each new comer would add largely thereto. After trying the expedient of carting their surplus products to the nearest point of water communication with the manufacturing districts of the older states and

of Europe, they came to the conclusion that their *only* salvation consisted in railroad communication; hence they bent all their energies in the direction of building railroads, subscribed all the money they could raise, mortgaged their farms, and gave town and county aid to assist in building the roads. While the roads were in course of construction, the large number of laborers necessary to build them, together with the increased population brought into the cities and villages along the lines of the roads for the time being, consumed a large portion of the surplus products of the farmers. But with the villages came the corresponding number of agriculturalists, and when the roads were completed, and the laborers had removed to other points, these new farmers had surplus food to sell, but no home markets, their railroad stock passed into other hands under a foreclosure of mortgage and their condition was about as helpless and deplorable as before the roads were built.

As the cry of *quick* transportation was raised twenty years ago, so now we have the cry of *cheap* transportation. I propose to show in the following pages that whilst quick transportation has not remedied all the evils complained of, neither can they be entirely remedied by cheap transportation alone. The individual who claims that our railroad system, even under its present management, is not of incalculable benefit to the farmer, certainly is not wise. The present roads furnish us with passenger rates that are within the reach of every one. They also furnish us with the means of exchanging all the more highly concentrated articles of production at reasonable cost. For instance, the amount charged by our railroad companies for the transportation of a yard of broadcloth is so inconsiderable when compared with the cost of the same, that it is not felt by the consumer. It is only in those articles where the cost of transportation comes nearer to the original cost of the article that the pressure is more keenly felt. There are numerous theories adduced to remedy the evil, and yet they all look to a single object, namely, legislative control of the railway system of the United States. The Hon. M. H. Carpenter labored long and earnestly before the farmers of Winnebago county, Illinois, at their fair at Rockford, last fall, to convince them that congress had the exclusive right to regulate the cost of

transportation from one state, to, or through another, and yet, when he had proved his proposition, he left the farmers of that county in no better condition than they were before, because, who in these days, have more confidence in the American congress than in the legislature of his own state.

I have heard the complaint of the farmer and the answer of the railroad man, and have tried to give them a candid and unbiased consideration, and I doubt whether the through freights from the far west to the seaboard cities can be reduced so as to furnish any considerable relief, and at the same time furnish an adequate compensation to those engaged in the carrying trade. I have no doubt, however, that by some judicious legislation on the subject, the farmer would be benefited to some extent. The greatest cause of complaint, so far as I have been able to investigate the matter, is in those who are forced to ship at way stations being compelled to make up to the companies what they loose in competing with other through freight lines. The great burden of the speakers and writers of the hour is "a through freight double track road from the Mississippi valley to the Atlantic seaboard," and most of those who are agitating that scheme are in favor of a congressional job. For my part, I would say, from all congressional railroads "Good Lord deliver us."

In the very able speech by Mr. Carpenter, already referred to, he makes one objection to the congressional plan that would be sufficient to condemn it, that is, the necessity "of appointing a host of government officers to run it." However, when private enterprise can see money in building the road, let congress grant a charter, with such proper restrictions, as will make the road when built a permanent advantage to the whole country. But whoever lives to see the building of such a road, will see a corresponding increase in the supplies of food. The resources of the northwest are hardly commenced to be developed as yet. The chief advantage that will accrue to the individual farmer, will be in the reduction of taxation consequent upon the large increase of taxable property in the country.

My theory on the transportation question, is not to transport at all. Last summer when Farmer Smith, secretary of the State Agricultural Society of Illinois, was astonishing every body with

his great learning, he gave us a few foundation facts upon which he himself failed to build. In one of his interviews with the New York Tribune reporter, he told us that no farmer in Illinois could raise a bushel of corn for less than twenty-five cents. Then he gave us a case of a neighbor of his who spent a whole day with two teams in marketing sixty bushels of corn, and as the neighbor was returning home he asked him how much he got for his sixty bushels of corn, and in reply the man held up two pairs of boys' boots and said, "I got these for my corn and two dollars in money." Corn was worth twenty cents at the station and the company charged eleven cents to freight it to Chicago, where it sold for thirty-one cents, so you see that if the railroad had hauled the corn for nothing, the poor farmer would have still been in debt, for it is certainly worth three dollars a day for a man and team. Now, what Farmer Smith's neighbor needed, was not cheaper transportation, but the knowledge how to convert his corn into more highly concentrated articles, so that it would not take him two days to market twenty dollars worth. Had he converted this corn into beef or pork, the cost to market the same would have been seventy cents; into cheese, twenty-eight cents; into butter, twenty cents; and if converted into wool, seven cents; and when we take into account the increased fertility of the soil by returning the corn in the shape of manure, we have the real profits of farming.

But there is another phase to this question of transportation that seems to be entirely lost sight of in the clamor for more railroad facilities, and it is this; no community can ever be permanently prosperous so long as it depends upon the caprice of any class of middle men, or so long as it depends absolutely on a foreign market or foreign made supplies. We, to-day, in the northwest are as actually dependent on New England as our country once was on old England for the comforts and necessities of life. I never could see the propriety of sending our wool to Boston to be manufactured into clothing and at the same time paying freight on it both ways, also sending our wheat and pork there to feed the operatives while they were engaged in the manufacture of the same, and at the same time be at the tender mercies of the transportation companies and the hoard of middlemen that

are growing fat out of the hard toil of the cultivator of the soil. Is there any remedy for this evil within reasonable reach of the farmer class? is a question pertinent at this point. And if the question can be affirmatively answered I shall have gained the point sought in this paper. While at Janesville last month attending the meeting of the State Grange, I saw the representative of a house in Philadelphia who had contracted to erect at Clinton, Iowa, a boot and shoe establishment sufficient to supply that entire state with all kinds of goods in that line. This firm stands ready at any time to contract with the farmers of this state to put up machinery and give us the advantage of purchasing from first hands, thus keeping the money at home, and furnishing a market at our doors for the amount of food necessary to supply the workmen.

But why need we contract with any firm; we have the men in every village and city in this state ready to supply us with everything we want in that line or any other. In conversation with the owner of the leading boot and shoe house in my own town recently, I was assured by him that he could sell a pair of his own make for six dollars, that would last a farmer as long as two pairs of such as he was selling of eastern manufacture for four dollars. But, he remarked, "I cannot make the farmers believe this, and I can make as much profit on a pair of eastern made boots as on a pair of my own manufacture." There is in this state an amount of unimproved water power sufficient to drive machinery to make this one of the greatest manufacturing states of the Union. There is in my own county, and in fact in a large portion of this state, a supply of hardwood timber suitable for the manufacture of all kinds of farm implements, and it seems to me that if the Patrons of Husbandry would turn their attention to the formation of joint stock companies for the manufacturing of reapers, cultivators and plows, instead of organizing to ship produce, they could much more readily defend themselves against what they claim to be encroachments of middlemen. It seems to me that under existing circumstances this will be a necessity. The plow makers having met in convention and solemnly resolved that they would not sell their goods to patrons only through their regularly constituted territorial agents, and the patrons having as solemnly resolved that they

would not purchase of any one unless he would sell direct to the grange. It seems to me this grange movement has the power to regulate and control this whole matter. Then, as farmers, let us demonstrate that there is really no conflict between capital and labor, by directing our labor in channels that are in harmony with properly directed capital.

A word to the Patrons of Husbandry, who are here represented. While it is true that we do not admit mechanics into our order, let us not forget that their prosperity is so interwoven with our own prosperity, that any adversity that befalls them, cannot but be keenly felt by us. Let us show to the mechanics of New England that while they are paying fifteen dollars per month for house rent there, that the same could be obtained for six dollars here, and also are paying freight, cartage, storage, shrinkage, cooperage and commission, upon every mouthful of food we send them, thereby increasing the cost two-fold, of which we reap no benefit. Let us convince them that their labor will be more remunerative here; that they can support their families better, pay us a better price for our products, and furnish us the manufactured articles cheaper. To demonstrate our sincerity in this matter, let us begin by supporting our home industry. If a home-made article does seem to cost a little more on the start, let us conclude that it will be cheaper in the end.

In conclusion, let me say to the farmers here in state convention assembled, let us strive to educate ourselves up to the standard of true business men. When we see one of our number suffering from poverty, the result of downright shiftlessness, and when we hear him trying to throw the blame upon some monopoly that he never came within a thousand miles of; when we hear a man crying out against railroad monopolies and high rates of freight, when the only trouble is he never had anything to sell, let us kindly persuade such an one to join the farmers' club or the grange; then let us carefully, and with a due regard to his feelings, invite him to go with us to visit some of his more prosperous neighbors, show him, if we can, the difference in the profit of keeping three dogs and 100 sheep; show him the difference between a good cow stable with stanchions, and the only shelter afforded by a rail fence; remove, if possible, the preju-

dice in his mind against book farming, and induce him to read at least one good agricultural paper. If we can stimulate one farmer to thought and study, to better modes of culture, and higher conditions of farming, then may we well say that we have not lived in vain.

THE ATMOSPHERE: A CONSERVATOR OF ANIMAL AND VEGETABLE LIFE.

BY COL. W. H. CHASE, MADISON.

[Written for State Agricultural Convention, February, 1874.]

All men's notions of nature have some foundation in human experience. This is the broad foundation on which intellectual structures ultimately rest. The notion of personal volition in nature had this basis. In the fury and serenity of natural phenomena, the savage saw the transcript of his own varying moods, and he accordingly ascribed these phenomena to beings of like passions with himself. Thus the notion of causality—the assumption that natural things did not come by themselves, but had unseen antecedents—lay at the root of even the savage's interpretation of nature. Out of this bias of the human mind to seek for the antecedents of phenomena, all science has sprung.

The first sciences were those of observation, when the matter of thought was provided by man's environment, and he had no notion of creating it himself. The apparent motion of sun and stars first drew toward them the questionings of the intellect, and accordingly astronomy was the first science developed. Slowly and with difficulty the notion of natural forces took root in the mind, its seeding being the actual observation by electric and magnetic attractions. Slowly and with difficulty the science of mechanics had to grow out of this notion, and slowly at last came the full appreciation of mechanical principles to the motions of the heavenly bodies. In presenting at this time a short treatise on the relation of the atmosphere to the animal and vegetable life around us, it may not be out of place to delineate in as concise language as possible, the different stages through which the earth

has passed, and with the earth the atmosphere, in order that the former may be fitted for the abode of man, and the latter become vivified with that life giving power which is the essential and leading idea of our topic. Designating these changes as *Epochs*, we have Epoch I.; an immense aggregation of mineral and metallic substances, intensely heated, undergoing incessant chemical reaction, forming a protosphere, comprising in its huge bulk all the various substances which have entered into the composition of the solids, liquids and gases of this planet.

Epoch II. By condensation, the result of the radiation of heat into space, there exists a molten globe—a seething cauldron of mineral substances, all in a state of fluidity, smothered with an atmosphere of immense depth, in four concentric zones: first, in proximity to the molten globe, a thick belt of chlorides, especially the chloride of sodium or common salt. Outside of this a zone of carbonic acid gas, and this enveloped by an immense volume of nitrogen, and highest of all and surrounding all, an enormous quantity of the vapor of water.

Epoch III. The radiation of heat into space continuing, there is formed a thin crust of solid minerals around the mass of molten rocks and metals, consisting mainly of silicates of little density, combined with alumina and alkali. Upon this crust, now reduced to real heat, there has been precipitated from the lower stratum of atmosphere a mass of chlorides, mainly common salt, sufficient to cover the solid crust of the globe to a depth of ten feet—a literal storm of salt—snow enveloping the entire planet. At length, the temperature of the atmosphere having been reduced below that of boiling water, a condensation of the immense mass of steam in the upper regions ensue, and the second storm which visited this world was a long continued deluge of hot rain, which, dissolving the salt on the surface of the earth, formed an ocean enveloped of salt water for the entire globe.

Epoch IV. Through the influence of continued heat radiations, continents and islands gradually emerge from the deep, covered in process of time with a vigorous vegetation. It was the era of vegetable organisms, whose affluent and abundant growth have never since been equaled. Let it be remembered that all the carbon and all the nitrogen was combined in the vegetable and ani-

mal organisms, and mineral substances of our planet were once suspended in the atmosphere. To the formation and growth of these gigantic vegetable forms, the immense zone of carbonic acid contributes its wealth of carbon,—to be retained, locked safely in the strong receptacles of the earth till the necessities of the race lead to the discovery of the treasure,—whilst the oxygen, holden in combination, has been rendered back, in purity, to mingle with the nitrogen, and thus form an atmosphere capable of sustaining the higher forms of animal life. When we consider that this aerial ocean, in the lower strata of which we live, is absolutely essential to all the higher forms of animal life, and that, with the exception of a few salts, the totality of plant food is, by the chemistry of the leaf, elaborated from the air; that this gaseous envelope, the sole conveyer of speech and means of communicating thoughts, forms one vast aerial harp, whose strings in constant vibration, bear to the ear of the Creator the discords and harmonies of a world of sentient beings; that, deprived of its atmosphere, this orb would roll through space a soundless desert, we shall realize that it is quite as worthy the study of the intelligent beings dwelling in its depths, as the smaller ocean of water which it encloses.

The gases forming the atmosphere are not in chemical union, as are the gaseous constituents of water, but mixed mechanically, about four parts of nitrogen to one of oxygen and 1-1000 part of carbonic acid. During a thunder storm the electric discharge, causing a chemical union of certain volumes of nitrogen with oxygen, result in the formation of nitric acid. Disseminated through the aerial ocean are found also those ammoniacal vapors—carbonate of ammonia—from which plants derive their nitrogenous contents. Were these gases subject, like fluids and solids to the sole control of gravity, there would exist nearest the earth a zone of carbonic acid gas, destroying all animal life, and above this belt of oxygen, enveloping all, a vast cloud of nitrogen. But somehow, the Creator, for the safety of his creatures has taught these gases to laugh at the claims of gravity, and to wander about at their own sweet will, mixing one with the other so uniformly that the proportion of each gas is found the same in two volumes of air,

the one taken from the mountain summit, the other from the ocean level.

The enormous quantity of nitrogen serves but to dilute the oxygen, adapting it to the delicate tissues of the lungs of animals and to the purposes of combustion. Were the atmosphere pure oxygen, no fire once lighted could be extinguished, and iron would burn freely as wood now does in common air.

Besides these, there are substances accidentally present in the atmosphere, especially near the ground, which in the form of gaseous miasmatic contagion, exercise a noxious influence on animal organization. Infusoria and minute particles of mineral and vegetable substances are also held in suspension in the atmosphere. This vast aerial ocean is never at rest. It has its gulf streams, its aerial currents, real air rivers, and is ever rolling its restless tides from the sea to the land, and from the land back over the waters. The upper and lower strata usually move in opposite directions. Aerial storms usually move in vast circles with a diameter of from two to five hundred miles, one arc upon the land and another on the sea, rushing always from right to left. The reason that carbonic acid gas accumulates, not to a dangerous amount during the winter sleep of vegetation, is thus accounted for. Currents of warm air, rich in oxygen, roll in from the tropics for the supply of the breathing animals of the higher zones, whilst opposite currents of cold air, dense with an accumulation of carbonic acid run steadily from all wintry climes, bearing an exhaustless supply of carbonaceous food for the luxurious and ever growing vegetable organism of equatorial lands.

This atmospheric envelope, like a huge sponge, rarified by heat, absorbs water in enormous quantities from oceans and lakes, then bearing these watery treasures over continents and mountains, under the condensing power of cold, pours them out in rain, snow and hail, dew and vapor, on the plains and mountain sides. The heated atmosphere of summer holds a much larger quantity of watery vapor than the condensed air of winter, yet it is in the cold months of the year that the moisture of the atmosphere is the greatest.

The air is far from being colorless, for we are really looking into its azure depths, when we are admiring the blue canopy we

call the sky, or taking cognizance of the tint on the distant hills. There is air in water, yet not like that surrounding the earth. Water exposed to the atmosphere absorbs a much larger proportion of oxygen than of nitrogen, an arrangement by which fish obtain the requisite supply of oxygen from a small quantity of air.

We now approach a branch of this subject comparatively new and exceedingly interesting to one desiring to penetrate nature's secrets.

Two other gaseous substances pertaining to the atmosphere, which undoubtedly exert an important influence over animal existence, remain to be examined.

Pure oxygen undergoes a remarkable modification when subjected to a series of electric discharges. It acquires more active properties, emits a peculiar odor and effects oxidations beyond the power of ordinary oxygen. The peculiar odor, noticeable in the air after the passage of a lightning bolt, is due to the formation of this gas. Ozone is oxygen condensed; three volumes of oxygen forming two volumes of ozone. It is absent from places densely populated and present in the pure country air. It is more abundant in winter than in summer, in cloudy than in clear weather, by night than by day, and is especially plentiful during a heavy fall of dew and in storms of snow. The bleaching qualities of new fallen snow are due to the presence of ozone. This gas is highly irritating to delicate lungs, and in large quantities may cause epidemics of catarrh, colds and influenza. Notwithstanding, its general influence is probably beneficial to animal existence, as it oxidizes and destroys many volatile organic substances prejudicial to health, and thus by removing infectious matter from the air, extirpate the germs of epidemic diseases.

But the marvels of the air multiply. A gas concealed from man for ages calls vigorously for recognition, and willing or unwilling we are constrained to consider the claims of autozone. It seems to be produced simultaneously with ozone, and is like that, a modification of oxygen gas. It has even been discovered in the fluor spar of bararia. The odor of autozone is exceedingly disagreeable, that of ozone merely pungent and irritating. Unlike

ozone, autozone changes at once to oxygen under the influence of heat. From dry electrified air autozone speedily disappears. But the remarkable distinction of this new aspirant for honor is its cloud-compelling power. Autozone sways its scepter over the waters, and lo, by a wave of its magic wand, fogs arise and vapors condense to clouds. We have thus a god of mists, whom the denizens of the Atlantic and Pacific slopes might do well to propitiate. That the forces of autozone are not of the fancy merely, we can easily prove. We pass a volume of air loaded with this gas through a quantity of water, and lo, an artificial mist is at once produced. Let the blind old bard of Scio sing of the "cloud-compelling Jupiter." Modern science has imprisoned the true Ariel of the clouds, causing him, Samson-like, to make sport for the human denizens of the air. The lover of the fragrant "Havana" little realizes what imp from the air depths artistically curls the white cloud of smoke which issues from his mouth. The artist delighting in the white smoke wreaths gracefully rising from the cottage chimney, little realized that the white smoke of the chimney owes its very existence to the presence of autozone, which always appears in large quantities whenthere is low-smouldering combustion, and with moisture forms the characteristic cloud.

Probably all clouds and mists owe their existence to this powerful gas. It unites chemically with water forming the peroxide of Hydrogen. Now this air of ours is at times filled with noxious matters unfriendly to all breathing animals, and kindly nature removes the dangerous atoms by frequent washings.

Heavy rains clean the air of malarious germs and of mineral and vegetable dust, also washing from the atmosphere the nitric acid formed by electric discharges and the carbonate of ammonia, which, percolating through the soils until they reach the rootlets of plants, supply the nitrogenous substances, which in grains and fruit form the food of which the flesh of animals is made and which the leaves of plants are incapable of absorbing directly from the air.

It is thus seen that the atmosphere is the marvelous conservator of animal and vegetable life, the vast storehouse from which the food of all living organisms is derived. On this we

live and breathe, and of this we require a most bountiful and constantly renewed supply. Each hour we drain these rich treasures from the air, and return what is poison to us, but the welcome food to all growing plants, which grateful for our liberality abundantly repay the loan in gifts of vital oxygen. It is this which carries health on its wings, and like an aerial scape-goat, bears from our dwellings the seeds of disease. How many of our houses, with their double windows and air-tight compartments are made simply the depositories of carbonic acid gas, in which children languish and men and women linger out a painful though brief existence?

When shall we learn to extend a hearty welcome to the sweet airs of heaven, which, even when chilled with winter's frosts, bear to our firesides treasures no wealth can buy. We have but to open to the waiting guest and treat him with hospitable warmth, after his cold voyage from other climes, and daily, his will prove an angel's visit, leaving blessings which shall render home an Eden. When will the architects of our dwellings, churches and school houses remember that the good Father has given us an ocean of diluted oxygen from 40 to 100 miles in depth, and offers this world of treasure a free gift to the dwellers of earth?

GRAPE GROWING.

BY GEN. N. F. LUND, MADISON.

Before the Northern Wisconsin Agricultural and Mechanical Convention, at Appleton, March 5, 1874.

EARLY HISTORY.

History goes not back to the time when man first planted the vine; and beyond the Sacred Records its first culture is shrouded in allegories, myths and fables; the only records that have come down to us being found in the poems and sculptures of antiquity. In the mythology of the ancients it had its special protecting deity, and Bacchus, the god of wine, was crowned with ivy and vine leaves. The shield of Achilles represented a vinegathering; and on the oldest Greek tombs are found pictures representing the vine-harvest.

It is first introduced to our notice when Noah planted a vineyard and drank of the wine; and as one of the articles of provision hospitably offered by Melchizedek to Abraham, and the Sacred Writings abound in allusions to the vine and its fruit. Herodotus speaks of its culture in Egypt, and Pliny writes of the natural history of the vine. It is doubtless as old as the human race, and its cultivation was probably amongst the earliest efforts of human industry; while from the remotest records of antiquity we learn that the vine has been celebrated as the type of plenty and the symbol of happiness.

The country where the vine was first cultivated cannot be positively known, but is believed to have been the hilly region on the southern shores of the Caspian sea, in the Persian province of Ghilan; from which country it probably spread across the continent, to its eastern limit by the sea. The record tells us that the Phœnicians carried it to the island of the Mediterranean, whence it spread to Italy, Spain and France and thence over Europe. It was early brought to the colonies, having been planted in Virginia before 1620. The Spaniards carried it to Mexico, and

the Jesuit planted the still famous "Mission grape" in California more than 200 years ago.

The grape has been cultivated and esteemed as one of the choicest fruit from the earliest period. Vine culture has been a constant attendant upon civilization; step by step they have journeyed together from country to country around the world, until it has become one of the most extensively diffused of fruit bearing plants.

The profitable cultivation of the grape in the open air is as yet confined to a zone of about two thousand miles in breadth. The northern limit of its cultivation is not confined to a given parallel of latitude. It has been observed in Europe that as you go east the culture of the vine extends to the north. Young says, that within the limits of France the difference is two degrees of heat in the same parallel. In the United States the difference of climate is also found, but operating in a reverse manner. As we come west from the sea coast, a milder climate is found in the same latitude. In the observations of Humboldt, he found that the best wines of Europe were produced in the interior, away from the sea-board, and remarks, that the cause does not alone reside in the lower summer temperature of the coasts, but he attributes the difference to the light from a clearer state of the heavens. Throughout this zone of two thousand miles the wild vine grows almost universally, most probably native to the soil where found.

IN AMERICA.

The numerous varieties cultivated in Europe are supposed to have originated from one species. Prof. Gray one of the highest botanical authorities, classifies the native grapes of this country under four species. These growing in the wild luxuriance doubtless suggested the cultivation of the vine to the first settlers of America, for we learn that it early attracted the attention of the colonists. Most naturally they brought from their old home the choice fruits to which they had been accustomed, and for which the wild grape was a poor substitute, and thus the foreign grape was introduced to America. But after many unsuccessful attempts continuing through nearly two centuries), to acclimate and grow the European varieties in open air culture, the experiment was

abandoned, and pomologists began their experiments for the improvement of our native species.

The great turning point of vine culture in this country was the introduction of the Catawba grape by Maj. Adlum, who considered that by it, he had conferred a greater benefit upon the American people than he would to have paid off the national debt.

From this point our progress has been marked and certain; at first slow and doubting, but accelerated as success followed success, until now it is rapid and assured; each year adding new and choice varieties, many of them by hybridizing with the foreign varieties, thus in part gaining what we failed to accomplish in the attempts to acclimate them.

The question of the successful cultivation of the grape in this country should be considered as no longer a doubtful matter, for our experience proves that no fruit can be more generally grown, with hope of annual crops. We know that some sections, from local causes, are better adapted to its culture than others; but this is also true of all fruits. As an example, in our own state, peaches have long since been out of the question even in the few favored localities where once found; while a general crop of apples, pears, plumbs and other fruits borne on trees, is an exception rather than a rule. But with the grape it is the reverse; we look for its fruit with each returning season and are seldom disappointed.

IN WISCONSIN.

Our state is most favorably located for grape growing; situated as we are a thousand miles from the sea, no cold ocean winds reach us; our atmosphere is dry and clear; the sun light pure and bright. Our hot summers are adapted to the rapid growth required in the full developement of the vine and its fruit, forcing growth with marvelous rapidity from a soil that seems just adapted to the grape; while our cool nights and dry atmosphere are especially favorable in keeping them comparatively free from the diseases which attack the vine in less favored localities.

The great hindrance to grape culture would seem to be our rigorous winters; and this alone has unquestionably prevented

many from planting it. But our winter climate has settled the question of winter protection for the vine. It is a necessity that cannot be avoided except in rare instances, and never with perfect safety. Doubtless one of the chief reasons why the vine is more successful in fruiting with us than fruit bearing trees, is the fact, that we are compelled to give it this winter protection. Thus shielded it is safe from climatic changes for five months of the year, and when in spring we uncover it, it seems almost to leap in its growth. Could we thus protect our fruit bearing trees, the result would probably be the same. In fact I have seen it stated that the experiment had already been made of protecting fruit bearing trees with coverings of boards during the winter, and with the most favorable results. This might not be profitable, but the question of profit or loss does not change the fact established by the experiment, viz., that by protection we get fruit. With the grape the question of profit is all on the side of protection.

Under circumstances more favorable than for its cultivation than that of any other fruit; with promise of speedy returns; shall we still question whether we can raise the grape in Wisconsin? Rather let us ask, *will* we raise it? Our wants must compel an affirmative answer, and this answer has already been given by hundreds among us who are yearly gathering its fruit.

TERMINOLOGY.

To cultivate the vine with success, we must know of its wonderful structure and growth, and its proper culture and training should claim our careful attention, remembering always that the ultimate object is the harvesting of the ripened clusters.

In speaking of the vine we must constantly use terms applicable to it. I therefore give in advance its terminology, commencing with the root:

The *Stock* is the main part of the vine above the root, and below where it branches.

The *Stem* includes those portions which have ceased to bear shoots, and are two years old and over.

The *Arm* is a portion of the stem trained in a horizontal position.

The *Cane* is a ripened shoot, from six to eighteen months old or until it ceases to bear shoots directly from its own buds.

The *Spur* is a cane cut short.

The *Shoots* are the growth of the current year until the fall of the leaf.

The *Laterals* spring only from the buds of shoots, and are simply the shoot reproducing itself from its own bud.

The *Nodes* are the joints in the shoots and canes from which spring the leaves, buds, tendrils or clusters and laterals.

The *Internodes* are spaces between the nodes—both these latter disappear in the stem.

The *Tendrils* is a twining support.

The *Cluster* or *Bunch* is a tendril perfected into fruit.

The *Buds* on the shoots occur only at the nodes in the *axils* of the leaves. They are of two kinds, growing side by side. From one springs the lateral, making its growth the current year; the other remains dormant, perfecting for the growth of the shoot the coming year. There are also the *Blossom-buds* which appear only on the tendrils, and the *Berries*, the whole making up the Vine.

Let it be borne in mind that the vine has no leaf buds and fruit buds distinctively, like the apple, but leaves and fruit come from the same bud, borne on the shoot, the growth of the present year itself growing from the bud perfected for that purpose the previous year. No part of the vine which has once borne leaf or fruit will bear it a second time.

SOIL AND PREPARATION.

Until within a few years, a great mystery has been thrown around grape-growing, especially about the preparation of the soil and planting. Into this mystery it was supposed necessary to be initiated by some one who had served a life-long apprenticeship. But thinking brains and practical hands have demonstrated that the mystery need no longer exist, for it has been found that no more knowledge or common sense is required than in the planting and cultivation of other fruits, or many of the field crops.

As a curiosity, let me give you one among many lists of fertilizers recommended and heretofore considered essential in preparing the soil for planting the grape, viz :

“Bones, horns and hoofs of cattle, bonedust, the entire carcasses of animals, cuttings of leather, woolen rags, feathers and hair. All these to be mixed with the soil when the border is first made.”

This is taken from a work on Grape Culture published in 1860, and is a mild compound compared with some of the lists in that work. It is difficult to understand why the grape should thus be made an exception to other plants and be treated with these powerful prescriptions, for although a great feeder it is exceedingly modest in its demands for stimulants, and care must be used not to over-fertilize, especially the vigorous growing varieties. If our author will plant on his plan in Wisconsin, we can tell him in advance that his harvest will be leaves and shoots and no fruit; and no one need trouble himself to try the plan here, unless he plants in yellow sand.

The proper soil for the grape we are told on the best authority, is “any soil that will grow good Indian corn.” The cultivator need not be told that it should be in the finest possible condition, for without this we cannot secure the highest success with any fruit or crop.

The grape loves a deep mellow soil, which should be thoroughly pulverized. A dry subsoil is an absolute necessity; if this be a compact clay, retentive of moisture, the remedy is draining. Fortunately our soil is largely underlaid with gravel, forming the most perfect natural drainage. In this we have another decided advantage for the success of the grape, as it is an established fact “that well drained land always possesses a higher temperature than that which is wet, the difference being 10 to 12 degrees, and is accounted for by the rapid absorption of heat by the water as it becomes converted into vapor.” A French writer makes the following observations on the influence which a dry or moist soil has upon the grape :

“Other things being equal we obtain grapes which contain much sugar and little acid from vines grown on a dry soil; more free acid in a moist soil, and much acid, albumen and mucilage with little sugar in a soil which is absolutely wet.”

PLANTING.

A good root is of the first importance as with all other plants; and in setting, the crown should be placed at least four inches below the level of the ground, for deep planting is requisite with our hot summer sun and dry atmosphere.

Before planting the roots should be smoothly pruned, all bruised ends cut off, and if very long, they should be shortened several inches. This process greatly multiplies the fibrous roots. In planting, spread out the roots evenly, letting them droop gradually from the crown; then press the soil firmly on and around them. The vine should be grown on stakes until ready for bearing, as it makes its most vigorous growth of wood while growing upright. This will be more fully shown as we proceed. The stake should be firmly set before planting the root, lest in setting we break or bruise the roots, and if a good one, it will last until the trellis is required.

The best culture should be given, as nothing short of this will yield the desired results.

Much disappointment may be saved by the proper selection of a location. A low, damp spot where the air cannot circulate freely should be avoided, as sooner or later it will yield a larger harvest of blight and mildew, than ripened fruit, and the insects that infest the vine will revel in the home thus located.

MULCHING.

Do you ask me if I would mulch? Most assuredly yes—always and everything where you desire to retain moisture. Mulch grapes when first set, for the protection of the young surface roots which will be thrown out by the stock above the deep set crown; mulch every year until the roots strike deep and the foliage becomes sufficient to partially shade the ground; mulch after this, at least when there is no rain and the burning sun is evaporating the moisture from the surface soil, and reason tells you that roots near the surface are famishing for drink. At such times, mulch is the salvation for every tree and shrub, whether fruit or ornamental. And let me add, for grapes, the best mulch I have ever found in drought, is fresh mown grass, lightly covered with leached wood ashes.

SUMMER PRUNING.

Pruning the vine has from the earliest times been deemed of the utmost importance to insure productiveness and fruit of the best quality. Yet there are those who of late years claim that the vine should not be pruned, but left to grow and bear fruit as nature shall direct; and there are others who have no thought on the subject, but simply neglecting it, leave it to its course. It is not difficult to show that all experience is opposed to this absurd theory, and that those who advocate it are not only behind the age in which they live, but far back beyond the records of the old dead centuries.

In the fifteenth century B. C., the children of Israel were commanded "to prune the vineyard when they should come into the promised land," and "forbidden to gather the grapes of the vine undressed." Isaiah in the eighth century B. C., speaks of "the vineyard trodden down" that "shall not be pruned."

Numa, the successor of Romulus (who lived in the same century with the prophet Isaiah), to encourage the pruning of vines, "prohibited the use of any wines in sacrifices to the gods that were made from vines which had not been pruned." The gods must have the best, hence we infer that the finest grapes and wines could only be had in those early days from pruning the vine. These instances might be multiplied indefinitely, but is sufficient to add that the choicest grapes and finest flavored wines have always been, and are still produced from the pruned vines, and though our anti-pruning advocates may claim a more "excellent way," they have failed, and ever must, to show the more excellent fruits.

A practical grape grower has lately said that "The success of grape culture in this country depends almost entirely upon a general diffusion of practical information relative to pruning and training."

For pruning there are two seasons. First, that of summer, or during the growing season; second, that of fall or winter, after the leaves have fallen. The latter with us is necessarily done in the fall, as it has already been shown that we must cover our vines for winter. To the former let us give particular attention,

as it is of more importance than any other single thing in growing the grape.

The term summer pruning, when taken in its literal significance, would include the removal of all superfluous growth from the vine during the growing season, whether in the succulent or ripened state. Understood in this general way, we are constantly led into the worst possible error, and it is of vital consequence that the distinction between summer pruning *per se*, and stopping and controlling growth while in the succulent state be made clear and defined, for on the proper understanding and practice of this, depends not only the fruitfulness of our vine, but its health, vigor and often its life.

Properly defined, *summer pruning* is the removal of large quantities of superabundant leaves and shoots which have been allowed to grow unchecked until the wood is nearly ripened, and to this only should the term be applied.

Many practice this, under the pretense of "letting in the sun and air to the grapes." While grapes will not ripen well, nor vines be healthy under a dense mass of matted foliage, this is not an evil to be remedied by the knife.

These summer pruners should also observe, that all the finer bunches grow and ripen under the shade of the leaves. The sun direct upon the wood or fruit is not necessary to their perfect ripening. Yet the vine, as a whole, should have the full and free benefit of sun and air. Then, if proper training has been given, observation will show the leaves adapting themselves in such a manner as to shield both wood and fruit from the direct rays of the sun. But the great evil attending summer pruning is given by an author who writes understandingly of the matter. He says:

"It is the sudden and violent check which it gives to the plants. The roots having been excited into vigorous action by the enormous draft made upon them, find themselves suddenly without a channel through which their unelaborate product can find vent; the balance of product and supply is upset, and the fruit is filled with crude, ill-digested sap, thus causing it to be unripe and ill-favored."

And he might have added, the injurious effect on the vine itself, for this rapid growth thus checked cannot find vent alone in the fruit; the pent up sap must free itself also in foliage growth, the

dormant buds will push into laterals and thus the hopes for next year's fruit be blasted.

These are some of the effects of summer pruning, and show conclusively that it should never be practiced. Better by far adopt the practice of the anti-pruners and take such fruit as unassisted nature gives.

STOPPING GROWTH.

Now all the evils of summer pruning are avoided by stopping growth in the shoots and laterals while in the succulent state. The remedy is not the knife, but the thumb nail. On this subject, our author says:

"When we reflect that the amount of organizable matter which can be furnished by any vine is limited, and also that all rank and succulent growth is prejudicial to the production of fruit, we can readily appreciate the advantage of directing the sap to the production of fruit, rather than wood and leaves.

"By early stopping the shoots, and thus preventing the further production of leaves and wood, we render summer pruning unnecessary; no sudden check is given to the vines, the sap is fully elaborated as fast as it is supplied, and the fruit receiving an extra supply of properly prepared sap, (which would otherwise have gone to the production of wood and leaves) is enlarged in size and improved in flavor."

This process of checking growth should commence the first season of planting, by pinching laterals on the first shoot, and be continued each year on every shoot grown. When the laterals have formed the second leaf they should be pinched back to one leaf, and when a new lateral starts from the one thus checked, it should also be pinched back in the same manner, and so on through the season.

An able writer and practical grape grower has recently said:

"This checking the growth of laterals not only concentrates the strength of the plants into the main canes, but it prevents the formation of a large number of small leaves, which are of no benefit to the plant, and are of themselves so feeble that they cannot resist disease like large and strong ones, consequently they are often attacked while others escape." And again, "It is a fact not to be controverted, that whenever the vine has unripened branches, there is also a corresponding number of immature roots, and these are as likely to become diseased, if not entirely destroyed during winter, as the unripened branches."

The entire removal of the lateral, as practiced by some, I consider very objectionable. Springing as it does from the axil of the leaf and shoot, its removal leaves a wound where there should be none, as, close beside it, the dormant bud is perfecting, and nothing should be done that will disturb its perfect formation. Then again, the dormant bud may *push* if the growth be rank; this is not liable to occur where the lateral is pinched to one leaf.

Only a single shoot should be allowed to grow on each plant until the stock is of sufficient size for the bearing canes to be grown, and this always from the lowest bud on the spur if possible.

The bearing canes may be safely grown when the stock is half an inch in diameter.

During the first year, and until the vine is in bearing, the main shoot should be allowed to grow without checking, until late in August, when it should be stopped. This insures the full development of the roots, the perfect ripening of shoots and buds, and the leaves will drop from ripeness without waiting for frost. When the vine is in bearing, the shoots should be stopped at from two to four leaves beyond the last cluster, according to the vigor of the vine; some varieties requiring greater length of shoot than others, owing to their rampant growth.

If a shoot is feeble in growth it can usually be made vigorous by allowing two or three of its upper laterals to grow unchecked until the proper size is obtained, when they should be pinched back. During this time all the laterals on the vigorous shoots should be closely checked, for if one part of the vine leads off in growth it is sure to maintain it unless held in check. In this manner the vine can be made to grow and produce fruit evenly, and the watching of this process of developing a weak shoot will be found exceedingly interesting.

THE TENDRIL.

Thus far I have only spoken of the shoots and laterals as necessary to check. But there is another member of this annual family growth, which though usually unnoticed we may find deserving of attention. I refer to the tendril. We tie our vines to the trellis, and as the tendril is only a "twining support," it becomes useless, and hence seems of no account. But let us give

a moment to it. Three years since, in trying to remove a large tendril which had reached out and was clasping a neighboring shoot and its cluster, I naturally found I could not break it. Applying the knife and carefully untwining it, the shoot and cluster were saved from being strangled. The question at once arose: Why pinch the laterals to save superfluous growth, and allow this waste of nutrition in the growth of this tough, wire-like tendril which is entirely useless? Acting at once upon the thought, I removed the tendrils from my vines, and have since continued to do so, to the evident benefit of fruit and vine.

Within the past few weeks I have met with the confirmation of my theory and practice in the following:

"The tendrils of climbing plants, as is well known since Mr. Darwin's discoveries, are continually making circuits to find something to cling to. The grape-vine tendril is among the slowest in this rotary motion, making a circuit once in about three hours. A recent writer in an English periodical notes the additional fact that if after about ten days the tendril finds nothing to cling to, the motion not only ceases, as Mr. Darwin says, but it soon after dies; whereas the one which finds something early in its search lives the entire season, dying only with the leaves as winter comes. Of course, this comes down to a question of nutrition. * * * Referring to Darwin's discovery of tendril motion, he shows that all motion must take food to maintain it, and useless motion must be a heavy draft on the nutrition and consequent vital power of the vine. When running over trees, the tendrils find support as soon as formed, and thus a great waste of nutrition is arrested and more is afforded for regular growth. This explanation will, perhaps, meet this question of life or death in the tendrils referred to. The tendril, after a ten days' fruitless search for something to cling to, exhausts itself and perishes, and because it is thus exhausted it dies within so short a time."

We here see that tendril growth is very rapid, and though allotted but ten days of life, it consumes a great amount of the nutriment of the vine. They will frequently be seen ten or twelve inches in length and very large where they have found nothing to clasp. They should be removed entire as soon as they start—except on bearing vines, where they should be allowed to remain until all the blossom buds are formed; for we must not forget that "every bunch of grapes commences its formation as a tendril," the premature removal of which would rob us of fruit.

Let me here add the caution, not to touch the vine while in blossom, for any purpose, if it can be avoided, lest the process of fertilization be disturbed.

THE LEAF.

While thus advising and practicing the stopping of superfluous growth on all vines, by pinching laterals and removing tendrils, and, on bearing vines, stopping the shoots, I am no advocate for removing the leaves from the shoots. I would as soon expect ripe, high-flavored fruit after removing the unripened cluster, as by stripping off the leaf opposite the cluster. I give to the leaves of the shoots equal care and attention with the fruit. The leaves are the laboratories in which the sap is prepared for the nourishment, not only of the fruit, but of the wood; and without the aid and companionship of the former, neither of the latter can ever ripen.

Dr. Lindley, in *Theory and Practice of Horticulture*, says:

"It would be of no use for a plant to suck food out of the earth by its roots, unless there was some place provided in which such food, consisting principally of water and mucilage, could be digested and so converted into the matter which maintains the health of the individual. The stem cannot do this, because it is a mere channel through which the fluids pass. It is to the leaves that this important office is assigned. They have veins through which their fluids pass, and cells in which they are held while digesting; myriads of little caverns through whose sides respiration is maintained, a skin to guard them from the air, and pores for carrying off perspiration. For the power which the parts of plants possess of attracting fluids is in proportion to the amount of their perspiration. Now leaves perspire copiously, but the grapes themselves scarcely at all; whence their gradual conversion from a substance of the texture of a leaf into a mass of pulp.

"A leaf is, in fact, both stomach and lungs, and of this we may be certain that neither taste, perfume, color, size, nor any other property can be given to a plant except through the assistance of the leaves. Strip the ripening grapes of their green garments, and no color or sweetness will be collected in their berries."

And yet, Dr. Lindley advocates stopping superfluous growth in some cases, and specially instances the vine. He says:

"In this plant the fruit is borne near the base of the lateral shoot, which will, if unchecked, go on lengthening and producing leaves to a considerable distance. Now, all the food of such a lateral shoot is obtained from the main branch, which, however, is only capable of furnishing a certain quantity. If the lateral shoot is allowed to grow until checked, it will consume its portion of food in the proportion of many leaves and some grapes; and the more there is of the former, the less will be the weight of the latter. But

if the shoot is stopped after having formed two leaves, all that quantity of food which would have been consumed in the production of leaves, is applied to the increase of size in the grapes and the leaves that are left; while the general crop of leaves on the vine will be amply sufficient to prepare those secretions which are to give flavor, color and sweetness to the grapes.

"In vine pruning, the great object is to leave on the shoots just as much force as may be required to secure for the bunches the food that is intended for them, and at the same time to deprive the laterals of the means of expending the food uselessly in the production of leaves instead of fruit."

We have here sound philosophy, and the best of instruction. Under this process of checking growth, about the first of September we find the shoots fully ripened to their tips, as are also the spurs of the laterals (where stopped). The fruit ripens earlier and is often double in size and quantity to that on the unchecked vine, while in sweetness, richness and flavor, there is no comparison. It is from such culture, that the best results thus far have been obtained in the open air.

FALL PRUNING.

We have seen that the proper time for fall pruning is just after the leaves have fallen. Also that on the falling of the leaf the shoot becomes the cane. Lying alternately along the sides of the cane we now find the dormant buds to which frequent reference has been made; and if the process of checking growth has been such as indicated, they will be found round and full almost to bursting, and seemingly impatient for the coming spring. In these are centered the hope for next season's fruit, and if properly preserved during the winter each will produce its shoot with full complement of leaves, laterals, clusters and tendrils. But we readily see that if all are left, our vines will be but a dense mass of foliage, which will appropriate in its growth most of the nutriment that can be furnished, with little hope for fruit. We therefore prune, and for this pruning, I have found one simple rule a sufficient guide in every instance, whatever the system of training may be.

First find where we want a shoot or shoots to grow the coming year. Then leaving one additional bud on each shoot, cut away all others. This applies, as well, to pruning before the vine is in bearing.

Should the buds all grow in the spring, the last one on the spur can be rubbed off. Should one fail, we have the extra bud to supply its place. Following this rule, pruning can be done correctly, and after a little practice, rapidly; and I have found it worth more than all the pages of minute instruction in books, or the advice of those who prune without system or reason.

It should be borne in mind always, that a weak bud will produce a feeble shoot and inferior fruit. If then when rubbing off the superfluous bud we can discriminate in favor of the one most fully developed, we shall be gainers, but this should never be done to the sacrifice of the lowest bud if possible to avoid it, for this lengthens the spurs too fast.

COVERING FOR WINTER.

The vine should be placed ready for covering as soon as pruned, but if left uncovered until the ground is frozen it will not be injured. It is in the alternate freezing and thawing that the buds sustain injury.

Before covering for the winter, the ends of the spurs should be allowed time to season, thus preventing the loss of sap through the wounds, when we uncover in the spring.

For winter covering I have found the soil the best material, and over this a light covering of straw or coarse litter to prevent the wind and rain from displacing it and exposing the buds. If the soil be clay it should not be used, as the water held by the clay is liable to kill the buds. Others reverse the process, first covering with straw or litter, and then soil. One of the most successful amateurs of this state, says "the best covering is marsh hay." A most essential point should never be overlooked, that the vine must be so placed that all water will readily drain from it.

In the spring, the vine should be left covered as long as possible, for the later the buds can be made to push the better, as they not only escape late frosts, but their excitability seems to be so intensified by being thus retarded that their after-growth is much more vigorous than it otherwise would have been.

TRAINING.

The systems for training the vine are numerous, and most of

them have long been in use. The most frequent with us are the arbor, the stake, the vertical, the oblique stems and the horizontal arm. Of these I have tried several, carefully examined others, and from experience and observation I give a decided preference to the horizontal arm and spur system. The arbor is adapted more for ornament and shade than for the production of fruit.

The objection I find to the vertical or spiral cane trained to the stake, is that the shoots grow laterally; the foliage and fruit droop, and, hanging in masses, afford hiding places for insects, collect and hold moisture, thus inducing mildew and other diseases; the stakes break in storms unless frequently renewed, with liability to injure both vine and fruit. In the vertical and oblique training of the stem, I find nothing that cannot be better attained with the horizontal arm.

While I would not deny that good fruit is often produced by all of these systems, there is one serious objection to them all. The canes or stems growing more or less upright, the tendency of the sap is rapidly to the extremities, and the most rapid growth and best fruit is usually found on the highest shoots, while lower shoots will be feeble, the fruit they produce inferior, and the vine out of balance.

There are those who insist that we must follow nature strictly, in growing the grape. While I would take nature as my guide, it might be found that we differ only in our interpretation of her. If we observe the vine in the forest, we find it spreading over the loftiest trees or covering the humblest shrub. In either case the fruit is borne at the top; for while growing upright it produces its most vigorous growth of wood, but little fruit. It does not produce fruit in abundance until it reaches a point where it must spread out horizontally, and it matters not whether this be on the highest trees or lowest shrub. If then the horizontal is the natural and best position that can be given the vine to develop its fruiting powers, (and this is the main object in all the various methods of training and pruning) the earlier we can give it this position the better.

With the horizontal arm we obtain this from the start. The upright bearing shoots being equally spread out along the arms

no portion of the vine has advantage over another, the flow of sap being equal to all parts; the air and wind have free access, thus rapidly freeing the foliage from moisture, and in checking growth, or if disease or insects attack the vine, every part, shoot, lateral, leaf and fruit can be readily seen and separately examined. On the horizontal arm the fruit grows in its proper position; the largest clusters nearest the base of the shoots. Frequently the lowest will be double shouldered, the next shouldered, while the upper will be a simple cluster.

Again, with low training, the fruit receives a greater amount of heat than when growing high on the trellis, as it gets not only the direct rays of the sun, but also the heat reflected from the earth. In our northern climate this is a most important point.

Should the spurs ever become as long as to be inconvenient, new arms may readily be formed by growing one shoot only from each of the center spurs. These should be stopped at about five feet, and not allowed to bear fruit, while the remainder of the vine will produce the usual crop. At the next fall pruning, cut away the old arms, prune the two canes to the desired length, and bend them down to form the new arms. But if proper pruning has been given, the arms will not require to be renewed oftener than once in fifteen years.

Thus we find the vine the most plastic of all the fruit bearing plants. If left to itself it often climbs the lofty tree and bears its fruit far beyond our reach, but controlled and directed by the will and hand, it bears its most delicious fruit within reach of the child.

A good and cheap trellis for this system is made of light posts, bars two inches wide, sawed from fence boards, and common lath. The lower bar is placed about a foot from the ground; the upper the length of the lath above it. To these nail the lath, nine inches from center to center, and you have a cheap trellis, good enough for the garden. A coat of whitewash is an improvement, but without, the vine will soon cover the trellis, and it will only be seen in winter, when the grape garden or vineyard, at its best, is seldom ornamental.

VARIETIES.

On the subject of varieties everyone who writes or speaks of grape-growing, is expected to have an opinion and list in readi-

ness for all. I have no special list to recommend indiscriminately, but I confess to an opinion in the matter, formed from observation and experience, and will try to give it.

Usually the first inquiry is, "what shall we plant!" Before the intelligent cultivator can answer this, various other matters of importance must be settled, such as the location, soil and its condition, the wants and tastes of the individual and the culture he has decided or may decide to give; for this latter usually has little or no consideration. If only the common varieties are wanted and he has a taste for nothing better, his list is soon made up and his wants supplied. But the choicest grape is as much to be desired as the choicest of other fruits, and the list of such varieties is not small; in fact I think it more numerous than that of the purely common grapes.

I spoke of location as important. For several years, we of southern Wisconsin were cautioned by gentlemen of northern and central Illinois, to beware of certain varieties of choice grapes that we were planting, but which had universally failed with them, and they advised, if we planted them, to do so sparingly. And yet we find them as free from disease as others, and yielding annually the most prolific crops.

A gentleman in our city, who lives on the shore of Lake Monona, his garden sloping to the southeast, has been raising successfully for years, the delicious Iona. On his advice I planted it without hesitation three years since, but have never succeeded in getting vigorous growth of fruit, though I hope for a small amount of the latter the coming season. My garden is on the opposite side of the city from his, on the shore of Lake Mendota, sloping to the northwest, and I know of no difference in our soils. He, from his experience, would probably advise my neighbor to plant the Iona. I, from mine, should advise him to plant it, if at all, only for trial, while I would advise his neighbor to plant it, confident that he would succeed. The experience of others has been similar to mine under like conditions. I cannot satisfactorily account for this, but here are the facts, and I mention them to show that often within a short distance, with only slightly changed conditions, we find a marked difference in the success of the same variety.

I might make a list for you of "the valley of the lower fox," in which the cultivators here could probably point to varieties at which they would laugh, and justly. My opinion then is, that no one in any locality can make a list for another locality that will surely succeed, and my advice in this matter to any one who desires to plant the grape without experimenting in varieties, would be, to consult some one in his near vicinity who has had experience, and then follow his recommendations. And I caution you to take the advice of no traveling stranger who has plants of untried varieties to sell, and who "knows they will succeed here because they have in New York, Ohio," or some other locality. And yet it is by experimenting that the choice grape suited to any locality must be found, and those who have the time, taste and inclination should do this without hesitation. Those who have been doing it in late years, are now in many instances richly repaid for their perseverance.

GATHERING THE FRUIT.

Gathering the grape before it is ripe is the too common practice. Grapes thoroughly ripe are seldom found in the market. The reasons for this are various. Naturally we become impatient for the harvest, after so much watching and waiting for the ripening of the fruit. The demand for early grapes, and the desire to be first in the market and thus command a high price is a great inducement to the gathering of unripe fruit with those who raise it for the market.

Again, many suppose them ripe because they are colored and appear to be ripe, when in fact they have only begun the ripening process. Others gather unripe grapes from necessity, the culture given them having been such that they can never ripen.

Most varieties change their color fifteen or twenty days before they become fully ripened. Now the grape is a fruit that must be matured in perfection on the vine or not at all. When the fruit is ripe the stem of the cluster near or at its junction with the shoot will be found brown and drying, or, properly, ripening. It is safe now to gather it as ripe fruit, but far better to err, if at all, on the side of over-ripeness, for such fruit will keep much better than that not fully ripe, and some varieties are greatly improved in their mellow richness, by a few additional days on the vine.

In Agricultural Report for 1869, William Saunders, Superintendent of Garden and Grounds, says:

"No grapes attain full maturity until the wood supporting the bunch becomes brown and hard, and the foliage is assuming its autumn coloring; in other words, ripe fruit cannot be gathered from unripe wood, the ripening of the fruit depending upon the general maturity of the current growth of the plant. I am aware that this seldom occurs in ordinary culture and management, the fruit being gathered, usually, long previous to the ripening of the wood; that is to say, the fruit is picked before maturity."

If the process of checking growth, of which we have spoken, has been faithfully followed, the reward will now be in harvesting large, delicious fruit from the thoroughly ripened wood, one or two weeks earlier than imperfectly ripened and inferior fruit can be gathered from the unchecked vine.

KEEPING THE FRUIT.

Many varieties of the grape can be kept far into the winter, some even until spring, and as the earliest usually ripen in August or the first of September, with a well selected assortment of varieties we may have it in season nearly or quite as long as the apple. For keeping they should be gathered when the vines and fruit are dry, (the middle of a bright day is the best), spread a few days for the evaporation of any chance moisture and the drying of the ends of the stems. All unripe, decayed and imperfect berries should be removed. Then pack in shallow boxes two or three layers deep, with or without a thickness of paper between the layers, cover the boxes and keep dry and as cool as possible above the freezing point. Perfectly clean, dry oats are excellent for packing—there is not the objection to them that is found in sawdust, chaff, chopped hay or other fine and dusty materials. The fruit will require an occasional examination, but with a little care we may enjoy it for months.

ENCOURAGEMENT TO PLANT IN WISCONSIN.

I have thus hurriedly given the process of growing the grape from the planting of the root to the storing of our fruit for the winter, a subject the full detail of which requires a book to be written.

I would not be understood to represent the raising of this delicious fruit as free from discouragements and disappointments, for they are to be met in this as in all other human efforts. The root we set with so much care will sometimes fail, the bud be weak, and the growth feeble, diseases and insects are to be met and fought, but all these we must encounter in any attempt to raise fruit, no more with the grape than others, and in our state much less than in most localities.

It may be objected that what has been named as necessary to successfully grow the grape, will require much time and labor. For vineyard cultivation this would be true, but for the garden it need not be so. An hour to-day, a half hour to-morrow, that might not be given to any other definite object, and thus on through the season, and all has been done that has been enumerated, and what at first seemed labor has become a pleasant recreation.

One of the greatest needs in our state to-day is a supply of fruit, and while waiting for the growth of the orchard and for the successful apple, our chief dependence must be upon the small fruits. Each of these has its appropriate place and season; none of them could be spared, and all should be raised to a limit of our wants. But most of them ripen early in the summer and their season continues but a few weeks at most. The grape should supplant all these, closing up the fruit season with its profusion of varieties. It should be found in every home. The farmer with his plentiful acres cannot afford to be without it, while the laborer, mechanic or professional man in village or city should find at least a corner in which to grow a vine in some form. Only a few square feet of earth will grow it on the upright trellis or stake, and better in that form than none at all. The coming spring is the time to begin if you have not already planted, for if you delay you are certain to lose a year in the growth of your vine, and one season's fruit.

A further inducement is, that few plants will so fully repay your labor and care. It bears fruit at three or four years of age, and continues to improve in quality and quantity with each succeeding year.

Again you may be planting for others to gather the harvest in the far distant future, for the vine lives to a great age. In Italy the vine yard of a hundred years is spoken of as young.

I have been greatly encouraged in my hopes for the success of the grape in our state by the favorable accounts from this Fox river valley and region. Our friends, who visited your fair last autumn, returned with wonderful stories of mammoth clusters and berries with which their eyes and palates were feasted. Your representatives at the late meeting of the State Horticultural Society gave the most favorable reports of the grape. In our part of the state we can report the like favorable results, while our eastern friends who visit us are astonished that such fruit can be raised in Wisconsin.

What I have said has been with special reference to raising the grape for use as a fruit. In its use for the manufacture of wine, I have had no experience. Neither have I made reference to the vine as an ornamental plant, though on this point full chapters are often, and justly written, and it has been a matter of surprise to me that woman has not more frequently seen its beauty and grace and found greater pleasure and recreation in the garden culture of the grape. After the first work of planting, and with the exception of the winter covering and its removal in spring, the labor is scarcely greater than that of the flower garden. Why not then divide your care and taste and give the vine a place beside the flowers? The growing beauty of the cluster may not so suddenly surprise you as the bursting rose, but the reward is far richer.

A chaste writer gives us, in the most delicate language, its grace and beauty. "The vine is one of the most graceful of plants. Its beauty is not of a glaring or self asserting character, but quiet and unobtrusive. It is not possessed of showy colored flowers, but is distinguished for the grace of its foliage, the fragrance of its blossoms, the exquisite symmetry of its fruit, and its full, overspreading luxuriance. Every leaf in its shape, venation and coloring, is a model of beauty, while painters tell us that to study the perfection of form, color, light and shade united in one object, we must place before us a bunch of grapes. In every country where it is cultivated, the vine forms one of the most beautiful features of the landscape."

If then it combines with the useful, so much of beauty and grace, let us unite to make Wisconsin the home of the vine.

FISH CULTURE.

BY SETH GREEN, ROCHESTER, NEW YORK.

[From the last report of the Department of Agriculture.]

BROOK TROUT.*

In this paper we shall speak briefly of improvements made during the past year, of the increase and present aspects of the business, and give some hints for general information.

No very great or startling discoveries have been made lately in the science of fish culture. Still there has been a steady advance in the practice of the art. New methods have been discovered of applying known facts; economy of time and labor have been well considered, and much has been done toward lifting the science from the region of experiment into that of a paying business. The discovery most talked about has been that of the so-called dry impregnation, said to have been discovered by a Russian gentleman, and brought to the knowledge of pisciculturists in this country by Mr. George Shepard Page, of New York. The story of the discovery is as follows: The Russian gentleman having attempted many times to impregnate his eggs in the usual way known to Russian gentlemen, failed in that way to impregnate more than a very small percentage. Having made numerous experiments with a view to a better result, he arrived substantially at the following conclusions:

First. That immediately upon its exudation into water, the egg being then in a flabbystate, commenced to absorb water, and with it melt, if present; and that the egg retains its power of absorption of the water and melt (and consequent impregnation) for a period of about fifteen to twenty-five minutes after exudation from the fish, the tendency toward impregnation being strongest when the egg is first exposed, and weakest toward the end of the period.

*The section on trout culture is written in conjunction with A. S. Collins, my former partner and successor at Caledonia, New York.

Second. The milt appeared to be composed of microscopic animal forms, inclosed or swimming in a whitish fluid. If this fluid was retained in the form in which it issued from the fish, the appearance of life was continued for a considerable period; but if the milt was diluted with water all signs of life were destroyed in a very brief time. If, then, both the eggs and the milt could be kept from contact with the water until they were mixed together, he thought the chances of impregnation would be very much increased. Accordingly, having taken his eggs first on a dry plate, he mixed with them the milt, and found that nearly all his eggs were impregnated. All this process, or one very nearly resembling it, has been used with great success by the fish breeders of this country.

Now, a few words about this discovery. In the first place there can be in practice no such thing as dry impregnation; because more or less water will always fall from the fish into the pan or plate, and it is hardly practicable to wipe each fish dry with a towel before squeezing. Second, a quantity of eggs which will cover the bottom of a pan, will absorb no more water from a pan full of water than from a pan only one-half, or one-quarter, or one-twentieth full. Third, the milt will die just as soon in a little water as in much, and, therefore, be no more effective. Fourth, the advantage which is gained is simply this: That by using little water the animal forms are less widely distributed, and, therefore, the chance of contact with the eggs is increased. Fifth, if the impregnation could be made "dry"—that is, without water—it is only reasonable to suppose that the egg in the absence of water must imbibe air, and whether this would be conducive to the future well being of the fish remains to be seen. It is now generally supposed that the egg absorbs water and not air or oxygen from the water. Sixth, the tendency from the commencement has been in our establishment to use less and less water every year for the purpose of impregnation. Starting in the first years of experiment with a pan full, the quantity has been gradually decreased, until now barely sufficient is used to cover the eggs. The difference in impregnation in skillful hands between one-quarter inch and one and one-half inches of water may amount to 5 per cent. In unskillful hands it will amount to very much

more. Our advice is, to use only enough water to fairly cover the eggs, and until further experiments are made not to use less.

Natural impregnation.—Some years since it was thought that a universal panacea for all the ills of trout-breeders had been found in the discovery of a means of *natural* impregnation. The first invention was made by Mr. Stephen H. Ainsworth, a name well known to and honored by all fish-breeders. His invention was followed by others, using the same principle, but economizing time and labor to such an extent that if the naturally-impregnated eggs had really been any better than those artificially impregnated, the system would have been perfect. Even now there is great diversity of opinion among trout-breeders, some persons not being willing to use any but naturally-impregnated eggs, and others making no use of them whatever. We ourselves prefer the eggs artificially impregnated, for several reasons. One reason is that many more eggs can be impregnated in this way than by the natural process. If any one will take the trouble to dig up the eggs laid by wild trout in a natural stream he will find that but a very small proportion bear marks of impregnation, the percentage varying from 3 to 10 per cent. The races put down on the Ainsworth plan do much better than this, the proportion of eggs impregnated being perhaps 75 or 80 per cent. Then, also, the eggs taken from the Ainsworth screens are mixed with sediment and fibers of woody matter, saturated with water, which are a source of great annoyance; and besides this, in order to get all the eggs from a pond full of trout on the natural plan, the area of screens should be three or four times as great as the usual area of race employed for stripping purposes. Now, the chief claim of those who urge the use of naturally-impregnated eggs is, that they grow into better, stronger, more hardy, and more healthy fish than the other. If this was the case the difference of percentage in impregnation, etc., would not be worthy of consideration. But after some years of experiment it looks to us as if the advantage, if any, was rather on the side of the artificially-taken eggs. Why this should be so is a mystery, as, theoretically, naturally-impregnated eggs should be perfect. We recommend methods of natural impregnation only to beginners in the art, or for use in places where it is not convenient to take the fish at proper seasons.

For instance, the owner of a trout-stream may wish to collect trout-eggs during the season, but may not have leisure to attend to it more than once a week, or may not be able to obtain the necessary assistance. In such a case one of the Ainsworth races fixed at or near the head of the stream would collect eggs, and keep them in good order for a week or more at a time.

Transportation of eggs.—Great improvements have been made in the transportation of eggs. The method is the same which Mr. Green used long ago. Eggs to be packed in tin boxes about three inches by two and one-half, holding one thousand each, for convenience in counting, unpacking, and arranging. Moss to be used for packing material as being on the whole the most reliable. Only the softest moss is used, cut into half-inch fibers, and well washed before packing. Saw-dust to be used (for packing the tin boxes) in larger or smaller quantities according to the distance to which the eggs are to be sent, and the temperature to which they are to be exposed. Greater care is now used in packing the eggs in the moss, and for long journeys the tins are surrounded by a double wall of saw dust or straw. Thus packed, the eggs stand everything but great extremes of temperature or handling. But the greatest improvement made in transportation is in the fact of not sending the eggs until they are within three or four weeks of hatching. The older the egg the more rough usage it will bear with impunity. Eggs sent within four weeks of hatching generally arrive in good order, unless the temperature has been unexpectedly high or low, or they have been subjected to violent blows by careless handling.

Hatching eggs.—In regard to the apparatus in which eggs should be put to hatch, opinions are still at variance. Some fish-breeders prefer the Coste trays; some use the stone-charcoal trough, and some hatch on slate beds; while we still give the preference to the old gravel troughs as being on the whole the handiest, least expensive, and best. Perhaps it may be of service to give the test we used in experimenting with the different sorts of hatching arrangements. It is well known that an egg not impregnated will not die at once if placed with the others, but will last a longer or shorter time; sometimes remaining of a natural color until after

the impregnated eggs of the same age have turned into fish. Now the test of the value of any hatching arrangement is the length of time in which unimpregnated eggs will remain of a natural color. If they will remain apparently good until after the impregnated eggs with them of the same age are hatched out, then the arrangement is about as near perfect as it can be. It has been insisted that the earliest hatched eggs were best, and also that eggs hatched in a temperature of 40° to 45° made the hardest fish. Our experiments thus far seem to indicate that there is no difference, fish from eggs spawned in March doing as well as those from eggs spawned in October, and eggs hatched in 50° doing as well as those hatched in 35° .

Growing young trout.—This has always been the rock upon which new beginners have been shipwrecked. Very few persons have found any special difficulty in hatching out the eggs, or in keeping the young fish until the sac was entirely absorbed. But a very general want of success has been felt in rearing the brook trout from the age of forty-five days to the age of three or four months. There must be some reason for this; let us see if we cannot find it. The failure must lie in one or more of four circumstances. Either the eggs are not good in the first place, that is, imperfectly developed, or for some reason producing weakly fish, or the water in which the experiment is tried is not adapted to the young fish, or the food which is commonly used is not the proper food, or the fault lies in the person feeding them. Now, does the fault lie in the eggs? We have no doubt that fish sometimes, from a lack of vitality, etc., produce imperfect eggs, and we have just as little doubt that the greater part of such eggs die before they are many weeks old. A few may survive the hatching process and absorption of the sac, but their number is exceedingly small. Our reasons for this belief are as follows: First, we have often taken the eggs from fish evidently diseased, and kept them in a place separate from others. In nine cases out of ten it was impossible to impregnate these eggs at all, and of those which were impregnated not one-tenth would live until the fish became plainly visible to the naked eye, and a still less proportion would survive until the sac was absorbed. Then, again, if the failure to raise the young fish lies in the imperfection of the egg, we should

expect in every case that some at least of the fish should be vigorous and healthy, as it is hardly possible that all the eggs should be imperfect. Whereas it is the general complaint of those who fail, that all their fish die together, and that they can raise none of them; and, still further, of two persons receiving eggs from the same batch, one will raise a good percentage and the other will raise none. Therefore it would seem to us that the fault does not lie in the egg or in any manipulation thereof. Neither can it be in any large number of cases that the water is unfit for them, because they have been raised by different persons in water at varying degrees of temperature and impregnated more variously with minerals or salts; and still less can this be true, because successes and failures have been made in different seasons by the same person in the same waters. Neither do we believe that the failure lies in the matter of food, as they have been raised successfully on curd alone, on liver alone, on beef-heart alone, on beefsteak alone, on liver and curds, on heart and curds, on liver and sweet cream, and on all together. It therefore looks reasonable to suppose that the failures must be looked for in the person feeding them. And this supposition is strengthened by the fact that some persons never fail to raise a crop and others always fail. Let us look at the facts in the case, and see what common sense will teach.

Suppose that a man has eggs enough to hatch out ten thousand trout. During the period of sac absorption, if he attends to the flow of water and does not raise it too fast, he will lose but few. When the sac is nearly absorbed, and the trout begin to come to the surface, they must be fed. Now the question is what substance to feed. Suppose our friend thinks, according to prevailing opinion, that curd does not contain nutriment enough, and determines to feed upon heart or liver or beef. In order to get this fine enough he chops it up with an old razor or with a chopping-machine or cleaver, and feeds it to the trout. That is, he throws it into the water for them to eat if they are willing, or if they can. We can see the trout eating greedily, and we also see falling upon the bottom a large proportion of the food which it appears the trout reject. Let us take a little of the preparation he is feeding and examine it, In most cases we shall find that it is composed of a few very fine particles mixed with a number of larger in the

proportion of about one particle of the fine to ten coarse. As young animals of all kinds eat more in proportion to their size than older ones, we should expect the young trout to eat voraciously. One hundred mouthfuls per day for each one would not be perhaps too large an estimate. These mouthfuls must be no larger than the size which a little trout can conveniently seize and swallow, (for very young trout less than the one-thirty-second of an inch in diameter,) as trout do not bite their food, but swallow it whole. Then, in order to give these ten thousand fish one hundred mouthfuls each per day, a quantity of liver must be divided into one million particles, each one-thirty-second of an inch or less in diameter, and all the larger pieces left in are not only a total loss, but so much positive damage, as they tend to foul the water. That the reason of failure lies in a lack of properly-divided food, we should also judge from a comparison of the results of feeding other fish. The (true) salmon, salmon-trout, white-fish and herring belong to the same family of fish as the brook-trout, and the methods of hatching, feeding, etc., are similar. Of these the salmon makes the largest fish when the sac is absorbed, and is the least difficult to raise. The salmon trout is next in size, being generally twice as large as the young trout, and 95 per cent. is not an unusual average to raise. On the other hand the white-fish and herring make very much smaller fry than the brook-trout, and we have never succeeded in raising any of them by artificial feeding, and have never heard of any one who has succeeded. In all our experience we have found that he who has had the patience and skill thoroughly to feed his trout, has always raised them, and all others have failed. This extreme care and delicacy in feeding is only required during a few weeks, as the larger the trout grow the less finely divided do they require their food. But it is just in those few weeks that the failures occur. Nor should the feeding be intermittent, as a day or two of starvation will not add to the general health of the stock. Men succeed better with small farms than with large farms, with a few trout than with many trout, and the reasons are obvious.

In regard to the *kind* of food our opinion remains unchanged, that any animal substance which can be finely enough divided is

good for food for the young, and that probably a variety is better than feeding on one thing alone.

Filters.—All the water which entered the hatching-house used to be passed through a large filter. The plan now generally adopted is not to filter the water at the entrance, but as it passes out of the supply-trough into the hatching-troughs. This is accomplished by means of one or more flannel screens laid under the spigot which supplies the trough. The advantage of this arrangement is that it is necessary only to filter the water used for hatching, and not to clean two or three inches of water for the sake of using one quarter inch. Besides this, the small screens are more easily cleaned, none of the dirt is spilled in removing them, and enough of them can be used to thoroughly clean the water.

A little sediment is also not minded so much as formerly; and there has come into use a watering-pot with fine rose-jet for the purpose of sprinkling and thus cleaning the eggs when sediment has been deposited upon them. The introduction of the watering-pot into the hatching house is due to Mr. Samuel Wilmot, superintendent of the Canadian government hatching-establishment. It is most effective, however, when the eggs are hatched out on trays. As the method of hatching on trays is not generally known, and is not, we believe, mentioned in accessible books, it will be briefly described here, as used in the New York State hatching-house, at Caledonia. The troughs are made fourteen inches wide (inside) and six inches deep. Iron-wire cloth, of ten or twelve meshes to the inch, is stretched tightly upon wooden frames, whose sides are one inch wide by one-half inch deep, the screen being a little less than fourteen inches wide, in order to fit easily into the trough, and about two feet long. One quarter inch strips are also nailed under the two long sides. The water is raised nearly to the top of the trough, and four or five of these wire trays filled with eggs can be placed on top of one another. No filter is used, as more water is required than in the usual plan, but as soon as sediment settles on the eggs, an empty trough is cleaned and the trays of eggs are taken out one by one, sprinkled with the watering-pot, and set over, bright and clean,

into the clean trough. The trough thus made empty is cleaned and filled from the next, etc. The only advantage of this plan is that it economizes room and enables the eggs to be more easily looked over. But for all purposes of accurate hatching, the old gravel beds are preferred.

Experiments to be made.—Accurate experiments should be made by those having means and leisure in the following directions:

As to weight of food given and increase in weight of fish in one year.

As to kind of food which will give best results.

As to their relative increase in weight at different periods of their lives.

As to the average age of a trout and average period of maturity.

As to the best age for spawning purposes, etc.

Some eight years ago, we believe, Seth Green's was the only establishment in the United States making a business of raising and selling fish stock. Now there are about a dozen widely known farms, and some hundreds of smaller ones which have attained only a local reputation. Of these establishments, Pennsylvania has the most in number, although not the largest, Massachusetts is probably next, while New York boasts the largest and most complete. A remarkable fact is the increase of trout-breeding in the more western states. Ponds, etc., for this purpose are now to be found in Ohio, Wisconsin, Michigan, Illinois, Indiana, Kentucky, Tennessee, Minnesota, and California. In fact, there is scarcely a state in the Union into which of late years we have not sent trout fry or eggs. This increase of those practicing the art shows that the practice must be successful to a degree wonderful for an art so new. Trout-culture has now been in use for a number of years, and though there is still very much to learn, yet great and successful progress has been made.

A few words may be in place as to present aspect of trout farming as a business. There are now, so far as a matter of this kind can be ascertained, a great many paying establishments. At any rate, many have gone into the business and still remain in the business, which they would not be likely to do unless they found it profitable. Their income is derived from the sale of eggs, live

fish for stock, and dead fish for market. There has been such a demand for eggs and stock that it has hitherto almost monopolized the attention of trout-breeders; and, as it is the most profitable and least laborious part of the work, although requiring the most skill, all new establishments strive to make it a specialty.

There has been no diminution of the demand hitherto, and during the last ten years every year but one has shown a marked increase in the business. There are also good reasons why the business should continue to increase. Densely settled countries have a tendency to economize food production. When our country was sparsely settled, fish were in such abundance that they had very little or no market value. As the population increases, the supply of food, not increasing in the ratio of the population, rises in value, and must do so as long as the population increases. Our country has very many barren trout streams which are to be stocked; and, to do this effectively, will require many more in the business than those now engaged in it. Then, again, these streams must not only be stocked, but must be kept stocked. If a larger number are taken out every year for market, their place must be supplied by young, or the supply will inevitably fail. Of course, the extent of the business in the future must be a matter of conjecture. But it seems now to be established on as firm a basis and to have as good prospects of increasing demand as any other.

It is an encouraging fact that there is now a greater diffusion of trout knowledge among the community at large. Ten years ago people had a mere general idea of how the thing was done, and the knowledge was not easily to be obtained. Now, however, books giving all known details can be readily found.

As we have very many inquiries as to books on the subject, it will be of service to give the names of prominent works: *Domesticated Trout*, by Livingston Stone, published by J. R. Osgood & Co., Boston, Massachusetts; *Practical Trout Culture*, by Dr. J. H. Slack, published by Orange Judd & Co., New York; *American Fish Culture*, by Thaddeus Norris, published by Porter & Coates, Philadelphia, Pennsylvania; *Trout Culture*, by Seth Green, published by Seth Green & A. S. Collins, Caledonia, New York. Most prominent pisciculturists keep these books for

sale. Valuable articles on fish culture may also be found in various sporting books of Hon. Robert B. Roosevelt, published by Harpers and Carleton, of New York, and in the book on Fishing in American Waters, by Genio C. Scott, also published by the Harpers. The works of Garlick and Fry, although the oldest, and valuable as contributions to the history of fish culture, are not now of practical value.

Beside the issue of numerous works, another help has been the eagerness with which the newspapers have published articles relating to fish culture. It is true that some very absurd statements have found place in their columns, and that stories about fish-ponds have not grown any less by being repeated. But, on the whole, much valuable information has been diffused, and public attention aroused and excited. Then, too, people now engage in it who mean to make it a business. At first those who raised fish did it from curiosity, or as a pastime, or for the purpose of scientific investigation. But now they go into it to make money, and doing this are willing to learn before commencing. The conviction has gradually been forced upon all, that fish culture required at least as much knowledge and experience as farming or any of the mechanic arts. A man's knowledge of fish raising must be paid for in some way. He must either get it from some competent person, or pay for it in the losses caused by his inexperience. Even when all the theoretical knowledge is obtained, experience is still required to make things work easily; and it is an encouraging sign that people are ready to acknowledge this and willing to learn from those who have been through the mill. Then, again, capitalists now seem willing to engage in the business, and although, as in farming, a great deal can be done with very little money, yet a great deal more can be done by the use of a little capital.

Again, those who start in the business now have the results of all their predecessors' failures and successes before them, and if they make the same mistakes they have no one but themselves to blame. As more is now known about the business, they start under better auspices and with a better chance to economize in labor, construction, and maintenance. All these points are highly

encouraging, and would seem to indicate that the next ten years will show no retrogression, but a steady advance in the art.

A few hints to those making it a business may not be out of place here. In selecting a site for fish-ponds be very sure that the supply of water is unfailing. The strength of a chain is always measured by the strength of its weakest link. If a spring should give twenty inches of water most of the time, but only one inch in a very dry season, then the flow of that spring is only one inch. It has more than once happened that a would-be fish-breeder has found his ponds without water, and his beautiful spring dried up. Then, too, it would be exceedingly convenient, though not absolutely necessary, to have such a fall that every pond could be drained, and the pond should be so situated that a rising and overflow of the stream should not overflow the ponds. This cannot be arranged very well if the ponds are made, as has been often recommended, by dams in the stream itself. They should be made at one side of the stream, taking all the water if required, but leaving the bed of the stream as a convenient wastegate in case of overflow. One dam across the stream will turn the water into the ponds, and the flow can be made even.

The distance of a spring from a market makes but little difference in these days of railroads and refrigerator-cars. But the amount of water and shape of land make much difference. It is also well to own the spring itself, if possible, in order to prevent disputes with other owners, and to have the water always pure.

Ponds for fattening purposes are now generally made small—say about twelve feet wide by twenty-four feet long, either in the shape of a square or of an oval. It is a matter of fact that trout will find more natural food in a large pond than in a small pond. A large pond has also several other advantages over a small pond. For instance, it is more economical to build one large pond than two small ones, and it is less trouble to take care of one race-way and one set of screens than of two. But the fatal defect in large ponds is that fish cannot be equally fed. The larger and more voracious will follow the feeder as he moves around the pond, and drive away the smaller and weaker fish. But in a small pond the food can be thrown all over the surface at once, and all the fish have an equal chance.

The materials of which ponds should be constructed vary with the nature of the soil. In heavy clay, ground embankments alone are necessary. But in fact so much trouble has been caused by muskrats perforating embankments and liberating the water, that we are tempted to say that embankments alone should never be used. In most soil either stone or wood should be used in construction. If stone is used it should by all means be cemented and the bottom of the pond finished in grout, or large flat stones, with the interstices filled with cement. In order to clean out the lime, water should be run through the pond some weeks before putting in fish. The cement and stone will crack and in time become defaced at the water-line. This may be remedied by a facing of boards along the surface-line. We have lately constructed very good and cheap ponds of rough hemlock boards, (our cheapest lumber), and find that they answer exceedingly well. Thirty feet long, four feet wide, and six inches of water will do very well for race-ways to small ponds.

The supply of water necessary to raise trout for market purposes (making it a business) should not be less than thirty or forty inches, and would be better if larger. Adults should be fed regularly once each day. The only rule to be given as to quantity is to feed them till they will eat no more. It is economy to cut the feed finely and feed slowly, as most of that which is not eaten at once will be wasted. A little water should be mixed with the meat, and wetting the knife or cleaver often makes easier chopping, and causes the food to spread evenly when thrown into the pond. Cut the toughest food for the largest fish. Keep your pans, chopping-block and meat-house clean, and feed your meat before it spoils. It is good economy, before commencing to build ponds, to take the advice of some experienced man, and also to read all obtainable works on the subject. On the main points there will be found very little difference of opinion, and on those comparatively unimportant everybody's experience will help you to form a sound judgment.

A few hints to those raising trout on a small scale ; that is, not making it an exclusive business. There are many persons who have trout streams, either wholly or in part on their farms, which streams bring them in no revenue, except an occasional day's

amusement. Let us suppose such a stream to be stocked annually with five thousand trout-fry, at an expense of \$100. In about three years the stream will be in full bearing. Let us look at the returns. At the lowest estimate three hundred pounds of trout, worth one dollar per pound at present prices, may be taken from the stream annually. Then, too, there is always a demand for fishing privileges, and in most places such a stream could be let to sportsmen at a profitable advance on the cost of stocking. Besides, if a place is to be sold, a well stocked trout stream on the premises will add several dollars per acre to the value of the ground. Even a little spring rill, across which a man can step, if stocked yearly with a thousand fry, costing twenty dollars, will yield a profitable interest on the money expended. The labor of catching them is, of course, to be considered. But in most cases their capture is thought to be a pleasure, and if there should be a proprietor who finds no enjoyment in trout fishing, he will find enough to do *that* work for him without wages. It must be obvious that stocking streams, though limited as to results, is yet in its degree more profitable than the other method of fish raising, inasmuch as there is no outlay for feed, and the trout require no care.

The two methods may often be combined with advantage. I once met an old farmer who was taking a trout to the village hotel for sale. The fish weighed plump four pounds and was a beauty. I learned that he was in the habit of bringing such fish occasionally, and on questioning him, found that he had a little spring stream of water running through his land, and that in its course he had dug out a deep hole—simply a hole in the ground, without screens or apparatus of any kind. The larger trout from the stream collected in this hole, and he would feed them with scraps from his table, refuse meat from his butchering, etc. With the outlay of very little trouble, and no cash, the old gentleman must have gathered a good many dollars per year from his hole-in-the-ground trout-pond. As a hint of what can be done in fish-raising with small means, his example is worthy of consideration.

There are a few erroneous impressions still lingering in the public mind which it might be well, if possible, to correct. No man

need ever expect to make a more rapid fortune in this business than in any other. The same qualities which command success in farming or the mechanic arts, will command success in trout-culture. He who fails at everything else, will not succeed in raising fish. It has also been imagined that trout required no feed, and many ingenious estimates as to the profits of the business have left this item out of account. Now when the time arrives that pigs can be fattened without feeding, or calves turned into beef without food, then trout may be grown without expense. Food they *must* have in some way. In a natural trout-stream a limited number can forage for themselves; but trout in a pond are like cattle in a barn—they must have food furnished to them or starve. In other words, fish cannot live on water.

Another erroneous supposition is that large fish can be easily sent alive by express. It is not only exceedingly difficult to send large fish alive, but the cost of transportation generally amounts to more than the cost of the fish. The fry or young fish can be sent by express during cold weather only. Large fish must be transported in tanks and have an attendant to change water and fee the railroad employes.

We have purposely refrained from making any estimate of profits. It would be possible to set down a very enticing row of figures. But so many elements enter into the question of profit, that no general estimate would hold good. We know just this one thing, that the business has paid us, and paid us better than any land-farming we ever heard of in this section of country; and if it has paid us, there is no law in this land forbidding one man to do as well as another.

WHITE-FISH.

The white fish is very justly regarded as standing high in the list of valuable food-fishes. So much of the water of the United States is adapted to its growth that it would look, at first sight, as if the supply could not soon be diminished. A large amount of capital is employed in its capture, and a great number of persons are dependent for support, directly or indirectly, upon the continued supply of the fish. A very brief examination of the number taken yearly during the last twenty years will satisfy any

one that the supply has decreased with alarming rapidity, and that at the present rate of failure the day cannot be far distant when it will cease entirely. It is hardly possible that the facts concerning these and other fish can be generally known, or they would give rise to an intelligent interest, which now seems to be almost wholly wanting.

Representations have been made to the legislatures of our various states, and to the general government, in times past, by those who were aware of the facts and of their importance. But it is only lately that any disposition has been shown to listen to the warning and save these sources of wealth to our people. This is not the place for statistics, but a few brief facts may serve to show how the supply of the white-fish is diminishing.

Twenty years ago a haul of five thousand fish at one time, in a seine, was not an uncommon occurrence. Now the seine is not used, because no fish can be caught in that way. Twenty years ago the wholesale price was about \$2.50 per hundred fish, retailing at 5 cents per pound; now they wholesale at \$17 per hundred, and retail at 12 to 25 cents per pound. The improvements in methods of capturing the fish also show the scarcity which made these improvements necessary. Twenty years ago fishing with the seine was the only method in use. But now, as I said before, the seine cannot be used, except, perhaps, at one or two points on the whole chain of the great lakes, and is, in fact, so far as white-fish are concerned, an obsolete method of fishing.

Next in order came gill-nets. This carried the war into the very home of the white-fish, being often set in three or four hundred feet of water. With these nets the catch became again, at first, productive. But the nets fished over every foot of ground, one boat often fishing six miles; and experience showed that three gangs of nets, of six miles each, would use up a fishery at any one point in eight years.

Again, the fish became so scarce that gill-netting would hardly pay, and the trap and pound-nets were invented. The trap-nets are of the same nature as the pound-nets, being only on a smaller scale. The pound-nets consist of a long leader with a pound or trap at the end. The fish run along this leader, or are *led* by it, into the trap at the end, from which they cannot escape. The

leaders are often six miles long, and furnished with a trap at each mile. They are comparatively expensive affairs at the outset, and are set in water ranging from six to sixty feet in depth. The poles to which portions of the net are attached are often a foot in diameter, and are forced into the bottom by the aid of a pile-driver. No fish can pass this long barrier; the only apparent passage-way being at the trap-opening, and this opening being only a means of sure capture. Any one can see that such an engine of destruction must clean out all the fish within its reach.

Now, as even the old seine lessened the annual yield, and the gill-net very much decreased it, how many breeders does any one suppose will be left after the pound-net shall have finished its work? Even the pound net fishing is nearly exhausted in lakes Ontario, Huron, Erie, and Michigan, and in lake Superior alone is this method extensively and profitably used. It is true that notwithstanding the decrease of the fish, the fishermen make nearly as much as formerly, because they charge an increased price. But it will take no wise prophet to foretell the failure of their business. They may raise the price until the last fish is drawn, and then——

Now, if it is true that the decrease of the fish has not decreased the profits of the fishermen, neither will the increase of the fish decrease their profits, as they will obtain more fish with less outlay of capital and less labor. Most of the fishermen already see this, and are not only willing but anxious to have the supply increased and the continuation of their business made sure.

If the fishermen are anxious to make the change, how much more anxious should be the general public. It can be demonstrated that a comparatively small outlay will very much decrease the price of the white-fish. In other words, by an indirect expenditure of less than one cent, we will be able to get for 25 cents the same weight of fish for which we are now paying \$1.75. This may sound like "big talk," but it is not considered an extravagant estimate by those acquainted with the facts.

There are two methods by which the lakes may be restocked to their former capacity.

The first is, by putting an end at once to all fishing, and trusting to the natural increase of the fish. Well, this process would

take a thousand years or more, and the reason is this: The salmon-trout inhabit the deep water of the lakes, in common with the white-fish, and their food is to a large extent made up of the young of the white-fish. Now, because the white-fish are more highly esteemed for the table, and are more easily taken than the salmon-trout, they have been decreased in greater proportion than the salmon-trout. In its natural state the lakes held so many breeding white-fish that the salmon-trout did not perceptibly decrease their numbers; the balance was maintained; but with the decreased number of white-fish breeders, and comparatively larger number of salmon-trout, the balance is lost, and the salmon-trout will keep the white-fish down.

The other method is by artificial hatching. If enough young fish are put into any one lake, the abundance of twenty years ago can be restored in four years. Let us take, for instance, Lake Erie. Most of the experiments already made with white fish have been tried there; that is, experiments in obtaining and impregnating eggs. The fish run up into the Detroit river to spawn, and are easily obtained. Hence, at this point (Detroit) the habits of the fish at their breeding-time are known, the spawners are caught without difficulty, and we have all the knowledge necessary to restocking the lake. For restocking Lake Erie there should be put into the lake at least one hundred million of young fish annually for four years. That these young fish will live and grow is not now to be questioned. The fact has been definitely settled by the increase of the various shad-fisheries stocked in the same way. Of course not all of the number put in will arrive at maturity; a large proportion will furnish food to adult fish of other kinds, but certainly no larger proportion than is now lost in the same way. The proportion destroyed being the same, let us see what is the advantage of artificial over natural increase. Out of five thousand eggs laid *naturally*, one egg (*not one thousand*) will hatch out. Four thousand fish hatched out of five thousand eggs is a low estimate for *artificial* hatching, but even at this low estimate the increase of chances is four thousand fish to one fish. An appropriation of \$15,000 per year for four years by the government would be amply sufficient for the purpose—which appro-

- priation, divided among the number of pounds taken, would not be anything like one cent per pound on the annual catch.

"One hundred millions of fish" has a rather large sound, and is, in fact, a very large number of fish. But the white-fish yields about ten thousand eggs to the pound of fish, and one hundred millions could be easily obtained. No trouble would be found in obtaining more if necessary, but the difficulty in the operation would be this: In order to obtain and take proper care of so many eggs skilled labor must be employed, and very few skillful workmen in this branch of art could now be found. The limited operations of the various states which have engaged in the enterprise of restocking their waters, and the numbers of private breeding-establishments, have added somewhat to the number of skilled laborers; but all such are in great demand, and men would have to be trained especially for the work.

The white-fish spawn generally about the month of November. Naturally they cast their eggs in from 5 to 20 feet of water, over springs, if they can find them; or, if not, near the shore, on gravelly bottom. The female, when ready to spawn, may be seen swimming round with a half dozen males in close pursuit. When she is about to cast her eggs one of the males darts to her side; they press against each other, and the eggs and milt are emitted simultaneously. This may take place near the surface of the water or lower down; but, wherever they may be, as soon as the eggs are thus spread broadcast, all the fish in the neighborhood start for them and eat up all they can find, while the parents themselves are not backward about taking their fair proportion. Only a few out of every thousand escape being eaten. I have found three thousand eggs in the stomach of one fish. Of those which remain, by far the largest part are covered up by sediment, or fall into places where there is no change of water, and never produce fish.

The method of artificial impregnation and hatching pursued with the white-fish eggs is very much like that in use for the eggs of the brook-trout. So many are taken at one time and in one pan that, as a measure of precaution, the pan is gently shaken at frequent intervals, in order to secure contact of the milt with all the eggs. This motion prevents the adhesion to the pan and to

each other which is seen in the newly-impregnated eggs of the brook-trout. But, even if left at rest, the eggs do not exhibit the same tendency to stick as the trout-eggs. After being washed they are laid in gravel troughs, or on trays similar to those used for hatching salmon-trout. (M. G. Holton has invented a new hatching-box for hatching white-fish, that is a great success.) For immediate transportation packing in moss is the best method, but is not practicable; and the eggs are either carried in water or brought "dry," that is, on trays arranged in layers in a pail or box, and without the use of water or any packing material. If jars are avoided, and a low and even temperature can be preserved, they will very well bear dry transportation. The period of incubation is about the same as that of the trout and salmon, being about sixty-five days at a temperature of forty-five degrees.

When the young fish break out of the shell very fine wire-cloth is required to keep them. The eggs are only about one-eighth of an inch in diameter, and the young fish when first hatched about five-eighths of an inch long. The umbilical sac is small, and in about ten or twelve days it apparently disappears. The fry have no period of helplessness like the young of the trout and salmon, but commence to swim as soon as they emerge from the shell. These facts show that it is a good variety for propagation in large quantities, inasmuch as it is able, like the shad, to take care of itself at once, and does not need the thirty or forty days' care required by the brook-trout, salmon, and salmon-trout. As soon as set free it heads for deep water, where it is in comparative safety, and finds food enough for its wants.

With regard to the question of food, the small fish live on the minute forms of animal life found in abundance in the lakes. The experiment of raising the young fish on artificial food has been tried several times, but never successfully. The reason seems to be simply that the food cannot be finely enough divided. The young fish is almost transparent; and, by keeping a few in a glass jar or tank, you may see them take the food, may see it in their stomachs, and see the droppings passing from them. A few may be thus fed very easily; but such feeding is not practicable on a large scale, nor is it from any reason necessary.

Their growth varies, of course, but they may be said to be of

age when three years old, although they will increase in size until four or five years old. In the lakes their average size is about two and one-half pounds.

The question may be asked, What waters are suitable for white-fish, and should be stocked with them? They require deep, clear water, with gravelly or rocky bottom. These conditions are fulfilled in all the large lakes, and also in very many of the inland lakes. For instance, in New York state alone, we have six hundred and forty-seven lakes, of which at least one hundred are well adapted to the growth of this fish. Of these lakes, perhaps fifty either are now, or have been in times past, the home of some variety of white-fish. But in none of the inland lakes of New York are they now to be caught in paying quantities. Think how much would be added to the wealth of New York state alone if these one hundred inland lakes were stocked to their full capacity.

In reference to our large lakes there is one point which will have to be settled before any attempts at stocking are made. As these lakes form, in part, the boundary between Canada and the United States, and as the Canadians have, of course, an equal chance at the fish, some arrangement must be made whereby they shall pay their share of the expense, or do their portion of the work. I am happy to say that the project is favorably considered by the Canadian authorities having charge of fish interests, and it is probable that a fair compact can be made.

As to the proper methods of restocking the lakes, the details only are now a matter of experiment. The great facts are established and ready for use. It is likely that the hatching houses should be placed at the point where the eggs are taken, since it is much easier to transport the young fish than to transport the eggs. The first costs more, but in the long run is probably least destructive. In closing this section, I wish to insist upon one thing. If any attempt is made to restock the great lakes, or any one of them, means enough must be provided to do it fully and completely. There is no possible good in dribbling a few thousand fish yearly into a hundred-mile lake, and the money used in such a way is simply wasted.

There is one curious fact about the white-fish which I have

never seen noticed in print, and wish here to put on record. The white-fish (and also the salmon-trout) have, during most of the year, except at spawning time, a certain swing on and off shore. They will swing out, say, fifteen miles into the lake, and then back again until within two miles of the shore. The men who are fishing for them are well aware of this swing, and set their nets out or in with reference to it. But the curious fact is this; that at a certain season of the year, somewhere from the middle of June to the middle of July, the white-fish forsake their accustomed haunts, and make a sudden night journey to some sand-bar, close in shore, where they may be seen in great quantities. This visit lasts about ten days, and then they all return to their former grounds and accustomed motion. What may be the reason of this visit I do not know. It looks to me like a summer pleasure excursion on a large scale. There must be some good reason, of course, and some time it will come to light.

SALMON-TROUT.

The rate of decrease of the salmon-trout has not been so great as that of the white-fish. This is owing to the fact that it is a deep water fish and the difficulty of catching them is thus increased. The rate of decrease has been rapid enough, however, to excite well grounded fears of their total extinction. Witness the following facts: they used to be sold at \$2.50 or \$3 per hundred pounds; they are now sold at \$7 per hundred pounds. This fact on its face would seem to indicate a failure of more than one-half of the old average, but in reality it indicates much more, because improved methods of catching them are now in use. That the decrease is more than one-half is sufficiently shown by the fact that not so many are now caught in two miles of gill-net as used to be caught in forty rods of gill-net. Besides this, in old times, owing to the scarcity of fishermen, only a portion of any one lake was in use at one time, but now, in order to keep up the supply, almost the entire area is netted. Now the salmon-trout do not roam over the whole lake, but any particular school of fish may almost always be found on the same ground. So long as only a portion of the ground was netted, some families had a fair chance to increase, and by their overflow to fill up the rest. But now,

when all the water is fished, and gill-nets are used, and the spawning grounds become the greatest scenes of slaughter, the number of spawners must decrease very fast.

A little bit of personal experience will give a better idea of the above facts. In the year 1837, I went to Port Hope, Canada West (on lake Ontario), to fish for salmon-trout with set-lines.* This was the first fishing for salmon-trout with set-lines ever done in any of the lakes. I used to fish out and in, not further than six miles from shore, sometimes using nine miles of set-line. The average catch the first year was one hundred fish on one hundred and fifty hooks, and the fish averaged eight pounds in weight. The second year the average was about sixty-six fish to one hundred and fifty hooks; average weight being about the same. The third year the catch was thirty-three fish to one hundred and fifty hooks, and the weight began to decrease. The fourth year the average catch was about fifteen fish to one hundred and fifty hooks, and the average weight only four pounds. This showed that the fish had been thinned out in that locality.

In the fifth year I moved fourteen miles to another ground; and there the fishing for the first year was of the same average catch and weight as at Port Hope, and in succeeding years showed the same rate of decrease. If I had been the only fisherman on the lake, this moving might have been repeated indefinitely, with the same result; as the local schools would have had time to grow before I got round to them again. But fishermen began to multiply, and when all places were fished at once, no one place had any chance. These set-lines ran about ten years, and then the highest average to be obtained anywhere was fifteen fish to one hundred and fifty hooks; the fish averaging four pounds in weight. As this would not pay, in 1847 gill-nets came into use, and since then the catch has annually decreased.

In a natural state the salmon-trout spawn on rocky reefs in from three to fifty feet of water. They will spawn in any place where they can find such reefs; often twenty miles from shore. They yield about one thousand eggs to the pound of fish, being only

*I would here humbly confess that I have done perhaps as much toward the depletion of the lakes as any other fisherman; but would plead in extenuation that I was like all fishermen, and wanted the last fish and would take it if I could. I am now, as a penance for my sins, trying to do all in my power to repair the injury.

about one-tenth as many as the white fish. The method of spawning is the same as that of the salmon and brook trout; a nest or hole being made for the reception of the eggs. In regard to these eggs the same story must be told—most of them are eaten before they are ten minutes old. It must be remembered that all fish are inordinately fond of fish eggs. The salmonidæ will not only eat them while falling, but, contrary to their usual habits, they will poke and root in the mud of the bottom to find those which drop. The eggs also are destroyed by wild ducks. These ducks will gather over a spawning ground as soon as the fish commence to spawn, and will remain there till frozen out. The size of the spawning ground can generally be told from the size of the flock of ducks over it. It may be generally supposed that as the fish spawn in deep water the ducks cannot do much injury to the eggs. But the fact is that they will take them from a depth of thirty feet. The few which escape these dangers must fall into fissures, or under thick weeds or be covered over with sediment; and in such situations it is only a very few which can have change of water enough to hatch.

For the last three years New York state has been extensively engaged in the hatching and distribution of salmon-trout, for the purpose of stocking its inland waters. The processes here described are those in use at the New York State hatching-house, at Caledonia, on the grounds of Mr. A. S. Collins. The eggs have to be obtained, of course, from the breeding-grounds in the lake. In order to get them men are sent out to the grounds at spawning-time; arrangements are made with the fishermen, and men go out with them when they take up their nets. As the nets are hauled in, the fish which may happen to be ripe are stripped of their eggs. Impregnation, etc., the same as that of the brook-trout. The eggs, when first taken, are kept in shad-hatching-boxes, at some convenient point in the vicinity, until enough of them are gathered to send one batch to the hatching house. The eggs are brought either dry or in water. One hundred thousand eggs can be sent three days' journey in a wide, eight-gallon milk-can filled with water, by changing the water every four hours. Upon arriving at the hatching-house, for the sake of saving room and of

convenience in handling, the eggs are placed upon wire-trays, fourteen inches wide by twenty-four inches long, and these trays are laid four deep in the hatching-troughs. The frames are so arranged that the water is evenly divided and flows evenly over the whole surface. The eggs are at present taken under unfavorable circumstances. A fisherman's small boat is hardly a place in which to perform the dainty process of impregnation; and when, in addition to the want of room, the boat is standing sometimes on one end and sometimes on the other, the men being frequently wet through to the skin, and the thermometer down among the thirties, it is a wonder that any eggs are impregnated. In the face of these difficulties, the impregnation last year was between sixty and seventy per cent.

As it is about five weeks before the impregnation makes itself manifest, only the bad eggs which die can be removed before that time; and for the purposes of picking out the unimpregnated eggs and keeping the good eggs clean, the trays have been found very handy. They can be taken out of the water, cleaned with a watering pot, and set back in a clean trough without any injury to the eggs. Of those which are impregnated, scarcely one per cent. die after removal to the hatching-house. The period of hatching is about sixty-five days. The young fish, when first out of the shell, cannot swim, can just "wiggle" about and, loaded with the umbilical sack, hide in corners and under stone. In about forty days the sack is so nearly absorbed that they begin to swim and come to the top of the water for food. If they are to be used for stocking lakes, this is the period for transportation. They are taken before the sac is entirely absorbed, because then they require no food on the way and less change of water. They may be carried in tanks of any kind and emptied into the head-waters of the lake to be stocked. This should be done in the night, when their enemies are not feeding, and they will find hiding-places before morning.

It does not look at present as if the white-fish could be made a pond-fish; at any rate the point is not determined. But I think the salmon-trout may be easily grown in ponds. The state of New York has no grounds suitable for trying such points. But Mr. Collins has been trying a series of experiments under my

personal observation, which are, so far as I can see, reliable. The young fish, when ready to feed, were tried upon various diet. Liver alone was used, liver and cream mixed together, beef, beef-heart, curd, etc. Any one of these was taken voraciously. In fact, not the slightest trouble was experienced in getting the fish to eat. The only trouble was to feed them enough. They seem to grow while young faster than the salmon or brook trout, and of course feed in proportion. It is known that adult fish, or those nearly grown, may be kept for a long time at very nearly the same weight by feeding them but little food. This is not the case with young fish, as a certain rate of growth must be kept up or they will die. For instance, if at any time one pound of liver per day gives food enough to a certain number of young salmon-trout, in two weeks' time, if fed on the same amount of food, they would not continue of the same size, but would nearly *all die*. The food must be continually increased in quantity.

The experiments were made in the press of other work, and therefore were not perfect. But even with some inevitable neglect, at one year of age the trout averaged six inches long, and if they had been fed as much as possible would have been two or three inches longer. In two years the fish had doubled in size, and were all handsome, bright, and healthy fish. They are an easy fish to raise, and those who wish to go into the business of raising brook-trout are recommended to commence with the salmon-trout, as the methods of hatching and growing are similar. A beginner will be far more likely to succeed with the salmon-trout, and thus gain the necessary experience for raising brook-trout.

Only a small appropriation has been made yearly by New York state, and it has been impossible to do much. Some of the larger inland lakes have been partially stocked. No very great results can be expected from this small scale of operations. Still the experience and training which it afforded makes us ready to enter successfully into larger labors. Besides this, public opinion has been educated and directed until we believe that now but few voices would be lifted against the attempt to thoroughly restock every lake in the state; and without the public sentiment in our favor we could do nothing. It has been only three

years since the first salmon-trout eggs were brought to the New York State hatching-house ; about two years and a half since the first partial distribution of fish, and from many points where a few thousand had been put into some lake, the report has come back that young fish had been seen there in unusual quantities. This result is as satisfactory as, under the circumstances, could be hoped for, and gives the assurance that any attempt, with full means at command, will be surely successful.

MISCELLANEOUS ADDRESSES.

RECREATION IN HORTICULTURE.

BY HON. ED. SEARING, STATE SUPERINTENDENT OF PUBLIC INSTRUCTION.

[Read before State Horticultural Society, February, 1874.]

Happy is the man who finds delight in external nature, who sees and is moved by beauty in trees and fields, in brooks and clouds. He is happy, for the sources of his enjoyment are easily and abundantly at his service. Nature gives him perpetual and ever varying pleasure. As man is placed amid such endless variety of natural objects, adapted to give him pleasure and instruction, every principle of self advantage should lead him to the cultivation of his powers of observation and appreciation of what is about him. The eye that catches not beauty and inspiration from the external world is like that which is unable to get wisdom or delight from the printed pages of books. It is equally man's duty and privilege to cultivate his perceptions so that he may obtain the utmost good from the printed records of other's thoughts, and the unconventional creations of nature around him.

Yet the beauties of the external world are largely unseen and unstudied by the majority of our people. The farmers who live in the midst of rural scenes are either too much uncultured or too much occupied with severe labor to appreciate and use what is about them. Professional and business men are too exclusively given up "to addition to themselves and subtraction from their neighbors," to find time for the enjoyment of aught else, and are moreover largely shut up in cities and towns whence they get only occasional and hasty glimpses of country scenes.

I plead to-night for a larger liberty for both classes. Man shall

not live by bread alone. Both soul and body, in city and country, need fuller and wiser recreation. There should be more of the country in the city, and more of the city in the country, and more leisure and inclination for rational enjoyment in both.

The farmer whose composition is such that he can work only with his hands, and not also with his head, is a slave to his business—in utter and immediate bondage from the beginning to the end of his career. Work tyrannizes over him. He is a slave because of his ignorance—because of his poverty, because of his ignoble surroundings, because of his hopelessness. Dwelling in the midst of a possible paradise, he makes it by his ignorance and his blindness an actual desert. He sees nothing in a tree but firewood, nothing in green grass but food for his horse or ox, nothing in a stone but an impediment to his plow or hoe, nothing in clouds but harbingers of rain or drought for his fields, nothing in birds but troublesome enemies which steal his substance. For such farmers—and their name is legion—there can be little true and ennobling recreation.

This should not, need not be so. I ask as a remedy a liberal education for farmers—an education both disciplinary and technical. There is no wider, nobler field to-day for educated faculties than agriculture or horticulture. To know all the circumstances best adapted to the growth of a grain, a grass, a tree or a shrub; to study and forecast the markets of the world as does the successful merchant, so that he may know where to purchase for the least and sell for the highest price, and may know what crops will pay him best, to keep his accounts with the accuracy and fullness of that same merchant, so that he shall know the cost and the profit of every crop he grows, every animal he sells, every investment he makes; to have the wisdom and the courage to cut off unnecessary expenses; to know how to plan for the future as well as act effectively in the present; to know how best to husband and preserve his resources in stock, in machinery and in buildings, wisely *providing against* accidents, so as to *prevent* the most and skillfully remedy the few; to make the labor of his brain limit to the minimum the labor of his hand, by carefully planning in his leisure the work of his busy days; to have a taste for the beautiful in Nature and in Art, so that he may invest his

home with those delights and comforts which need for their creation not so much a well filled purse, as a cultivated eye and brain ; to have a taste for reading, so that his leisure may be partly given to that recreation which combines instruction with pleasure ; and last, though not least, to make a home for his children which shall be worthy of the name and of them—a home full of attractions and delights, which it shall be hard for them to leave and undesirable to forget—these are some of the qualifications a true farmer needs. They are not overdrawn. They are such as some possess, but such as the majority lack.

I plead for a higher education of farmers. I have not only the greatest possible respect for their calling, but a strong personal attraction to it. I was brought up on a farm, have always had farmers for my neighbors and friends, am fully half a farmer myself by right of both birth and experience. I know the hard facts of a farmer's life, and I even know its pleasant possibilities. It cannot be necessary that the calling which lies at the very basis, not only of national prosperity, but of national existence ; which brings man more intimately in contact with Nature than does any other ; which has been the delight of some of the greatest and wisest of men ; and has afforded a theme for the highest poetic genius in all ages since Theocritus and Virgil ; it cannot be necessary that this calling should be limited and degraded by conditions so servile as now too often prevail. To put in it more freedom, more liberal living, more profit, more honor, I would have farming one of the learned professions. I believe the day has already come with us when true success in agriculture or horticulture is the result only of intelligence and skill.

You know a child is "pleased with a rattle, tickled with a straw." The soberness of more mature age cannot be thus moved. So it is with the soil of our country. Some years ago in its virgin infancy, when even slightly "tickled with the plow it laughed with the harvest." Now the most persevering efforts at mere "tickling" are seldom rewarded with more than a "smile" in the way of crops. That is, the conditions are changed. The superabundant fertility is gone. Skill must now effect the results which rude labor once produced. And as a consequence of this,

he who is hereafter to be a truly successful farmer, must be a truly intelligent farmer.

I repeat, I plead for a higher education of farmers. They ought to be men of generous culture, with keen intelligence to see what is wisest, truest, best, amid a multitude of conflicting or uncertain conditions; with cultivated taste to make their surroundings beautiful and attractive; with a love for literature and science that they may enjoy recreation during the intervals of labor, in that which shall be instructive to themselves and their families.

When there is no great need of reform in this respect—when agriculture and horticulture ought to be reduced to a science, and not be a mere series of uncertain and blundering experiments, what is the duty of those who see the defects? It is plainly in the first place to show those engaged in these employments what their higher success demands; to give them a consciousness of their needs; and, in the second place, to afford them opportunity for supplying these wants. The agricultural and horticultural press, and agricultural schools are striving to show the need and to supply it. The former is doing a largely successful and beneficial work. The latter are doing far less than they ought, are in fact exerting only a trifling influence upon the agricultural interests of the country. They appear, to an outsider, to be well equipped with everything except students. Why is it that the agricultural department of our own University is not filled by them to its limits? Agriculture and horticulture cry aloud for the benefits which such institution should furnish, and for aught I know does offer to those who do not come.

O, that some great apostle of agriculture might arise from the bones of dead methods, to lead our young men to a high enthusiasm, and thorough preparation for the divine work of co-operation with nature in adding to the fertility and beauty of the earth! Would that an agricultural Agassiz might come to found a school of farming and horticulture on a new Penikese, drawing to him by the superiority of his knowledge and the magnetism of his presence disciples from every state of our broad Union. There is need for such—great and increasing need. The honored Agassiz, who has gone, ministered simply, or mostly, to the world's

curiosity. Like explorers in Artic seas, or in African wilds, he added to the boundaries of human knowledge, but contributed little or nothing to the amelioration of the human condition. He is entitled to honor, but the world owes him far less than it owes the inventor of printing, or of the telegraph, or of the steam engine, or any one of scores of other labor saving and civilizing inventions or discoveries.

I have thus hinted at some of the needs of agriculture and horticulture—more intelligence, more taste, more brain work, more leisure, more profit, more of those things which constitute the attractions and the glory of cities, less of those things which constitute the repulsion and the shame of country life.

Now, as one means not yet mentioned, of the solution of this problem of promoting agricultural and horticultural interests ; of giving to the country more of the culture, taste, comforts and attractions of city life ; I would give to the city and the town more of the rural delights and the freedom and the health of the country.

This brings me to the second division of my subject, and that which more appropriately comes under the title, "*Recreation in Horticulture.*"

I would recommend to business and professional men a systematic employment of a portion of their means and their leisure in horticultural pursuits. In this there would be the noblest recreation, refreshing both body and soul ; and out of it might and would grow not only advantages to themselves, but benefits to horticulture as a science. Very many business and professional men dream of the delights of rural life after they shall have acquired a competence to justify the luxury. They think the dream can only be realized at some indefinite future period.

I shall proceed to show a better and more rational way than this. Let business and professional men more generally seek suburban residences, with two, three, ten or more acres of ground. Of this, let as liberal a portion as possible or convenient be sacredly devoted to the lawn and to ornamental trees. Let the truest principles of landscape and architectural designs govern the construction of both grounds and house. We are seeking the sources of recreation, of delight, mindful of the truth that a thing of beauty is a perpetual joy. There is no recreation more satisfy-

ing to a rightly cultured man, than association and communication with Nature. He who finds not delight and renewed strength in the observation of her creations and processes in the external world, will not find pleasure in the creation of human artists. A painting or statue will be devoid of interest to him. But to and of such persons—the exceptional Gradgrinds of our civilization—I am not talking.

Here let me emphatically say that the picture of suburban felicity which I am now drawing, requires spacious and beautiful grounds as its chief feature—a necessary feature. A spacious and elegant house and costly furniture are desirable, and shall go in if the bank account shall permit, but they are not essential. There is in this country far too much building of houses for the admiration or envy of our neighbors. The more simple style often seen in England—a neat but inexpensive cottage or villa in the midst of an elysium of lawn, and trees and flowers, and graveled walks—commends itself to a truer taste, as well as to a more moderate purse.

One of the earliest recollections of my childhood is of such a place in the lake region of Central New York. Ten or twenty acres of charming park land encircled the inexpensive but convenient house of one whose money might have built a regal palace. The place was not only the admiration and delight of neighbors, but an occasional English visitor felt there as if he were in the verdant glories of his own country.

I have in recent days been nowhere so fully impressed with the truth of the ideas I am now presenting, as when traveling, not long ago, on the carriage road from New York City to Tarrytown. The drive was a perpetual delight. Perhaps nowhere else in America are to be found in a similar distance so many tasteful and delightful homes. I found it difficult to say whether I admired most the regal residence encircled by forty or more acres of equally regal park land, or the more simple but tasteful cottages and villas embosomed in the trees and shrubbery of half an acre, or even less. Along that famous river horticulture has achieved some of its best American victories. Happy the business or professional men who, after the day's toil and bustle of the city, can find recreation in such charming homes! Happy the children

who there live, and play, and grow, and learn, amidings so salutary to the body and mind!

If it be objected that this union of country and city life is expensive—a luxury only to be afforded by the rich—I emphatically deny the necessity of it. I know that it often is, but I say it need not be. Suburban life might easily with the proper management, be made pecuniarily a self-sustaining pleasure. With from three to six acres of ground, near any city half the size of Madison, it would not be difficult, from the sale of fruit, to pay the salary of a permanent gardener, and the interest on the cost of the land, and thus to have free of expense a permanent paradise of lawn and trees and fruit and healthful recreation. A pleasure thus self-sustaining would to most men be the more unalloyed. In what may be termed practical horticulture, as opposed to ornamental, a cabbage head which the account book says has cost a dollar to grow cannot be contemplated by the producer with unmixed delight, nor will one's strawberries be quite satisfactory if inexorable figures make them twice or thrice as costly as those of the market.

Notwithstanding the wide circulation and popularity of such books as "Ten Acres Enough," "Four Acres Enough," etc., there is an impression in the common mind that they contain more poetry than truth—that such pictures as they present are snares and delusions. This impression has probably been strengthened by Mr. Warner's delightful little book, "My Summer in a Garden," and other kindred writings, in which there is a vein of infidelity in respect to the pleasures and profits of gardening.

But it is with much confidence that I have made the statement above respecting the comparatively easy possibilities of practical horticulture. A pleasant experience of five summers in a garden has convinced me that there can be profits as well as delight in amateur horticulture. And it has also convinced me that horticulture is worthy to rank with the higher professions. Great success in it requires cultivated and trained faculties exclusively devoted to the business.

While my own success has been small compared with the possibilities which I realize, and towards which I have been slowly advancing, yet that success has been encouraging. I have time to

enter into no details, but will simply say that with an average of two acres under cultivation, with no home market worth the mention; with nearly everything sold in Janesville, eight miles distant, or in Milwaukee, sixty miles away, with good help willing to obey orders faithfully, and with orders well considered beforehand; but with several mistakes annually occurring from my want of previous knowledge; under these semi-favorable conditions, I have only once failed to realize above all expenses of cultivation and transportation an annual profit per acre about equal to the original cost of the land per acre—\$100. In the meantime there has been growing upon part of the land a fine orchard of seventy-five apple trees, now beginning to bear. I say nothing of the grapes, plums, strawberries, raspberries, currants, asparagus and the other garden products, which my family enjoyed in profusion, in such excellence as markets never afford, and the money value of which would be considerable. I say nothing of the pleasure I personally experienced in watching the growth and changes of the several months, from the buds of spring to the sere and yellow leaf of autumn. As pleasure sells in this world I would estimate the value of this to average about \$10 a day for the season.

I say, in conclusion, ladies and gentlemen, that this business pays, and that there is too little of it. More intelligent use of the soil, more permanent and more beautiful homes, less roving about to *find* the better lot we can more easily *create*, more out door life and exercise, more English love of Nature and English health, less American love of money and fashion and American frailty of body—these are what we need more of.

I think better things are already coming. The parks that adorn our great cities give proof it. Two individuals occur to me as giving proof of it—the founder of Shaw's Garden in St. Louis and Woodward of San Francisco. Two cities do these men honor, and their names are known over the entire country. They must be men worthy of national esteem, and their noble example will, I trust, find imitators in many another city.

Can I more fitly close these hurried sentences than by saying that Madison presents peculiarly rare attractions for the suburban resident? When wealth and taste shall have fringed her lakes with beautiful homes, even as they have lined the banks of the

Hudson, then shall Art have fitly set these now rough, but almost incomparable jewels of our capital.

"THE FARMERS' MOVEMENT."

BY GEO. E. MORROW, OF THE WESTERN FARMER.

Delivered at the Dane County Fair, 1873.

That which we call the "Farmers Movement" has become one of the most common topics for discussion. Monster meetings are held in its behalf; from the platforms on hundreds of fair grounds it is being talked of; the press of every class, fills columns with opinions and advice concerning it; no political party ignores it in selecting candidates or setting forth its principles. This movement is in no immediate danger of dropping out of the minds of men; nor is it in danger from unwillingness on the part of the people to do right. The average American citizen is in favor of truth and right as regards any cause, if you but allow him to clearly see the right and do not cover it up with side issues or appeals to prejudices.

THE GREATEST DANGER.

To this movement is from within—not from without. If it fail of doing good; if this interest in the questions discussed die away, leaving farmers in no better condition than before, it will be because they have consented to be led either by narrow minded impracticable men, seeking blindly a good end through inadequate means, or else by hypocritical, vicious men, seeking only their own advancement. Something more than zeal is needed in a leader; something besides protestation of interest may be needed to prove sincerity. There are already too many such would-be leaders, bringing contempt on the cause they profess to advocate, by their pretentious ignorance, their indiscriminate denunciation and their empty threats.

We need here, as in every discussion, full and accurate information; careful study of each question, anxious only to find the truth, and a willingness to hear and do full justice to the other side.

THE FARMER'S COMPLAINT—ITS CAUSES.

The complaint of the farmers may be briefly stated thus: Their labor is not fairly rewarded; they have to sell their products at too low a price, and to pay too much for that which they buy.

In answer to the question, why? a Babel of voices respond, each one insisting on giving the one great cause. Loudest is the cry of railroad extortion and unjust discrimination. Rivaling this is that against lazy and dishonest middlemen levying a heavy tax on all the farmer sells or buys, for allowing it to pass through their hands. Other voices tell of the agricultural implement monopoly; of the patent laws; of the tariff; of our general financial system. Some lay all blame on the Republican party; others on the Democrats, who thwart its desires to do good. A few farmers say the credit system is the one great curse; while some business men are unkind enough to say that the trouble is that farmers do not know enough to manage their own business.

This is a formidable list, and there is some truth in each charge; but there are other causes equally important, but of a very different nature. We have a country of almost boundless extent, and it has, apparently, been thought essential that every available acre of it should be made use of at the earliest possible moment. National, state and territorial legislation has been lavishly given to securing the building of railroads to far distant points in advance of settlements. The railroad companies have naturally sought to secure immigration, and have sung in sweetest strains the praise of valley, plain and hillside. We have all urged the peasantry of Europe and the residents of our more eastern states to settle on the fertile lands of the far west. Most of these settlers had little capital; many at once involved themselves in debts large for them. They engaged principally in the production of the bulky, raw materials of farm products, which had to be transported hundreds of miles to the centers of consumption. When this was fairly started out great war came, taking away immense numbers of producers, and by its waste greatly increasing the consumption. Prices advanced and the nominal prices became higher than ever before, because of a depreciated currency. Many farmers plunged again into debt for more land, new houses or other im-

provements. The war closed, and thousands on thousands came back to the farms, immigrants flowed in as never before, the currency approached its normal condition, prices nominally fell greatly on this account, and really because of full production; while the debts, contracted in the time of high prices, remained unpaid, and in our own state there was added to all this, three years of unusual drought, with other serious injury to the crops. This recital is given to show how powerless any one remedy will be to relieve all evils. Fortunately, in the nature of things, some of these causes of depression will disappear as a more diversified system of agriculture is introduced and centers of trade and manufacture are established in the west.

RELiance ON POLITICAL ACTION.

There is, on the part of many, too much dependence on some undefined political action as a means of bringing prosperity to farmers. It is not the privilege, but the duty of every farmer to be, in its true sense, a politician; to inform himself carefully on questions affecting the prosperity of the country and of his business, and by voice and vote to do all in his power to establish the supremacy of right principles, and secure the election of honest, faithful officers. But the farmer should ever remember he is also a citizen, and that those laws which will be for the permanent best good for the whole people are those which will be for the permanent best good of the farmers.

SPECIAL LEGISLATION.

A curse to our country has been special legislation for the benefit of classes. We want such legislation stopped and undone, and not added to by that which it may seem would be of temporary advantage to the farmers. The legislation we need is that which will impose the fewest possible restrictions on the prosecution of any honorable business. For this reason we want no distinctive Farmers' Party, named as such and seeking only the farmers' special interest, thus arraying other classes in opposition. We want no political, business nor social action to increase class feeling and prejudice farmers against other men engaged in other equally honorable callings.

DISTRUST OF COURTS.

Coupled with the desire for special legislation is, in apparent direct opposition, a feeling of lack of confidence in our legislators—sometimes well founded—and of distrust of our courts—generally unfounded so far as the higher courts are concerned. Nothing is more to be deplored than a loss of confidence in the judiciary of any country. The intelligent farmers of the country do not, they cannot believe the judges of our highest courts, national and state, are corrupt. The elevation of any man to so responsible a position in itself tends to impress him with its responsibilities and to lead him to careful conservative judgment.

Most unwise is the too common feeling in favor of substituting the hasty enactments, generally necessarily ill considered, of large bodies of men, for common law principles, thus thrusting aside in contempt the wisdom of all generations since civilization began.

THE RAILROAD QUESTION.

No one question, in connection with this movement, has been more discussed than that of railway transportation. In itself this transportation business is plain and simple. Partly purposely, on the part of men connected with it, and partly because of the way in which it has been discussed and legislated upon, much needless mystery has been thrown about it.

The one thing which makes the railroad question one of the most delicate and difficult which our statesmen have to consider is the great accumulation of capital placed in the control of one man, or, at most a few men. This gives gigantic power for wrong if these men so choose. Wisdom and care is needed, lest we, in our attempt to prevent wrong, cripple and retard one of the greatest material blessings of our times.

We need increased transportation facilities, but, the opinion of able men to the contrary notwithstanding, not by the general government building more roads. The conflicting interests of various sections would seem an insuperable objection to the selection of any one route, were there no other difficulties. We need a better management of the roads so as to prevent extortionate charges and unjust discriminations, but the best way to secure this is not by accepting the astounding plan, although advocated by good

men, of having the general government purchase all the present lines, adding immensely to our great public debt, as well as **vastly** enlarging and complicating our none too perfect Civil Service.

The multitude of circumstances to be considered, the frequently varying conditions properly affecting them, the necessity of frequently making discriminations, unjust to no one, yet advantageous to the companies—these and like considerations, as well as the experience in a neighboring state, seem to point out the practical impossibility of regulating railroad tariffs by minute and specific legislative enactments.

The plan recommended by our honored governor, and adopted by one political party in the state, as it probably will be by the other—of having a railroad commission, seems to me may be made a simple mode of securing relief from most of the troubles of which complaint is made regarding railways. With able, thoroughly informed, incorruptible men—or better one man—with ample powers, injustice and extortion could be prevented and yet every just right of the railway companies be protected.

PATENT LAWS, THE TARIFF, ETC.

We heard yesterday, from my friend Professor Welch, of the injustice of our patent laws. There is much room for improvement here, and as one chief reform, I suggest that the question of renewal be taken from congress and placed where it belongs, with the commissioner of patents, for one able man, devoting his whole time to such questions and knowing that mal-administration would be followed by speedy punishment, can treat them better than can hundreds, knowing little of them and dividing the responsibility.

Our tariff regulations and financial system undoubtedly need modification, but it will not be considered inexcusable ignorance if I confess that, having several other questions to study, I have not yet prepared myself to say just what should be done as to these vast things, to the consideration of which so many able men have devoted years of study without agreement.

THE AGRICULTURAL IMPLEMENT QUESTION

Is the most prominent of another class of difficulties in the way

of the farmer. Here legislation can only indirectly help. The present system of selling them is justly complained of by farmers, while it very often is unsatisfactory to the manufacturers. The large commissions can be wholly or partially avoided, in some cases, by dealing directly with the manufacturers, especially where a number of farmers will unite in making purchases. Oftentimes complaints come from those who have allowed themselves to be induced to purchase that for which there was no absolute need, or who have, by their own lack of care, made repeated purchases necessary. In co-operating in this matter we have one great good of associations of farmers.

FARMER'S ASSOCIATIONS.

We have thousands of granges and great numbers of open associations. There is no reason why these should not work together in harmony for the one great end of securing the greatest good not only to the members but to the whole class. To some, the secrecy, the pleasing ritual, the regalia, the compact organization of the grange have special charms. To others these things are distasteful, and they prefer to work in the farmer's club, but this is no reason why there should be lack of harmony. The close connection of the granges gives certain elements of power, and also makes possible certain evils, and dangers against which cautions may be needed. I have regretted to see the advocacy by members of both clubs and granges of co-operative stores, managed by farmers, as such; of large manufacturing establishments under their control—of the assumption by farmers of the management of most kinds of business. I have regretted to see advocated the utterly impracticable plan of compelling higher prices by combinations to hold farmers' products from market—advocated generally because of a greatly exaggerated idea of the ease and frequency with which similar combinations can be made by purchasers.

Farmers can make these associations of great pecuniary advantage to them, but far more important than this is the educational effect they can be made to have, increasing interest in all that relates to agriculture, and helping to acquire information concerning it.

MORE KNOWLEDGE, BETTER FARMING.

More important to each individual farmer than anything he can do to secure favorable political action, is it that he seeks to gain all possible knowledge about his business, and to learn all he can of the principles common to all avocations. Let each do all he can to secure better legislation, but let him not forget to think, and talk, and read how to be a better farmer. Try to learn how to sell to the best advantage, but also seek to learn how to produce most cheaply.

The farmer's condition is very far from hopeless. Some farmers in this State have been making 10 per cent. net on their total investment, even during these hardest times. Now we have better crops with a prospect of fair prices.

The farmer has his choice of other callings. If he thinks he can do better in any other the sensible course is to engage in that business. If he decide to remain a farmer, the wise thing to do is to look on the brightest side and do the best he can for himself and his family. And he has this comfort, that in the nature of things, in any long series of years the farmer is sure of a fair return for his labor if he use in his business, Industry, Intelligence and Integrity.

THE IMPORTANCE OF AGRICULTURE AND ITS RELATION TO OTHER INDUSTRIES.

BY SEC'Y W. W. FIELD,

Delivered before a convention of Sauk County Farmers, at Baraboo, Jan. 29, 1874.

MR. PRESIDENT AND GENTLEMEN:—At the request of the worthy secretary of your county agricultural society, I appear before you to-day to make brief remarks upon the importance of agriculture and the relation it bears to the other industries of the country. I do not expect to educate or especially enlighten you in your calling, as I doubt not most of you are my equals in enlightened and practical agriculture, and many of you my superiors. I will, however, interest you as well as I can, and while I endeavor hastily to show the vital importance of agriculture in its

varied branches, I shall hope to stimulate you to better systems of culture, and thereby advance the agricultural community to a higher plane of usefulness and happiness.

The importance of agriculture cannot be over-estimated. Whatever else is done, humanity must eat. Farmers' work cannot be suspended for a single year without the most serious results to society. Suppose that any one of the valuable and legitimate branches of trade, commerce, manufactures, or the learned professions (so-called) were suspended for the same length of time, would the same marked effect be visible? Certainly not. Strike out of existence any one of the other great industries and it would have a depressing influence upon agriculture, seriously derange business interests, and retard progress and civilization, but the in-harmonious working of the entire business and industrial system by the suspension of one of the numerous aids to agriculture is but the pruning of the branches or roots of a tree.—But when you strike out agriculture you have leveled a fatal blow at the trunk and death ensues. This one fact ought to establish in the mind of every thoughtful person, the importance of this great interest, agriculture. Another well established fact, which observation and experience teaches, is the intimate relations which exist between a prosperous agricultural people and the advancement of what is moral, good and great.

Statistics informs us that in those years when food is abundant and commanding remunerative prices, that crimes are much less numerous, and that the educational and moral influences of a people are much strengthened and improved. My observation and experience teach me that all conditions and classes of society are advanced physically, morally and mentally by having at all times an abundance of good, nutritious food. Feed a man well and he is sweet tempered, kind, charitable, cheerful and happy. Half feed him and he soon becomes ill-tempered, sour, crabbed, un-charitable and generally miserable, and produces gloom and unhappiness wherever he goes. Purity, charity and other kindred virtues are the result of good, generous living, which produce health and vigor. These characteristics are, however, no more marked and striking in the full development and betterment of mankind than is the enormous amount and value of the products

of the soil. The receipts of all other classes and professions are insignificant, when value is taken into consideration, and compared with the product of the former. The census of 1870 tells us that there was raised in that year the enormous product of sixty-eight million tons in round numbers, not including the products of the forest, and that its valuation was twenty-three million dollars, with a capital invested of twelve thousand million dollars. When you look at these vast annual products and compare them with the products of all other classes and legitimate business interests, you will find that it is many times the amount of them all.

Here you see the importance of the farmers' labors, and you cannot but feel that his occupation is the base and foundation upon which all human industries must build, and by which they must be supplied. I would not be understood as underrating the importance of other industries and aids to agriculture, in the advancement and progress of the world. Most of the legitimate pursuits tend largely to gratify man's desires and wants, and hence contribute to his comfort and happiness. But agriculture is the great moving power, the master wheel which must start the numerous activities of man and keep them moving by supplying the workers with bread and meat. Agriculture requires labor of the hand and labor of the brain, both of which are good for every human being. You often hear it said that little labor of the mind is required to till the soil. As well, or better, might it be said that little mental effort is needed to conduct mercantile, or commercial branches of business, manage a railroad, run a bank, or build up a first class reputation as a lawyer, physician or divine. Agriculture needs brains as much or more than any other vocation; trained brains, skilled labor, and he who is not willing to apply both physical and mental labor to this calling had better engage in some other, for he certainly will be a failure in this. But methinks I hear this young man, or that young woman say that labor incident to farming requires too much physical labor, that one becomes weary and exhausted, his or her mental powers become dulled, the routine of daily labor is depressing, and that altogether the life of the farmer is a dull and discontented one. Now this ought not to be so, and is not so if that

labor is rightly directed. With the aids to agriculture which machinery brings, and the study and thought now given to this calling, the work is accomplished with a more equal distribution of the labor of the hand and brain than in olden times, and the results are more time for recreation and repose, and a greater degree of contentment and happiness.

Lest you may think I am theorizing, I wish to say that I have been in this state twenty-one years, and that until I was elected to the position of Secretary of the State Agricultural Society, tilled the soil, earning my bread by the sweat, not of a hired man's brow, but of my own. I purchased a little piece of land in the county of Grant, with a few hundred dollars of money which I had earned by hard labor, after my majority, moved into a poor log house standing upon the tract, and with no further capital but a willing hand, good health, and a determination to carve my way forward and upward, I looked cheerfully and happily into the future. I labored hard, as I admire to see the young man and young woman labor to-day. I tell you, Mr. President, labor develops the youth of our country as nothing else can. It makes them self-reliant and independent. In other words it makes men and women of them, such as only we can rely upon to uphold and maintain our republican institutions. I desire to see, however, that labor remunerative, and, if intelligently directed, it usually is, so that when old age and decrepitude steal in upon them, they may have enough of the good things of this life, that their labor may be light and their measure of happiness thereby made full and overflowing, as they descend quietly and peacefully to that other country, "from whose bourne no traveler returns."

Now, I have briefly attempted to show that agriculture is the foundation, the bed rock upon which all human industries must build; that it is the source from which all supplies must first come. If this is true, and, I take it, no one will attempt to refute it, then what are its relations to other industries, avocations, or professions? I say, emphatically, that it ought, and of a right should stand at the head of all departments of effort in this country. Farmers should demand a controlling, ruling interest in this government, and show to the world their ability, sagacity, and true

statemanship in the management of all its internal affairs. They should be qualified to fill all positions of trust and power, and see that the affairs of state and nation are managed with economy and frugality, to the end that labor may be protected in all its varied branches. The relations of other industries and business interests are so interwoven with agriculture that a community of interest exists between them; but we should bear in mind that the latter, agriculture, so overshadows all others that its interests should be protected by all legitimate modes, and the labor incident to its full development allowed to reap as large results as labor bestowed upon any of the different avocations. We hear much said on every hand that farming don't pay. If it doesn't pay, why is it? Look around you carefully for a solution of the trouble. Is it because you do not possess the taste, education or ability to do your work when it ought to be done, with the skill and inclination to care for stock, tools, &c., necessary in your farming operations, with a proper knowledge of the markets, and the best mode of turning your surplus products into the most money? If these, or similar causes are operating to defeat you of liberal returns for your labor, look around you and apply the remedy. This you can do by intelligent and well directed labor, thought, study and the knowledge obtained by the observation and experience of others given us in the numerous works upon agriculture and from the weekly agricultural papers of the country, one, at least, of which should find its way to every fireside. I assure you these works will furnish you food for thought and research, by which the mind will be enriched and the profits of your business correspondingly increased.

Farmers must think, study and investigate the underlying principles of their avocation. To illustrate this more forcibly, allow me to relate an incident of Henry Ward Beecher, who, when visiting the White Mountains some years since, was urgently solicited by a friend to address the people the following Sabbath, and consented, conditioned that a contemplated visit to a point of interest be postponed until another time, for he said he must have time to prepare for the service, as he never allowed himself to go into the pulpit without thought and preparation. Of course the conditions were complied with, and on Wednesday morning of

the week previous to the Sabbath, appointed, Mr. Beecher invited his friend to go fishing with him. They went on that and each succeeding day until Saturday, when his friend remarked to him that his time was limited for preparation for his sermon, and was somewhat astonished when the great man said ; "My sermon is ready." Beecher had fished, and at the same time had studied the works of the Great Creator until his mind was filled with fresh, vigorous, original thoughts, which fell from his lips on the following day like "manna" from heaven, furnishing mental food, and elevating to a higher plane all who heard him.

Such ideas as are given us by this class of minds are not coined, polished and made of force and value but by study, deep thought and constant application. There should be Beechers in agriculture as well as in theology, as such minds afford examples which stimulate others to do better, raise them to a higher plane, with better profits and more of the higher enjoyments of life.

Farmers must bring to their aid the observations, experience and knowledge of the best minds in the country—must learn from those who theorize and those who practice ; from the worker and the talker. The lawyer and physician are not content when they receive their diplomas and start into the practice of their respective professions. They feel that they have just begun to learn. The former reads up carefully all the best authors upon the theory and practice of his profession, examines critically the decisions of courts, and if new cases arise involving nice, fine points of law, he watches the arguments of counsel and the decisions of the court with eagerness, hoping to store his mind with some heretofore hidden truth in his profession. The latter notes with care every new case which arises in his profession ; reads and thoroughly digests many of the medical and surgical journals of this and foreign countries, that not an important discovery shall be made and escape his knowledge.

Farmers must understand that the world moves, and unless they are willing to fall to the rear and be unnoticed and quickly forgotten, they must be up and doing. It takes a good deal of square, hard work to carry on the varied activities of the world ; and, depend upon it, somebody is going to push them forward.

If you want a hand in the labor, the honors and rewards, you must understand and attend to your business.

When you, as farmers, have done all you can do to make two blades of grass and three bushels of wheat grow where only one grew before, by systematic, intelligent, persevering labor, from the time the seed is placed in the ground, or the stock needs your care, to the time when the results are in your pocket, placed to your credit in your bank account, or in improvements upon your farm, with frugal, economical living, and you find that you have not increased your possessions, it will be well to look around you and note the outside causes which are at work to prevent such gain and profit. And you have no right to complain of your condition until all this is done. If by a careful survey of the entire situation you are of the opinion that other interests are reaping more than a just share of the profits of your labor, in consequence of a want of proper legislation, or because of the enactment of certain laws for the undue protection of class interests, you have the remedy in your own hands and you ought to apply it. What would you think of a man who held a majority of stock in a manufacturing or other important interest, who should allow others holding only a few shares to come in and control it, elect its officers, manage its financial interests, and do all things connected with its affairs as they pleased? You would at once say that he had better sell out his interest in that concern, and invest where he would take an interest, and look after his receipts and expenditures. Are you not, as farmers, all over this broad and beautiful land, to-day doing just this same thing? Millions of money is expended annually in this government, back pay steals and high and extravagant salaries are inflicted upon the already tax-ridden people. Men occupying high official positions stand up in the halls of congress, and before the people, and advocate these schemes to rob the treasury, plunder the people and enrich themselves with, seemingly, no sympathy with the laboring, toiling millions who produce the staples of life, and who are compelled to exercise the utmost frugality to educate and bring up their families so that they may take respectable positions in society, and not feel that forever they must be slaves and occupy a menial's place. Have you reason to complain of all this?

Very little. Why? Because you have not men in the councils of the nation to represent your interest. We, a great agricultural people, represented in the senate of the United States by whom? Not by a farmer, for there is not a single one in that august body. This great interest, one above all others, without a representative in the higher branch, and (if I am rightly informed) not one in the lower—certainly not one from this state. If you want a man to represent your wishes and sympathize with your condition, either in or out of congress, send him whose occupation and labors have best fitted him for that work. One who is capable and honest, and who will devote his time and talents to your interests, and not for his own pecuniary profit and aggrandizement.

If there ever was a time when we needed men of integrity and of high moral principle to look after the interests of this country, it is now, and I think I see a hopeful prospect in the near future that many of them will be elevated to positions of trust and honor, extravagance put down, and the nation once more return to the simpler, plainer, more honest and economical ways of the early days of the republic.

I am often astonished at the little interest manifested by the producing classes of this country. Questions of more vital interest to them than to all others combined, are continually arising. For instance, taxation. This is one of the most important questions in our state and nation, because it has for its object the distribution of the burdens of supporting and maintaining the state and national government, caring for the unfortunate and afflicted who fill our prisons, reformatory and charitable institutions, and protecting the weak and feeble, the laborer, the stern tillers of the soil, the mechanic and artisan, against the selfish greed of capital, class interests, and gigantic monopolies. For one-half hour before I left Madison yesterday, I listened to an able argument in the assembly chamber before the railroad committee and members of the legislature, by Hon. John W. Cary, a paid attorney of one of the powerful corporations of this state, against an increase of taxation of railroad property, and, in attempting to show that their property was already bearing more than its proportion of the burdens of taxation when compared with the other property of the state. As I listened to this learned and able advocate of the

railroads, who warned the new reform party and the old republican party in words of elequence and power, and in almost a threatening manner told them not to increase taxation upon this species of property as it would be an unjust discrimination and a burden they could not bear, I said to myself where is the learned counsel to reply to him on the part of the people who are building up and enriching their roads, or at least those who control them, and who the masses of the people believe are extorting from them high and unjust tariffs, and paying less than their proportion of the taxes of the country according to the real value of property. Are the representatives of the people assembled at the capital, sent there to represent the industries of the state, and hence do not need an attorney or counsel to present their side?

Our legislators are no more the representatives of the industrial producing masses than of the railroads or other corporate and special interests, and if these gigantic corporations are to come before committees and legislators to argue their side of the case, some one or more competent persons should be employed by the people to present the other side. Some of these special interests in this state have become so strong, and their wealth so great that the relations which they bear to the agricultural and other producing avocations of the state are so interwoven and closely connected, and of such vital importance to taxpayers, that if the representatives annually sent to Madison to look after the interests of the whole people and to enact such laws as shall deal justly and honestly by all classes and general interests cannot discharge that duty intelligently and wisely, then I am in favor of having a board of railroad commissioners to examine and study up the relations which these great interests bear to each other and have them adjusted in the interests of the entire people as recommended by his Excellency C. C. Washburn in his annual message in 1873, and by his Excellency Wm. R. Taylor in his message just presented to the legislature. But, says one, the people cannot get men upon this commission that cannot be bribed by the use of a few thousand dollars to present a favorable case for the corporate interests. Mr. President, I don't believe such statement to be true. I will confess that from my experience and observation, my faith in the honesty and integrity of poor,

weak human nature has been somewhat weakened, but I am not prepared to say that all men are venal, corrupt and mercenary in their motives, and if placed in positions of power, trust and responsibility would sell their honor, self-respect and manhood for a "mess of pottage." Possibly such men are not prominent before the country; they may be occupying modest, retiring, humble positions and possibly little known outside the township or county where they live, but who are men of education, ability, integrity and sterling worth, men whose nice sense of honor and high moral principle, corrupt, scheming bad men would not approach and attempt to bribe. Such men are needed to-day. Let them be sought for by the people. This is a government "by the people, of the people, and for the people," and where economy, frugality and republican simplicity should permeate every department, and where our representatives should be men in whom we have the highest regard for honesty and integrity, men whose sympathies are with the people, the laboring, toiling millions who produce the necessities of life, and who do not seek these places of responsibility and trust for the fortunes they may bring, but who are willing to work for reasonable salaries and devote their time for the public good.

I don't want to see aristocracy encouraged in this country by high salaries. I don't want to be taxed to enable officials to dress in expensive garments and spend the earnings of my labor in riotous living.

Some months since I read with a feeling mingled with shame and contempt, of the action of the British Parliament in giving of the people's money to an amount of one hundred and twenty-five thousand dollars annually to the Duke of Edinburg, son of Queen Victoria. I doubt not this boy is possessed of many good qualities, and if made self-reliant and strong by being thrown upon his own resources would earn for himself and handsome Russian princess an honorable living, but that the subjects of her Majesty should be compelled to labor for a few pence per day, and live upon the poorest and cheapest fare to enable this Royal Scion to live in silver palaces, "dress in purple and fine linen and fare sumptuously every day," is an outrage upon civilized and christianized society, and an insult to every laboring man in the king-

dom. This may be all very well under the governments of the old world, but to use a common phrase, "I want none of it in mine." I want to see every man, however lowly born, have a fair chance to rise by merit to eminence and distinction, and I will do in my humble way what I can to keep the great highway of life clear, that he may have a fair chance with others for an even trial of mental and physical effort. In this race, capital is a powerful agent and one of great good if kept within reasonable limits. Capital, however, will always take care of itself, and usually takes care of labor too. It needs no special legislation to protect it. Labor is what needs protection against the selfish greed of capital, and one of the great questions for our present and future statesmen to solve is, how best to harmonize and rightly adjust the intimate relations of each to the other, so that strikes shall be unknown, and labor and capital, each receive its just reward and stand together as "Nast" says "The American Twins," "The Real Union," "United we stand, divided we fall."

What we want is republican simplicity and frugality at home, making our labor as profitable as possible, and live within our income, however small, and insist that our public servants shall receive a salary to live on a plane with us, or at least not so far above us as to lose all knowledge of the condition of those they were elected to represent. We want men in the councils of the state and nation who shall command the confidence of the industrial masses, men whose souls and hearts and every desire is to serve the people in their best and highest interests.

Back pay grabbers must take back seats, and men fresh from the people, men in whose integrity and ability the people have the utmost confidence, and whose fidelity to principle is unquestioned must come to the front. Then, and not till then, will the relations of other industries and pursuits to agriculture be harmonized and rightly adjusted, and labor in all its varied departments reap its just and legitimate reward.

PRACTICAL SUGGESTIONS.

BY JOHN H. CARSWELL, LONE ROCK.

(Before Richland County Agricultural Society, 1873.)

By the solicitation of your secretary I appear as a minute man, to fill the place of a speaker from a distance. It is an old proverb that "distance lends enchantment to the view," and doubtless a speaker from abroad would be better appreciated. It is said that "a prophet is not without honor save in his own country." Although I come from among the people here assembled, I hope you will not regard my words the less, but that you will regard the subject rather than the speaker.

We assemble here as agriculturists, to review the labors of the past season. We have spread our seed over our fields, have watched it come forth in strength and beauty, and have garnered the ripened sheaves. If sown on fertile soil, if intelligently cultivated and matured, it has brought forth its sixty or hundred fold increase. If, through ignorance, it has been sown on stony ground, or has been neglected, we have reaped only the rewards of the slothful.

I do not now propose to talk to you of pigs and sheep and Durham cattle. These I have talked to you about before. When I see the addresses that have preceded me at the State Fair, and those already published to the country by Governor Fairchild, by the President of the State Agricultural College, by Secretary Field and others, I feel that I am treading on fearful ground. The field is already occupied by those in highly honored positions, whose published opinions it would seem dangerous for us to attempt to controvert.

We will pass by the subject of preparation for winter—how you expect to care for your stock, cattle, and above all, for yourselves and families. During the past year no unusual calamity has visited us; no fierce tornado, no devastating pestilence has spread terror among our citizens or bowed their heads in sorrow. We have

been blessed with our usual harvest, and in many particulars fully satisfactory, and we come to the financial features of the year not mourning, but with hearts full of gratitude and peace.

We do not come to the yearly settlement of our accounts with the sweetness of the grangers. We do not propose to do away with the evils we bear by holding dark lantern meetings and refusing to discuss political questions, but by the ballot, which Whittier describes as—

“Falling lightly as the snowflake on the sod,
Which executes a Freeman’s will as lightning does the will of God!”

The time was when we cut our own grain, when we did our own threshing—when men used the scythe and the flail. Now Racine does our threshing—every two hours she finishes a thresher. Cohoes Falls cuts our grass—we no longer do that with the scythe that costs us but a dollar. Cohoes does that with her machinery, and we call it monopoly! We, as agriculturists, are prone to shirk labor; we feel too proud to use a flail, a scythe, or even a beetle! Hundreds of farmers endeavor to use machinery which they buy at exorbitant prices, and put money into the hands of manufacturers who become immensely rich from the toil of the farmer. Too many endeavor to farm with brains rather than work. Such farmers have bad bank accounts, while the farmer who works has his stores of produce, his stock, his home without mortgage, and he feels independent.

Labor is the life-blood of energy. We must have a generation with moral elements of character. We must look to the mothers for a regeneration of our race. There never was an energetic man without an energetic mother. She was no pampered doll in a parlor, but hers was an active, living energy that gave character to her children. We must think! we must act!

The Governor tells farmers to combine against monopolies. We are told to dig rifle pits, to fortify, to intrench against money. If President Twombly’s doctrine is carried out, as set forth in his address before the State Agricultural Society, it is war, not civil government. When you sap and mine, and intrench, it is military. When the “Little Giants” their lamps and the “Wide Awakes” began their march, how long before the boom

of guns at Fort Sumpter? What we need is an intelligent use of the ballot. We producers and farmers generally must pay the Governor, our Congressmen and the swarms of officers who are so ready and willing to scoop out the heart of our loaf and give us the crust. As farmers we must work for too many, try to farm with brains and no labor. Our intelligence should guard our wealth from wily politicians and monied monopolies — our energy relieve us from the evils we suffer.

To my sister before me with bronzed hands, not ashamed to wash dishes, and able to perform the culinary duties of her household, we would say, you need not envy the butterfly who sweeps the street of the city with her ten dollar silk. Wait a few days and look upon her as they bring her husband's body from the river to the morgue. The coroner's inquest says "suicide;" I say, she murdered him!

The work of reform is the renovation of public sentiment. The remedy for farmer's grievances is the ballot, not such collegiate education as President Twombly proposes. When he talks renovation, it is useless unless men have brains given them by their mothers. You cannot expect to educate the idiotic. My Granger friends propose to reform things by secret combination and dark lantern meetings. Railroads represent a capital of three billion dollars controlled by six men. They command, the telegraph wings their message, and their satellites execute their wishes as willing slaves. Farmers represent a capital of nine billions in the hands of millions of agriculturists, who cannot be combined as a unit. The Grangers do not have a proper conception of the vastness of these things. The American government has gathered within its limits men from all nations and kindreds—here they all become citizens with sovereign power vested in each one alone.

Railroads and manufactures are essential elements of our country. What we need is legislation to control them. We must tell the railroads to carry our wheat for so much, just as we tell the miller to take only so much toll, or the money lender so much interest. When secret societies tell us to reform without political action it can not be done. We must educate to vote. Politicians are like the nightingale in Cowper's tale. She sang all day, when, feeling the pangs of hunger she looked around and saw the glow

worm, who protested against being eaten by her indolent but musical neighbor. Politicians chant soothing strains to the farmers before election; when in office they remember their greedy appetites and at once fall upon the farmer and eat him up! Thus farmers are the victims on every hand, and our only safeguard is higher intelligence—better self-education.

EQUALIZED ASSESSED VALUATION

OF THE REAL ESTATE AND PERSONAL PROPERTY OF THE
STATE FOR 1874.

COUNTIES.	Personal Property.	Real Estate.	Aggregate.
Adams	\$272,709	\$1,120,222	\$1,492,931
Ashland	102,167	970,294	1,072,461
Barron	79,881	652,480	732,361
Bayfield	20,910	615,857	648,767
Brown	1,255,789	5,649,964	6,905,735
Buffalo	532,395	1,783,553	2,315,948
Burnett	28,339	310,830	339,169
Calumet	485,458	2,901,278	3,386,736
Chippewa	735,181	9,473,605	10,208,786
Clark	238,575	3,358,072	3,596,647
Columbia	2,176,835	8,644,503	10,821,338
Crawford	707,833	2,695,196	3,403,079
Dane	5,160,600	20,581,248	25,741,848
Dodge	3,162,893	14,091,878	17,254,771
Door	191,154	654,331	845,485
Douglas	8,270	1,284,475	1,292,745
Dunn	952,866	2,191,078	3,144,944
Eau Claire	1,252,711	3,165,721	4,418,432
Fond du Lac	3,483,590	13,965,984	17,449,574
Grant	2,957,906	11,938,610	14,896,516
Green	1,973,579	8,397,194	10,370,773
Green Lake	971,818	4,222,491	5,194,309
Iowa	1,614,147	7,624,952	9,239,099
Jackson	562,812	1,690,763	2,253,575
Jefferson	2,366,201	9,422,097	11,788,298
Juneau	775,929	1,840,081	2,616,010
Kenosha	1,388,351	5,886,318	6,774,669
Kewaunee	122,156	506,284	628,440
La Crosse	1,885,090	4,984,330	6,869,420
La Fayette	1,564,482	6,728,293	8,292,777
Manitowoc	1,296,730	6,575,961	7,972,691
Marathon	482,161	3,773,032	4,255,193
Marquette	371,040	1,090,002	1,461,042
Milwaukee	16,256,368	37,025,197	53,282,565
Monroe	977,451	3,622,668	4,600,119
Oconto	749,209	5,075,182	5,824,391
Outagamie	931,099	6,194,367	7,125,466
Ozaukee	720,186	3,059,124	3,779,310
Pepin	220,517	591,684	812,201
Pierce	633,677	3,717,996	4,351,673
Polk	171,973	1,344,726	1,516,699
Portage	633,172	2,753,688	3,386,860
Racine	2,683,413	8,513,906	11,197,350
Richland	816,989	3,268,850	4,085,839

COUNTIES.	Personal Property.	Real Estate.	Aggregate.
Rock.....	\$4,805,266	\$16,750,986	\$21,556,252
St. Croix	826,459	3,707,065	4,533,524
Sauk	1,587,381	7,446,382	9,033,763
Shawano	108,385	1,457,356	1,565,741
Sheboygan	1,759,562	7,371,896	9,131,458
Trempealeau	670,780	1,966,830	2,637,610
Vernon.....	1,029,396	4,803,983	5,833,379
Walworth.....	3,241,217	11,361,034	14,602,251
Washington	1,520,539	5,483,989	7,004,528
Waukesha.....	2,803,709	11,440,692	14,244,001
Waupaca	640,828	3,168,604	3,809,432
Waushara.....	460,841	1,658,705	2,119,546
Winnebago.....	4,338,742	11,502,939	15,841,681
Wood.....	291,490	1,535,245	1,826,735
Total.....	\$88,070,287	\$493,215,072	\$421,285,359

The following items comprise the personal property :

Horses.....	\$15,233,630
Neat cattle	12,454,470
Mules and Asses.....	302,700
Sheep and Lambs.....	1,993,157
Swine	849,450
Wagons, Carriages, etc.....	5,038,505
Watches.....	373,060
Pianos and Melodeons	1,046,915
Bank stock.....	3,433,559
Merchants' and Manufacturers' stock.....	23,077,299
Value of all other articles of personal property.....	24,262,542
Total.....	\$88,070,287

APPENDIX A.

PRODUCTION AND CONSUMPTION.

TRANSPORTATION, POPULATION AND TAXATION.

BY S. D. CARPENTER.

Address delivered before the State Board of Agriculture, in the Assembly Chamber,
February 5, 1874.

Gentlemen of the Executive Board of the State Agricultural Society.—In responding to the invitation of your secretary to present some facts and conclusions on these subjects (or rather *subject*, for I consider the integral parts as intimately blended in a general whole), I approach the duty with no little misgivings of my ability to condense such a vast and diversified subject into the proper limits of a single discussion, which might properly be extended to a treatise of tiresome duration. Still, as the field is under culture by an active, public mind, I will endeavor, with the limited means at my command, to do my humble part of the great work.

Public interest is suggestive of public duty. Individual interest generally, is public interest, for in the nomenclature of political science, a state is nothing but the *people* of the state, and that generally which concerns the common interests of the people individually, is also of moment to the people collectively. It may be stated as a truism of political science, that the interests and welfare of the people, in all that pertains to productive energy and

remunerative returns, can no more be separated from the interests and duty of the state, than the law of gravitation can be divorced from the specific gravity of substantive things.

This is no new theory, invented for the occasion, but is an acknowledged truth in the science of political philosophy. This great law that establishes a kind of governmental protectorate (contradistinguished from *paternalism*) over the people under any form of government, has been acknowledged from the earliest stages of historic man, even under the crudest forms of civilization. Even the chiefs of the barbarian clans that roamed through Egypt, Persia, and along the Illyrian coast, had an eye to the lives and fortunes of their adherents, thus acknowledging the highest order of statesmanship, that individual and collective good should be the test of authoritative duty. The Phœnicians were earliest in the field, plying the arts of navigation, for the diffusion of articles of production and consumption, and it is said that Solomon employed their shipping in the transportation of timber from various places and gold from Ophir, which he used in the construction of the temple.

It is said that all events are hinged upon their own philosophy, and since the law that encourages and even permits massive population, is sustained by the "higher law" of production and *diffusion*, I will cite one of the most remarkable cases in point, either in ancient or modern history. Between the epochs of 1245 and 332 B. C., the liliputian kingdom of Phœnicia became, and continued to be the artful master of the commercial world. The little strip of land lying on the east coast of the Mediterranean and at the base of the Lebanon mountains, only 100 by 20 miles in geographical extent, was peopled by an energetic branch of the family of Canaan, who opened roads into Egypt, Arabia, Judea, Illyria, and even to the East Indies, through Persia—into Greece, and as far as the Black and Caspian seas. Their ships were numbered by the thousands, and visited the Black, the Caspian and the Baltic seas, the Persian Gulf—opened an extensive traffic with India, and the island of Ceylon, with Spain, France, the British Isles, and even according to Goodrich, doubled Cape Good Hope, arousing the incredulity of Herodotus, because, without the knowledge of the compass, they had passed from

Lydia around Cape Good Hope, "with the sun to the left" or at the north, etc. Their own narrow land gave them little sustenance. Egypt and Judea were their granaries, and by diffusing their own products in exchange for exotics, through the means of internal improvements and extensive ocean commerce, they became so great and powerful, that even Alexander, the conqueror of the world, lay for seven months outside the gates of Tyre with the whole Macedonian army, before he could reduce the Phœnician capital. The application of these "logic of events" to the present tense and purpose, shows without illustrated exception, that all prosperous, happy and multitudinous people have ever, and must continue to obey the laws of both production and diffusion under such facilities as will leave a marginal inducement to industrial pursuits.

Under the advanced stage of civilization reached by the Greeks and Romans, the arts and sciences were taught as a means of advancing individual interests and the public weal. It required no great inventive genius to discover the physical fact that domestic beasts of burden possessed more strength than man. The first discovery of the kind led to the employment of these serviceable animals as pack bearers, on whose backs the moveable products of those times were transferred from lodge to lodge, and from tribe to tribe, in commercial interchange. Then followed the discovery that these animals could draw more than they could carry. This led to the invention of vehicles, mounted on wheels, and these in turn, suggested highways, over which these carriages might pass in safety. These highways required labor, and often the best engineering skill of the times. The Lacædemonian highways were brought to a state of great perfection under the enlightened sway of Lyncurgus and others. The Roman empire was threaded with improved roads, even to the confines of Egypt, and through the Illyrian provinces, and though military thirst for glory and dominion may have been the primary motive, as providing passage ways for Roman legions and their triumphal chariots, yet these highways were trodden by commercial caravans, that interchanged their products with other peoples.

Under the decrees of Gracchus, Tiberius Cæsar and other Roman magnates, Roman helots were set at work to improve the

public highways and excavating canals, for the purpose of irrigation, etc. These public works not only enabled the rulers to move their armies and munitions of war with greater celerity, and to furnish subsistence in more abundance, but the Patricians and nobles of the famous city were better enabled to receive their provisions and luxuries from their rural and plebian neighbors of the adjacent country.

Queen Nitocris of Babylon, protected her kingdom against the Medes by turning the Euphrates into a canal with gates and sluices and so many windings, that it was a three days' voyage to pass the city of Ardericca 562 years before Christ. Nebuchadnezzar built an immense lake and lined the banks of the Euphrates with brick and bitumen walls, for many miles, to accomplish objects of pleasure, safety and commercial intercourse.

Rome was once supplied with water from twenty aqueducts that brought water across the Campagna, from a distance of sixty miles. One of these aqueducts passed over 7,000 arches.

Cæsar was not unmindful of the advantages of improved land transportation, as well as transit by water, and while in England he set on foot a general system of highway improvement.

Charlemagne was an ardent promoter of public utility, while in later days, Napoleon I. set examples in the construction of roads, bridges and canals that all Europe has essayed to imitate.

Prof. Guyot calls the history of navigation "the Geographical History of Man." Says a popular writer: "the free and open paths of the sea have proved to be the paths of knowledge. If, indeed, we glance back into the remote ages, we perceive that the most forcible and pregnant illustrations of the condition of man, at certain epochs, may be derived from the state of navigation at those epochs. * * * In the history of navigation, as elsewhere, we are obliged to commence with periods and events that are partially fabulous, though founded upon actual occurrences." Says Humboldt: "The legend of Prometheus and the unbinding the chains of the fire-kindling Titan on the Caucasus, by Hercules, in journeying eastward; the ascent of the Io, from the valley of the Hybrites towards the Caucasus, and the myth of the Phryxus and Helle, all point to the same path on which Phœnician navigators had early ventured," and, remarks another writer

on the same point: "As the expedition of the Argonauts to Colchis opened the way to the east, so the voyage of Colæus of Samos, who sailed for Egypt, but was driven by easterly storms, 'not without divine direction,' says Herodotus, beyond the Pillars of Hercules, into the ocean." And thus the commerce of the Greeks was extended to the "Elysian Fields" and the Hesperides by the accident of uncontrolled circumstance.

Cromwell is credited with bringing the commercial conflict between Holland and Great Britain to a favorable crisis for the latter by his sagacious navigation laws, which have ever since crowned England as the dictator of European and Asiatic commerce.

Necessity is said to be the parent of invention, and this parent begot the channels of irrigation, in the mediæval ages, intended only to diffuse the waters of rivers over arid plains, to stimulate agricultural production. As these ditches were filled with water, the idea suggested itself, without the cost of invention, that boats would float on these artificial channels as well as upon natural water courses, and often much better, since Art was compelled to follow the plane of water level to the points of distribution, whereas Nature followed inclined planes, often interposing obstructions, either in shoaly depths or otherwise. These conduits were first only intended for irrigation, but were subsequently used to float boats laden with the trophies of art and commerce, and this long before the Christian era. Herodotus and Pliny both mention navigable canals in Asia Minor and Liguria. The latter describes the canal excavated by Drusus, in the reign of Augustus, from the Rhine to the Yssel, making a new exit from that river to the sea. Xerxes is said to have constructed a canal across the low isthmus of Athos, and sundry attempts by the Greeks, and afterwards by the Roman emperors, to connect the Ionian sea with the Archipelago, via the isthmus of Corinth."

It has been the amazement of all civilization, since the world has had an introduction into interior China, how that people, so homogeneous, and by habit so unobservant of the virtue of cleanliness and the laws of health, have managed to avoid sweeping and decimating scourges for so many centuries, while massed in such vast numbers, more dense than the most populous rural dis-

tricts of Europe. The number of square miles, as stated by Sir George Staunton at 1,500,000, and 1,482,091 by Malte Brun, and its present population, by Dixon, at about 500,000,000, averaging 333 persons to the square mile, and when reduced to the actual and arable cultivated lands, equals about 2,660 souls to the square mile. According to Berghaus, only 1-8 of the entire territory is low fertile lands, the other 7-8 being the alpine ranges of the Himalaya, and the gigantic glaciers of the Yun-ling mountains. With these physical facts before him, the student of modern civilization is perplexed—amazed, at the sustenance of such a vast and crowded population. But, the solution is given in the artificial and natural means of *diffusion* which the celestial statesmen seemed to comprehend at a very early period, for we find that in the beginning of the 13th. century, the government commenced its great system of canals, reasoning that to sustain animal life, animal appetites and wants must be supplied, and as the wave of population increased, the means to procure life's sustenance and comforts must also be increased, as well as cheapened. With these statesmanlike views, Kublai Khan commenced the great system of canals, which has made that empire famous. The total number of canals exceeds 400, and are the popular highways of the country, and are used both for transit and irrigation. One of the principal objects is the draining swampy districts, thus utilizing otherwise valueless territory. The great Yun-ho, or imperial canal is 650 miles in length, 200 to 1,000 feet broad, and 40 feet deep. It connects the capital Pe-King with the Yang-tse-Kiang, near Hang-chau, and branches off into numerous lateral canals, to the China sea. This is said to be the greatest canal in the world. Many of the canals are built with granite masonry, for miles above ground, and are substantial works of engineering.

When these canals were constructed the Chinese had not discovered the art of constructing locks, and the boats were lifted from one level to another on inclined planes, by means of capstans and other equivalent devices. Their systems of canals generally cross the great rivers from north to south, thus intercrossing the river channels for the distribution of the products from one district to another, and thus this artificial flow of commercial sustenance, feeds and quickens a population more vast and crowded than in

any other geographical division of the globe. The combined length of the Chinese canals is said to exceed 12,000 miles, which solves the problem of cheap production, cheap transportation, free consumption and massive population.

Canals were first introduced in the Netherlands, about the 12th century, and their perfect adaptation to the low, level lands of Holland, gave them great prominence as a means to stimulate production *by reason of cheap and easy transportation*, the same law favoring consumption, and augmenting population. As Holland contains a population of about 575 to the square mile, it proves that the same rule of suiting the law of supply to the law of demand is as powerful in Holland as China. The canals in Holland have been so universally extended, that scarcely a village that is not connected with these "water roads," as they are called, from the fact that they are as commonly used as land thoroughfares. The city of Amsterdam owes its great commercial prominence to its ship canal, 51 miles in length, that connects the river Y with the German ocean. The great width and depth of this canal permit the largest frigates to pass each other. It is one of the largest works of the kind in Europe, and was completed in 1825, at a cost of £850,000 sterling.

The invention of the canal lock is ascribed to Italy, in the fourteenth century, though the French historian, Belidor, gives the credit to the Dutch, while some writers say that Leonard de Vinci first employed locks on the Milanese canals, in 1497, and soon thereafter introduced them into France.

Nearly all the countries of Europe had constructed canals before they were introduced into England. But Great Britain seeing the Dutch and Italians diffusing the bounties of production by commercial arts among their people, and were rapidly appropriating the honors and profits of supremacy, not only had resort to her Cromwellian navigation laws, but under the agitation of the construction of canals by the Duke of Bridgewater, took steps in 1755, to connect her inland towns by canal. Manchester and Worsley were first brought in commercial *rappor*t, the fever of improvement raging until nearly every town in the realm, particularly the southern part, were connected by canals, aggregating

two thousand miles in extent, before the introduction of railways changed the mode of improvement.

The people and the government of the United States were not slothful in recognizing the utility of these great agents of civil progress and empire. The first construction of the kind, of which we have any authentic knowledge, was the South Hadley and Montague canals in Massachusetts, undertaken by a chartered company in 1792.

The Erie canal, one of the grandest works of the kind on the continent, was completed in 1825, at an original cost of \$7,602,000. It has a length of about 350 miles, and has 84 locks of 15x90 feet. The construction of this great work, though at a cost of labor less than a fiftieth part of the great Chinese canal, secured to the state of New York a perpetual lease of empire. When De Witt Clinton proposed the undertaking, he was beset by financial objections on all hands. New York, financially, commercially and numerically, was then weak. She stood then (1812) third on the list of states. Her settlements, with the exception of a few bold pioneers that had penetrated the western wilds of Chautauqua, Cattaraugus, Erie, Genessee and Alleghany, were confined principally to the banks of the Hudson, the Mohawk and lake Champlain, and along the St. Lawrence. Her people were poor, and with immense and heavy forests before them, they dare not risk the unlearned expense of a canal from the Hudson to lake Erie. But Clinton, with a wisdom that modern savans admit to have been almost inspired, demanded that the work should commence. But the legislature was weak, and feared to risk the necessary appropriation, and Mr. Clinton was posted off to Washington as commissioner, to ask the general government to enter into joint construction and ownership. The answer returned was, that "the general government is not able to assist in so expensive work." Mr. Clinton replied that "New York is able, and amply able," and on his return he pictured in such glowing terms the vast benefits to result from the undertaking, that finally the work was commenced and finished as already stated. Mr. Clinton argued, and that justly, that the joining of the great lakes with the Hudson by a water channel, would not only build up

and rapidly settle the central and western portions of the state, but that it would stimulate the settlement and growth of the great west, and he declared in a speech at a jollification after the canal, was completed, that within 50 years from that date Buffalo (which was then but an Indian trading station), and Chicago (which was then but a fort), would contain a population each of 100,000 souls. This was the subject of newspaper squibs at the time, wherein Clinton was styled an enthusiast and zealot, yet that prediction was more than fulfilled within 40 years.

The bare undertaking of the work so stimulated industry and diffused population, as well as encouraged emigration, that New York arose from the third in rank to the first, five years before water was let into the canal. The progress of New York after that event, was simply magical. She had secured for all time the monopoly of western commerce. She had put herself commercially *en rapport* with the already prepared farms of the great west, and sent her sons out to till them.

Where the center of trade and commerce is, there will also be the center of *dollars*, and when the two are combined, the magnetic attraction becomes too strong for resistance. Boston, Philadelphia and Baltimore, all the strong competitors of New York in the bid for commercial power, were not long in discovering the fact that the ancient Dutch town at the mouth of the Hudson, had secured advantages, which they must duplicate, or forever resign their pretensions. Each one of these towns had the same ocean to float its foreign commerce. Boston had by far the most tonnage afloat. Philadelphia and Baltimore enjoyed more productive adjacent farming lands, and their closer proximity to the coal fields of Pennsylvania and the Cumberland, gave them hopes for better facilities for manufacturing, but still the great fact existed that the Alleghanies and the Cumberland mountains stood menacingly as alpine barriers between the Quaker and the Monumental cities and the Ohio and Mississippi basin. Philadelphia lavished her millions, with the commonwealth of Pennsylvania at her back, in the vain endeavor to lift her commerce with the west over the Alleghanies by canal; but she was compelled to yield, as the dilapidated ditch along the banks of the Susquehanna and Juniata sadly testifies. For long years she was compelled to ship

her limited portion of western trade via the Essex and Erie canals, thus paying tribute to her rival, and so great is the force of precedence, that when she was finally connected by rail with the waters of the Ohio, New York, by her early facilities was prepared to retain the advantage gained in the interim between canal and rail transportation, aided by the fact that most goods may to-day be shipped to Pittsburg from Philadelphia via the Erie and Beaver canals cheaper than by rail across the Alleghanies.

The locomotive is admitted to be the god of commercial speed, but the still, slow, winding canal is the god that rules the star of *quantity* and *cost*, and though the illustrious name of Stevenson has never been over-praised in prose or song, as the pioneer of that wonderful civilizer and indispensable courier of commerce—the railway—yet a good water course between important and distant termini, is of all known means superior, not only as a builder of cities and commercial centers, but as a cheaper and safer agent in promoting rural prosperity. It may be laid down as a maxim of human governments, that any people should not only be provided with the means of personal transit and interchange of products, into all geographical divisions of their country, as well as the return of the avails of their products, but that the cost of such means should not be such as to trench upon reasonable profits. Otherwise, commercial intercourse must cease, production will decline and population recede. Both railways and canals are necessary, and valuable. The first is “high-toned” and expensive, the latter is the type and essence of frugality. Both, useful. Both in their sphere of usefulness, indispensable.

Not over three decades past, the popular judgment assigned to canals the front rank of inland transportation, but as railways began to checker the country, the iron horse, like a toy in the shop windows, attracted and amused the public mind with its speed and antics, so that for many years canals were stowed away in the upper garrets of contempt, as old rubbish of the past, and even a serious proposition has been made to fill up and abandon the great Erie canal as a worthless appendage—a superannuated “fashion” of the old foggy past. But, as in architecture, the style of the mansion, and in personal habit, the cut of the coat or clip of the hair, old fashions are revived, so the public mind is again being directed

to the canal, not as a toy of fancy, but as a commercial necessity; for having tested the utmost limit of cheapness which railways are capable of reaching, and finding the cost too expensive to leave a profit on production, sufficient to warrant the struggle between productive energy and transportation, the "old fashioned" canal is again announced among the "fashions" of commerce.

I have no object in drawing' invidious distinctions between our Atlantic cities, proud monuments of the nation's greatness, but to show the force of the argument, and that trade and commerce, like water, will seek a proper level and flow in the freest channels, I give the amount of imports and exports at each of our principal Atlantic seaport cities for the years of 1851, 1865 and 1870, showing an interval of 20 years.

CITIES.	Imports.	Exports.
1851.		
New York.....	\$144,454,016	\$79,857,315
Boston.....	30,508,139	10,948,180
Philadelphia.....	14,168,618	5,356,036
Baltimore.....	6,648,774	5,635,786
1865.		
New York.....	\$175,983,989	\$247,636,605
Boston.....	25,605,096	21,934,068
Philadelphia.....	7,357,150	11,294,498
Baltimore.....	4,816,454	11,141,037
1870.		
New York.....	\$293,990,008	Wheat, bushels. 29,557,464
Philadelphia.....	14,500,767	1,723,035
Boston.....	47,524,845	884,820
Baltimore.....	19,572,468	2,573,631

The student of cause and effect can have no difficulty in attributing this disparity in the import and export trade in favor of New York to her Erie Canal and better water connection with the great west—that city being the center of commercial gravity, as a matter of course secures the lion's share of trade. The latter table shows also that New York is our grain market for export.

If it were a question *which* of the two modes of transportation—water or rail—should now be chosen, I am inclined to believe the people would select the latter; for the former, with all its eco-

conomic advantages, is so long blockaded by the fiat of the ice king that we could not dispense with the latter at whatever cost. But happily, we are not compelled to choose between them. We will employ both systems, because both are indispensable—the one for its speed and ever ready services, the latter for its economic advantages and capabilities of moving more tons to the mile in a given time. Indeed, with all grades of our present facilities, a vast amount of our surplus products remain unmoved, and great loss annually occurs in disposing of the redundant mass at a sacrifice, such as the burning of corn for fuel, feeding it at inappropriate times to stock, yielding less returns than it would if sold in market at living rates for transportation.

Our country is one of vast proportions and extent, and is capable, under suitable means of productive diffusion, of sustaining a much greater population than the Celestial Empire. Its varied interests are expanding with most astounding rapidity. Foreign nations look with amazement upon our inhomogenous yet rapidly developing interests. They can no more account for this harmonious prosperity in the midst of seemingly antagonistic and inharmonious elements, than they can account for the diurnal exactness of the earth's revolutions amongst the seeming conflict between the laws of attraction and repulsion.

So long as the sun of prosperity is permitted to shine on, and fructify the products of labor, no matter how variable, so long will harmony prevail among the toiling masses. The truth of this is observable in the contrast between the happy quiet of prosperous times and the bread riots and mobocratic spirit that rule the hour of want. Have we not seen considerable of this within the last six weeks, even with our western granaries overflowing, and with larders of plenty, and even luxury to their fill? The reason that organized deputations have within the two months just passed, been demanding labor at municipal headquarters, on pain of mob violence, is not because we have not an abundance of bread, but because (for sundry reasons), that bread could not be sold in market in season to diffuse its returns to keep in motion the looms and spindles, the forges, foundries and mills of the country. I do not suppose that all this stoppage is a want of

proper transportation, but I record the fact as a simile of what may follow a similar *effect* arising from the want of transportation.

The secret of our present prosperity is that labor has not only been in good demand, but has been well rewarded, but when the charm is once broken and labor ceases to find remunerative reward, then production is retarded, consumption ceases to a like extent, and if the cause long remains, population will recede. This is exemplified in the case of Mexico, that now contains less than a third of the population it did in the sixteenth century, when overrun by Hernando Cortes and his Castilian band of marauders. No roads, no canals, no public improvements of moment have been undertaken in that government. Hence productive energy has been diverted from its legitimate sphere to marauding, rapine, waste and pillage, and according to M. Say and Dr. Adam Smith, large districts in Asia have by like means been depopulated under the miserable vicissitudes of venal and voluptuous rulers, whose fiscal exactions have been greater than labor could bear.

Our mechanic arts, agricultural and mining interests have been expanding more rapidly than our means of transportation. As one illustration of this fact, who that does not remember to have seen the two wonderful facts gazetted in the same newspaper, that while we were burning our food for fuel in the west, for the want of adequate means of transportation, thousands of persons in portions of Europe were dying of hunger.

One fact is clear: that we have only one practical market—New York. We may reach that mart in two directions and by three routes, 1st, by the lakes and Erie canal; 2d, by railway; 3d, by the Mississippi river. The first is clogged by various obstructions and needs improvement. The second is inadequate and too expensive, and third, when we turn our attention down the mighty Mississippi, and calculate 4,000 miles before we can reach our point of destination, with a reshipment at New Orleans, and the vicissitudes of ocean transport, we are discouraged, but when Mr. Elliott tells us that that mighty river carries a mean volume of over 60,000,000 cubic feet of water per minute, each cubic yard containing $15\frac{1}{2}$ cubic inches of solid earth, we find that the

mouth of that river is filling up at the rate of about 500 square acres, three feet deep, every year, that its deltas even now forbid the passage of sea-worthy vessels—when we look these facts in the face, and find that all these modes of exit are inadequate to our wants, we are appalled, and naturally enquire “Is there no balm in Gilead?” I think I can affirmatively answer that question, and will here introduce my statistical witnesses:

Take the states of Illinois, Nebraska, Iowa, Minnesota and Wisconsin, which would be likely to ship their products at either Milwaukee or Chicago, especially the crop of corn. In 1872, the corn crop of these states yielded 223,370,000 bushels. Allowing 75,000,000 bushels for home consumption, and it would leave 148,000,000 bushels surplus for export. I find there were shipped from Milwaukee and Chicago (1872), 49,260,990 bushels (only 5,404,044 by rail), leaving unshipped (except what may have gone by other routes), the immense amount of 99,110,010 bushels.

In the same states the wheat crop yielded 145,215,860 bushels. Allowing 30,000,000 bushels for home consumption (about 5 bushels to each person), and it would leave 115,215,860 bushels for export, and yet, (reducing flour to wheat), there were shipped from Milwaukee and Chicago, 67,888,971 bushels, leaving an unexported surplus of near 50,000,000 bushels, except what may have been shipped from other lake ports, of which I have no data.

We have a right to suppose that all the water craft and railways have as much as they can do, and yet if we were to send this vast surplus of corn alone by rail to New York, the first thing we would do would be to secure the services of one of the great trunk lines. We would approach the master of transportation and tell him that some foreign war had created a sudden demand for corn and that we had 100,000,000 bushels to ship, and desired to send it forthwith, while the price was up. He would probably say to us that he would do the best he could, that the whole freight services of the road should be at our command, and that the best he could do, after borrowing all the spare box cars from all the other roads, would be to give us 6 trains a day and 20 cars to the train. This would hardly give room for passenger and way trains, still he would risk it. This we would consider very obliging, and with slate and pencil we would proceed to see how long it would

take to deliver the one hundred million bushels. Having ascertained that we could get 300 bushels in each car, 20 cars to the train, would give us 6,000 bushels to the train, 36,000 bushels each day, including Sundays, requiring 16,668 trains, 333,360 cars, taking 2,778 days, or *seven years, seven months and thirteen days*. When we had reached this point, and "proved the sum," as the pedagogues say, to see that we had made no mistake, we would come to the conclusion, that before we could ship our 100,000,000 bushels of corn under that contract, the foreign war would have been succeeded by peace, our values would have shrunk under the pressure of some eight new crops, and that as the insurance men say, our risk would be "extra hazardous!" This is not given to test the powers of figures, but to illustrate a perplexing fact, which ought to awaken the government out of its somnambule sleep of indifference.

Such are the results I had estimated from the best lights before me, but not wishing to overstate or understate the facts to the disparagement of roads, I called on John C. Gault, Esq., assistant general manager of the St. Paul railway, whose reputation as a railway economist stands No. 1, and that gentleman upset some of my calculations as to the ability of the present trunk lines. He informed me that the several through lines had agreed to furnish the following number of cars to move the wheat crop of '73, and agreed with me that twenty cars to train would be the practical maximum:

Roads.	No. Cars.	No. Trains.
Michigan Southern (New York Central line).....	350	18
Michigan Central (Canada line).....	300	15
Fort Wayne (Pennsylvania line).....	350	18
Pan Handle (Erie line, I believe)	200	10

This will give the two trunk lines eighteen trains per day. They now have one way train, and I believe not less than five passenger trains—making twenty-four trains per day, or one for each hour, day and night. Mr. Gault agreed with me that this number would be to the full capacity of the proposed double track road. The freight trains cannot in safety make over ten

miles per hour, which by the New York Central line, would require 196 hours to make the round trip, without accident or delay, and allowing one day to load and one to unload, ten days and four hours would elapse between the starting of the first train and the use of the same cars for reloading, requiring the company to have on hand 3,558 grain cars, so as to permit no delay. The Milwaukee and St. Paul road, with its 1,283 miles of track, mostly devoted to the wheat trade, only requires 2,720 box, freight and caboose cars. But suppose the trunk lines to the Atlantic have the cars, the freight trains must side track every ten miles (after meeting the first inward bound return trains) for each freight train, and every fifteen miles for the passenger trains each way. According to this view of the case, they must be on the side track over half the time—taking double the time to make the round trips, and requiring some six thousand cars at the depot in Chicago to hold out until relieved by return cars. But the most forcible objection to accepting the possibility of running so many trains on side tracks is the fact that there is no such convenience on any of the roads as switches and side tracks every ten miles. Without these I see no possibility of making the proposition possible. Still, to give the supposition its full benefit, I have re-cast my figures on this basis, and running nights, days and Sundays, with no accidents or delays, and it would then take two years, six months and sixteen days to move 100,000,000 bushels.

Now, if the Fox and Wisconsin rivers were properly improved, as well as the Erie Canal, and double locked, so as to permit the passage of 300 ton barges under towage by steam, it is easy to see that a fleet of ten boats *en tantem*, on the canals, may be towed by one tug, and 50 or more on the lakes, each barge containing, 10,200 bushels of wheat; 10,500 of corn, or 12,000 bushels of oats, giving 105,000 bushels of corn to a canal fleet; starting 10 fleets each day, would require only about 95 days to move the whole mass of 100,000,000 bushels. As a question of *possible* capacity this whole mass *could* be moved in 30 days.

The simple truth is, that our western granaries are not cleared annually—that our great wheat center has removed, within thirty years, 500 miles westward, from Ohio to Minnesota, and still has a

westward tendency. That our great corn center (for the west) has removed from Ohio to Illinois, and though the latter state is its natural center, its productive gravity is restive and uncertain as the location of the magnetic pole, mostly attributable to two causes, both of which art and resolution is capable of removing. The first cause is, we have not the facilities, all combined, to move all the grain, and the higher qualities are taken to the exclusion of the lower grades; the second is, that it is totally impracticable to move the lower grades by rail, as the charges would eat up the profits, leaving nothing to reward labor. As the centers of production recede from the gravity of markets, the means of transportation should be increased, and the pro rata cost reduced, but unhappily such is not the case. It is evident that the lowest possible water rates must be combined with the highest market rates to insure remuneration to labor. These facts are suggestive of government duty.

A nation rises and falls in productive energy, general prosperity, happiness and population, like the mercury in the glass, just in proportion as the people are encouraged by remunerative returns for labor, or depressed by unrequited toil. Productive energy will bear up for a while, even against the deterioration or accidental loss of the fruits produced, so long as hope enlivens the prospect, but when *hope*, chilled by the blasts of ever-recurring disappointment, opens no avenue of seeming deliverance, a relapse into barbaric indifference and indolence, is a result not without its array of precedents. When labor ceases to be remunerative—especially when it fails to yield a reasonable means of subsistence, indifference usurps the throne of acquisitiveness, and the victim floats carelessly on his frail barque with no higher ambition than that of the Fejee—to eat and be wretched. The organ of acquisitiveness is well developed in many savage tribes, and is not wanting even in the improvident Digger Indians, but with these lower order of men that organ is like a hidden nugget of gold—they have not discovered its existence, for the simple reason they have no incentive. Once divest the sable subjects of Dahomy of their superstition—teach them that wealth is not only a means to enjoy the luxury of pleasure and comforts, but that it

is the magnetism of power and influence, and that wealth can be had by labor and interchange of products with other peoples—and give them the means to test the truth of the philosophy, and even the indolent and improvident heathen of the equatorial limits would, in time, become a good Western Granger, having dominion over the plow, or one of the monitary beasts that luxuriate in the civilization of Wall street, and instead of dickering in a few pounds of elephant's tusks per anpum for beads and red flannel, they might, like our own knights of the "almighty dollar," collect their gains by the millions, in the buying and selling rain water and "cheek" in solution with railway securities! Trace over the geographical limits of the world; and the fact is patent that those nations that have encouraged little or no means of intercommunication (like Mexico and some of the Central and South American states) are rent into factious guerilla bands, the contempt of other nations—the prey of all rival adventurers—the foot-ball, the shuttle-cock and battle-door of piratical freebooters. I never heard of but one valid reason (not to say it was sufficient) for the government showering so freely its subsidies on the Pacific Railway, and that was, that without free and easy means of intercommunication, our Pacific possessions could not be kept within the Union except by the power of bayonets. On this point I never knew issue to be taken, and even old "strict constructionists" for the time waived their objections to subsidies for that road, since it was conceded the only means to unite and cement the Atlantic and Pacific states. But let us turn from analogies to practical facts.

From the report of the Hon. Wm. J. McAlpine to the New York legislature; in 1853, I learn that some 3,200 miles of canals had been built in the United States at a cost of \$100,000,000, and 77 1-2 miles in Canada, at a cost of \$13,500,000. These canals average from 40 to 120 feet surface width, and from 4 to 10 feet in depth; with locks from 75 to 200 feet in length, and from 15 to 50 feet in width. The greatest lift in feet is that of the James River and Kanawha Canal, 1,916. The tonnage ranges from 20 to 500.

COST OF FREIGHT PER TON PER MILE.

As we proceed with the propositions before us, it becomes a matter of no little moment, to reduce the cost of water and rail freightage to the science of decimal fractions, so that we may determine the cost per mile per ton by each mode of transit. By this means may we only arrive at the relative value of the two modes. Mr. McAlpine, under the old Erie management, when boats of only 160 tons were used, fixed the cost per ton per mile at 4 1-2 mills, but Gov. Fenton concurred in the subsequent opinion of Mr. McA. an Chief Engineer Seymour, that with enlarged facilities and steam towage, the cost would be reduced one-half making it 2 1-4 mills per mile for the extent of the Erie canal, and without doubt 2 mills per ton per mile from the Mississippi to New York, with steam towage, in closed barges, and without breaking bulk, would be ample.

The lowest railway charges, so far as I know, have been 14 mills per ton per mile, while by the following table, which I copy from a carefully prepared statement of B. J. Stevens, Esq., of this city, and published in the Agricultural Report of 1869, puts the cost at 17 90-100 and charges at 29 80-100 mills. I copy the whole table, adding the general averages :

CLASSIFICATION.	Cost in mills per ton per mile.	Receipts in mills per ton per mile.
By railroad.....	17.90	29.80
By canals, including deduction, lockage, etc	6.40	11.40
By Erie canal.....	4.05 .....	.....
By rivers, steam towage	2.26	2.90
By bays	2.27	3.73
By ocean	1.26	2.50
Average rates by water.....	3.24	5.11

I find, however, by consulting statistical tables, that the cost and charges have been considerably less, (while they are in many cases much higher) in both instances.

STATISTICAL TABLES

In reference to sundry tariff charges by the Milwaukee and St. Paul Railway.

AVERAGE PUBLISHED RECEIPTS PER TON PER MILE,
For Eight Years.

Year.	Rate in Mills.	Year.	Rate in Mills.
1865	37 $\frac{6}{10}$	1869	31
1866	37 $\frac{3}{10}$	1870	28 $\frac{2}{10}$
1867	39 $\frac{4}{10}$	1871	25 $\frac{4}{10}$
1868	34 $\frac{2}{10}$	1872	24 $\frac{3}{10}$

PRESENT RATES PER BUSHEL (WHEAT) AND IN MILLS PER TON PER MILE,
Between the points named and Milwaukee.

Stations.	No. Miles.	Rate per Bushel.	Rate in Mills per Ton per Mile.
From Sun Prairie.....	69	10 $\frac{8}{10}$	52 $\frac{1}{10}$
From Madison, by short route.....	80	10 $\frac{8}{10}$	45
From Madison, long route.....	96	10 $\frac{8}{10}$	37 $\frac{1}{10}$
From Prairie du Chien.....	194	16 $\frac{8}{10}$	28 $\frac{3}{10}$
From St. Paul.....	405	21	17 $\frac{2}{10}$

FIRST CLASS MERCHANDISE.

Between Milwaukee and	Miles.	Per 100 lbs.	Rate in Mills per Ton per Mile.
Sun Prairie.....	69	48	139 $\frac{1}{10}$
Madison, short route.....	80	50	125
Madison, long route.....	96	50	105 $\frac{1}{10}$
Prairie du Chien.....	194	70	72 $\frac{2}{10}$
St. Paul.....	405	100	49 $\frac{3}{10}$

FOURTH CLASS.

Between Milwaukee and	Miles.	Per 100 lbs.	Rate in Mills per Ton per Mile.
Sun Prairie.....	69	30	87
Madison, short route.....	80	30	75
Madison, long route.....	96	30	62 $\frac{4}{10}$
Prairie du Chien.....	194	40	41 $\frac{1}{10}$
St. Paul.....	465	50	24 $\frac{3}{10}$

AVERAGE RATE PER CAR.

Adding \$7.20 for loading and unloading, for lowest classification, No. 9.

Between Milwaukee and	Miles.	Per car of 20,000 lbs.	Official rate.	Mills per ton per mile.
Sun Prairie	69	\$31 20	\$24 00	48
Madison	80	31 20	24 00	39
Madison	96	31 20	24 00	32 $\frac{1}{2}$
Prairie du Chien	194	47 20	40 00	24 $\frac{4}{10}$
St. Paul	405	67 20	60 00	16 $\frac{3}{10}$

I see by the printed schedule, that took effect September 15, 1873, that the cheapest rates are attached to classification nine, such as lumber, coal, etc., as embraced in the above table, by the car load.

DECEMBER RULING PRICE OF WHEAT FREIGHT,

From Milwaukee and Chicago to New York.

	Miles.	Per bushel.	Mills per ton per mile.
From Chicago via Lake Shore, etc.....	980	36	12 $\frac{2}{10}$
Same, via Erie Railway	976	36	12 $\frac{3}{10}$
From Milwaukee via Lake Shore, etc.....	1,066	36	11 $\frac{2}{10}$
Same, via Erie	1,062	36	11 $\frac{1}{10}$

General average of through freight by Erie route	25 to 30
Same, by Lake Shore and N. Y. Central	12 to 20
Same, by Pennsylvania.....	15
Same, by Pittsburg and Ft. Wayne.....	12 to 30

It will be seen that wheat is now being carried from Chicago and Milwaukee cheaper than ever before, by rail.

It should be some consolation to farmers in the remote rural districts, that they are not so far from market by the road of dollars and cents, as they are by miles and furlongs, as will be seen by comparing the tables relating to wheat tariffs and the company's general average rate per ton per mile for 1872. The farmer at St. Paul is seven mills below that rate, while the farmer at Sun Prairie is nearly 4 times above it. The farmer at Madison is about 3 to 1 above it, while the farmer at Prairie du Chien is just 4 mills above.

It is but due to state, however, that special rates are said to be allowed in certain cases, much below the published rates. To

what extent, or how much I have no means of knowing, except that these rates are arbitrary and governed by the caprice of circumstances, in favor of large shippers and against those who do a small business. I append the certified rates in mills per ton per mile of some of the principal roads that reported to the legislature of Pennsylvania, 1873.

Names of Roads.	Through rates.	Coal.	Way rates.
Reading and Columbia.....	25	18	57
Shenango and Alleghany.....	73	.....	161
Tioga R. R. Co.....	105	.....	115
Weschester and Philadelphia.....	80	37	100
Atlantic and Great Western	25 to 30	10 to 15	15 to 50
Cleveland and Pittsburg.....	19 ⁹ / ₁₀	10 ⁹ / ₁₀	10 ⁹ / ₁₀
Philadelphia and Reading.....	23	16	Average

The cost by rail from Madison to Milwaukee (short route) on wheat, has been, and I believe is now, 45 mills per ton per mile, or 10 8-10 cents per bushel, while the all rail charges from Chicago to New York in the summer and fall of 1872, as reported by the Board of Trade of that city, was about 14 mills per ton per mile, the lowest rates I have observed, except in rare instances for long routes. By these figures it will be seen that railway freights are from three to four times higher than water rates, and seven times higher than under a condition of canal suitable for steam towage, without breaking bulk. Mr. Andrews, author of the celebrated report on Colonial Trade and Lake Navigation, puts the lowest cost per ton per mile by rail, at 15 mills. But I have placed it at 14 for the reasons stated. I have also modified Mr. Andrews' table, showing the value of a ton of grain at various distances from market. In this case I have designated New York as the market, the shipment by water at any point between La Crosse and Dubuque, and have located the producers of the grain 75 miles inland, with 15 miles (the assumed *average* distance from the first railway station) and the first railway station 60 miles inland, (being the assumed *average* distance to the point of water shipment.) I have also supposed the Fox and Wisconsin rivers in this state, and the Erie canal to have been improved, as already suggested. I have supposed the wheat to be worth \$1.50 and

the corn 80 cents per bushel, in New York, making the former worth per ton \$51 and the latter \$28. I also allow two cents per bushel for hauling by team the 15 miles, making \$1.36 and 14 mills per ton per mile to the river, making 84 cents per ton. These items deducted will show the actual price paid to the farmer at his home.

NUMBER MILES FROM NEW YORK.	WHEAT.		CORN.	
	By Canal.	By Rail.	By Canal.	By Rail
1 ton, worth in New York.....	\$51 00	\$51 00	\$28 00	\$28 00
10 miles out, worth.....	50 98	50 86	27 98	27 86
20.....do.....	50 96	50 72	27 96	27 72
30.....do.....	50 94	50 58	27 94	27 58
40.....do.....	50 92	50 44	27 92	27 44
50.....do.....	50 90	50 30	27 90	27 30
100.....do.....	50 80	49 60	27 80	26 60
200.....do.....	50 60	48 20	27 60	25 20
300.....do.....	50 40	46 80	27 40	23 80
400.....do.....	50 20	44 40	27 20	22 40
500.....do.....	50 00	44 00	27 00	21 00
600.....do.....	49 80	42 60	26 80	19 60
700.....do.....	49 60	41 20	26 60	18 20
800.....do.....	49 40	39 80	26 40	16 80
900.....do.....	49 20	38 40	26 20	15 40
1,000.....do.....	49 00	37 00	26 00	14 00
1,200.....do....[33.20] [10.20].....	48 60	33 20	25 60	10 20
1,500.....do.....	48 00	30 00	25 00	7 00
1,700.....do....[47.60] [24.60].....	47 60	27 20	24 60	3 80
2,000.....do.....	47 00	28 00	24 00	1 60
3,000.....do.....	45 00	14 00	22 00	*4 $\frac{3}{4}$
Deduct freight and hauling to river.....	43 80	12 80	20 80	.....
At 300 miles, worth per bushel.....	1 29 $\frac{1}{10}$	37 $\frac{1}{2}$	61 $\frac{1}{2}$	.....

The distance from the Mississippi to New York by rail is rated at 1,200 miles, and by water at 1,700 miles. The first figures in brackets opposite "1,200" miles will show what the former would realize on a ton of wheat, sent by rail as above stated—\$33.20, or about 97 cents per bushel. The second figures in brackets in the same line, indicate the sum he would receive for a ton of corn, sent by rail—\$10.20 or 29 cents per bushel. The first figures in brackets opposite "1,700" miles, represent the value to the farmer of a ton of wheat by the water route—\$47.60, or \$1.40 per bushel. The second figures in brackets in the same line, represent the value to the farmer of a ton of corn by water—\$24.60 at 70 3-10 cents per bushel.

*At 1,000 miles, corn is worth, by rail, 4 $\frac{3}{4}$ c. per bushel.

Thus, a ton of wheat by rail from the Mississippi to New York, rates	\$32 20
The same by water.....	47 60
Difference per ton in favor of water.....	<u>\$15 40</u>
Home value per bushel, 75 miles inland, by water, 1,700 miles.....	\$1 36
Same by rail, 1,200 miles.....	97
Difference per bushel of wheat in favor of water route.....	39
Difference per bushel of corn, same.....	<u>41³/₁₀</u>

Now, if we multiply the surplus wheat and corn I have called attention to, as belonging to the five states named, by the amount that might be saved per bushel by water over railway transportation, it will be seen that it amounts, in a single year, to the enormous sum of \$105,309,404.60, to say nothing of the millions of tons of other inward and outward freights. It would be safe to say that aside from merchandise and some other "fast freights," which must always go by rail, the saving to the people of the five states named could not be less than \$175,000,000 annually. This sum would more than complete the improvement of the Fox and Wisconsin river, widen, deepen, and double-lock the Erie canal, and build the Niagara ship canal, besides.

This question of railway tariffs is the most subtle branch of the fine art business it has been my fortune to meet with. In order to post myself on the subject I sent for all the way and through tariff rates of all the principal railroads in the west, together with their annual reports. Several of the roads generously responded; others, for causes, to their agents best known, did not. But I began to investigate such as were sent me, and the more I investigated the more I was in the fog, like the man who got insured, the more he read his "policy," the more he became convinced he was not insured at all! I had plenty of statistics from statisticians and the best scientists on the subject in the country, that ranged the rates from 14 mills to 20 mills per ton per mile, as an average. I took up the tariff schedule of the Michigan Central and the Milwaukee and St. Paul Companies. I set down the classifications, prices per 100 pounds, and rates per ton per mile in each class, for the longest distance, so as to get the *lowest* rates, and then I examined their respective reports for the number of tons moved one mile in one year, and their compound average of rate per ton per mile for the longest distance for

through, and the longest distance for way freight. The Michigan Central claimed in their annual report to the stockholders that their compound average rate was 1.57-100c. per ton per mile for both through and way freight. The St. Paul claimed that 2.43-100c. per ton per mile for all freights was the test of their receipts.

So I set down the classes as follows, and figured out the compound rate according to rates charged their customers, as follows :

MICHIGAN CENTRAL. 960 miles.			MILWAUKEE AND ST. PAUL RAILROAD. 405 miles or 300 miles—all same.		
BETWEEN NEW YORK AND CHICAGO.	Rate per 100 lbs.	Rate per ton per mile.	THROUGH RATES RECK- ONED FROM ST. PAUL TO MILWAUKEE.	Rate per 100 lbs.	Rate per ton per mile.
			Double rate.....	2.00	13.32
1st class	1.60	3.33	1st class	1.00	6.66
2d class	1.25	2.59	2d class .....	.85	5.66
3d class .....	.85	1.76	3d class .....	.75	5.00
4th class .....	.60	1.24	4th class .....	.60	4.00
Flour, corn, med., etc.	1.20	2.49	Grain and flour ...	.40	2.66
Dressed hogs .....	.85	1.76	Salt and water lime	.30	2.00
Fresh meats .....	.95	1.79	Live stock .....	.75	5.00
Cured meats .....	.70	1.40	Agr'l implements..	.85	5.66
Grain, etc .....	.60	1.24	Coal, stone, etc....	.25	2.66
Wool	1.60	3.33	Heavy machinery .	.32	2.13
Window glass.....	1.25	2.59			
General average .	1.02	2.12		61.12	4.22
LOCAL.			LOCAL. Between La Crosse and Milwaukee, 200 miles.		
270 miles between Chi- cago and Detroit.			Double 1st class...	1.56	15.60
1st class .....	.58	4.49	1st class .....	.78	7.80
2d class .....	.46	3.40	2d class .....	.68	6.80
3d class .....	.38	2.81	2d class .....	.58	5.80
4th class .....	.30	2.22	4th class .....	.49	4.90
Flour, etc.....	.46	3.40	Grain, flour, etc...	.33	3.30
Grain .....	.23	1.70	Salt, lime, etc....	.27	2.70
Wool .....	.46	3.40	Agr'l implements .	.64	6.40
Coal, lime, stone, etc.	.19	1.40	Coal, stone, etc....	.20	2.00
Lumber .....	.20	1.47	Heavy machinery .	.26	2.60
Iron, etc.....	.30	2.22	Lumber, average ..	.32½	2.25
Window glass .....	.46	3.40	Live stock .....	.59	5.90
General average .	.37	2.70		.60	7.00
Add through.....	1.02	2.12			4.22
	2) 1.39	4.82			2) 11.22
	.69½	2.41			5.61
Company's comp'nd average.... 1.57.					

Thus, I found that the Michigan Central, instead of a compound average of only 1.57-100, actually charges its customers 2 41-100, or nearly double; that the St. Paul, instead of a compound average of only 3 48-100, goes as high as 5 61-100, or nearly double. The next question to be settled was, is this the proper way to test the matter? It looks fair—at most it looks, on its face, that it must be lower than the actual charges, since there are only three classes out of the twelve lower than the compound average, while, on examination, these three classes do not comprise a very large portion of the general freightage of any of the roads. But lest I should do injustice to the roads, by neglecting to state some occult fact, not patent to novitiates, I began a series of geometrical calculations, and before I got through I gave the whole series of “geometrical progression,” a pretty severe chase, and they gave me a colossal task, such as I never encountered before. My figures were multiplied by the yard of nonpareil fineness. No pilgrim to the Holy Land or archæologist ever studied with more assiduity to find the key to the Egyptian hieroglyphics, than did I to find the key to the fine art of keeping railway receipt accounts. I added up—I added down, I multiplied to the right and to the left, I divided and subtracted. In short, for months I was in a maze of waltzing figures, of “addition” and “division,” if not “silence,” and to make sure, I commenced on one branch of one of the roads to determine the actual amount received on that branch, by reducing all Nos. of barrels, bushels, 1,000 feet, pieces, etc., etc., to car loads, from car loads to hundreds, from hundreds to pounds, and from pounds to tons. I then took the published rates per 100 lbs., the rates per bbl., the rate per 100 feet, the rate per piece and per cord, and reduced them all to rate per 100 lbs., and grains to rate per bushel, and all, in each and every class, the rate per ton per mile, and the whole to the number of tons moved one mile. All this for fifty-two stations on that branch, with the hundreds of manipulations, not only took a long while, but involved so much mathematical accuracy, that I dared not even trust my own penchant for figures, and I employed an accomplished mathematician to assist me, and after months of hard labor, often trespassing on the we sma’ hours, I found that the general compound average amounted to a fraction over 5 61-100c per ton per

mile. The freights going eastward could be quite easily assigned a distance, but those going westward could not, in the absence of any information by the company, be so easily determined. The whole distance being 200 miles, I averaged the way freight at 75 miles, and to make all sure, I made a cast of the company's report for way freight, and I found it to substantially agree with my estimate. I had thus found the long sought key, and although I do not believe it to be mathematically exact, still I believe the gross amount under rather than over the gross receipts, for the reason that in the final cast I have taken no account of that no inconsiderable amount of freight which has been carried at one and a half and double first-class rates, amounting at twenty-five miles as high as 35c., or 350 mills per ton per mile, and since the Hurlbut bill in congress proposes to limit bulk freights over 750 miles to 5 mills per ton per mile, and other freights in proportion, I am inclined to the belief that the actual rates charged by most of the roads vastly above the bounds of equity, especially since the rates alluded to on the branch of road I have carefully computed, show that the receipts are now 300 per cent. over the tabulated confessions in the report to the stockholders.

I cannot say that I fully concur with the National Board of Trade that rates ought not to be controlled by law, but I have a well settled conviction that no legal regulation ought to be attempted without proper data to enable justice to be done to all interests.

A PRETTY CLOSE TEST.

What the people are most interested in at the present time, when this transportation subject is *the* "previous question," is the actual *cost* per ton per mile in moving freights. I am aware that this depends somewhat on the amount of business as well as facilities, and the nearest I can get at the cost is from the report of the Michigan Southern and Lake Shore Railroad Company. The through rates that govern on this line are on freights through to New York, near 1,000 miles. I have made a cast of the lowest rates published by that company in all the classes for through, which give an average of 1 95-100c. per ton per mile, and taking way rates between Chicago and Toledo—244 miles—the average is 2 47-100c. per ton per mile, making a compound rate of

2 21-100c. per ton per mile for all freights; nor have I taken any account of the higher "special" rates.

The company say, in their report, that they have moved 910,855,195 tons one mile, which, at their stated compound rates, 1 37-100c., amounts to \$12,613,499.35; but, by the rate above stated, which cannot be too high, it amounts to \$20,129,899.80, or nearly \$8,000,000 more.

But the company, on page 41 of their report, give a tolerably good clue to the whole secret—that is, they give a clue to the fact that whatever error may be committed, it is evident that my figures cannot be too high, since they divide the whole amount by per cent. of classification, when it will be seen they have carefully left out all reference to the higher grade of freights; but I am content, since their own low grade of classification and per cent. justifies my computation of their compound rate. At the risk of being tedious, I copy their table:

CLASSIFICATION.	Per cent. of whole No. of tons moved.
Coal.....	6.5
Stone lime.....	3.2
Petroleum.....	8.4
Railroad and pig iron.....	2.1
Other iron and castings.....	2.1
Lumber and other forest products.....	10.4
Animals.....	9.6
Grain.....	21.2
Agricultural products, except grain.....	3.8
Flour.....	5.3
Provisions.....	5.3
Manufactures.....	4.4
Merchandise, etc.....	17.7
Total.....	100.0

Now, get the proper per cent. of the whole, and multiply by the rate charged in the class to which the foregoing articles belong, and it gives a total of \$20,986,432.46, or a little more than when multiplied by 2 21-100c, as the rate I have figured per ton per mile. This shows that the company must have received nearly double the rate they claim to have received, or they must have knocked off nearly 50 per cent. of their published rates; a fact that does not often occur to gladden the hearts of shippers. The company say their *cost* rate per ton per mile, was 92-100c,

which gives \$8,379,886.79, leaving the company a little more actual profit than they claim their gross receipts to be for freight. As to discount on their rates, I know of no one who is the beneficiary of such unbounded "charity" and benevolence. There is one way, and but one, so far as I know, for the people to ascertain for a verity, the exact amount received, and that is, to appoint officers of the law, armed with power to scrutinize the books and papers, and to personally see to it that the whole gross receipts are published. Until this is done, I do not say it for all cases—but as a general thing—the law might as well say to the owners of our railways—pay us just what you please for taxes and charge us just what you please for your services. It will be seen that grain furnishes but 21 2-10 per cent. of the freight moved, while on the St. Paul road the actual grain moved amounts to about 25 per cent. of the gross tonnage.

I am indebted to Mr. Stevens' valuable statistics for the following, which is credited to the auditor's report, of New York, for 1866. The New York and Erie and the New York Central railways for that year moved 809,561,319 tons of freight one mile, while the canals—open less than one-half the time—moved the same year, 1,012,448,034 tons one mile. The railway charges, even under restrictive laws that do not govern in the west, were \$20,282,943, while the canal freights amounted to \$10,160,651, thus showing that the canals—open only about five months—actually moved 202,886,715 tons one mile more than the roads, and at less than half the expense. The same author states that it costs 30 mills per ton per mile to move wheat from the Mississippi to Lake Michigan. This is correct, with a qualification, which makes the charge (10 8 cents per bushel) from Madison to Milwaukee, (80 miles by the short route) about 45 mills per ton per mile, or nearly the cost by all rail in 1872 from Milwaukee to New York.

Mr. Stevens estimates, that after deducting the grain shipped by rail from points not approached by water, that not over five per cent. of the whole amount shipped, goes by rail. I am inclined, from all the data at command, to accept this as correct. He also states that of the 273,000,000 bushels of corn raised in four western states, in 1865, only 25,000,000 bushels were shipped, or about one in ten of the whole crop.

As it costs substantially the same to move corn that it does wheat per bushel, and as all our facilities combined, cannot transport half the crop raised, it must inevitably follow that profits on corn growing, under our present facilities for transportation, are more theoretical than actual.

Let the sum be stated thus:

Value of corn in New York.....	80 cts.
Cost of raising corn per bushel.....	30 cts.
Hauling to nearest depot (average distance 15 miles)	2 cts.
Purchasing commission.....	1 ct.
Elevators and storage.....	4 cts.
Average rate to Chicago (60 miles).....	2½ cts.
Freightage from Chicago to New York.....	40½ cts.
Total cost.....	<u>80 cts.</u>

Thus it will be seen that the farmer has *nothing* left. It should be borne in mind that I have reckoned the cost at the lowest rates for through freights, yet *practically*, according to the actual charges, the farmer would be out of pocket some 15 or 20 cents on each bushel, unless the necessities of the consumer should compel him to pay a large portion of the charges at the other end of the line.

The same author I have quoted says that the total number of tons moved by the New York and Erie and New York Central, in 10 years, from 1854 to 1864, was 2,507,274,914, and by the New York canals, same period, 8,175,803,065 tons. The average charges by the Central were 26 mills, and by the Erie 22 2-10 mills per ton per mile; by the canals 9 1-10 mills, or nearly 3 to 1 in favor of the canals, and that had all this freight been moved at canal charges, the net saving would have been \$122,637,045.97, and this, be it remembered, in a state where railway tariffs are regulated by law to the lowest possible rates.

In 1851, as per Mr. Andrew's report, the Erie canal moved the following amount of freight:

Classification.	Value.
Products of the Forest.....	\$10,166,656
Agriculture.....	36,394,913
Manufactures.....	4,335,783
Merchandise, etc.....	2,706,733
Total.....	<u>\$53,602,085</u>
Same time by rail to Albany.....	<u>8,332,441</u>

All roads landing at tide water, \$44,556,000.

Mr. Andrews says that our 3,200 miles of canal, in 1851, moved about 6,000 tons per mile, 18,600,000 tons, valued at \$1,880,000, 000, while the railways moved only some 2,000 tons per mile, averaging for the like distance of canals, only 6,600,000 or about 2-3 the amount moved by canal the same distance.

Gross tons moved by Erie canal, in 1852.....	18,000,000
By coast trade	40,794,980
By rail	<u>10,815,000</u>

With such a stream of golden treasure pouring into, and proceeding from New York, averaging from 3 to 5 times that of any other Atlantic city, is it strange that New York up to 1850, should double its population every 16 years, while Boston doubled hers once in 25½ years, Philadelphia once in 20 years, Baltimore once in 27 years?

FOX AND WISCONSIN RIVER IMPROVEMENT.

The foregoing statistical facts and considerations bring us to the primary object of this discourse, and that is, to consider the relation which the Inland navigation through our state may bear to the great question of cheap transportation, and the equally important questions of production, consumption and population. Every citizen, whether producer or consumer, must, per force, be interested in this problem.

Since the great wheat center of the country has removed from Ohio to Iowa and Minnesota, and is fast encroaching on the boundary of Dakota, and as the Fox and Wisconsin Improvement is the first door of exit by water, these great centers can reach, on their way to tide water, it becomes a question of skilled statesmanship, and not a mere question of party, and of bidding for votes, whether we will strive to open this door, as did New York, in her successful bid for the millions of Western commerce, by her Erie canal, or whether we will indolently fold our arms and compel our western neighbors to seek the only other water exit, by going 300 miles out of their way, only to find a more rugged, uncertain and contracted path, in the Illinois canal, with a certainty of a perpetual blockade at Chicago, where the present lake shipping renders her single channel harbor "as thick as four in a bed." We cannot think of reaching New York via the Gulf, our-

selves, nor should we expect our neighbors to subject their crops to a like circumnavigation. As I have already clearly shown, we cannot move our crops over the trunk lines of railway, for two reasons: They could not, all combined, move them, if we desired it, and if we did, and they had the means to do the job in time, we could not afford to pay even what it would actually cost the roads. Under these views of the case, one of two things *must* transpire:

We must either stop raising surplus products, or we must have ample facilities to move our surplus, at living rates! As the Fox and Wisconsin channel partakes of the nature of both canal and river, with steam towage, we may safely put the freight cost (after completion and for through freight) at two mills per ton per mile. This would yield a gross freightage from the Mississippi to Green Bay, 178 miles, with a full cargo and a tonnage of 300, of \$106.80, for about 36 hours' time. The present railway charges, from Madison to Milwaukee, 80 miles, for the same number of bushels, is \$588.00. I presume it is not much more from the river. This shows a difference on 4,200 bushels, from the river to the lake, of \$481.20—or 13 86-100 cents per bushel in favor of the water course.

This rate of difference, if sustained on all freights carried by our roads last year, and officially reported to the secretary of state would make a sum total of \$22,500,000, but since this is greater than the whole sum reported by the roads, it would seem that the farmer's produce is taxed higher by the roads than most other freights.

I do not suppose (much less desire) that the improvement of our water channel would materially lessen the business of the roads, since, as I am prepared to show, they would still be crowded with business. To be assured of this, let the political economist and statistician take up the U. S. Census Reports and statistical tables from the most authentic sources, pertaining to the thirteen states and territories lying in the latitudinal pathway to New York, between the Pacific and Ohio, and they will see that all the railways we are likely to construct for the next five decades, in addition to our present lines, together with all our present water facilities, would not suffice to move the mountainous volumes of freights that annually await transportation. The cereals raised in the

states referred to, as per the United States census, aggregated near 1,000,000,000 of bushels, which by the more extended and prolific crop of 1873, cannot fall much, if any short of the sum of 1,500,000,000 bushels. Allowing 200,000,000 bushels for home consumption, and there remains 1,300,000,000 bushels for export. If this was all wheat, and reduced to tons, it would equal 38,235,294 tons, but since it embraces considerable of the lighter cereals, I will place the gross tons of surplus grain at 38,000,000 tons in round numbers, and for all other produce, including products of the forest, of the mines, live stock, etc., at least as much more, aggregating a gross of 76,000,000 tons of freight to be annually moved to the East from the thirteen states and territories alluded to, including the overland Asiatic commerce.

The whole number of merchant vessels on our great chain of lakes, as reported officially by the government in the report on commerce and navigation in 1870, was as follows :

No.	Tonnage.
621 steam vessels	140,704
1,330 sail vessels	237,470
<u>1,951</u>	<u>378,174</u>

The whole number reported by the chamber of commerce of Chicago for 1872, was as follows :

No.	Tonnage.
731 steam vessels	151,029.69
1,585 sail vessels.....	266,468.09
<u>2,336</u>	<u>417,497.78</u>

This includes tugs and unrigged vessels, and the government report is no doubt nearer the effective force; But suppose the whole of the latter to be effective, and that it should be exclusively engaged in the trade of the states and territories named, and each boat should make 10 trips per season, without accident or delay, and the whole force would move but 4,174,970 tons, as their utmost capacity, leaving 71,825,030 tons, for railway transportation, or to be shipped down the Mississippi, or to remain unmoved. It is evident to the least observant eye, that all our present trunk lines could not move this vast amount, and hence attention has been turned to the project of connecting the Mississippi and its

vast array of prolific tributaries with the lakes, as a means of relief.

But as there are interests inimical to this plan, because it offers to bring no fish to their net, and for no other possible reason, and the "Double-Track Railway" project is pushed into the forum of discussion—not, as I have reason to believe, as an adequate panacea, but as a means to head off the improvement of the Fox and Wisconsin river route. The bold proposition was made, and was even endorsed by ex-Governor Washburn in his speech at Fond du Lac last October, to saddle the general government with this double-track scheme. But the savans have, for the time at least, concluded that as a railway is exclusive and cannot be national in its character, since its time tables must be obeyed with the precision of clock-work, and no cars but the organized force could be put upon the track, the government cannot constitutionally engage in works of this kind, and a charter has been asked from congress for the road under private auspices. Even the constitutionality of this, through Sovereign States, may well be questioned. But there can be no question as to the right and the duty of the general government improving the water courses, since in their very nature they are *national*, and capable of sharing their privileges with all citizens alike, and are calculated to advance the general good of all.

But since this double-track leviathan is thrust forward just at this time, as a pretext to furnish the relief needed, let us examine the pretension with a view to results. We have just seen that the states and territories in latitudinal proximity to this great international route between the Atlantic and Pacific, going no further east than the west line of Pennsylvania, and no further south than Kentucky and Missouri, have a surplus over and above the capacity of all the lake craft, of 71,825,030 tons annually. We now have four trunk lines penetrating this territory from the Atlantic, and with the double track we shall have five trunk lines, the latter to be devoted exclusively to freight. Six trains per day and 30 cars to the train would be more than the old lines could furnish, with their passenger and way trains, but that no one shall say I overdraw the picture, to the disparagement of the roads, I will make my computation on that basis. The old lines, then,

would give us 24 trains per day, and 720 cars. The double track devoted exclusively to freight, we will tax to its utmost, and allow one train per hour for nights, days and Sundays, without delay or accident. This would give us 24 trains per day, and 720 cars, making in all 48 trains and 1440 cars per day. If each car contained 10 tons, it gives 14,400 tons per day. This gives us 4,987 days, or thirteen years, eight months and two days to move the BALANCE of produce for one year, after all our water craft have done their best. As all the cereals, pork, beef, and other provisions ought to be moved in 90 days at least, and the whole in one year, we must have not less than 40 double track roads to meet the actual demand "on that time."

The absurdity of the proposition gives its own answer. Still, I have nothing to urge against the building of any number of double track roads, as private enterprises. They will all help to the extent of their ability. Nothing more. But suppose that all the railways and the extra lake craft could dispose of 35,000,000 tons, leaving 36,000,000 tons in round numbers, for the river and canal route. I have already seen that the grain could be moved in 95 days, and giving 36 fleets of 10 barges each for the 24 hours, the whole could be moved by canal barges, from the Mississippi to New York, without breaking bulk, in 333 days. This, I admit, is crowding both time and space somewhat beyond *practical* results, but not as much as the estimates do in reference to railways.

In the foregoing calculation, I include what is deemed sufficient for seed (20,000,000 bushels), under the amount excepted for "home consumption," and that I may commit no injustice, I will re-cast my figures, allowing the 18 trains of freight cars on the single track roads, as suggested by Mr. Gault. This will give, for the proposed double track and the 4 trunk lines, 120 trains every 24 hours—3,600 cars, or 36,000 tons per day, and to move the whole 71,325,030 tons by all the railway lines, double track included, it would take 5 years, 5 months and 20 days, and even if I have estimated the freight other than the canals, 100 per cent. too high, with all this, to me impossible gain on the single track lines, it would take some three years to move it all, by all our present facilities combined.

Having seen that all the roads combined, including a dozen or more double-tracks, cannot move all our surplus products at any price, let us see if they can move wheat at such rates as the producer can afford to pay (I have already shown that the cost of transportation and charges, at the lowest railway rates, exactly eat up the value of corn in New York).

	Cents.
It is safe to say that, in average years, wheat cannot be raised and prepared for market at a sum less per bushel than	60
Cost of hauling (as before stated)	2
Two storages and handling	6
Published rates for buying	1
Average rail cost of reaching lake and river ports.....	15
By rail to New York (lowest average rates).....	40½
	<hr/>
	124½
	<hr/>

Price in New York, say \$1.50—net to farmer 27 1-2c. It is evident that no farmer can live at such rates, and then the charges are often more than enough to eat up this small balance by the long storage on the way for want of facilities for transportation. As I have already shown, the net to the farmer by water, without breaking bulk, and with nothing sticking to the fingers of middle-men or among the chinks of elevators, etc., would be \$1.40 per bushel.

Thus, after making all proper allowances for exceptional cases, I think I have shown by facts, within the reach of all, that unless some new scientific discovery shall make a cheaper exhibit in the cost of operating railways, we cannot ship our cereals by rail, unless the consumer shall consent to pay the charges, and even if he does that, the dilemma has another horn to goad us, and that is the fact that our carrying facilities—all combined—are not equal to the actual wants.

As to government assistance it is difficult to see how there can be two opinions as to what direction that assistance should take. As an economic question, both to the public till and individual purses, sound policy dictates the improvement of a water course between the Mississippi and the Hudson on a scale to admit boats and barges of 300 tons burden, capable of steam towage.

To enlarge, improve and double-lock the Erie canal up to the required standard, would call for an expenditure of about \$75, 000,000, which I am informed New York would undertake, if the

general government would loan its credit. That that state would be amply competent to take care of the interest and ultimately discharge the principal no man can question.

And then some \$4,000,000 expended by the government in the improvement of the Fox and Wisconsin rivers, would complete the job, without embarrassment to the national treasury. Thus would the portage across Wisconsin and the Erie canal be of the same capacity.

The only remaining question, then, on this point, to be discussed, is the possibility of using barges, suitable for canal service and to ride the heavy seas of the upper lakes. I have no guide—nothing better than intuition and analogy to guide me to a conclusion on this subject, and yet I have not the shadow of a doubt of the feasibility of the plan. Last season, we saw in the newspapers, that a raft of logs, containing 1,000,000 feet of lumber, had been successfully towed through a heavy storm from Grand Haven to Chicago. A twelve month anterior prediction that such a feat was possible, would have been derided as a “lunatic hallucination,” But facts are facts on their first, as well as subsequent appearance, and if rafts of saw-logs can be made to successfully ride the mountainous seas of Lake Michigan, can any one doubt that barges may do likewise? The barges should be made with “tumble-in” or oval decks, and with hatchways sealed water tight. Then lash them with jointed spars, a sufficient distance apart to prevent contact and abrasion, when being tossed about, and with long tow lines, they would ride in fleets of fifty or more as safe as the best clippers that ride the waters.

Here, then, we have a plan, with no formidable outlay of capital, by the general government, to transport our cereals and other products from any point on the Mississippi and Missouri rivers, or their extended tributaries, to New York, without breaking bulk—without intermediate elevators and storehouses, to act like sponges, in sucking up all profits—without middlemen, and without any of those tormenting delays and expenses that now “eat up the grist before it reaches the mill,” and charging the toll back upon the muscle of production.

The cost of maintaining or repairing canals is much less than

that of railroads. According to Mr. Andrews the cost of maintaining the Ohio canals for a period of five years, 1855 to 1860, inclusive, was but one half of one per cent of their cost. The cost of repairs on railways is infinitely greater. The Milwaukee and St. Paul road reports about 24 per cent. on the capital stock, for the year 1862. I find some roads that cost much more than this.

One cause for fear that congress may not make the proper appropriation to complete the improvement of the Fox and Wisconsin rivers rests not only in the fact that the national legislature is already submerged with propositions to improve all manner of rivers and canals, but that the late panic and the late elections may have forced such a mushroom growth of economy, that nothing may be done; or, on the other hand, that too many passengers may be crowded into the omnibus, and the whole upset by the power of specific gravity. And then, too, those that are inimical to our interests, because it may not enhance the value of their corner lots in some pretentious city, withal, may be likened unto the pious enthusiasts of England, in the 15th century, who worshipped the Lord according to the gospel of selfish Mammon, and who met in their temple and laid down the trinity of their pious litany as follows:

"Resolved, firstly, That the earth is the Lord's and the fullness thereof.

"Resolved, secondly, That the fullness thereof belongs to the saints.

"Resolved, thirdly, That we are the saints!"

Nothing short of such disinterestness and self-sacrificing resignation, could claim that, because forsooth, the lower Fox does not discharge its 32,000 horse power of water fall and its prospective commerce, into the turgid basin near the head of lake Michigan, that the government should do nothing to open our inter state channel to a commerce incapable of reaching the sea without it. Hence, we are assured that every obstruction that antagonism can invent, or call up, will be thrown in the way. Some of these obstructions are now before congress, and may be epitomized as follows:

To improve the Mississippi river below Cairo	\$10,000,000
Same above Cairo.....	20,000,000
Canal at mouth of that river.....	15,000,000
Improvement of Ohio river.....	25,000,000
Improvement of James river and Kawana canal.....	50,000,000
Improvement of Tennessee and Cumberland rivers	20,000,000
Construction of a canal from Mississippi river over the moun- tains of Georgia	35,000,000
Improvement of the Red, White, Arkansas and Ouchita rivers..	25,000,000
Louisville and Portland canal	2,500,000
Total.....	<u>\$202,500,000</u>

Now, even admitting all this to be necessary, and proper improvement to make, still it must be apparent that as the government cannot undertake all at once, it should first complete the cheapest and most important route, which without a question is the improvement of the Fox and Wisconsin rivers, at an expense of about \$4,000,000. And, besides (which is the best side of the argument), the government has already got this work on its hands, by force of statute law, while the other works are as yet in the cocoon of propositions.

The project of connecting the great lakes with the Mississippi is not a new one. As per papers read at the Canal Convention at Prairie du Chien, in 1870, it was shown that the late Jesse Hawley, of Canandaigua, N. Y., wrote sundry articles, which were published in that place, urging the construction of the Erie canal, and at the same time the improvement of the Fox and Wisconsin rivers, as but a link in the chain of water communication from the Hudson to the Mississippi. According to Hoosic's life of De Witt Clinton, that statesman acknowledged that the first he heard of the project was by these papers, thus fixing the date of the agitation of this subject about 1811. In 1838 it was recommended to Congress, by Joel R. Poinset, Secretary of War, and in 1839 he caused a preliminary survey to be made by Col. Cram, of the Topographical engineers. In 1846, '54 and '55, Congress donated lands to aid the improvement. The Commercial Conventions held in Chicago in 1863, and in Dubuque in 1866, St. Louis in 1867, and Keokuk in 1869, all declared in favor of this improvement, and the legislatures of this state have studiously, for years, petitioned Congress to complete the great work. The governors of the states of New York, Missouri, Wisconsin, Iowa and Minnesota, have urged it in their messages. I

quote a short paragraph from the message of the Governor of New York, in 1870:

“At the request of the governor of Iowa, I appointed last autumn, delegates to a convention held for the purpose of promoting improvements in the navigation of the Wisconsin river, a work in which the people of the state have a deep interest, as it will make, in connection with our canals, water communication complete from the Mississippi river to New York city; canals do not, as some say, belong to a past age, nor are they superseded and rendered useless by the construction of railroads. Both canals and railroads are essential to the full and rapid development, not only of our state, but of our great northwestern neighbors, whose interests and prosperity are so firmly interwoven with our own.”

It is but just to add that our venerable fellow citizen, the Hon. Morgan L. Martin, has devoted the best years of his life to this great work, and without proper remuneration.

THE FINANCIAL VIEW OF THE SITUATION.

In the hour of panic and commercial distress, when cramped by a monetary colic, it is but too natural that men in official positions snuff danger through their sense of fear—as often on account of personal and political consequences as from any other cause—and under the high pressure of economy, often neglect or refuse to undertake the most necessary and money-saving improvements. At such times as these, it may be safely laid down as a rule, that more injury comes to the public faith and interests by an over-dose of economy, than often occurs in times of plethora and improvidence. Because a merchant may have been unfortunate in some things, that should be no excuse for not paying his debts, if he still has the means, or of neglecting improvements that would be the very soul of economy. During our late war the people submitted to a strain upon their resources of one million dollars per day, which would now net a sum sufficient for this great work in four days, or in 14 days, as compared with the budget of expenses of 1869—a year of profound peace. If this expenditure was to be a waste, or even of doubtful propriety, then the doubt and indecision ought to be thrown in the scale of economy and non-action, but since I have clearly shown that for every

penny expended in this direction, the public will secure its dollar in return, the economic considerations are on the side of the outlay. This brings us to the consideration of that part of the subject embraced under the head of

VALUATION AND TAXATION.

By valuation, is not meant that of the annual assessments, nor shall I confine taxation to the mere legal exactions of tithes. Aided by public documents and such array of statistical information as I could command, I have endeavored to tabularize the entire actual wealth of the country by states, compared with the sum of taxation on the basis of that wealth—dividing taxation into voluntary and involuntary, or such taxes on our resources as the law imposes and such as we voluntarily impose, for certain general nonproductive purposes. Of course, every dollar a man pays out is a tax on his resources. I do not intend to include under the head of involuntary taxes all that a man expends, but only such as are general, although personal, and may be viewed in the light of public expenses, such as building and maintaining railways, sustaining insurance companies, etc. It is some consolation to be able at a glance to see just how much the whole people own, how much they owe, collectively as well as individually. The footings under the column of figures representing the number of inhabitants only require eight Arabic figures, yet it cost millions to obtain the information, so easily expressed. So the following tables are simple, yet it has taken weeks of labor to tabulate them for convenience and use.

The table herewith prepared will show in detail, by states, the integral sums that make up the totals here presented. The last census report places the

Assessed valuation of all property in the United States at ..	\$11,267,133,735
Real valuation at	26,971,665,864
To which I have added 10 per cent., making it	29,746,273,182
From which sum I deduct the state and municipal indebtedness, adding 100 per cent. for individual debts, and it leaves a total valuation of property of	26,802,676,621
Thus showing that all the public and individual debts of the nation (if my estimate of private debts be correct), exclusive of the national debt, is but about 10 per cent. of the value officially reported three years ago.	
The national debt subtracted, leaves about.....	<u>24,500,000,000</u>

It has long been a mooted question as to the per capita proportion of tax on account of the impost duties levied. That once determined, and it is an easy matter, under our present system of statistical collections, to determine the per capita taxation of the country. I remember to have seen but two statements with regard to the subject, one by the bureau of statistics and one by Mr. Andrews, both concurring, on a series of test calculations for a series of years, that collectively, by communities of states, the consumption of imported goods is distributed about equally. If this be true, and I see no reason to doubt it, the expense of impost tax, per capita, for the whole people, for 1872, on \$216,000,000 revenue from importations, was about \$5.40 to each person. This, when applied to Wisconsin, and added with other known taxes, shows the following result:

Taxes, state, county, town, etc. (1873).....	\$7,395,131 00
Taxes on importations, (pro rata)	5,675,618 00
Taxes on internal revenue	<u>1,881,820 97</u>

Total, for Wisconsin, (adding 10 per cent. to internal and impost tax).....	\$15,708,312 86
The total of internal revenue (for the states).....	106,255,637 50
Total impost revenue (for the states).....	202,715,421 40
Total state, county, town, and municipal taxes (for the states) with 10 per cent. added to above.....	<u>652,528,713 00</u>

Average taxes per capita in United States.....	\$16 00
Average valuation per capita after deducting public and private debts	595 00
Average rate per cent. on population per capita	<u>3 $\frac{1}{2}$</u>

Total state and local debts, including District of Columbia...	\$999,385,982 00
Total population including District Columbia ..	<u>38,690,071</u>

Total valuation per capita for Wisconsin	\$758 00
Same for 1850.....	136 00
Wisconsin's tax, rate per cent. of property per capita to population..	<u>1 $\frac{9}{10}$</u>

So that it will be seen that Wisconsin is above the general average per capita valuation, and only five states being below her on rate per cent.

So much for what may be termed involuntary taxation. In addition to this, we have as a people to support railways, telegraphs, express companies and insurance companies; etc.

RAILWAY PROGRESS.

The following table is interesting in this connection :

"The last issue of the *Railway Monitor* furnishes a great mass of interesting statistics concerning the railroads of the United States. From it we learn that the whole railroad mileage in this country is 71,564 miles with second tracks and sidings of 13,512 miles, making the total equivalent of single track 85,076 miles. The total number of locomotives is 14,223; of passenger-train cars, including baggage, express and smoking cars, 13,725; of freight-train cars of all sorts, 338,427; the total capital stock amounts to \$2,072,251,954, or about \$28,956 per mile; the total floating and funded debt, \$1,999,741,597, or \$27,957 per mile; and the total cost of railroads and equipments \$3,728,416,958, or about \$52,099 per mile. The total gross traffic of railroads for the latest year obtainable was \$478,855,597 and the total net receipts over and above operating expenses were \$174,350,923. These earnings, however, are based on 54,484 miles of road, that being the total for which earnings have been reported; and hence the net income of railroads applicable to the payment of interest and dividends amounted to about \$3,201 per mile on the 45,454 miles operated.

"During the year just closed, there were built in the United States 4,190 miles of railroad, distributed over the states and territories as follows:

STATES AND TERRITORIES.	Miles.	Built.	Miles.
	1872.	1873.	1873.
Maine.....	891.5	44.0	935.5
New Hampshire.....	882.7	73.1	895.8
Vermont.....	736.3	57.9	794.2
Massachusetts.....	1,625.0	113.7	1,738.7
Rhode Island.....	133.2	36.9	170.1
Connecticut.....	898.3	29.7	928.0
	5,107.0	355.3	5,462.3
New York.....	4,884.9	398.4	5,282.3
New Jersey.....	1,343.7	69.5	1,413.2
Pennsylvania.....	5,432.5	412.9	5,845.4
Delaware.....	222.7	16.0	238.7
Maryland and District of Columbia....	865.4	69.7	935.1
West Virginia.....	493.3	.....	493.3
	13,212.5	266.5	14,209.0

Railway Progress—continued.

STATES AND TERRITORIES.	Miles.	Built.	Miles.
	1872.	1873.	1873.
Ohio	3,923.8	192.0	4,115.8
Michigan	2,973.7	222.1	3,195.8
Indiana	3,705.2	128.0	3,833.2
Illinois	6,277.7	201.4	6,479.1
Wisconsin	2,028.2	205.7	2,233.9
Minnesota	1,861.6	51.0	1,912.6
Iowa	3,640.7	203.7	3,844.4
Kansas	1,901.8	101.2	2,003.0
Nebraska	1,147.3	113.8	1,260.3
Missouri	2,769.3	128.0	2,898.3
Wyoming Territory	454.0	.....	454.8
Utah Territory	370.0	71.5	447.5
Dakotah Territory	225.0	38.5	251.5
Colorado Territory	551.9	105.0	616.0
Indian Territory	310.5	.....	310.5
	32,143.7	1,762.2	33,905.9
Virginia	1,504.7	39.8	1,544.5
North Carolina	1,263.5	17.1	1,280.6
South Carolina	1,261.2	62.0	1,323.2
Georgia	2,180.4	21.0	2,201.4
Florida	475.7	.....	475.7
Alabama	1,858.6	11.0	1,869.9
Mississippi	985.4	37.0	1,022.4
Louisiana	650.0	.....	560.0
Texas	1,110.9	219.7	1,330.4
Kentucky	1,195.5	201.0	1,396.7
Tennessee	1,521.1	97.3	1,618.4
Arkansas	551.5	142.0	692.5
	14,468.5	847.9	15,316.4
California	1,491.3	198.0	1,689.3
Oregon	297.0	10.0	307.0
Nevada	569.0	.....	569.0
Washington Territory	55.0	51.0	106.0
	2,212.4	259.0	2,671.0
RECAPITULATION.			
New England States	5,107.0	355.3	5,462.3
Middle States	13,242.5	996.5	14,209.0
Western States, etc.	32,143.8	1,762.2	33,905.9
Southern States	14,468.5	847.9	15,316.4
Pacific States, etc.	2,412.3	259.0	2,671.3
Grand total	67,374.0	4,190.9	71,564.0

The actual cost has been augmented by dilution, with what is termed "water," \$136,000,000, making a total of nominal cost of

\$4,764,416,958, all of which is expected to pay ten per cent., out of the people's purse. I notice by the statistics of some sixty roads, before me, that the dividends have been from two to twenty-five per cent.—those containing the most water, securing the greatest dividends, generally.

Suppose we put the interest at five per cent. on the whole amount, and then we have a sum to add to our budget of taxes, amounting annually to.....	\$288,220,847 90
Excess paid for insurance over premiums paid, say.....	40,000,000 00
Ten per cent. on \$45,000,000 telegraph and express stock, including copious showers of water	4,500,000 00
Profits on three branches of business	\$332,720,847 90
Add total taxation, heretofore stated	652,528 713 00
And we have an annual taxation of	<u>\$985,249,560 90</u>

The Secretary of State reports the excess of premiums over losses paid by insurance in Wisconsin at.....	\$988,040 00
Which is a tax to that amount on productive industry.	
There are 1,926 miles of railroads in this state, which at \$40,000 per mile equals a total cost of \$77,040,000, five per cent. on which amounts to \$880,528 (two of the roads having declared dividends in 1872, amounting to \$2,232,254.77, or near ten per cent. of the whole cost), so that without deducting the amount paid the state including taxes, I will add.....	880,528 00
Add for telegraph and express companies, say pro rata.....	500,000 00
And the sum of our voluntary taxes for those purposes is ..	<u>\$2,368,568 00</u>

Which, added to the sum of involuntary taxes, makes the annual levy on the people of Wisconsin for all the above purposes, \$18,076,680; yet, with all this vast sum of taxes, if all the property in the state was divided by the Agrarian law of equality, it would show that each person in the state possessed \$758, which is more by \$622 than they severally possessed by the same supposed leveling process under the census of 1850. Thus, notwithstanding a devastating war of four years duration, and subsequent government expenses more than five times the amount ever incurred before the war for a like period, we actually increased our wealth near sixteen-fold in twenty years, when public and private debts are deducted.

Stupendous as have been our burdens—great as have been our excesses, and onerous as have been our taxes, we are, in spite of all these inflictions, to-day “able and amply able” to construct a dozen such improvements, without abating a jot from our round

of luxurious living, though with proper economy in the public expenditures, we might have been many dollars better off to each individual, still we are by no means poor. Though our involuntary taxes are \$14.80 to each person *per capita*, and in England but about \$8.00, still we live months while that sleepy nation lives but days. Though older in luxurious riotings, we are younger in nerve and muscle, and can turn a penny into two-pence-ha'-penny, while John Bull is striking up his dicker for a round of beefsteak. We have nothing to fear, but everything to encourage us to go ahead—brush away all obstacles as we would cobwebs that stretch across our path, remembering that individual greatness is but a segregated portion of national greatness, and that national greatness consists in the *means* of being powerful and great.

NOTE.—It would be strange, indeed, if in the voluminous statistics called to my aid in the foregoing tabulated and mathematical statements, some errors do not occur. I have studiously endeavored, however, to avoid errors, and am satisfied that in the main the general mathematical statements are substantially correct.—S. D. C.

Comparative Statement of Taxation in state, etc., in U. S.; also total amount of property, population, per capita tax, value to population, etc.

STATES.	Int. revenue, 1872, by states.	Impost rev. pro rata, \$5.40 per cap. on \$216, 000,000 rev. 1872	State, county, town, munic. taxation, 1872	Total taxation, 10 pr ct. added up to 1873.	Tot. act'l val. 1870, deducting public debts, and 100 per ct. for priv. debts.	Amt. of taxes, per capita.		Valuat'n, per cap- ita, 1870.	Rate per ct.	Total popu- lation, 1870 by states.	Total state and local debts.
						1870.	1850.				
Alabama	\$152,493 35	\$4,383,756 80	\$2,982,932	\$6,618,830 96	\$177,880,555	\$6 75	\$293	\$117	5.9	996,992	\$41,987,643
Arkansas	88,861 02	2,661,251 40	2,866,890	6,117,192 66	96,812,161	12 83	188	179	7.2	484,471	26,761,265
California	2,367,911 07	3,025,393 80	7,817,115	14,320,401 35	602,582,953	25 02	133	1,072	2.3	560,247	18,089,082
Connecticut	813,984 99	2,902,291 60	6,064,843	10,759,230 84	770,653,812	20 00	416	1,453	1.4	537,454	18,086,906
Delaware	429,392 84	617,141 60	418,092	1,610,089 08	96,128,563	12 88	201	469	2.9	125,015	526,125
Florida	158,142 21	1,013,889 20	496,166	1,894,962 15	-1,431,419	9 77	259	less by 7	.....	187,748	22,797,537
Georgia	477,559 90	6,394,186 60	2,621,029	10,448,095 25	199,894,207	8 82	366	169	5.2	1,184,109	34,137,500
Illinois	16,493,169 34	13,713,411 40	21,825,108	66,536,747 61	2,037,296,481	21 68	181	802	2.5	2,539,891	42,191,869
Indiana	5,678,052 51	9,075,439 80	10,891,121	27,989,074 64	1,251,544,023	16 66	203	745	2.2	1,680,637	7,818,710
Iowa	1,012,997 29	6,447,708 00	9,655,614	19,266,851 21	701,558,494	16 13	122	616	2.9	1,194,020	8,043,133
Kansas	161,469 76	1,967,754 60	2,693,992	5,304,327 99	76,007,452	14 83	.....	209	7.1	364,399	6,442,282
Kentucky	5,456,628 47	7,133,454 40	5,930,118	20,152,220 00	566,411,587	15 26	304	429	3.5	1,321,011	18,953,484
Louisiana	1,339,607 36	3,925,611 00	7,060,722	13,558,530 00	216,123,318	18 65	447	298	6.3	726,965	58,501,174
Maine	214,196 26	3,385,441 00	5,348,645	9,849,080 00	314,906,423	15 72	208	502	3.1	626,915	16,624,624
Maryland	2,653,801 83	3,716,827 60	6,632,842	14,302,718 00	585,683,826	18 30	372	750	2.5	780,94	29,032,575
Massachusetts	3,761,004 95	7,869,695 40	24,922,900	40,208,900 00	1,993,725,665	28 28	571	1,038	2.6	1,457,351	69,211,598
Michigan	2,205,720 72	6,393,918 60	5,412,957	15,412,315 00	705,757,656	13 02	148	596	2.2	1,184,059	6,725,231
Minnesota	241,404 94	2,374,412 40	2,648,372	5,730,507 00	223,431,926	13 12	.....	418	3.1	439,706	2,788,797
Mississippi	128,079 31	4,570,778 80	3,736,432	9,310,819 00	214,008,479	11 25	374	253	4.0	827,922	2,994,415
Missouri	4,257,320 15	9,294,993 00	13,908,498	30,158,092 00	1,191,031,167	17 60	119	698	2.6	1,731,295	46,909,865
Nebraska	242,962 38	664,162 20	1,027,327	2,127,896 00	65,098,959	17 30	.....	520	3.3	122,993	2,089,204
Nevada	72,305 32	229,451 40	820,308	1,240,940 00	27,161,326	29 20	.....	638	4.6	42,491	1,986,093
New Hampshire	325,455 36	1,718,820 00	3,225,793	5,786,074 00	230,317,366	18 18	320	764	2.4	318,300	11,153,373
New Jersey	2,567,442 37	4,892,918 40	7,416,724	16,363,737 00	896,268,451	18 05	404	989	1.8	906,096	22,854,304
New York	19,219,504 52	23,666,846 60	48,550,308	100,579,323 00	6,181,224,792	23 18	345	1,414	1.8	4,382,759	159,808,234
North Carolina	1,408,321 72	5,785,349 40	2,352,809	10,501,126 00	168,982,310	9 82	258	152	6.5	1,071,361	45,887,467
Ohio	14,851,309 42	14,392,404 00	23,526,548	58,047,287 00	2,190,946,324	21 80	252	802	2.5	2,665,260	22,241,988
Oregon	73,544 48	490,980 20	580,956	1,458,032 00	51,118,970	16 03	384	562	2.9	90,923	218,486
Pennsylvania	7,826,275 69	19,078,535 40	24,531,397	56,579,717 00	3,630,285,850	16 06	309	1,031	1.5	3,522,521	89,027,131
Rhode Island	324,552 17	1,173,701 20	2,170,152	4,035,245 00	285,088,398	18 56	540	1,312	1.3	217,353	5,938,624
South Carolina	169,213 58	3,811,892 40	2,767,675	7,421,158 00	129,829,151	10 55	427	183	5.6	705,906	39,158,914
Tennessee	644,480 76	6,896,008 00	3,387,579	12,012,273 00	480,583,342	9 04	198	319	1.8	1,258,520	48,827,191
Texas	272,325 77	4,420,326 60	1,129,577	5,812,228 00	109,039,342	7 10	245	131	5.3	518,571	25,006,600
Vermont	75,860 40	1,784,975 40	1,547,123	3,748,759 00	228,160,153	11 34	290	690	1.6	330,551	3,594,700
Virginia	7,343,799 29	6,615,886 20	4,613,798	19,330,831 00	297,745,823	15 77	300	243	6.4	1,225,163	55,921,255
West Virginia	444,661 59	2,386,875 60	1,722,153	5,144,464 00	189,527,957	11 44	.....	438	2.8	442,014	561,767
Wisconsin	1,881,830 97	5,075,618 00	7,355,131	15,708,312 00	701,130,265	14 80	156	758	1.9	5,054,670	5,903,532
District of Columbia	133,424 58	700,580 00	1,581,569	2,425,573 00	97,218,700	18 42	268	739	2.5	131,700	14,777,459
Totals	\$106,255,637 50	\$202,715,421 40	\$587,275,842	\$652,528,713 00	\$26,802,676,621	\$16 00	\$301	\$505	3.3	38,690,071	\$999,385,982

* Average, \$17,171,809.

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