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## **Transactions of the Wisconsin State Agricultural Society, including a full report of the state agricultural convention, held in February 1873, and numerous practical papers and communications. Vol. XI...**

Wisconsin State Agricultural Society

Madison, Wisconsin: Atwood and Culver, State Printers and  
Stereotypers, 1872/1873

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TRANSACTIONS  
OF THE  
WISCONSIN  
STATE AGRICULTURAL SOCIETY,

INCLUDING A FULL REPORT OF THE  
STATE AGRICULTURAL CONVENTION,  
*Held in February, 1873,*

AND NUMEROUS  
PRACTICAL PAPERS AND COMMUNICATIONS.

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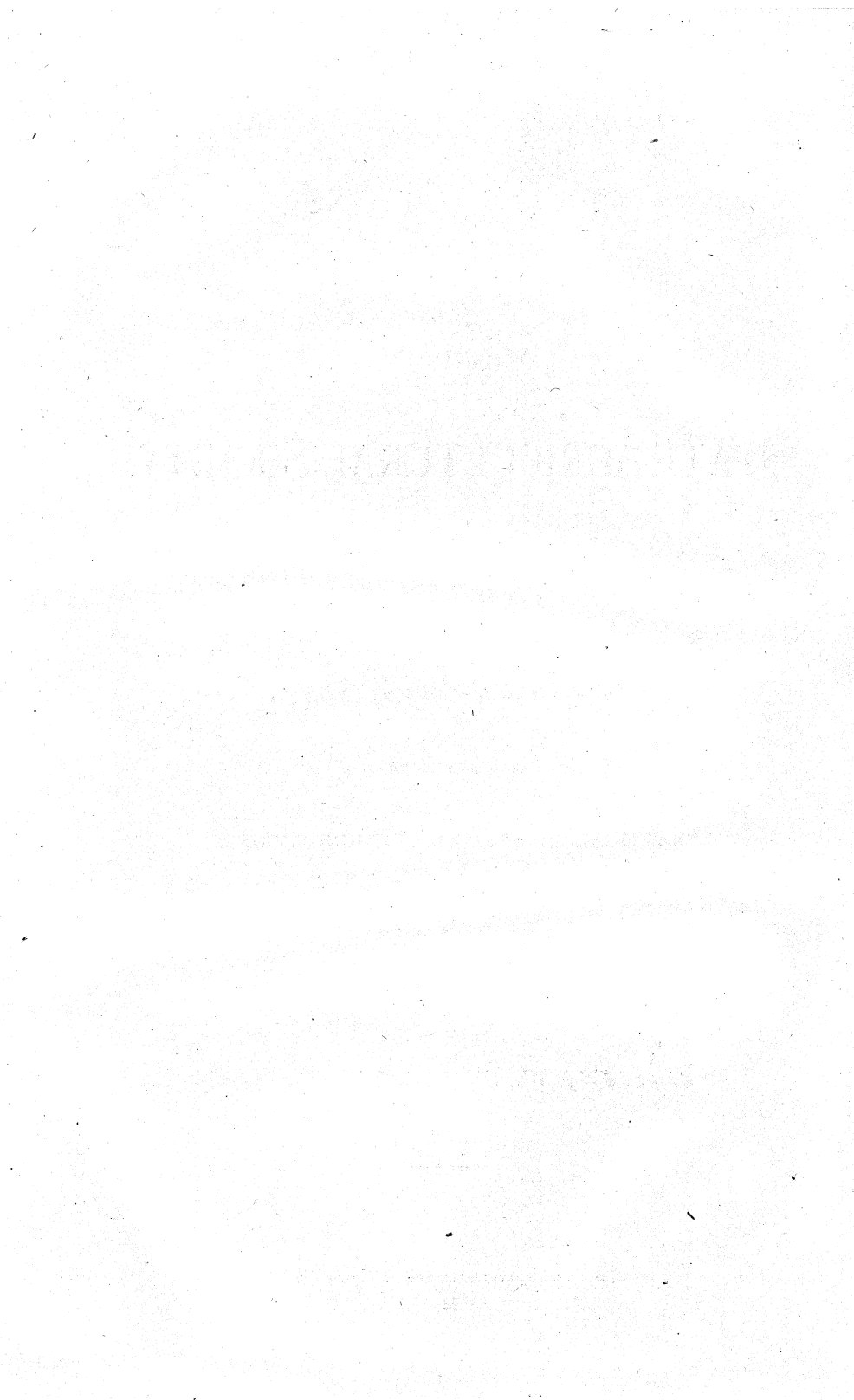
VOL. XI, 1872-3.

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*Prepared by W. W. FIELD, Secretary.*



MADISON:  
ATWOOD & CULVER, STATE PRINTERS AND STEREOTYPERS.  
1873.



## TABLE OF CONTENTS.

I.—CONSTITUTION.....	9
II.—BY LAWS.....	11
III.—LIST OF LIFE MEMBERS.....	15
IV.—SECRETARY'S ANNUAL REPORT—1872-'3.....	23-102
<b>AGRICULTURE</b> .....	23-30
Agencies for its advancement.....	23-25
The uncertainty of Agriculture.....	25
Work for Local Societies.....	25-26
Wheat.....	26
Corn.....	26-27
Oats.....	27
Barley.....	27-28
Rye.....	28
Buckwheat.....	28
Potatoes.....	28-29
Cranberry Culture.....	29
Tobacco.....	29-30
Hops.....	30
<b>STOCK FARMING</b> .....	30-36
Horses.....	30
Cattle.....	30-31
Sheep.....	31-32
Swine.....	32
Poultry.....	32
Butter.....	32-35
Cheese.....	35-36
<b>MISCELLANEOUS</b> .....	36-43
Apples.....	36
Pears.....	36
Grapes.....	37
Clover.....	37
Pisciculture.....	37-39
Epizooty.....	39
Manure.....	39-40
Fences.....	40-42
Fairs.....	42-43
Industrial Societies.....	43
County Societies.....	44-45-48
The Academy of Sciences, Arts and Letters.....	46
The Agricultural Department of the University of Wisconsin.....	46
Co-operation among Farmers.....	46-47
Farmers' Clubs or Granges.....	47-48
State Society.....	48-49
Centennial Celebration.....	49
State Agricultural Convention.....	49-98
Its Object and Purpose stated by Secretary Field.....	50-52
Address by Prof. W. W. Daniells.....	52-64
Address by Gen'l Sam'l Fallows.....	64-75
Address by President Wm. R. Taylor.....	76-86
Valuable Papers and brief discussions.....	86
Invitation by Prof. Daniells to visit the University.....	86-87
Suggestions, by Edward Porter.....	87
Practical Papers read.....	87
Preamble and Resolutions.....	87-89
Breeds and Breeding. Paper by Amaziah Richmond.....	89
Experimental Dairy Farm. Suggestions by <i>Mr. Favill</i> .....	89
Market Fairs. General Discussions.....	90-92
Papers and Communicatio <sup>n</sup> s read and brief Discussions upon Grain and Fish Culture.....	92-94



## SECRETARY'S ANNUAL REPORT—Miscellaneous—continued.

Co-operative Schemes. Remarks by <i>Mr. Favill</i> .....	94-95
Pear Culture. Remarks by <i>Hon. J. T. Kingston</i> .....	95
Papers, and Discussions.....	97
Closing Remarks. <i>By Secretary Field</i> .....	97-98
Geological Survey.....	98-100
The Great Need of the State.....	100-101
A Bright Future.....	101-102
<b>V.—PROCEEDINGS</b> .....	103-133
EXECUTIVE MEETINGS.....	103-120
SOCIETY MEETINGS. Election of Officers.....	121-123
ANNUAL MEETING.....	123-126
TREASURER'S REPORT.....	124-125
WARRANT ACCOUNT OF THE SECRETARY.....	127-133
<b>VI.—EXHIBITION OF 1872</b> .....	134-140
General Remarks.....	134-217
Opening Address. <i>By President Hinkley</i> .....	141-147
Annual Addresses.....	147-171
Address of <i>Hon. Geo. B. Smith</i> .....	147-157
Address of <i>Governor C. C. Washburn</i> .....	157-159
Address of <i>Secretary W. W. Field</i> .....	160-167
Address of <i>Dr. J. H. Twombly</i> .....	167-171
Reports of Superintendents.....	172
Report of <i>Eli Stilson</i> , Superintendent Sheep Department.....	172-173
Report of <i>J. H. Warren</i> , Superintendent Swine Department.....	174
Report of <i>Rufus Cheney</i> , Superintendent Machinery Department.....	175-176
Report of <i>O. S. Willey</i> , Superintendent Fruit and Flower Department.....	185-190
Report of <i>J. O. Eaton</i> , Superintendent Fine Arts Department.....	191-193
Report of Special Committee on Machinery.....	176-185
Premiums awarded.....	194-217
<b>VII.—MISCELLANEOUS ADDRESSES</b> .....	218
Address of <i>Hon. Frederick Watts</i> , Commissioner of Agriculture.....	218-225
Address of <i>Governor C. C. Washburn</i> .....	226-236
Address of <i>Stephen Favill</i> .....	237-242
Address of <i>Hon. C. G. Williams</i> .....	243-253
Address of <i>Hon. John L. Mitchell</i> .....	253-257
Address of <i>President W. R. Taylor</i> .....	257-263
Address of <i>I. S. Stickney</i> .....	263-268
Address of <i>Hon. D. E. Davis</i> .....	269-274
<b>VIII. PRACTICAL PAPERS</b> .....	275-447
CO-OPERATION AMONG FARMERS. <i>By Gen. E. E. Bryant</i> .....	275
Agents of commerce extort from the consumer without mercy.....	276
One-fourth of the earnings of the poor absorbed by the profits of retail trade.....	276
Times of simple wants gone by.....	277
Outline of plan for co-operative effort.....	278-286
Time for uniting the agricultural interests of the country.....	287
PRODUCTION AND CONSUMPTION, SUPPLY AND DEMAND. <i>By J. B. Parkinson, A. M.</i> .....	288
The moving impulse is human wants.....	288
Man, a lazy animal.....	289
The farmer pays for all.....	290
Mind work essential.....	291
Agriculture, the base of production.....	292
Distribution of the rewards of industry.....	293
Gold and silver the most perfect standard of value.....	294
Cost of production a very definite thing.....	295
Important service of middlemen.....	297
Rewards of industry not properly distributed.....	298
Private fortunes of railroad kings.....	299
Organize associations.....	300
<b>HORSES. <i>By Hon. John L. Mitchell</i></b> .....	301
The thoroughbred.....	301
Lexington's pedigree.....	302-303
Ignorance of what constitutes a thoroughbred pedigree.....	303
Much abused Messenger.....	304
Breeding of <i>Rysdyck's Hambletonian</i> .....	304
Horse matters in general, and racing in particular.....	305

PRACTICAL PAPERS—continued.

SHORT HORNS. <i>By Vice President C. H. Williams</i> .....	306
First animals perfect, but by neglect degenerated .....	306-307
A new era in Short Horn breeding .....	307
More bred in America than in England .....	308
Noted public sales .....	309
Profits of growing for market compared with common breeds .....	310
Short Horns as milkers.....	311
Breeding .....	312-313
Feeding .....	313
JERSEY CATTLE. <i>By Judge George E. Bryant</i> .....	314
The breeders of Jerseys grievously abused.....	314
Famous for cream and butter.....	315
The cow for gentlemen, small farmers and the poor man .....	315-316
Queen Victoria's Jersey cow .....	316
The grand desideratum in agriculture is to discover a breed of cattle most useful .....	316-317
AYRSHIRE CATTLE. <i>By Jonathan Stoddard</i> .....	317
Breeds .....	317
Wisconsin destined to be a dairy state .....	317
Records .....	317-318
Hardy, and the best milkers .....	318
SHEEP HUSBANDRY. <i>By Vice President Eli Stilson</i> .....	319
Its relations to agriculture .....	319
Wool growing, on a sound and healthy basis.....	319
Wool growing in relation to farm and state .....	320
Two modes of sheep husbandry.....	320
Wool growing in relation to railroads .....	321
Races and varieties .....	322-323
Care and breeding.....	323
POLAND CHINA HOG. <i>By Hon. M. Anderson</i> .....	324
History of.....	325-326
Weights of .....	327-328
A well established breed.....	328
Its peculiarities and worth .....	328
The hog for the packer .....	329
ESSEX HOG. <i>By Hon. John Jeffers</i> .....	330
How procured .....	330
For beauty and symmetry they have no superiors .....	331
Quality and form to govern .....	332
Fifteen bushels of corn to be placed in a three bushel barrel.....	333
DISEASES AND REMEDIES. <i>By Dr. Wm. Horne</i> .....	334
The horse—his color .....	334
Anecdote of .....	335
Breeding .....	335-336
Housing—ventilation.....	336-337
Diseases.....	337
Rheumatism—founder .....	337
Care .....	338
Colic .....	339
Spavin and ringbone .....	339-340
The cow—abortion .....	340
Stoppage of the teats .....	341
Placenta or afterbirth.....	341-342
Sheep—foot rot.....	342
The pig .....	342
Poultry .....	343
Quacks .....	343
Disinfectants .....	343
DAIRYING. <i>By Chester Hazen</i> .....	344
Products of different dairies.....	344
Ayrshire, a popular dairy breed.....	345-347
Product of the dairy exceeds in value any other agricultural product.....	348
DAIRYING. <i>By Mrs. P. Putnam</i> .....	348
Too little interest in by farmer's daughters.....	348
Skill not acquired by faint-hearted trials.....	349
Valuable suggestions .....	350
Butter Making.....	351-352
Butter Worker.....	352

## PRACTICAL PAPERS—continued.

<b>GENERAL FARM HUSBANDRY AND ITS ASSOCIATIONS.</b> <i>By Dr. C. L. Martin</i> , member of the Executive Board.....		352
Practical Suggestions.....		353
Wheat Growing.....		353-354
Stock Raising—Durhams.....		354
Farming a Science.....		355
Farmers should be educated.....		355-356
Times of vice and corruption.....		356
Farmers in Congress—Lords of the Land.....		357
Fruit Trees—Flowers.....		357
Home Pleasures, conducers of virtue.....		358
<b>THE RELATIONS BETWEEN THE VEGETABLE AND ANIMAL KINGDOMS.</b> <i>By Prof. John Murrish</i> .....		358
Matter, that man is interested in.....		358-359
Nature says, "Give me matter and I will fill your barns.".....		360
Limestones—Elementary Substances.....		362
What it is the business of man to know.....		363-364
Silica—Lime—Labelled ready for the farmer's use.....		364
Bill of Fare—Extras.....		364
Scientific Farming, worthy the best Talent of the age.....		365
<b>SOILS—THEIR PRESERVATION AND RENOVATION.</b> <i>By Sec'y W. W. Field</i> .....		365
More economical and better system of culture necessary.....		365-366
Nature teaches wise and valuable Lessons.....		366-367
Plant Food—To be placed in the soil.....		368
Importance of making, saving, and applying manure.....		369
Thorough Culture.....		370-371
Clover—cheap and excellent Fertilizer.....		372
Commercial Fertilizers.....		372-373
Will these Things Pay?.....		374
The Wealth and Prosperity of the State largely depend upon the Farmer.....		375
<b>ELEMENTS OF SUCCESS IN FARMING.</b> <i>By Geo. E. Morrow</i> .....		375
What I count Success.....		376
Farmer, a Business Man.....		376-377
The Farm, the Main Capital.....		377
Peculiar Fitness of Things.....		377-378
Mixed Husbandry—Live Stock.....		378
Capital, an Important Element.....		379
The Farmer should be Educated.....		380
State University.....		381
Farmers cannot afford to have Ignorant Neighbors.....		382-383
Faith in your Business.....		383
Farming Must Pay.....		384
Mind Rules the World.....		385
<b>FISH CULTURE.</b> <i>By Alfred Palmer</i> .....		385
Fish can be Transplanted, Acclimated and Domesticated.....		385
Only leave their home at the Spawning season.....		386
Political Economy would dictate their Protection.....		386
Commissioners of Fisheries.....		387
Anadromous in their Habits.....		387
Public Waters can be stocked.....		388
<b>WHEAT CULTURE.</b> <i>By N. E. Allen</i> .....		388
Average crop of.....		388-389
Sow Plaster and Clover.....		390
Mulch the Land with Green Clover.....		392
To Utilize the Straw.....		393
<b>CRANBERRY CULTURE.</b> <i>By H. Floyd</i> .....		394
Productiveness.....		395
Preparations for Cultivation.....		395-396
Enemy of the Cranberry.....		396
Scalping.....		396
Planting.....		396-397
Curing.....		397
<b>FIRE BLIGHT.</b> <i>By J. C. Plumb</i> .....		398
How Recognized.....		398
More Prevalent in Close, Sheltered Locations and on Rich Soils.....		399
Theories of different Authors.....		399-403
Fungi not a cause, but a consequent.....		404
A Disease of the Circulation.....		405
Regulate by proper Soil and Culture.....		406

PRACTICAL PAPERS—continued.

**MARKET GARDENING.** *By J. M. Smith.*..... 406

Every man a Gardener..... 407

Proper soil, Market, etc..... 407

Location..... 408

Planting and Cultivation..... 409

List of Vegetables..... 410

Care and Labor..... 412-413

Faith, and Good Cultivation..... 414

Asparagus..... 415-416

Sales..... 416-418

Expenses..... 418-420

Inducements..... 420-424

**HOW CAN FARMING BE MADE ATTRACTIVE TO THE YOUNG.** *By Mrs. Helen Brettel Huntley.*..... 424

Change of Location injurious..... 425

No Excellence without Labor..... 426

A Stockholder in this beautiful Earth..... 427

Nature's Jewels should be set around the Simplest Cottage..... 428

Seeing Ourselves as Others See us..... 429

Useful and Beautiful Adornments of Nature..... 430

**HELP ON THE FARM.** *By Mrs. H. P. Tucker.*..... 430

Labor a Blessing..... 430

Money settles most of life's Questions..... 431

Help a necessity of the Life and Happiness of the Household..... 432

The Farm nearest like Paradise..... 433

**SUNLIGHT IN THE HOUSE.** *By S. L. Boardman*..... 433

Its Healthful Benefits..... 433-434

Disease cured by..... 434-435

Tenements unsuited to Live in..... 435-436

Let the Sunlight in..... 436

**CO-OPERATION AMONG FARMERS.** *By Hon. M. Anderson.*..... 437

Combinations for Robbing the People..... 437-439

Double Track Railroad..... 439

Railroad Commissioners..... 440

Farmers Aroused..... 441

Special and Local Agents..... 441-442

Patrons of Husbandry..... 442

Measures for Relief..... 442-443

**EDUCATION FOR THE FARMER.** *By T. H. Eaton.*..... 443

A Practical Lesson..... 443-444

Education the Foundation upon which to build..... 444

Lucrative Callings..... 445

Library..... 445

The Western Farmer..... 446

Intelligent Farmers a Power..... 446

Home Education..... 447

**IX.—UNIVERSITY FARM—REPORT BY PROF. W. W. DANIELS.**..... 448

Characteristics of the Season..... 448

Rain Fall—Milwaukee and Madison..... 449

Experiments..... 450

Winter Wheat..... 450-452

Spring Wheat..... 452-456

Barley..... 456-457

Oats..... 457-460

Corn..... 460-462

Sugar Beet..... 462-463

Silver Hull Buckwheat..... 463

Potatoes..... 463-464

Improvement of Soils by Mechanical Means..... 464

Seed donations..... 465

Meteorology..... 466

Summary of Observations..... 467-468

**X.—APPENDIX—GEOLOGICAL SURVEY OF THE MINERAL REGIONS.** *By Prof John Murrish.*..... 469

History of Mining has established certain Facts..... 469

Mineral Belt..... 490

Practical Value of Work already Done..... 477



APPENDIX—*Geological Survey*—continued.

Ironton—Sauk County.....	474
Facts never surrender to Theories or Authority.....	475 475
Limits of Lead and Zinc District.....	477
Fine Farming Lands.....	478
Great Inducements to Capital and Labor.....	478
Kaolin, or Porcelain Clay.....	480 481
Magnetic Separators.....	483
Important Enterprise.....	484
Bog Iron Ore.....	487 489
Indications of Rich Deposits.....	491
Iron Ridge—Dodge County.....	494
PATRONS OF HUSBANDRY.....	495

# CONSTITUTION.

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## 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 of 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.

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### 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.

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*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. Reports 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 at 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, Jas.....	Janesville	Bostwick, J. M....	Janesville.
Adams, Isaac.....	Cottage Grove.	Bostwick, Perry....	Janesville.
Adams, L. L.....	Stoner's Prairie	Bostwick, R. M....	Janesville.
Alexander, O.....	Milwaukee.	Bonnell, James....	Milwaukee.
Allen, J. W.....	Janesville.	Boorse, Henry....	Granville.
Allen W. C.....	Delavan.	Boyce, A. A.....	Vienna.
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, Cha's D....	Madison.	Brazea, Benj.....	Wauwatosa.
Atwood, David.....	Madison.	Briard, W. A.....	Madison.
Atwood, Wm. T....	San Francisco.	Briggs, F.....	Buffalo, N. Y.
Atwood, R. J.....	Madison.	Brockway, E. P....	Ripon.
Armour, P. D.....	Milwaukee.	Brodhead, E. H....	Milwaukee.
Armstrong, L. G....	Boscobel.	Brown, Jas. J....	Madison.
Aspinwall, D. M....	Farmington.	Brown, B. F.....	Fitchburg.
Ayres, J. W.....	Kenosha.	Brown, T.....	Madison.
		Bruce, A. T.....	Milwaukee.
		Bryan, Jno.....	Cross Plains.
Babbitt, Clinton....	Beloit.	Bryant, D. D.....	Madison.
Babbitt, D. H.....	Janesville.	Bryant, G. E.....	Madison.
Bacon, J. P.....	Westport.	Bull, Stephen.....	Racine.
Bacon, W. D.....	Waukesha.	Bullard, Jas.....	Evansville.
Bailey, A. P.....	Sun Prairie.	Bump, N. P.....	Janesville.
Bailey, M. T.....	Madison.	Bunker, Geo.....	Madison.
Barlass, Andrew....	Emerald Grove.	Burgess, J. M....	Janesville.
Barlass, David.....	Emerald Grove.	Bush, Sam'l.....	Milwaukee.
Barnes, George.....	Janesville.	Button, Henry H..	Milwaukee.
Barrows, E. S.....	Chicago.	Burnham, Miles...	Danville.
Barry, James.....	Fitchburg.	Burnham, A. Jr....	Milwaukee.
Bates, A. C.....	Janesville.	Burnham, J. L....	Milwaukee.
Beecroft, W. G.....	Madison.	Byrne, John A....	Madison.
Bement, E.....	Oregon.		
Bemis, Jervis.....	Janesville.	Casar, Wm.....	Janesville.
Benedict, J. D.....	Bristol.	Camp, H. H.....	Milwaukee.
Benedict, S. G.....	Provid'ce, R. I.	Capron, Geo.....	Madison.
Benedict, W. G.....	Milwaukee.	Carlton, W. D....	Sun Prairie.
Benson, S. W.....	Bloomfield.	Carpenter, J. A....	Waukesha.
Billings, Earl.....	Madison.	Carpenter, J. E....	Windsor.
Bird, I. W.....	Jefferson.	Carpenter, J. H....	Madison.
Bird, T. E.....	Madison.	Carpenter, S. D....	Madison.
Bishop, John C....	Fond du Lac.	Carr, N. B.....	Madison.
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.
Blossom, Levi.....	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.
Chapman, C. R.....	Leicester.	DeMore, A. B.....	Milwaukee.
Chase, Enoch.....	Milwaukee.	Dewey, Nelson.....	Lancaster.
Chase, H.....	Milwaukee.	Dewolf, E.....	Chicago.
Cheney, Rufus.....	Whitewater.	Devoe, A. B.....	Madison.
Children, E.....	Lancaster.	Dexter, W. W.....	Janesville.
Chipman, A.....	Sun Prairie.	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, J. B.....	Milwaukee.
Colby, Charles.....	Janesville.	Dousman, T. C....	Waterville.
Coleman, W. W.....	Milwaukee.	Dousman, H. L....	Prairie duChien
Colladay, Wm. M....	Stoughton.	Dow, O. P.....	Palmyra.
Colton, S. B.....	Middleton.	Drakely, S.....	Madison.
Cooper, E. D.....	Mineral Point.	Drury, E. W.....	Fond du Lac.
Cornell, James.....	Beloit.	Dunlap, S.....	Burke.
Cornwell, H. H.....	Verona.	Dunn, Andrew.....	Portage City.
Corrigan, Jno.....	Cedarburg.	Dunn, Wm.....	Madison.
Cottrill, J. P. C.....	Milwaukee.	Dunning, Abel.....	Madison.
Cottrill, W. H.....	Milwaukee.	Durkee, H.....	Kenosha.
Cottrill, C. M.....	Milwaukee.	Dutcher, J. A.....	Milwaukee.
Cory, J.....	Footville.	Dwinnell, J. B.....	Lodi.
Crampton, N. B.....	Madison.	Eaton, J. O.....	Lodi.
Crawford, E. B.....	Omaha.	Echlin, J. O.....	Janesville,
Crawford, J. B.....	Baraboo.	Edgerton, E. W.....	Summit.
Crawl, Jno.....	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.
Cummings, Wm.....	Fitchburg.	Ellsworth, O.....	Milwaukee.
Curtis, F. C.....	Rocky Run.	Ellsworth, W. J....	Madison.
Curtis, Seymour....	Fitchburg.	Elmore, R. P.....	Milwaukee.
Cutting, J. W.....	Harmony.	Eldred, Jno. E.....	Milwaukee.
Daggett, M. L.....	Madison.	Elson, Chas.....	Milwaukee.
Dahlman, Anthony..	Milwaukee.	Emmons, N. J.....	Milwaukee.
Dahlman, John.....	Milwaukee.	Enos, Elihu.....	Waukesha.
Dann, Obed.....	Janesville.	Esterly, Geo. W....	Whitewater.
Danks, E. P.....	Stoughton.	Fairbanks, E.....	St. Johnsbury, Vt
Daniells, W. W.....	Madison.	Farwell, L. J.....	Chicago.
Darling, K. A.....	Fon du Lac.	Fenn, G. W.....	Janesville.
Darwin, A. G.....	Brooklyn, N. Y.	Ferguson, D.....	Milwaukee.
Davidson, Adam....	Verona.	Ferguson, Benj....	Fox Lake.
Davis, G. L.....	Milwaukee.	Fernly, Jno.....	La Grange.
Davis, Jno.....	Milwaukee.	Field, Martin.....	Mukwanago.
Davis, N. P.....	Pierceville.	Field, W. W.....	Boscobel.
Davis, S. B.....	Milwaukee.	Fifield, L.....	Chicago.
Davis, W.....	Center.	Fifield, D. E.....	Janesville.
Dean, E. B.....	Madison.	Fifield, E. G.....	Janesville.
Dean, N. W.....	Madison.	Finch, Lorin.....	Bradford.
Dean, John S.....	Madison.	Firmin, F. H.....	Madison.

LIFE MEMBERS.

NAMES.	RESIDENCE.	NAMES.	RESIDENCE.
Fisher, C. C. ....	Center.	Haight, J. M. ....	Sacramento, Cal.
Fisher, Elijah ....	Newark.	Haight, Nicholas ..	Madison.
Fisher, S. W. ....	Center.	Hall, Augustus. ....	Janesville.
Fisher, Seth ....	Center.	Hallock, Youngs. ...	Middleton.
Fitch, D. ....	Madison.	Hall, H. P. ....	Madison.
Fitch, W. F. ....	Madison.	Hanchett, A. M. ....	Hanchetville.
Fitch, W. G. ....	Milwaukee.	Hancock, Brad. ....	Marshall.
Fitzgerald, B. P. ....	Milwaukee.	Hammond, L. M. ...	Janesville.
Fletcher, John. ....	Springfield.	Hammond, E. S. ...	Fond du Lac.
Flint, J. G., Jr. ....	Milwaukee.	Harrington, N. H. ..	Delavan.
Folds, Geo. H. ....	Madison.	Harris, Jas. ....	Janesville.
Foot, E. A. ....	Kansas.	Harvey, J. W. ....	Madison.
Foot, Sidney. ....	Madison.	Hasbrouk, W. H. ...	Eau Claire.
Fowler, Jacob. ....	Oshkosh.	Hastings, S. D. ....	Madison.
Fowler, James S. ...	Milwaukee.	Hausman, Jos. ....	Madison.
Fox, W. H. ....	Fitchburg.	Haves, J. F. ....	Madison.
Fratt, N. D. ....	Racine.	Haves, 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. E. ....	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. ....	Milwaukee.	Hill, P. B. ....	Milwaukee.
Gernon, George. ....	Madison.	Hill, Robt. ....	Milwaukee.
Gibbs, Chas. R. ....	Whitewater.	Hilmer, 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.	Hoyt, J. W. ....	Madison.
Greene, N. S. ....	Milford.	Hurlbert, E. ....	Oconomowoc.
Green, Samuel. ....	Fitchburg.	Hume, Wm. ....	Oshkosh.
Greenleaf, E. B. ....	Milwaukee.	Hutson, Sol. ....	Janesville.
Greenman, C. H. ....	Milton.	Hyde, Edwin. ....	Milwaukee.
Gregory, J. C. ....	Madison.	Ilsley, Chas. F. ...	Milwaukee.
Grinnell, J. G. ....	Adams.	Imbusch, J. H. ....	Milwaukee.
Groom, John. ....	Madison.	Ingham, A. C. ....	New York.
Grover, E. ....	Madison.	Jackman, Hiram. ...	Janesville.
Grubb, W. S. ....	Baraboo.	Jenks, S. R. ....	Madison.
Guernsey, Orrin. ...	Janesville.	Jenkins, J. C. ....	Janesville.
Gurnee, J. D. ....	Madison.		

NAMES.	RESIDENCE.	NAMES.	RESIDENCE.
Jerdee, L. P.....	Madison.	Lyman, L. H . . . .	Dakota.*
Jerdee, M. P.....	Madison.	Lynch, T. M.....	Janesville.
Johnston, Jno., Jr...	Madison.	Lynde, W. P.....	Milwaukee.
Johnson, M. B.....	Janesville.		
Johnson, John.....	Milwaukee.	Main, Alex. H.....	Madison.
Johnson, Hugh L..	Milwaukee.	Mann, I. L.....	Fitchburg.
Johnston, John.....	Milwaukee.	Mann, J. E.....	Sun Prairie.
Jones, C. H.....	Sun Prairie.	Mann, Henry.....	Milwaukee.
Jones, John N.....	Madison.	Mann, Curtis.....	Oconomowoc.
Juneau, Paul.....	Juneau.	Macy, J. B.....	Fond du Lac.
Janssen, E. H.....	Mequon.	Manwaring, Wm...	Black Earth.
		Marshall, Samuel..	Milwaukee.
Kellogg, L. F.....	Madison.	Martin, A. C.....	Ashton.
Kellogg, L. H.....	Milwaukee.	Martin, C. L.....	Janesville.
Keimert, 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.
Landaur, 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.	Mears, Wm. A.....	Madison.
Larkin, William...	Madison.	Merrill, Alf.....	Madison.
Lawrence, W. A.....	Janesville.	Merrill, S. S.....	Milwaukee.
Lawton, J. G.....	Green Bay.	Miller, John.....	Madison.
Learned, J. M.....	California.	Mills, Simeon.....	Madison.
Leiedersdorf, B.....	Milwaukee.	Miltimore, Ira.....	Chicago.
Leitch, W. T.....	Madison.	Miner, Cyrus.....	Janesville.
Leitch, W. T., Jr..	Vienna.	Miner, John, B....	Milwaukee.
Leslie, John.....	Madison.	Mitchell, Alex.....	Milwaukee.
Lester, Waterman..	Janesville.	Mitchell, J. L.....	Milwaukee.
Lewis, Herbert A...	Madison.	Morehouse, L. H...	Milwaukee.
Lewis, John L.....	Madison.	Morse, Samuel.....	Milwaukee.
Lindsey, E. J.....	Milwaukee.	Moseley, J. E.....	Madison.
Little, Thos. H.....	Janesville.	Mosher, J. C.....	Lodi.
Lloyd, Lewis.....	Cambria.	Moxley, A. R.....	Madison.
Lockwood, John...	Milwaukee.	Mullen, James.....	Milwaukee.
Ludington, H.....	Milwaukee.	Murray, Geo.....	Racine.
Ludington, James...	Milwaukee.		
Ludlow, A.....	Monroe.		
Lucy, O. K.....	Columbus.	Nash, C. D.....	Milwaukee.

NAMES.	RESIDENCE.	NAMES.	RESIDENCE.
Nazro, John.....	Milwaukee.	Rawson, C. A.....	Madison.
Needham, J. P.....	Wauwatosa.	Ray, Charles.....	Milwaukee.
Newcomb, S. B.....	Cold Spring.	Raymond, S. O.....	Geneva.
Newton, Ephraim ..	Oregon.	Riordon, Charles...	Oshkosh.
Newton, I. S.....	Middleton.	Reed, Herbert.....	Arena.
Nichols, L. T.....	Janesville.	Reed, Harrison.....	Jacksonville, Fl.
Norris, C. W.....	Milwaukee.	Ressigue, A. C.....	Janesville.
Norten, J. B.....	Madison.	Reynolds, M.....	Madison.
Nott, B. F.....	Oregon.	Reynolds, John....	Madison.
		Reynolds, Thomas'.	Madison.
		Reynolds, John....	Kenosha.
Ober, R. P.....	Milwaukee.	Rexford, J. D.....	Janesville.
Olney, C. W.....	La Cygne, Kan.	Rice, E. M.....	Whitewater.
Orr, G. H.....	Verona.	Richards, Richard..	Racine.
Ott, Geo. V.....	Madison.	Richardson, D.....	Middleton.
		Richardson, James.	Buffalo, N. Y..
Paddock, Geo.....	Milwaukee.	Richardson, R. J....	Janesville.
Page, H. L.....	Milwaukee.	Richardson, H.....	Janesville.
Page, H. M.....	Madison.	Richmond, Amaz'h.	Whitewater.
Palmer, H. L.....	Milwaukee.	Riebsam, C. R.....	Madison.
Palmer, J. Y.....		Robbins, J.....	Vienna.
Palmer, O. M.....	Oregon.	Robbins, J. V.....	New York.
Park, John W.....	Vernon.	Roddis, R.....	Milwaukee.
Park, Wm. J.....	Madison.	Rodermund, John..	Madison.
Parker, C. H.....	Beloit.	Rodgers, Lawrence.	Westport.
Parmley, Ira.....	Center.	Roe, J. P.....	Franklin.
Palmer, Henry.....	Oregon.	Rogers, C. H.....	Milwaukee.
Parsons, P. B.....	Madison.	Rogers, D. J.....	Milwaukee.
Partridge, J. S.....	Whitewater.	Rogers, J. S.....	Burlington.
Patten, L. F.....	Janesville.	Rogers, Anson.....	Janesville.
Patton, Jas. E.....	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.	Simmons, C. J.....	Monroe.
Post, David T.....	Milwaukee.	Sinclair, Jeff.....	Milwaukee.
Powers, D. G.....	Milwaukee.	Sharp, J. W.....	Iowa.
Powers, D. J.....	Chicago.	Shaw, J. B.....	Milwaukee.
Powers, Wm. J.....	Black Earth.	Sheldon, A. H.....	Janesville.
Pratt, E. E.....	Chicago.	Sheldon, D. G.....	Madison.
Pres't St. Peter's Val.		Sheldon, S. L.....	Madison.
Farmers' Club.....	Springfield.	Shepherd, C.....	Milwaukee.
Pritchard, P. M.....	Fitchburg.	Sherman, Adelmorn	La Prairie.
Proudfit, Andrew ...	Madison.	Sherman, Amaziah.	La Prairie.



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

*LIFE MEMBERS.*

21

NAME.	RESIDENCE.	NAME.	RESIDENCE.
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.		
Worthington, Geo. ...	Milwaukee.	Young, J. E. ....	Harmony.

## OFFICERS OF THE SOCIETY AND EXHIBITION.

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PRESIDENT.		
B. R. HINKLEY,	- - - -	SUMMIT.
SECRETARY.		
W. W. FIELD,	- - - -	BOSCOBEL.
TREASURER.		
HARRISON LUDINGTON,	- -	MILWAUKEE.
MARSHAL.		
W. R. TAYLOR,	- - - -	COTTAGE GROVE.
GATE - KEEPER.		
N. D. FRATT,	- - - -	RACINE.
TICKET ACCOUNTANT.		
D. H. McARTHUR,	- - - -	MILWAUKEE.

### CHAIRMAN AUDITING COMMITTEE.

JOHN L. MITCHELL,	- - - -	MILWAUKEE.
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### DEPARTMENT SUPERINTENDENTS.

<i>Horse Department.</i>		
N. S. GREEN,	- - - -	MILFORD.
<i>Cattle Department,</i>		
C. H. WILLIAMS,	- - - -	BARABOO.
<i>Sheep Department.</i>		
ELI STILSON,	- - - -	OSHKOSH.
<i>Swine Department.</i>		
J. H. WARREN,	- - - -	ALBANY.
<i>Poultry Department.</i>		
J. T. KINGSTON,	- - - -	NECEDAH.
<i>Agricultural Department.</i>		
DR. C. L. MARTIN,	- - - -	JANESVILLE.
<i>Fruit and Flower Department.</i>		
O. S. WILLEY,	- - - -	MADISON.
<i>Machinery Department.</i>		
RUFUS CHENEY,	- - - -	WHITEWATER.
<i>Manufacturers Department.</i>		
SATTERLEE CLARK,	- - - -	HORICON.
<i>Fine Arts Department.</i>		
J. O. EATON,	- - - -	MILWAUKEE.

# TRANSACTIONS.

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## ANNUAL REPORT.

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To His Excellency, C. C. WASHBURN,

*Governor of the State of Wisconsin:*

SIR: In presenting my first report of the transactions of the Wisconsin State Agricultural Society, embracing its work from January 1st, 1872, to April 1st, 1873, being volume XI. of the society, it is a source of pride and gratification to state that agriculture has never been in a more flourishing and healthy condition. This fact is not more, if as much, to be attributed to the increased crops, better prices, or more direct paying results of the labor of the farmer in any of his varied departments of effort, as to the deep and vital interest manifested in his profession. The farmers all over the state are asking what they shall do to renovate and increase the fertility of their soils, to increase the quantity and quality of their crops; how they may raise more and better stock; how they can better their market facilities, and generally improve their social, intellectual and financial condition. This looks promising. It shows that the quickening spirit of the age which most other callings and pursuits caught years ago, has at last stirred up the great agricultural world to a realizing sense of its duty, and to the influence and power which it ought to exert in the grand struggle which is now going on in all departments of human activity, each battling manfully to obtain the largest remunerative returns for the mental and physical labor expended. This society has been somewhat instrumental in stimulating this inquiry and investigation among the people, by its

annual fairs and volume of transactions, which, by a liberal provision of the legislature, I am now able to circulate more largely among the people. The same may be said in a more limited sense of the county and other local fairs. They are great public educators.

In this connection, it is but justice to say that W. W. Daniells, M. S., Prof. of Agriculture and Analytical Chemistry in the University of Wisconsin, has, by his public addresses, practical and scientific writings, done much to educate the reading and thinking agriculturist. And then the able, earnest and efficient laborers in the cause of industry, the Morrow Brothers of the *Western Farmer*, are doing their share of this noble work. These valuable agencies working harmoniously together, as I am happy to say they are, are powerful influences for the dissemination of scientific and practical information among the people, and are producing a healthy stimulus and competition, causing the farmers to think, study and investigate their calling. They begin to appreciate the stubborn fact that this is a time of mental strength and vigor, and that no business or profession can compete with its neighboring calling or pursuit unless thoughtfully and intelligently directed. They appreciate the scientific and experimental investigations which are now being made, by availing themselves of their benefits and teachings, and are beginning to understand that there must not only be industry, economy and perseverance, backed by muscle, in conducting farming operations, but that there must be an application of common sense and chemistry, thought and brain force to govern and direct. They are fully comprehending the idea that the information derived from a few well selected scientific works upon agriculture, and chemistry as applied to agriculture, and the practical knowledge derived from experience and observation, which can be obtained from agricultural journals, coupled with their own experience and observation upon the farm, and in attending fairs and conventions, where the results of experiments and private enterprise are brought together and comparisons made, will make them scientific, practical, and successful workers of the soil. It is with pride that as proof of this earnest effort now going forward, I can point to Farmers' Clubs, Patrons of Husbandry, and other educational and industrial societies which are springing

up all over the state, for bettering the social condition of the farmers, and educating them in the noble profession which they have chosen for a life work.

#### THE UNCERTAINTY OF AGRICULTURE.

Perhaps there is no branch of business more uncertain than agriculture. This is partly owing to local conditions of climate, soil, and other causes and agencies, which the farmer should carefully observe and study. The practices and experiments in one county of the state, may not apply in another, where the local conditions are entirely different. For instance, experiments made upon land in one part of the state with full protection from the cold north winds and other favorable conditions, may be of little practical value in another part of the state with the same kind of soil, but with local surroundings and conditions unfavorable. Persons therefore, in discussing these important questions should, as far as possible, give the character of the soil, the exposures and general conditions which may have a bearing upon results, so that those similarly situated may feel sure of a like result, without the loss of time, trouble and the expense of making the experiment. Modes of culture best adapted to the prairie soils of the southern part of the state, are not adapted to the more clayey soils of some of the timbered, or oak opening lands of other parts of the state. Hence, a general practical knowledge of the various modes of developing the great agricultural resources of this state, must be more slowly acquired than in some of our more exclusively prairie sister states adjoining us.

#### WORK FOR LOCAL SOCIETIES.

Here opens a work for farmers clubs and other local societies. Let them show the variety of soils, crops best adapted to each, whether cereals or grasses; whether the soil is better calculated to be of profit to the owner in one branch of farming or in another; whether its peculiar location, surroundings and favorable conditions, railroad and market facilities, do not make it a more suitable location for raising small fruits, vegetables and the like, than other products which may be produced in other localities with greater profit; whether stock raising would not pay better than any other branch

of farming upon such lands, with such and such conditions, facilities for transportation; and if so, whether the dairy would be best, or the raising of cattle for market. No other branch of business requires so large an area for successful operations, and this naturally tends to place at a much greater distance those engaged in agriculture, and thus are lost many of those social, refining, and elevating influences which attach to other callings or professions, where a more frequent intercourse and interchange of ideas can be had. This, however, is being happily obviated by the weekly, semi-monthly and monthly meetings of these local agricultural educational societies, and these are sources of information and culture which cannot be too highly encouraged and sustained.

## AGRICULTURE.

### WHEAT.

The acreage of this great staple was somewhat larger than the year previous, and the yield per acre largely in excess of 1870 or '71; probably one fourth greater, except in one or two counties, where the chinch bug and the extreme heat of mid-summer very materially injured it. This large increase was more marked and striking, upon the old lands than upon the new; and is to be accounted for from the extreme heat, and dryness of the atmosphere during a portion of the growing season, thereby affecting more seriously the shallow breaking or new sod land, than the older, deeper tilled and more thoroughly pulverized soils. The increased yield per acre was due no doubt to many causes, but chiefly to the improved condition of the soil by the favorable winter and spring; the ground freezing slightly, and the frost having almost entirely disappeared when the snow began to melt, allowing the water, rich in ammonia, to pass into the soil, making it not only light and friable, but increasing largely the amount of plant food for the crop. The quality was rarely, if ever, better in the state.

### CORN.

[This crop, the great cereal for the farmer, was of excellent quality, and some eight per cent. greater in quantity than in 1870.

This must ever be the leading crop of the state, for the reason that it not only furnishes excellent and nutritious food for man, but is the crop upon which the farmer must ever rely to fatten his cattle, hogs and sheep. It is also good food for horses, particularly in cold weather when they perform labor which requires only a slow gait. For the roadsters, oats, or other food of less heat producing qualities are no doubt better.] I cannot too strongly urge upon the farmers of the state the importance of raising this staple in abundance. It is less exhaustive to the soil than any other general farm crop, can be converted to more numerous and profitable uses than any other, and is with proper care and cultivation, a sure crop. Lands may be seen in some parts of this state, where this cereal has been grown for twenty years in succession, and nothing of a fertilizing nature but the stalks returned, that in 1871 produced as good crops as in any year during the period mentioned. The culture, care and preparation of such lands have, however, not been neglected. I would not advise this continual cropping to corn, but nevertheless I do believe, that with a seeding to clover, say one year in ten, taking off one crop of wheat and one of hay, with eight of corn, that the land, if deeply and thoroughly cultivated, stalks plowed under carefully each year when in corn, will produce good crops for an hundred years.

## OATS.

[A slightly increased yield of this crop was apparent, and of superior quality. Oats are principally used as food for horses, but experience has shown that they are also very valuable food for stock hogs, a feed being occasionally given them instead of corn. They contain more of the bone forming elements than corn, or wheat. This crop is more exhaustive to the soil than any other general farm product, and unless made very remunerative by nearness to high oat markets, I would not advise its culture except for home consumption.]

## BARLEY.

[About the average crop produced, but of inferior quality. Except in localities where there is a home demand, and at highly remunerative prices, I would not encourage its production in abund-



ance, believing it to be of less value per acre than either wheat, corn, or oats. Some farmers deem this grain when ground, excellent for fattening cattle and hogs, and upon certain soils, and from the fact that it ripens earlier than many other cereals, giving more time to harvest a large crop, it may be made profitable.]

#### RYE.

[The acreage of this crop was less than the previous year, and the average yield somewhat reduced, but the quality was good. This is a sure crop upon any of the soils of the state; is excellent food for man and beast, and for late autumn and early spring feed for stock, is of great value. As it can be sowed at a time of comparative leisure to the farmer, harvested in advance of his spring sown crops, and converted to so many valuable uses as food, its cultivation is to be encouraged.]

#### BUCKWHEAT.)

The product was a good average, and of the best quality. While other crops upon most of the lands of the state may be grown with greater profit than this, there are some soils, particularly in the sandy belt, of poorer quality, where this grain thrives with vigor, and yields a return equal to the more valuable and richer soils of other portions of the state planted in other crops. The flour is about the price of wheat flour, and for the manufacture of hot breakfast cakes, has become in cold weather, an indispensable article in every household. Enough was raised for home consumption, and a small balance for export. The \*Silver Hull Buckwheat," sent by the Commissioner of Agriculture to Prof. Daniells, and by him sown upon the experimental farm at Madison, is said to produce a superior article of flour, is a great yielder, and a little earlier than the common variety.

#### POTATOES.

This esculent was quite an average crop, and in most parts of the state of excellent quality. This crop has been seriously injured by the Colorado beetle in previous years, and, to some extent the past season, but its destruction being confined to narrower limits than heretofore, it is to be hoped that it is disappearing

from the state, if not from the face of the earth. Our varied soils are all well adapted to the growth of this tuber, but I think it can be grown in greater quantity, and of superior quality, in timbered portions of the state. Our home markets were well supplied, and thousands of bushels shipped to the adjoining state of Illinois.

#### CRANBERRY CULTURE.

This branch of industry is of considerable importance. I have no means of information as to the amount of cranberries produced the last year, but suffice it to say that it was several thousand barrels. The quality was excellent, commanding the high price of \$12 to \$15 per barrel in the markets of the country. It is claimed, and I think justly, that Wisconsin has the best cranberry lands, with the most favorable conditions of culture, of any state in the Union. Companies are being formed for the raising of this fruit upon an extensive scale, and private parties are looking up marshes with a view of entering this field of labor, both stimulated by the enormous profits which are being realized by cultivators who have put their cranberry lands under proper drainage and tillage for this crop. This interest is a source of much wealth to the state, and promises grand and munificent returns in the near future.

#### TOBACCO.

This weed has been raised for some years, and with a good degree of success, upon the prairie soil of the southern part of the state, particularly in the counties of Rock and Walworth. The crop was above an average one, and of superior quality. This is one of those special farm products, which if soil and other conditions favor, is quite profitable. It is an exhaustive crop, and farmers should beware, lest in the application of all their manure to their tobacco land, they do not impoverish the balance of their farming lands to such an extent that, notwithstanding their net returns may be greater from the few acres in tobacco than from the same number of acres in any other crop, their real or prospective wealth is not insured. If man, and the tobacco worm, continue to use this weed, as I doubt not they will, and if larger and more remunerative returns can be realized than in the product of any

other crop, its culture should be made a special study by those engaged in it, so that the best quality may be produced, and highest price secured.

#### HOPS.

This is another of those special products which, if produced in limited quantities in other states and countries, and in abundance here, is highly profitable. This crop is principally raised in the counties of Sauk and Richland, only a few yards having been started elsewhere. The yield was light, but the price ruling high, the result has been quite satisfactory to the producer. Cultivation to a large extent is not to be encouraged, as prices are unstable and crop uncertain.

### STOCK FARMING.

#### HORSES.

This valuable animal has not improved in the same ratio as other farm stock. Horses reasonably adapted for heavy draft work, or general farm purposes, may be found in all parts of the state, but there seems to be a want of first-class horses for the road; animals with good feet and legs, well muscled and strong, and hence possessed of speed and endurance. Horses for the road do not require great size and weight, but should be bred for rapid traveling, and for vigor and powers of endurance. Another point of importance in the breeding of horses is the gait in walking. The horse that can walk his four and one-half to five miles per hour, and do it naturally, will perform more work with greater ease than the three mile gait of the common animal, and hence is much more valuable. This can only be obtained by breeding from the best blood, and with a view of developing and strengthening certain essential characteristics, and is worthy the thoughtful consideration of the breeder of this noble animal. Inferior thoroughbreds should be discarded, and only animals perpetuated which possess the desirable points required.

#### CATTLE.

The cattle of the state are rapidly improving. The scrub stock

of twenty years ago is seldom seen. The more beautiful and profitable Short Horns, Devons, Ayrshires, Alderneys and grade cattle of valuable qualities, are fast taking their places. The farmers of the state are more and more each year turning their attention to this branch of farming, believing that the profits arising from their labor are much greater, and the exhaustion to their lands much less. Until transportation is cheapened between the great food-producing states of the west, and the consuming states of the Atlantic, the farmer must study how he can best compress his corn and other coarse products into the smallest bulk, and have it conveyed for the least money. It is a source of gratification to state that nearly all of the coarse grain shipped from the state is in the concentrated form of beef, pork and other like products. The number of cattle has increased the last year, notwithstanding the increased demand for home consumption, and the export being larger than the previous year.

## SHEEP.

This branch of stock raising cannot be too strongly encouraged. Wool is commanding good prices, and woollen manufacturing establishments are being built all over the state, making a home market for the entire product. There is also an increased demand, both for home consumption and for export, of fat sheep and lambs. Mutton is an excellent article of food, and is much sought after by all classes, particularly in warm weather, being highly nutritious, easily digested, and possessing less heat producing properties than more fatty meats of many other animals, and hence more healthful during the summer season. Altogether, I consider the sheep one of, if not the most profitable animal for the farm. They will thrive upon coarse feed, with little grain, will obtain their living later in the autumn and earlier in the spring upon the pastures than other stock, clean pastures of weeds and brush, and preserve the lands upon which they roam in a high state of fertility.

(ROOM FOR MORE:—"Statistics show that there were in 1871, about 32,000,000 sheep in the United States, yielding an average of four pounds of wool each, or 128,000,000 pounds in the aggregate. In addition, the annual importation of wool amounts to about 70,000,000 pounds, at a cost of nearly \$10,000,000. Then we import woollen goods to the amount of nearly

\$44,000,000 per annum. There is room, therefore, for an increase of 17,000,000 more sheep in the country to supply the home demand for wool, and for about 12,000,000 to displace the importation of woolen goods.")

There has been a healthy increase in number the last year, and a determination among breeders to still further increase their flocks. ]

#### SWINE.

[The hog must ever be one of the favorites of the stock farmer, as he is quiet and peaceable when well fed, rapidly increased, marketed at any age, and returns realized as readily and quickly as almost any farm product. With good clover pastures, with running water therein, warm sheds or stables in winter, with plenty of corn — heat producing and fattening food — they can be raised with profit. The hog crop of the state was considerably in excess of the previous year, but the average weight lighter. The most popular breeds are the Poland China and Berkshire. Suffolks and Chester Whites are also much admired by some growers.]

#### POULTRY.

The rearing of poultry is receiving much attention. Those exclusively engaged in it claiming that they can produce a given number of pounds of this delicate and desirable food as cheaply as beef or pork. Insects, as well as wild seeds and scattered grains may be utilized in raising these choice birds, and I doubt not, if made a specialty, may be made quite profitable, particularly near our large cities and villages, where eggs and young chickens command high prices. Beside, much of the labor of caring for and feeding can be done by children and women, furnishing them a light and pleasant employment. The varieties grown are numerous.

#### BUTTER.

[This dairy product is manufactured by almost every farmer's wife in the state, and when well made, as it can only be by those possessed of a thorough knowledge of the business, and who take pride in doing "all things well," is a delicious and healthful article of food. When I say that much poor butter is made in the state, I do it with a realizing sense of the truthfulness of the assertion

from my own observation, and the experience I have had in being occasionally compelled to purchase a worthless article. It is miserable stuff and should be ruled from the market as butter, and called by its true name, axle grease. " 'Tis true, 'tis pity, pity 'tis 'tis true." Nearly all the poor butter made is directly traceable to one, or all of the following causes. Improper feed of cows, disregard of cleanliness, and a thoughtless, heedless, don't care mode of manufacture. In fact, a want of proper knowledge of the business. Dealers are also largely to blame for much of the worthless butter made, as the price they pay for a poor article is substantially the same, as for a prime brand. They hav'nt the courage, candor, or common honesty to say to their customers, "this is an inferior article and we will pay you accordingly," for fear of losing their custom, but pay the same, and then to even up and save themselves from loss, charge an exorbitant price for their goods in exchange.]

#### THE ART OF MAKING BUTTER.

Mr. Todd, of New York, in response to numerous inquiries relative to making prime butter, gave the following information before the American Institute Farmers Club, at its meeting in March, 1873:

"Many producers of butter make a grand mistake, which deprives them of a large amount of clear cash, by supposing that the products of their dairy will return them just as much profit when the butter is made in such a careless manner that it resembles a cross between mutton tallow and lard, rather than gilt-edged butter. Thousands of tubs and firkins of butter, strong enough to perambulate the city, are sold at from ten to fifteen cents per pound; whereas by exercising a little care and neatness, and adding the proper quantity of salt, every pound would have brought thirty to thirty-five cents. The loss has to be sustained by the producers. Thousands of hard-working females who grind out their dimes by irksome drudgery could make two or three dollars per every hour's service when making butter, by simply spending a few minutes more than they have hitherto done in managing their milk, cream and butter with extra care. It is the scrupulous neatness in washing milk pails and pans, in

the management of the cream, in churning and packing butter, that secures an article that will pass for prime gilt-edged, which always commands a remunerative price, whether it is made in Orange county, or on the prairies of Kansas. I wish to impress on those butter producers, who always complain of low prices, the eminent importance of observing only a few things which will enable them to make an article which may be forwarded directly to any of our fashionable hotels, where every pound will command the highest price.

"1. See that every milk-pail, pan, churn and butter bowl is cleansed with boiling hot water as often as they are used.

"2. See that the udders of the cows and hands of the milkers are as clean as pure water will make them before an atom of milk is drawn.

"3. Provide a neat and clean place for the pans, and where the pure breezes from the green fields may pass over the cream and out at an opposite opening. Good butter can never be made in a filthy apartment, where there are offensive effluvia arising from anything, no matter what.

"4. Cream ought to be churned every day; yet, if one can provide a clean corner, in a cellar or milk-room clean and cool, and keep the cream pail on a clean piece of flag stone, he can make superior butter by churning twice a week, provided the temperature of the cream is maintained from day to day about 60° Fahrenheit.

"5. Always skim the milk soon after the cream has risen. Thousands of barrels of cream are ruined for making gilt-edged butter by not skimming the milk soon after all the cream has risen. The sooner the cream is removed after it has arisen, the better the butter will be. Milk, which should be skimmed at evening, is frequently left until the morning, when the cream will be injured to such an extent that gilt-edged butter cannot be made from it at all; neither will it make as many pounds as if it had been skimmed at the proper time.

"6. Let the churning be done by a person whose hands and clothes are as sweet and clean as blossoms of red clover; and let the churning be continued until the butter has come. It is ruinous to butter to put cream in the churn, as it is sometimes done,

and churn rapidly for a minute or two every hour in the day, then in the evening all take hold in turn, and keep the cream dashing and splashing until midnight. If the cream is managed properly, butter will always come beautifully in less than half an hour.

"7. The butter should be worked and thoroughly salted soon after it is churned. There is but little danger of salting too much. One ounce per pound is not enough for butter that is to be shipped any considerable distance. It is ruinous to the grain of butter to throw it into a dish pan and knead it with the hands. The best instrument for working out the buttermilk is anything that will cut deep gashes in the butter into which the buttermilk will flow. The next day after churning, the butter should be worked again and packed. Beware of working butter too much. A great many persons continue to work and knead their butter to its greatest injury after the buttermilk is removed, thinking that all the crystal 'tear-drops' which are not buttermilk, must be worked out.

"8. Thousands of tubs and firkins are received in the New York market, containing what was once prime, gilt-edged butter, but which was spoiled by being packed before the tubs had been properly prepared by being soaked in brine. For the sake of saving three cents worth of salt, for preparing a brine in which to soak a firkin two or three days, many a frugal housewife has been obliged to accept half the price of prime butter, simply because the staves were not saturated with brine before the butter was packed."

This important branch of farm industry cannot be too highly encouraged, and when one has acquired a thorough knowledge of the business, so as to make a strictly prime brand, the public should appreciate his or her efforts, and pay them "gilt-edged" prices for such a superb article. The amount manufactured in 1872 more than supplied the home demand.

#### CHEESE.

This product has largely increased the last year, and promises well for the future. The supply in the state is much in excess of the demand, and hence a large amount is exported. Wisconsin cheese stands high in foreign markets, and by co-operative and combined effort the rates of transportation have been so reduced



that it can be shipped from the dairy to Liverpool for about one cent per pound. Too much attention cannot be given to this branch of industry, as there is little danger that it will be overdone, or the price unremunerative when it can be carried a thousand miles across our country and three thousand across the Atlantic for one dollar per hundred pounds. Besides, it is an article of food liked by all classes, but from the price it usually commands, is used in limited quantities—more as a luxury than otherwise—by the poorer people, whereas if the amount manufactured was largely increased—even doubled—the price would be slightly less, and the consumers wonderfully increased, so that the product would be all used, and at remunerative prices to the producers. There is no other branch of farming which has paid better in the state than this, and the better its manufacture is understood the better will be the profits.

## MISCELLANEOUS.

### APPLES.

There was a very light crop of this standard fruit—not half enough for home consumption. Orchards of hardy varieties are however being planted all over the state, and promise a fruitage in the early future, of such abundance as not only to supply the home demand, but the calls from other states less favorably situated for successful fruit culture.

### PEARS.

This excellent fruit is produced in limited quantity, many cultivators believing that they can not be successfully and profitably raised.

Experience and observation have however shown that they may be produced in abundance, and of excellent quality in many parts of the state. The remarks of ex-senator J. T. Kingston upon pear culture, will be found in this volume in the proceedings of the agricultural convention held in February, 1873, and are worthy of careful thought and investigation. The Flemish Beauty and Early Bergamot have been cultivated to considerable extent, have been raised for some years and are very hardy.

## GRAPES.

This healthful and luscious fruit was produced in such abundance as was never before known in the state, and of superior quality. They were not simply grown in small quantities for family use, but were raised by the acre and the ton. A home market was found for most of them at five to seven cents per pound. The supply was, in many parts of the state largely in excess of the demand, even at the above figures, and hence many tons were manufactured into a pure and truly excellent wine, far more healthful, or perhaps, I should say, far less hurtful, than many of those brands that come to us from other lands. If the public will have a stimulant, I advise them to take the juice of the grape, pure and unadulterated. The Concord is grown in greatest abundance, being the most hardy. Catawba, Delaware, and other choice grapes for the table, and for wine, are also produced in considerable quantities, but are somewhat less hardy, and require greater care in cultivation.

## CLOVER.

Among the many valuable grasses grown in the state for pasturage, hay, and the renovation of the soil, clover stands pre-eminently at the head. It furnishes rich and nutritious pasturage, and hay of unsurpassed excellence, if cut early and properly cured. But its great superiority over the other grasses is the renovating and restoring properties which it imparts to the soil. Its long, large and vigorous roots penetrate the soil to a depth in search of plant food that none of the cereals can reach, and brings up fertilizing properties which otherwise would be useless, and thus new life and vigor are given to the soil. The farmer must ever remember that the land he cultivates is his bank deposit, and that, if not kept up to a certain high standard of fertility, his dividends annually declared must be small, his labor become less remunerative and unsatisfactory, and general ruin, if not the poor-house, ere long appear to him as but a little way off.

## PISCICULTURE.

A commendable interest is being shown in this department of agriculture. As yet, however, little has been done beyond the

propagation of the trout. This fish has been quite successfully, and, I am informed, profitably grown for some years by H. L. Douseman of Waterville, a member of the executive board of this society, and Alfred Palmer of Boscobel. Others are commencing its culture in various parts of the state. Mr. Palmer read a brief but valuable paper upon fish culture, before the agricultural convention in February, 1873, which will be found in this volume. The general government has done something in the direction of planting many of the valuable fishes, such as salmon, shad and bass, in the large rivers and lakes of the country. The German government has recently made a present to the United States of two hundred and fifty thousand salmon eggs. From this stock and others purchased from the same country, it is thought our waters suited to that valuable fish may soon be supplied. I am credibly informed that Prof. Spencer F. Baird, U. S. commissioner of fish and fisheries, has recently sent forty thousand salmon eggs to H. L. Douseman of Waterville, and that they have hatched well, and are doing finely. These little fishes are to be placed in the rivers flowing into lake Michigan as an experiment, and one can but hope that this valuable family when they arrive at the great lake, will believe it to be the "briny deep," and live and flourish as well as in other waters supposed to be more congenial.

The enterprising city of Madison, by her wise city council, has taken a lively interest in the introduction of salmon trout into the lakes surrounding the Capital City, planting several thousand of the young fish in February, 1873. This species is allied to the salmon and trout, bites readily at a hook, is fine flavored, rich and delicate for the table, and it is hoped and confidently expected that its propagation here will be a success.

"The relative fertility of the water and the land is altogether in favor of the water. An acre of land will produce corn enough to support a human being, but an acre of water will support several persons, and could readily be made, with proper aid, to sustain the lives of many more. The former requires manuring, working, planting and harvesting; the latter merely requires harvesting; and that, where the fish are sufficiently abundant, is hardly labor at all.

“While the yield from the land is reasonably large, the profit is exceeding small. The field must be plowed, and harrowed and fertilized; the corn must be planted; it must be plowed again; and still again, must be hoed; and at last the ears must be stripped, husked and ground. What is the net result of this compared with the natural increase of fish growth in abundance, almost without effort, finding their own food, and finally taken in some net which does its fishing while its owner is sleeping?”

Fish are so very productive, that if individuals and the legislature will but use the proper efforts to stock the numerous lakes and rivers of the state with those valuable varieties sought after for table use, the abundance of pure water may thus be utilized, and the food producing power of the state largely increased.

#### EPIZOOTY.

This pestilence prevailed throughout the state in the months of November and December, 1872, few horses escaping the loathsome disease. Horses kept in warm, well ventilated stables, avoiding currents of air, with little or no medicine, and fed upon nutritious and laxative food soon recovered. But few died. The loss to the state was considerable, particularly in cities and villages, where large numbers were used in profitable branches of business. Oxen in many instances were substituted, and in some cases, such was the demand for labor usually performed by the horse, that men hauled loads through the streets upon light wagons. The loss of labor in the rural districts was comparatively light, from the fact that farm work for the season had closed, and team labor was little required at that time of the year. Had this Epizooty swept over the state during the seeding or harvest season, the loss to the agricultural community would have been almost incalculable.

#### MANURE.

¶ I wish I had the power to impress upon the tillers of the soil the vital importance of carefully saving this valuable nutritive substance of all kinds, and of applying it in a judicious manner to their land. One cannot but feel sad, as well as sometimes disgusted, in passing through the city, village, and even in the country, to witness the pestilential gasses escaping into the atmosphere

from the barn-yard, cesspool, water-closets, and numerous unclean places, which nauseate, and often endanger the health of man, when he knows that the cereals and other products of the farm are feeble, puny and sickly, for want of just that kind of food, and that the farmer knows all this too, and still disregards it, and goes on in a hap-hazard, half-and-half way of farming, expecting to thrive himself, and keep moving with healthful velocity the other great and numerous activities of man. This should not be. The farmers do understand that agriculture is at the base, that it is that foundation principle upon which all business superstructures must be reared, and which must uphold and sustain them in their prosperity, and that this cannot be done, if the foundation becomes weak and rotten for want of care and watchfulness on their part. In other words, they must keep their lands in a healthful state of fertility, if they expect to prosper themselves, and aid others to do likewise, who are dependent upon the results of their labor. This can only be done by carefully making, saving and applying all the manure possible to their lands. Circumstances and their own good judgment must determine the mode.]

#### FENCES.

It is said by those who have carefully investigated the subject, that the entire farming lands of New England could not be sold at the present time for an amount equal to the cost of a renewal of the fences surrounding and dividing them. This subject should engage the thoughtful attention of every farmer in the state, as it is a large expenditure incident to his farming operations. Repairs are annually needed, and a renewal absolutely required once in about twelve years. The first cost for fences in this state, from carefully prepared statistics by the commissioner of agriculture, is, in round numbers, forty million dollars, or eighty-five cents per rod. Based upon what I believe, by experience and observation to be true, that this expenditure of forty millions must take place once in about twelve years, the cost in this state in fifty years, with only the number of rods of fence we now have, would be the enormous sum of one hundred and sixty millions of dollars. If one could discover a plan by which three-fourths of this enormous outlay could be saved, he would be a conservator of the

public good to the amount of one hundred and twenty millions of dollars of principal, and of principal and interest of more than five hundred millions of dollars, or ten millions annually. I believe this saving can be made by the building or planting of live fences. The first cost of preparing the land, planting, with care and labor required for three or four years in cultivation and trimming, need not exceed, if equal, the first cost of building the common fences of the country, and annual repairs thereon. At all events, the live fence for twelve years cannot cost more than the common fence for the same period, and the former is then of little cost during the life of the person planting it, and probably for an hundred years, while the common fence must be immediately rebuilt at a cost of forty millions more. If this snug little sum of ten millions annually, on an average, in fifty years can be saved to the farmers, it would stimulate and build up business enterprises throughout the state, improve the farm houses and their surroundings, infuse new life and vigor into the agriculturist, and generally better the financial, social and intellectual condition of all our people.

Experiments are being made in several localities of the state with fast growing timber, and the prospect is promising that a good and substantial fence will be the result in a few years. After giving this matter some thought and investigation, I am prepared to say that the best of live fences can, in my judgment, be grown from the yellow willow, white or soft maple, box elder or ash-leaved maple, Lombardy poplar, cottonwood, and acacia or honey locust. These trees are all hardy, will thrive vigorously in any part of the state, and if planted sufficiently close, say eight to twelve inches, will make in a few years, with proper care and attention, a good fence. Some may think that they will not grow so near together and be strong and healthy, but they will. Those with the widest spreading branches, like the maple, may want an occasional trimming between the trees, but they will grow finely and make a fence so strong and so tight that no animal can pass it. If made from the soft maple, or box elder, they can be tapped at the age of seven or eight years, and the trees thereafter made to serve the double purpose of fence and sugar tree forest. This fence cannot be grown without thought, patient care and prompt

attention. If the seed of the maple or locust, the slip of the willow, or the plants or young trees of any of the kinds mentioned, are planted, whether in the seed bed, to be transplanted, or in the fence row, to there remain, they must be kept clean and free from weeds, thoroughly cultivated, the same as a wise and thrifty farmer would do in the production of any other crop. If this is done, I believe the farmers will all exclaim that their crop of fences, though longer in coming to maturity, was of more value to them than any other crop they ever raised.

This is one of the great questions which the farmer must grapple with. Either live fences must be produced, or the stock raiser must herd his stock or build only sufficient fences to keep them within certain pasture limits. The farmers of the state can never prosper with this millstone of millions hanging about their necks. I believe the live fences to be the sure and effectual remedy.

#### FAIRS.

I cannot too strongly urge upon the farmers and producers of the state the importance of attending the local and state fairs. These should be great festal days, not only for relaxation and amusement, but for social culture, and to stimulate and excite honorable emulation among producers, in all that relates to progress in their particular department of industry. Days for comparing exhibits of stock, grain, manufactures, and other products of the county or state, and to encourage an active and healthy competition which may be productive of great good. If Mr. A. has a superior animal or article on exhibition, Mr. B. naturally wishes to know how each was produced, so that he can do better in the future. A man who is a mere looker on this year catches the spirit of rivalry and competition, and is stimulated to exhibit next year, and carry off the award if he can, for no one, possessed of that spirit which should actuate every producer in the state, is content to let his neighbor do better than himself, with the same opportunities.

"The more great fairs we have, the better, the more enlightened and the more prosperous will our country be. And we take pleasure in knowing that such is the opinion of progressive and level-headed people everywhere. Mark the influence upon the

countries of the civilized world of the great international fairs or expositions of Europe. Each was looked forward to by the artists and artisans of the globe as a sort of grand day of judgment, when the excellencies of the excellent and the faults of the faulty were to be trumpeted forth to the nations, and woe to him who should hold the lowest place. No individual exhibitor, no corporation which brought its specimen work, but strove for months to make it as near perfect as human skill and machinery could render it. Those exhibitions did more to bring the arts and trades represented up from the "job work" level to which they had fallen, than any other thing which could possibly have happened. They created a world-wide ambition to do good work, and the result of that ambition is to be seen in every manufacturing town and city of the world to-day.

"It is precisely the same in regard to agriculture or stock. The man who sees his neighbor producing a crop twice as large as his own, on precisely the same quality of land, will be apt to ask the reason why, and if he cares to know it, he can find it out. If he sees a man no better off than himself with cattle that weigh more, sheep that shear more, cows that give more milk and make more butter, and horses that are worth double his own—if he be a true farmer, he will find where the difficulty lies and obviate it. This mission is successfully accomplished by the agricultural fairs of the country. They compare the good work with the bad, inferior productions with the better, and by that very comparison, plant the seed of reform which will bring forth some thirty, some sixty and some an hundred-fold."

#### INDUSTRIAL SOCIETIES.

These organizations are in a prosperous condition. The work of the state society will be found under the head of "proceedings," and the following statement will show the condition of county societies:



ABSTRACT OF RETURNS OF COUNTY AGRICULTURAL SOCIETIES FOR 1872.

COUNTIES.	OFFICERS OF SOCIETY.			PLACE AND DATE OF FAIRS.		FINANCES.			
	Presidents.	Secretaries.	Treasurers.	Place.	Time.	Receipts.	Expenses.	Premiums	Am't. in Treasury.
Adams.....	V. E. Smith ...	Dan'l. Scofield.	A. F. Hill .....	Friendship ....	Oct. 2-3	\$518 50	\$402 58	\$163 38	\$24 07
Buffalo.....	Robert Henry..	John Hunner..	J. W. DeGroff..	Lincoln .....	Oct. 9-11	676 65	11 60	130 00	.....
Columbia.....	A. G. Cook .....	L. H. Doyle ...	J. Q. Adams ...	Portage .....	Sep. 18-20	861 21	383 90	570 00	296 70
Crawford.....	J. Atherton ...	J. B. Brunson..	L. Case.....	Pra du Chien..	Oct. 8-9	317 87	111 01	140 80	68 06
Crawford.....	J. M. Gay .....	C. D. Lamport.	R. Wallin .....	Seneca .....	Oct. 2-3	231 50	40 00	172 50	19 00
Dane.....	W. R. Taylor ..	O. S. Willey ...	Geo. A. Mason.	Madison .....	Sep. 16-19	5,012 95	2,158 52	891 50	.....
Dodge.....	M. E. Babcock.	E. B. Bolens ..	David Barber ..	Juneau .....	Sep. 13-15	461 10	289 23	178 80	.....
Door.....	Geo. Pinnly ...	R. M. Wright..	J. R. Mann .....	Sturgeon Bay..	Sep. 27-28	257 24	48 21	165 50	43 53
Fond du Lac..	E. S. Hammond	D. C. Lamb.....	A. B. Taylor ...	Fond du Lac ..	Sep. 10-12	1,803 98	873 03	930 95	.....
Grant.....	J. B. Callis ...	T. A. Burr .....	W. W. Robe .....	Lancaster .....	Sep. 18-20	1,039 75	597 59	591 50	155 93
Green.....	T. H. Eaton ...	W. W. Wright..	Wm. Brown .....	Monroe .....	Sep. 12-14	931 00	405 87	525 13	.....
Green Lake..	S. W. Mather ...	L. C. Potter ...	S. P. Rogers ...	Berlin .....	Sep. 10-13	844 70	261 00	618 70	.....
Iowa.....	J. Whitman ...	J. Ralph .....	J. Ellwood ...	Dodgeville ...	Sep. 18-20	1,066 81	644 64	425 00	.....
Jackson.....	W. T. Price .....	F. H. Allen .....	O. O'Hearn .....	Bl'k Riv. Falls.	Sep. 18-20	1,145 40	779 20	438 25	44 25
Jefferson.....	Q. C. Olin .....	D. E. Baker ...	Jas. Barr .....	Jefferson .....	Sep. 17-20	1,617 13	876 42	725 20	65 84
Juneau.....	L. Beckwith ...	F. S. Veeder ...	M. Temple .....	Mauston .....	Sep. 17-19	650 20	215 98	413 50	126 10
Kenosha.....	J. M. Kellogg..	H. H. Tarbell ..	L. M. Thayer..	Bristol .....	Sep. 17-19	987 21	405 57	498 42	83 22
La Crosse.....	Wm. Van Zandt	A. J. Phillips ..	F. W. Stiles...	Salem.....	Sep. 17-19	872 30	350 00	479 50	42 80
La Fayette.....	S. Warden .....	H. L. Brown...	W. J. Bird .....	Darlington ..	Sep. 12-14	1,035 15	469 57	568 25	.....
Lodi Union ..	P. S. Kingsley.	J. Van Ness ...	J. B. Dwinnell.	Lodi .....	Oct. 2-5	1,097 78	428 88	602 00	110 96
Marathon.....	W. C. Silverth'n	M. M. Charles ..	Jacob Kolter ..	Wausau .....	Sep. 30 Oct 1	551 80	234 86	448 00	.....
Marquette.....	James Graham.	S. A. Pease .....	M. A. Stebbins.	Westfield.....	Oct. 2-3	201 50	60 00	131 50	10 00
Monroe.....	J. A. Clark .....	E. Nutting .....	T. B. Tyler .....	Sparta .....	Sep. 11-13	532 50	286 47	270 00	.....
Outagamie.....	A. P. Lewis .....	L. L. Randall ..	P. S. Bennett ..	Appleton .....	Sep. 17-19	708 55	424 88	297 80	.....
Ozaukee.....	A. M. Alling...	W. Vogenitz ...	T. Fricke, M.D.	Cedarburg.....	Oct. 7-8	260 45	71 50	151 00	37 95
Pierce.....	H. A. Jay .....	Wm. Howes...	C. Gray .....	Prescott .....	Oct. 10-11	913 69	842 78	150 75	.....
Portage.....	C. Couch .....	J. H. Felch ...	Enoch Webster.	Amherst .....	Sep. 19-21	1,229 31	1,335 83	226 75	.....

Racine .....	N. D. Fratt .....	A. L. Lawton ..	W. E. Chipman	Burlington .....	Sep. 11-13	\$, 759 37	1, 111 05	1, 554 89	483 43
Richland .....	J. B. McGraw ..	J. H. Waggoner	D. L. Downs ...	Richland Cent'r	Oct. 2-4	750 75	439 80	289 50	21 45
Rock .....	Seth Fisher .....	R. J. Richard'n	C. Miner .....	Janesville .....	Sep. 17-20	3, 989 48	2, 394 49	1, 596 14	.....
St. Croix .....	W. L. Clapp .....	Rufus R. Young	A. D. Richard'n	Hudson .....	Oct. 2-3	372 90	290 00	200 00	127 90
Sauk .....	H. H. Potter .....	J. M. True .....	T. T. English ..	Baraboo .....	Sep. 17-18	697 55	262 63	488 50	.....
Sheboygan .....	E. Eastman .....	J. E. Thomas ..	B. F. Heald .....	Sheboygan F'ls	Sep. 18-19	653 55	261 08	435 25	.....
Trempealeau ..	J. Rhodes .....	C. E. Perkins ..	D. Arnold .....	Trempealeau ..	Oct. 1-3	670 37	492 38	245 50	52 39
Vernon .....	F. K. Vanwag'n'r	G. W. Nuzum ..	C. M. Butt .....	Viroqua .....	Oct. 1-4	774 00	295 14	458 25	245 61
Walworth .....	P. G. Harring'n	S. G. West .....	H. Latham .....	Elkhorn .....	Oct. 1-4	3, 248 09	1, 887 09	1, 364 00	.....
Washington ..	Peter Frazer ...	A. Semler .....	F. Lorenz .....	West Bend .....	Oct. 2-4	1, 450 64	548 76	423 50	478 18
Waukesha .....	Isaac Lain .....	F. H. Putney ..	O. M. Tyler .....	Waukesha .....	Oct. 18-21	1, 169 34	458 92	720 00	142 00
Winnebago .....	J. M. Ball .....	James Brainard	R. D. Torrey ..	Oshkosh .....	.....	4, 909 70	1, 836 00	2, 864 00	377 00

## THE ACADEMY OF SCIENCES, ARTS AND LETTERS.

The transactions of the academy, containing its work from the organization to February, 1872, have been published by order of the legislature. It is a volume of much merit, containing numerous papers of scientific and practical value. Its field of labor is broad, and its officers and members active workers, who, I doubt not, will push forward scientific and practical investigations with zeal and success, do much to educate the people in literature and the arts, and generally to advance and elevate mankind to a higher social and intellectual plane.

## THE AGRICULTURAL DEPARTMENT OF THE UNIVERSITY OF WISCONSIN,

Is doing much good by way of important experiments which are annually made under the scrutinizing eye of Prof. W. W. DANIELLS, who stands at the head of this department. The Regents of the University generously furnished the Professor with additional apparatus for analytical experiments the last year, and the department may be said to be in a flourishing condition. Young men who desire to acquire a scientific as well as practical agricultural education, should take a course of study here. That part of Prof. DANIELLS' report to the Board of Regents, which I think to be of special interest to the agriculturist, will appear in this volume under the head of "University Farm."

## CO-OPERATION AMONG FARMERS.

As a class, the farmers of the state are behind the age in the practical and scientific knowledge of their business. They are, however, fast becoming imbued with that electrifying influence which, in this day of progress and sharp competition for supremacy, must attach to all callings and professions to make them pay. They are learning the lesson, that in unity of effort there is strength, and in division weakness. That if they expect to insure a just share of the profits of their labor, they must organize and combine; not to battle other interests and pursuits, but to protect their own. That there must be unity and co-operation,

trust and confidence in one another, and a desire to elevate the profession of farming, and make it not only profitable but honorable. Many farmers are apt to think that because other pursuits are often more lucrative than theirs, that because less hours are devoted to other professions, less physical strength required, with profits greater, that of necessity these callings must be enemies to their interests. Such, in my judgment, is not the case. They are not enemies to the farmer, but friends to themselves. It is natural for man in his individual capacity, and when associated with others, to reap honorably and honestly as large returns for his labor as possible, regardless of whether that labor be physical, or mental, or both, and he who does not act by this rule will find the balances against him when the profits of each shall be adjusted, and a final settlement with other occupations made at the end of the year. To insure success in agriculture, there must not only be enterprise and industry, but united and associated effort. All great and needful reforms have been carried on by combined and associated agencies, and if the farmers of this state, who in point of intelligence and wealth equal, if not exceed, all others, who are in fact the very foundation upon which all others must build and flourish, if at all, with numerical strength superior, with votes which make judges and legislators, and fill every place of trust and profit in the state, will not organize and co-operate to protect their own interests and profession, but scatter and divide their influence and power, be controlled by sharp, scheming men, who are seeking to appropriate to themselves the surplus profits of their labor, I shall have little hope of an amelioration of their present condition, and a lower appreciation of their intelligence and manhood.

#### FARMERS CLUBS OR GRANGES.

These associations should be formed, one or more in every town in the state, where weekly meetings should be held, say from September to May, and less frequent the balance, or more busy season of the year, and discussions had upon topics of interest in the various branches of farm and household management. These meetings should be conducted in a systematic and methodical manner, questions given out at each meeting for the one follow-

ing, so that thought and study may be given them in a leisure hour which might intervene, and each and all have an opportunity of presenting hard facts and solid experience. In this way the farmers would be better educated in their business, like it better, think it more honorable, and make it pay better. Besides, these gatherings are great educators of our higher social natures, for one cannot meet and mingle with his neighbors on these interesting occasions without having the angular and rough corners broken and rounded off, and he or she the better fitted for higher social culture and improvement. |

#### COUNTY SOCIETIES.

<sup>Need of</sup>  
(The next step should be) a county organization, where the combined wisdom and experience of the clubs can be brought together, and general county interests canvassed and discussed to their fullest extent. Where experience in stock and grain growing, or other general or special farm products may be compared with those of different conditions and surroundings, and how best the farmer may surely obtain the highest price for his labor. This would lead to thought, study and investigation, and without these valuable aids, little progress will ever be made in agriculture or any other calling. |

#### STATE SOCIETY.

A state association is now pretty well organized, under the lead of this society, where the educated representative men of the clubs and county societies should meet annually to consult, not only upon matters strictly agricultural, but upon all subjects which relate to their interests as farmers. If, upon a careful, unprejudiced and intelligent survey of the entire situation, they shall come to the conclusion that agriculture doesn't receive its equal share of the profits which are annually being divided in the different departments of labor; that unjust discriminations are made in favor of other pursuits and against theirs, they can advise together and take such steps in their own behalf as in their wisdom shall seem to be just and right. If these industrial societies will unite and work together for the common good of those composing them, with malice towards none others, and will wield the

power they possess in the right spirit, it is a mighty force which will tend to elevate and improve their condition, make them watchful of their own business, and just and liberal toward others. To these ends, these agencies should be encouraged to the highest possible extent.

### CENTENNIAL CELEBRATION.

Under an act of Congress, approved March 4, 1871, which provides for a celebration of the One Hundredth Anniversary of American Independence, a commission has been appointed by the President, consisting of two members from each of the states and territories. This exposition should be the largest of the kind ever held in the world, and should give a full exhibit of American industries, and of the rapid development of our country in the last century. This is to be a purely national celebration, and should be managed and controlled by the government. If the city of Philadelphia and the state of Pennsylvania, which are largely to be benefited, compared with other portions of the country, desire to take the stock so liberally offered to the several states, and manage the finances, well and good. If not, let the general government furnish the amount necessary to carry this great and noble work forward, and the burden, if any, will then fall equally and lightly upon the people. Its object is a noble and worthy one, and this society, in connection with the other industries of the state, will be found, I doubt not, shoulder to shoulder in the glorious work of preparing and exhibiting the varied products of our soil, mines, manufactories, and works of art, and of showing the valuable and effective agencies at work in our young state to improve the moral, social, and intellectual condition of our happy and prosperous people.

### STATE AGRICULTURAL CONVENTION.

Pursuant to the call of the secretary, the convention met in the rooms of the State Agricultural Society, in the capitol, on Wednesday evening, February 5th, at 7 1-2 o'clock, and was called to

order by Col. Wm. R. Taylor, president of the State Agricultural Society. About one hundred delegates were present, representing some forty farmers' clubs, granges, and local agricultural societies from different parts of the state.

#### THE OBJECT AND PURPOSE OF THE CONVENTION

Was briefly stated by Secretary Field, as follows:

*Mr. President:*— This being the first Agricultural Convention held in Wisconsin under the auspices of the Wisconsin State Agricultural Society, and having, on behalf of said society, been somewhat instrumental in calling it into being, it may be expected that I would state briefly its purpose and object. In my circular letter of August last, addressed to farmers' clubs, county and district agricultural societies, I stated substantially that this society had long felt the importance of more intimate and practical relations existing between said local societies and the state society, and of associated effort and efficient co-operation among the farmers of the state. This, perhaps, is more important in agriculture than in any other department of industry, as the farmers differ from all other classes in being so separated that it is more inconvenient to have that free and easy interchange of ideas upon all those vital questions connected with their welfare, than for those engaged in other callings or professions.

If I fully understand the purpose and object of this convention, it is to meet the representative agricultural men, not only of the societies mentioned, but of the state, and have a social, familiar and practical interchange of ideas with them upon agriculture, and other subjects which have a direct bearing upon this great and important interest. Many and varied branches of this subject will, no doubt, come up for consideration during our interview. General questions, prepared by a committee heretofore appointed by this society, will be taken up in their order, papers having been prepared upon some, if not all of them, which will be read before the convention, and discussed so far as time will permit. Papers will also be read upon special subjects, each having a near connection with the great farming interest.

Gentlemen, let us make this first gathering of the representa-

tives of the farmers' clubs, and other agricultural societies with the state society, the commencement of a new era in agricultural life and progress in this state; let us educate each other, and make the light of this convention shine to the remotest part of the state, and even beyond her borders. Let us make this an interesting and profitable meeting, one that we can look back to as one of the brightest spots in our agricultural labors for the year; one in which new and valuable lessons were learned, and where we were stimulated to think as well as act.

For, Mr President, in my judgment, the time has now come in agriculture, when one must think, study, investigate, experiment, draw his designs and lay out his plans in a thoughtful and intelligent manner, when the intellectual as well as the physical forces must be brought into requisition. The farmer cannot occupy that advanced position which his calling entitles him to, and in fact is not worthy of the name in this go-ahead age, unless he is educated in his business. It is of equal importance, as that the minister, tradesman, lawyer, or mechanic, should be educated in his.

The labor of the hand is, and ever must be, necessary in all agricultural pursuits, but when guided and controlled by the mind—the brain force—less labor of the hand is required, and yet more remunerative and substantial results follow. "Mere brute force has not the desire to be aided in the performance of labor, but cultivated mental vigor is ever striving for some plan which will accomplish work without exhausting the body. Hence it may be that the weary toil of the farmer's life shall exist only in myth, and farming take that rank among the professions which it deserves."

Mr. President, nothing now remains to make this convention a grand and decided success, if those comprising it will impart to us a portion even of the knowledge they possess, whether acquired by scientific research, practical experience, or observation, and I trust that every person present will feel free to express his thoughts upon any topic which may arise, but in so doing be brief and pointed, so that all may be heard who desire to speak. If this is done in a social and practical way, the wisdom of the many may here be concentrated, and their combined knowledge diffused



throughout the state, by the press, and in our annual volume of Transactions, and be promotive of the highest good.

At 8 o'clock, P. M., a joint convention of the Agricultural and Horticultural societies was held in the Assembly Chamber, President TAYLOR of the former, and President STICKNEY of the latter, presiding.

President TAYLOR introduced W. W. DANIELLS, M. S., Prof. of Agriculture and Analytical Chemistry in the University of Wisconsin, who proceeded to deliver the following interesting and able annual address, in behalf of the Agricultural Society :

#### ANNUAL ADDRESS.

BY PROF. W. W. DANIELLS.

There is no other question that occasions so much perplexity and anxiety among those interested in education, and the educational institutions of to-day, as this: "What course of study is best suited to the college curriculum?" Shall a college have a single course for all students, whatever be their tastes or aims in life, or with certain prescribed studies, forming a basis and common nucleus for all; shall elective studies be allowed to meet the natural bent of each, and, as far as is consistent in such a course, to direct the student's mind in the channel of his life work? Shall the classics and mathematics constitute the college course, or may the natural sciences, and the modern languages largely take their place?

These are questions of vital importance to all. It is but trite to say that the welfare of the world lies to a great extent in the education and intelligence of men.

The advancement and discoveries that are being continually made in every department of learning, by increasing the sum total of human knowledge, render man's three score years and ten, a comparatively shorter period than it was a hundred years ago, when there was less to be acquired. So that it is essential to so plan work that each one may accomplish the most in the time allotted here.

It is not strange that men should think differently upon this all

important subject. The old course of classics and mathematics, by several hundred years of trial, has proved itself an excellent one. It has been a mighty power for good in the world, and to-day, able, earnest and good men believe it to be the only true course of study.

But gradually old landmarks are being removed. Old methods are by degrees being replaced by new ones. Natural science and modern languages are forcing themselves into the college course, not to replace the classics, but to share with them in the education of men.

The advocates of the old system may writhe under the change that is going on, they may cry out the danger of depreciating the standard of education, by these innovations, but it appears to be all to little purpose.

The change is still called for, more loudly than before, and colleges and universities, being created for the people, are yielding to the public demand. The old boundaries of the college course are being enlarged to embrace a greater range of studies, and to adapt it to the diversified wants and tastes of those for whom it exists. This demand for the introduction of more science into the college curriculum has even affected the old English Universities, Oxford and Cambridge. Their "middle class" examinations were established to meet this requirement. By this change, the halls of these grand old seats of learning have been opened to many who were before excluded. Yet the demand for more concessions is still made by the English public.

In our own country, great changes have also taken place in the oldest and best colleges in the land. But perhaps the wants of this new education have been more fully met by establishing independent schools of science, or connecting scientific departments with classical colleges.

The conflict between the old and the new education is not, in this country at least, an "irrepressible conflict." The earnestness and truthfulness of science, its accurate methods of investigation, and its peculiar fitness for training men in methods of investigation, have won for it the support of many, and the tolerance of all, even though they consider it of little value as a means of education.

The introduction of science into the schools of the country has brought with it another element, also new to colleges. It is the demand for practical education. Not only must science be taught, but it must be so taught as to aid men whom the old education did not reach. The farmer, the engineer, the miner, the machinist and the manufacturer, all need the assistance it can render. They are all dealing with science, nature's laws, and for them the demand has come for practical education. Science, then, has her devotees in investigators who only seek new laws, and in men who utilize these laws by applying them in practice, or as a rhymer has well expressed it:

"To some she is the Goddess great;  
To some the milch cow of the field.  
Their business is to calculate  
The butter she will yield."

There are then three elements in a college course of instruction where the new educational system is followed.

1st. The classical, which no true lover of education would wish to see abolished.

2d. Pure science, which teaches general laws and scientific methods, and

3d. Practical education, in which the applications of science to all branches of human industry are taught.

The movement in practical education began just at the close of the last century, in the manual labor schools of Germany and Switzerland. But it is only within the last thirty years that much progress has been made in industrial education.

Liebig gave the great impulse to agricultural science, and the application of science to other arts may doubtless be regarded largely as an indirect growth from his investigations, and applications of science to this all important industry. In our own country, the movement for industrial education was made by the government in the liberal donation of lands to "provide colleges for the benefit of agriculture and the mechanic arts."

This grant has been accepted by the majority of states, and there are now thirty-seven agricultural and technical schools, and departments, organized under the law of congress, and receiving aid from the congressional endowment. Besides these, there are

a large number of other schools throughout the country, giving almost exclusive attention to the application of the sciences. Liberal private benefactions and state aid have in many cases been given to advance the interests of this practical education.

It would be useless then to prove by argument, the benefit of these industrial institutions to the country. Their advantages are universally admitted. They have already given a great impetus to advancement in all industries by educating men for their professions, but the greatest harvest is still to be reaped. In the sudden introduction of this new educational element into schools and colleges, unforeseen difficulties have been encountered, difficulties that have been proved hard to solve, because of their complicated nature. In an ordinary college, the methods and details of its internal affairs are well established by long experience. But in the management of these new colleges, nearly everything is tentative, and the wisdom which experience alone can give is still to be acquired.

The first, and one of the most important of these unsolved questions is, "what are the relations between industrial and general education? Shall a course of study in these industrial colleges consist of practical studies only? Shall it be purely professional, or shall there be mingled with professional, other studies, that are intended to develop the mind in other directions, and that will give to the student broader and more comprehensive notions of life, and will give him some correct idea of his relations to the world?"

In the act of congress for the endowment of these institutions, the question is left unsettled, and yet impliedly it is settled. The words of the act are, "the endowment, support and maintenance, of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, \* \* \* in order to promote the liberal and practical education of the industrial classes, in the several pursuits and professions in life."

The experience of these colleges has shown that the act was wisely worded, the "liberal and practical education of the industrial classes."

There can be no doubt that the endowment was given for the benefit of farmers, mechanics, machinists, miners, engineers and of every class who are producers of wealth by manual labor. No class of men is excluded, but for these classes especially is industrial education to be promoted.

The creation of the law making this liberal donation for such education, and the universal favor with which it is regarded, is sufficient evidence that a need for such instruction exists.

There is, then, this question to be answered: "Of what shall such education consist?" The reply is, that it must supply the needs of those for whom it was created. With primary education, these institutions have directly nothing to do. The common schools of the country are the places for such instruction. The school of agriculture has no more to do with such training than have the schools of law, of medicine or of theology. The ideal agricultural or mechanical school should be purely professional, so teaching science that it may be applied to practice. Then when the practical applications of science are given, the question of what shall industrial education consist, would seem to be answered.

It sometimes appears unfortunate that men have to deal with facts, with things as they actually exist, and not as they will be when the millenium shall have come. A superstructure cannot be built except upon a foundation, and the strength and stability of the superstructure is only equal to that of the weakest part of the foundation. Just here lies the great difficulty in adjusting a course of study for the industrial classes.

The highest object of professional education is not to teach facts, nor the application of facts, but it is to so teach those principles that underlie all practice, that the student may apply them for himself, to every special problem that may present itself for solution.

The successful lawyer is not the one who has been taught a given set of methods, one of which should apply in any possible case, nor is the successful physician the one who has learned certain remedies, to each one of which some form of disease will yield. But it is he who has learned the great fundamental principles of his profession, and who has that mental power to so

combine those principles that he may apply them to every possible exigency that may arise.

So it is with the educated farmer. He is the man who has been taught those principles of science that bear upon his profession. He is to apply them to practice, and he must know them so thoroughly, as to see how he can bring them to his aid in every branch of farming.

How can this instruction be given? The greatest practical difficulty that has been met with, by all the industrial colleges of the country, has been the want of preparation, on the part of students, to receive the required instruction. There is no royal road, even to industrial knowledge. The student cannot leap from the common school into the depths of applied science. He must work his way there gradually. It is not a mere form of college routine that prescribes for the student freshman studies before the sophomore, or sophomore studies before the junior, etc. A student cannot reap the benefit of the higher and more intricate studies until he has laid a foundation for them by previous culture and training.

The college course is simply the arrangement of studies in that sequence which will gradually strengthen the mind for the comprehension of that which requires stronger mental power. The higher you would build a superstructure, the broader and deeper must be its foundation. It is precisely so in the education of men. If you would raise them to the comprehension of higher truth, you must first prepare them for its reception by previous training. A theological seminary cannot take a pupil from the common school, and in its three years' course transform him into an eminent divine, nor can the medical school prepare such a man for practicing the healing art in so short a time.

But the fault is not with the schools; it is with the man. He has not the power of comprehending the truths embraced in professional instruction in these departments, and hence fails to receive the benefit he would otherwise gain. In the schools of science the same difficulty is experienced. To thoroughly understand the principles of science requires previous training on the part of the student. He must grow into habits of thought. He cannot leap into them. To be well versed in the sciences that

pertain to agriculture is to know nearly all natural science. And of all arts to which science is applied, no other is so difficult, because there is no other in which so many conditions are beyond man's knowledge and control.

The heat, the moisture, the evaporation, the physical condition and chemical constitution of the soil, and the relations of the atmosphere and of the soil respectively, to plant growth, are all variable elements that give complexity to the applications of science to agriculture.

To the question, "What course of study would best meet the wants of a student in agriculture?" this reply, then, might be given: That which, while it teaches him the science he wishes to apply, also gives him that thorough culture that will enable him to use all his mental powers in the application of such knowledge. There is, however, this practical difficulty. To get such an education requires several years of study, and few farmers are willing to give their sons the time and means required for such a training. The dilemma in which these agricultural colleges are placed, then, is this. To get the greatest good from them, the students need a fair degree of previous training, while the farmers, not fully realizing the necessity of such knowledge, will not give their sons the benefit the college offers, because of the time required to gain this practical instruction.

That other studies than those that are simply of practical value (in the narrow and restricted sense of being practical) are necessary in an industrial college course, is not simply the vague notion of some theorist. It is found to be true in the experience of all these colleges throughout the country. The course of some of them was reduced, a few years since, to a two years' course of only "practical" studies. But this change was soon found to be an impracticable one, and the four years' course was re-established.

The Lawrence Scientific School, connected with Harvard University, has for several years given degrees to students who pursued a special course, embracing but one department of science, as of chemistry or of zoology.

This rendered students expert in one department, and had they been thoroughly prepared by previous study, would have given them an excellent training as scientists. But coming, as they fre-

quently did, without the preliminary discipline necessary, it was found that studies embracing so narrow a range were not sufficient to fit them for any position in life. It made one-sided men, instead of developing that symmetrical manhood which results from a wider range of studies.

The best zoologist could not be made by studying zoology alone. Either he must first have received disciplinary training, or else, around this as a center, other studies must be grouped that will give greater breadth to his intellectual powers. Harvard has, hence, done wisely in changing her course. Students who are candidates for degrees are now required to take collateral studies with the single science that is the object of their pursuit.

The purely technical studies of any agricultural college in the country can be completed in a single year, if a student has previously had a thorough training in the elements—not rudiments merely—of science. Yet, nearly all of them have a full four years course. Why is this? Simply because the students go to these colleges without training necessary to a full comprehension of the technical studies, and that training must be given them there.

I have discussed the question only from a utilitarian point of view, endeavoring to show that training and discipline on the part of the student are necessary, before he can receive the benefit that technical education is intended to impart.

The agricultural, and other technical colleges have endeavored to meet this necessity, by combining general with technical instruction. They have done well doubtless, situated as they are, to make this combination. But it has forced them to make their scientific training less thorough than it otherwise might have been. The good every man receives from education, aside from its merely practical bearing, and the duty of men to educate their children, that they may gain complete control of their mental powers, and be raised to the highest manhood, are questions that have been often discussed, and need not take our time to-night. I believe in such education, and wish more of the youth of this state might be placed where they could receive it.

President White of the Cornell University has well said, "make your son a master farmer or master mechanic; but make him also a master man." I am a firm believer in industrial edu-



cation. I am confident that great good is to be reaped, *is now being reaped* from it by the farmers, the mechanics and by those engaged in all industries. And yet I would say, make your son a master man, and he will make a master mechanic, or a master of whatever business it may be his choice to pursue.

I have before intimated that the farmers and mechanics do not fully realize the benefits to be derived from such an education, as these industrial colleges offer. The prejudices against "book-farming," as they formerly chose to call it, have mostly passed away, and they willingly accept the good that science brings to them. But they are not sufficiently anxious for it; they do not hunger and thirst for it as they ought, and hence are backward about seeking it.

This indifference arises from the want of proper appreciation of the good they might receive from this education. This is so well illustrated by a personal incident, that I trust I may be excused for repeating it.

A year ago, I read before a convention similar to this, a paper showing the relations of science and agriculture. A farmer in the state, one who stands high in his particular branch of farming, said he "did not think much of that address."

A short time since, I read a paper before a meeting of dairy-men, upon the co-relation of forces, as applied to feeding, watering and sheltering farm animals, and this same farmer thought it a most excellent address.

The difference between the papers was that in one a special subject was so elaborated that the farmer saw its practical application, while the other only aimed to show the general relations of science and agriculture, and the practical applications were not as plainly pointed out. But they both alike represented science in agriculture.

Every one feels that these industrial colleges have duties to perform, in the advancement of the several industries of their respective states. They were created in the interests of practical industry. Agriculture, mining, the mechanic arts, all have their rightful claims upon these colleges. But does it not follow that there are counter-claims of the colleges upon those who represent these industries?

Has not the farmer some obligation to perform toward the agricultural college? Is it not the duty of every farmer to make some effort to ascertain the value of these colleges, to aid them if they need his aid, and at least to support them in every good work? The farmers of Wisconsin have not, indeed, been as prolific in fault-finding as have those of some neighboring states, but they have given their college a severe letting alone, and this apathy that has been shown may, perhaps, indicate even a more dangerous condition than fault-finding.)

→ The University of Wisconsin offers to the farmers' sons a four years' course of study, combining general and practical education, that is equal to the course of any similar institution in the country. It also offers to those who are sufficiently advanced to take it, a one years' course, consisting of agricultural studies only. Besides these courses, it offers opportunity for any student to pursue any study or studies he may desire.)

Its board of regents has wisely thrown its doors wide open. The restriction it imposes is, that no student shall be allowed to take a study that he is not prepared to pursue with profit to himself.

How many of the farmers of Wisconsin are there who have ever asked themselves if this is the education needed by farmers? How many of them have sons who are to make farming a life profession, and what is the capital with which those sons are to begin their business career?

Would not an education, that would cultivate their intellect, and at the same time give them that practical knowledge that lies at the foundation of their profession be the best investment that could be made for them?

The laboratories of the agricultural college and its lecture rooms should be well supplied with the best apparatus. Do the farmers of Wisconsin know if their college is so supplied? Laboratories, lecture-rooms, cabinets, costly apparatus, libraries and teachers, are but means to an end.

The value of these means to the farmer depends upon the use he makes of them. Are the farmers of this state receiving all the benefit that is offered them through the gift of congress? These are not questions that each may rightly answer according to his own inclinations.

Every man has duties to perform as a citizen of the state. Whatever each can do, to increase the productiveness of the soil, either directly or indirectly, or to add to the intelligence of men, without injuring himself, it is the duty of each man as a citizen to do. The agricultural colleges were created for these purposes. And indifference toward them is not the means of making them the most useful, either to individuals or to the state at large.

These institutions have made mistakes. Those who have been in charge are not infallible, and they will doubtless make more mistakes. But these errors will gladly be corrected when pointed out. The cordial sympathy and support of the farmers, with a fair degree of patience, (for the results come slowly) is what these schools need. The patience is not lacking in Wisconsin, but the the sympathy and support—where are they?

There are other means of disseminating education among farmers. First among these should be the State Agricultural Society. Do the farmers make this society as useful to themselves as they might?

The meeting inaugurated this evening is the first of the kind ever held under its auspices. This convention should be hailed as a good omen, that farmers believe that progress may be made, and that they are anxious to know by what means it is to be sought. The State Agricultural Society is one agent for advancing the cause of agriculture. Let it be made useful in every possible way. The annual exhibitions of the society are well, but it may do greater good in other ways; it will do it, if the farmers ask that it shall be done. A score of meetings of the nature of this one, should be held each year throughout the state, under the supervision of this society, and at which the secretary at least should be present to direct and to aid. When will this be done? As soon as the farmers ask that it shall be.

County societies, farmers' clubs, granges of the Patrons of Husbandry, are all helps to a better education for farmers. The good they will accomplish must depend largely upon the demands that are made upon them. If knowledge is earnestly sought, they will get it, and in the measure that it is sought by those for whom these societies exist.

There is one way in which these societies may do a great good

in the cause of agriculture, that has not, in this state, been adopted. That is for each society to furnish at least one student the means of getting an agricultural education. Large premiums are paid each year for the best horses and cattle, and sheep and swine. This is well. It ought to be so. But would not a great good be accomplished if each society should furnish one or two young men, who had shown themselves worthy of such encouragement, with a means of thoroughly fitting themselves for farmers? Such men would return to the farms with well trained minds, and with that knowledge which would aid them in successful culture of the soil, and, in doing so, would aid greatly, by their influence and example, in advancing the interests of farming.

The various agricultural societies of Massachusetts gave, in 1871, nearly \$200 for the aid of students at the Agricultural College. Their example is worthy of being followed by the agricultural societies of every state in the Union. Money so spent would be like seed sown in good soil, that would spring up and bring forth an hundred fold.

No student should be entirely supported, but he should be so aided that he can readily help himself to the remainder by his own industry.

The objection will come to this proposition that these societies do not propose to do missionary work. But that is the very work they are to do. They are created to go about doing good to the cause of agriculture, and they are to help that cause in every way possible. Is not bringing out worthy young men, and fitting them for high positions as farmers, one way of accomplishing good? It will not do to decry missionary work. The congressional land grant was not given to establish colleges for the education of lawyers, or physicians, or ministers, but to educate farmers and mechanics.

The state of Wisconsin is not asked to print the reports, to furnish an office in the capitol, to pay express charges and postage, and to supply stationery for a society to advance the interest of any one of these professions. Such gifts are only made to the farmers. They are given for the farmers' use. They are then to be used in that way that shall help the farmers most.

Let every legitimate means be used to advance the farmers' in-

terest. Let every one, so far as possible, aid in this great work. Be earnest, be faithful; for the cause is a worthy one. Remember that the surest way to secure the permanent good of all is to so educate them as to give them the power of directing their labor by thought and intelligence.

At the close of this address, President Stickney introduced Rev. Samuel Fallows, D. D., State Superintendent of Public Instruction, who gave a highly instructive and satisfactory annual address on behalf of the Horticultural Society.

#### ON THE STUDY OF THE NATURAL SCIENCES IN THE COMMON SCHOOLS.

BY GEN. SAMUEL FALLOWS.

A young school teacher some years ago, who has since risen to the highest executive position in an eastern state, was asked the difference between agriculture and horticulture. Not having a dictionary by his side to consult, he replied: "agriculture is farming carried on with oxen, and horticulture with horses."

The census of 1860 reported the number of farmers and farm laborers, at 3,219,574, and the number of horticulturists at 57, so the preponderance of oxen must have been very great. I find also, that while in the state of Wisconsin, the same census reported 125,331 farmers, it reported not a *single horticulturist*.

Times have changed wonderfully in the last ten years. The greatest events of history have taken place. Continents have reeled with the shock of battle. The foundations of liberty have been more securely laid. The chains of servitude have been stricken from the bodies and souls of men. Thrones have been overturned, burying usurping monarchs in their ruin. Science has won its proudest discoveries, spanning the ocean with nerves of intelligence, making of mountain peaks and abysmal depths highways of safety for the tireless iron horse; tunneling the barriers of ages, practically making the *cis-alpine* and *trans-alpine* of the ancients, *non-alpine*; reading the mystery of the sun and stars, telling us through the spectroscope of the very bell

metal of those glorious constellations, which as Mr. Everett says, "Far up in the everlasting belfries of the skies chime the hour of twelve at midnight." The education of the people, of the whole people, has been occupying the attention of parliaments and senates as never before in the world's history.

But one of the most stupendous evidences of change, and progress too, would be found in the fact, if true as the census states, that ten years ago, there was not a single horticulturist in the state of Wisconsin, while to-day, there is in our midst a society embracing far more than the whole number of horticulturists in the United States in 1860. It must be conclusive proof that this society was not deliberately made, but, like Topsey, it "grewed." I suspect the census takers must have been as much puzzled as the Dutchman was about himself and his twin brother. He said, "when I looks at mine bruder, I tinks it is myself, and when I looks at myself, I tinks it, is mine bruder sure. So I's not sure which is mine bruder, him or myself, but I tinks, on the whole, myself is mine bruder." These census takers were not sure whether the horticulturist was a farmer, or the farmer a horticulturist, but, on the whole, they thought the horticulturist was a farmer, and so they put him down as such.

According to the census of 1860, 233,523 persons were engaged in different occupations in the state of Wisconsin. Let me enumerate a few classes. There were 1,100 physicians, 1,133 ministers, and 1,234 lawyers, illustrating pretty well as to their relative number the saying of a man who had combined within himself the functions of physician, clergyman and lawyer, that "he had found the average man willing to give 25 cents for his soul's salvation, 50 cents to be made well if sick, and \$5.00 to have his own way." There were 3,949 teachers, 2,976 merchants, 28,238 laborers, 588 public officers, and 240 United States officers. The great majority of the remaining 225,269 persons whose occupations are enumerated, were engaged in employments requiring the use of the hand—they are the great grand army of manual workers, and of this number, as I have before stated, 125,331 were engaged in the pursuit of agriculture.

In 1860, there was not a single school in the entire state of

Wisconsin in which an education was imparted bearing specifically upon the life vocation of this vast number of producers. Since then, provision to a slight extent has been made in some of our higher institutions of learning, and to a larger extent in the State University of Wisconsin. Still, comparatively but a few are reached.

WM. PITT, when Prime Minister of England at twenty-two years of age, visited the University of Oxford, which had been bitterly opposed to him. But, as "nothing succeeds like success," when he came to those ancient halls, the young men crowded round him to do him honor. The chancellor of the University, not liking the sudden conversion, when he ascended the pulpit to preach the sermon before Mr. PITT and the University, took for his text, "There is a lad among you with five barley loaves and two small fishes, but" (looking around very significantly) "What are they among so many?" What are these educational agencies among so many of you? Unless they can be multiplied, you will go hungry for the bread of knowledge, eager though you may be to gain it.

I lay it down as a fundamental rule, that the education of a people to a great degree ought to have reference to their professions and pursuits.

This rule does not bind us to make mere-specialists; it does not sink the *man* in the pursuit, but it does say to him, "the thing you have to do in life, whereby you and yours are to be benefited, whereby society at large is to be the gainer, ought to be done in the *best possible manner*. Do as many other things as you decently can. Be as much of a cosmopolitan as you can. But be master in your own field. Unless this is the case, the manhood is wanting. It is the concentration of a *man* in a backbone, straight up and down, that makes him what he ought to be, and not its diffusion in gristle or gelatinous jelly.

Where shall this education be imparted? How many of this great army of workers find their way to our colleges and universities? How many of the 8,287,043 engaged in different pursuits in the United States trod the halls of these higher institutions of learning? How many of the 3,219,574 farmers of the country? How many of the 125,331 farmers of the state? *Four-fifths* of

this number received all the instruction they ever were blessed with, at the "people's colleges," the common schools.

Our education is good as far as it goes, but it does not go far enough. We all ought to know how to read and write; it is questionable if we do. We ought to know how to cipher, and something of geography. When we have gone as far as that, we nearly all have said, that is far enough for our common schools to go with us. I am glad they have gone so far, and I am here tonight to bear witness to the great value of the little that has been acquired in these public schools.

I have just been perusing with intense interest the report of the bureau of education, on the relation of education to labor. A series of questions was addressed to a large number of intelligent employers in all parts of the Union as to the effect of education—mainly common school, upon each person in their employ. The answers were nearly unanimous, "that his value to the community at large is positively increased, and his power as a producer of adding to the common stock of wealth is materially enhanced by the education given him as a child in the common school. The increase of wages he will receive on account of his knowledge is put at various figures, averaging nearly twenty-five per cent. That this increase of value arises, 1st, from the fact of his being more readily instructed in the duties of his work; 2d, that he needs less supervision; 3d, that he does his work to better advantage; 4th, that he is less liable to join in unreasonable strikes; 5th, is more industrious; 6th, less dissipated; and lastly, is less liable to become an expense to the commonwealth through poverty or crime."

Now, remember, gentlemen, that twenty-five per cent. is added to the value of the laborer from the possession of the slender outfit given in the common school. What will be the per cent. of value, if, in addition to this, he receives a training in part, which specially fits him for his work. The answers are given to such an inquiry in the report alluded to. That a knowledge of the sciences that underlie the occupation gives greatly increased value to their possessor, is agreed on all hands. It does this: 1st, by enabling him to avoid dangers, in mining for instance, to which ignorant men are exposed; 2d, by enabling him to detect and



remedy difficulties, which else would cause expense and delay; 3d, by enabling him to discover shorter and simpler methods of work, thereby increasing his powers of production; 4th, by stimulating his qualities of contrivance, so that he adjusts and modifies the tools or machines which he uses, and becomes eventually an inventor of simpler and better machines, thus increasing the wealth-producing power of his fellow laborers. In this direction, it is estimated by these men, competent to judge, that his value is increased *one hundred per cent.*, while in certain exceptional cases it is incalculably higher. Better even than all this, it advances the well-being of its possessor. By virtue of his increased education, he commands higher wages for his services, and also adds largely to the common production.

A case illustrating this very point is given by Prof. John S. Hart. He says, "A gentleman of my acquaintance had frequent need of the aid of a carpenter, for alterations, odd jobs and adaptations to meet special wants, and no little time and material were wasted in the perpetual misconceptions and mistakes of the successive workmen employed. At length a workman was sent who was a German, from the kingdom of Prussia. After listening to the orders given, Michael would whip out his pencil, and in a few minutes would present a sketch of the article, so clear that any one could recognize it at a glance. Thus there was no waste of time nor material, and such was the demand for Michael's services, that, though he was no better carpenter than many others, yet through his knowledge of drawing obtained in the common schools of his native country, he could obtain two dollars per day, while his companions in the same shop only received a dollar and a quarter. What is true of Michael in carpentry would be true of any other department of mechanical industry."

What a convincing argument is given in this report for our common school system. *It pays*, in the lowest as well as in the highest sense, to educate the people. According to the last census, 1,554,931 adult males were regarded as illiterate. If, now, according to the opinions before given, these persons should earn each one dollar per day in their illiterate state, by learning to read and write, twenty-five per cent., would be added yearly to the production of the country, or \$116,612,425; nearly twice as much as is

paid annually for public instruction in the United States. If, now, we take four-fifths of the 8,287,043 engaged in various pursuits in the United States in 1860, who received their education in the common schools, considering each one as capable of earning one dollar per day without such education, and \$1.25 with it, we have a yearly addition to the production of the country of \$523,740,178; nearly nine times the amount paid annually for public school instruction. Then, consider what the increased production would be if specific instruction were given to these persons in the different branches of industry represented by them, or if, in early life, studies were pursued bearing directly upon their vocation. The instruction that these men need, in the main, is in the facts and truths of natural science, for these lie at the foundation of the life-work of the vast majority of the producers of our country's wealth. These sciences must be studied if our nation would attain the exalted destiny which clearly awards it.

Dr. Playfair says, "the great advantage of such an education is, that while it elevates the individual, it at the same time gives security for the future prosperity of the nation. There are instances of nations rich in natural resources of industry, yet poor from the want of knowledge how to apply them; and there are opposite examples of nations utterly devoid of industrial advantages, but composed of an educated people who use their science as a compensation for their lack of raw material. Spain is an example of the first class, and Holland of the second. Spain has everything in the richest profusion to make it great and prosperous. Few countries have such riches in the natural resources of industry. A rich soil and almost tropical luxuriance make her a great food exporting nation. Iron and coal, copper, quick-silver and lead abound in profusion, but these do not create industries unless the people possess knowledge to apply them. When that knowledge prevailed, Spain was indeed among the most advanced of industrial nations, not only her metallurgic industries, but her cotton, woolen and silk manufactories were unequalled; her shipbuilding was also the admiration of the nations. But all have decayed, because science withers among an uneducated people, and without science nations cannot thrive.

"Turn now to Holland, once a mere province of Spain. She

has nothing but a maritime position to give her any natural advantage. Not so bad, indeed, as Voltaire's statement that she is a land formed from the sand brought up on the sounding leads of English sailors, though she is actually created from the debris of Swiss and German mountains brought down by the Rhine. Hence, within her lands are no sources of mineral wealth, but she has compensated for its absence, by an admirable education of her people. And so this mud-produced country, fenced round by dykes to prevent the ocean from sweeping it away, is thriving, prosperous and happy, while her old mistress—Spain—is degraded and miserable, unable in all Europe, until lately, to find a King, who would undertake to govern her ignorant people."

Let me give an illustration of the value of science which has recently come to our notice: One of the most audacious and magnificent swindles of the ages has just been exposed by it—the diamond swindle. So cunningly and brazenly had its originators gone to work, that the wealthiest and shrewdest men in New York city were taken in. Gen. McClellan was president of the company, which had a capital of \$100,000,000. Eighteen other companies were formed with a capital of \$18,000,000. Fabulous stories were told of the diamonds found in the Arozina mines; the evidence was so minute and circumstantial, that doubt seemed well nigh impossible. But a young graduate of Yale College, Mr. Clarence King, went quietly to work with his two assistants, and after a careful examination, they found, and showed to the satisfaction of the world, that these fields had been "*salted*" by the hand of man, and not sown by the hand of God.

The question arises, shall the studies in the natural sciences be reserved for a mature intellectual developement, or shall they begin with the mental growth of the child? I answer, they are the first studies to be pursued or taught. I again quote from the eminent Dr. Playfair:

"The whole yearnings of the child are for the natural phenomena around him, until they are smothered by the ignorance of the parent. He is a young Linnæus roaming over the fields in search of flowers. He is a young conchologist or mineralogist gathering shells or pebbles on the sea shore. He is an ornithologist and goes bird nesting; an ichthyologist and catches fish. Glorious

education in nature is all this, if the teacher knew how to direct and utilize it. The present system is truly ignoble if it sends the workingmen into the world in gross ignorance of everything he has to do with it. If you bring up a ploughman in utter ignorance of everything relating to the food of plants, of every mechanical principle of farm implements, of the weather to which he is exposed, of the sun that shines upon him, of the rain which, while it drenches him, refreshes the crops around, is that ignorance conducive to his functions as an intelligent being? All nations that have in recent years revised their educational systems, have provided a class of secondary schools for the industrial classes, especially devoted to teach them the principles of science and art relating to their industries. Holland compels every town of 10,000 inhabitants to support such a school."

Distinguished educators, men of science, and literary men, unite with the keen, practical men of the world, who have no pet theories to advocate, in expressing their opinions of the value of these sciences in the primary schools.

In the province of Ontario, through the efforts of Rev. Dr. RYERSON, who has been at the head of its educational interests as chief superintendent of education for more than twenty-five years, and who is second to none in the civilized world for practicality, success and ability as an educational executive officer, a bill has been passed requiring the elements of mechanics (including drawing), commercial instruction, the elements of practical science, agriculture and natural history to be taught in the public schools. I am under many obligations to Dr. RYERSON for the valuable information on the subject under discussion contained in his report for 1872.

The superintendent of public instruction for the state of Maine, asks and answers the following pertinent questions in regard to the studies of our common schools: "What shall be taught in our common schools? *Answer.* Those things necessary to our children as men and women. When shall the several branches be taught? *Answer.* As fast as their faculties of sensation, perception and reasoning develops. How shall they be taught? *Answer.* In the order of development of the child's faculties, and

with all the allurements possible to the inventive power of the adult mind."

The superintendent of public instruction for the state of Kansas says: "A practical education is by far the best. Close observation in every day life leads to this."

Prof. ALLEN of Pennsylvania, an eminently successful teacher in the school-room and institutes, says: "As all studies in the school-room may be classed under the three heads of language, mathematics and natural science, and as the elements of all physical and natural science should *be taught to the youngest child* that enters the school, every child should have daily one lesson in language, one in mathematics, and one in science."

A year ago the legislature of Illinois enacted that "no teacher shall be authorized to teach a common school who is not qualified to teach the elements of the natural sciences, physiology and the laws of health, in addition to the branches previously required."

Hon. Newton Bateman, Superintendent of Public Instruction in that state, thus defines what he understands the law to mean by "elements": "the elements of science are its fundamental principles, its rudiments, its primary rules, laws and facts; the simplest and most essential things involved in a knowledge of it." He defined natural sciences as applicable to the common schools of that state to mean botany, zoology and natural philosophy.

Hon. Wm. T. Harris, Superintendent of the Public Schools of St. Louis, asks the question, "Can we not give those children who study five years or a less time in our public schools, some knowledge of the outlines of physics and natural history, which will be of great service to them in after life, and for the time being not interfere seriously with the prosecution of elementary studies?" He answers the question in the affirmative.

The Royal Commissioners of Great Britain, appointed to inquire into systems of schools, report in regard to the study of natural science as follows: "We think it established that the study of natural science develops better than any other study the observing faculties, disciplines the intellect by teaching induction as well as deduction, supplies a useful balance to the studies of language and mathematics, and provides much instruction of great value for the occupations of after life."

Prof. Agassiz, in an address at an educational meeting in Boston, says: "I wish to awaken a conviction that the knowledge of nature in our day lies at the very foundation of the prosperity of states; that the study of the phenomena of nature is one of the most efficient means for the development of the human faculties, and that on these grounds, it is important that this branch of education should be introduced in our schools as soon as possible."

The language of Thomas Carlyle has found a response in the breast of many a cultivated man, when he wrote: "For many years, it has been one of my constant regrets that no school master of mine had a knowledge of natural history, so far at least as to have taught me the names and habits of the little winged and wingless neighbors that are continually meeting me with a salutation which I cannot answer, as things are."

I contend these studies not only underlie the pursuits of so many persons, but they also pertain to all true complete culture. Every student, whatever he may be in future life, should know these ground truths of nature. Poor indeed is that education which now leaves them out. Discipline is in them of the most rigorous kind; ideas clear, crisp and definite are in them. Beauty is in them. Sublimity is in them. Logic is in them. Law is in them. Order is in them.

These are the letters of the alphabet which the God of Nature himself has given. Here are stories and histories more fascinating than the Arabian Nights Entertainments, and more glowing and truthful than the enrapturing pages of Macaulay; but our untrained eyes see them not.

Listen! there are ten thousand voices more exquisite in their melody and harmony than the strains that come from the lips of an Adeline Patti or from the magic strings swept by the fingers of an Ole Bull. There are more soaring symphonies than Beethoven ever wrote, and grander oratorios than Handel ever composed. The air is heavy with music; but our dulled ears hear it not.

Object lessons, we say children ought to have. Pictures, we say children ought to have. Why, here are pictures in forest and field, on water and sky, in matchless colors of unspeakable beauty, filling and thrilling and blessing the receptive soul—pictures the Great Artist himself has designed to limn for the

grace and glory of our lives, and we turn from them and go into raptures over pigment and pigmy daubs!

Back to nature, gentlemen, we must go; back to that nature with which you have to do; back to nature, not only for sentiment, but for truth and life. Back to her trees, her shrubs, her flowers; back to her rocks, her hills, her vales; back from the seen to the unseen—from phenomena to processes and laws; back from these to the mind and heart of Nature's God.

I make then, an appeal to you, gentlemen of the horticultural and agricultural societies, to help introduce the study of these sciences, in their *elements*, in the common schools of the state. Taught as they can be taught, they need not and will not crowd out the studies now pursued; nor will more studies be introduced than our children can successfully master. If instruction is given each day *orally* in the objects of nature (and it may be given in connection with other studies, such as geography), it will *rest*, as well as please and instruct the mind. To teach these elements we must have *teachers*; that is the first necessity. To have such teachers, the studies must be required by law. Once required, the facilities for gaining the information desired will be furnished in abundance. Already the board of regents of normal schools have laid down these studies in the first year of the course in the different normal schools of the state. Teachers' institutes will supplement the work of the normal schools. Suggestive text-books will be issued in response to the demand; and the result of the experiment, if tried, will be, that teachers will not know *less* of arithmetic and grammar because they are required to know *something* of the elements of natural science.

Wisconsin should fall into line with Ontario, and Illinois, and St. Louis, and lead the column of the primary schools of the states and the world, as they shall keep step to the music of science in her glorious march through the world, and to the stars.

In this capitol, last December, the county superintendents, teachers and friends of education in our state, unanimously expressed their opinion that the natural sciences, as soon as practicable, should be taught in all our schools.

A bill has been introduced into the legislature to make these studies obligatory upon teachers after January 1, 1874. Let it

pass. The thanks of the young and the benedictions of the old will hereafter rest upon all who shall aid the movement, fraught as it is, with untold good.

I plead, gentlemen, for model schools, model school houses and model school grounds. It is in your power to make them. Create the demand, and model teachers enough will be found to lead your children in the way of truth.

In conclusion, gentlemen, besides model schools, let us have model homes. Homes crowned with the clambering vine, amid the cooling shade of trees, surrounded with the verdant lawn, with pendent berries, with golden fruits and clusters of crimson grapes, homes graced with pictures, refined by books and gladdened with song. Homes in which there shall be no scorching blasts of passion, nor polar storms of coldness and hate. Homes in which the wife and mother shall not lose all her attractive charms by unremitting drudgery and toil; nor the husband and father starve his brain and dwarf his soul by hours of over-work. Homes in which happy children shall ever see the beauty of love and the beauty of holiness. Homes of plenty, homes of sympathy, homes of self-sacrifice, homes of devotion, homes of culture, homes of love. Angels from the fruits and flowers and streams and fellowships of the home in the upper Paradise would be lured to dwell in these earthly Edens.

The people's poet truthfully wrote—

“This world is full of beauty—  
It might be full of love.”

But out of the very *heart* of truth he struck the divine song—

“This world is full of beauty,  
When the heart is full of love.”

That is what we need—love in its manifold forms; love of nature, love of truth, love of integrity, love of our work, love for man, love for God. Gain this love! It is the open sesame to all the mysteries of matter and mind. It is the soul of all enthusiasm; of all insight; of all success. Love virtue—

She will teach you how to climb  
Higher than the sphyry chime.  
Or if virtue feeble were,  
Heaven itself would stoop to her.



These addresses were listened to by a large and appreciative audience, and were welcomed with much applause at their close.

THURSDAY, February 6th, 9 A. M.

Agricultural Convention met.

President Taylor in the chair.

The President called Col. Wm. Warner to the chair, and then proceeded to deliver his address upon

AGRICULTURAL SOCIETIES, INDUSTRIAL EDUCATION AND CO-OPERATION AMONG FARMERS.

BY PRESIDENT WM. R. TAYLOR.

*Gentlemen of the Convention:* In attempting to address you upon the importance of associated, educated effort among farmers, I feel myself chiefly embarrassed by the very multitude of considerations that marshal themselves before me. There is strength in union, and wisdom in united counsel. The wonder is that this truth did not earlier impress itself upon the agricultural population of the civilized world. Other trades and professions have been less slow to recognize the benefits of co-operation. Societies and organizations have long been regarded by them as invaluable educating agencies, and have been seized upon as a power to be wielded when occasion should demand. History is full of confirmations of what we say. The professions, learned and unlearned, soon saw the importance of associating and counseling together for mutual improvement, if not for pecuniary gain. Tradesmen and artizans of every grade have not been blind to the importance of systematic co-operation, as the "Guilds" of the middle ages—trades-unions of later date, chambers of commerce, boards of trade, commercial conventions, etc., bear witness. But agricultural associations are of comparatively recent date.

The farmer, in his isolation, has been very slow to open his eyes to the numerous illustrations of the power of combination, and to the great advantage of more frequent intercourse with his fellows of the same pursuit. Within the recollection of some who are here present, the agricultural societies of the United States could have been counted upon one's fingers, and agricultural *fairs* were a thing scarcely known. But, thanks to the pio-

near efforts of a few far-seeing men, and to the stimulating influence of an intelligent press, strengthened and reinforced by the progressive spirit of this wonderful age, a great change has been wrought since those plodding days. To-day, associations of this kind are almost as numerous as those of any other, while industrial exhibitions are the distinguishing event of the autumn season in every part of the country; and, what is of greater moment, the wholesome, saving doctrine, that there is a true *science* of farming, without a knowledge of the principles of which the highest success is impossible, is gaining ground.

Public recognition of this is beginning to clothe the business of farming with a new dignity, and to create new demands for its further improvement. Colleges, in large numbers, have been established and endowed, the primary object of which is to provide instruction in the application of science to the improvement of agriculture. In this way, farming is gradually approaching that degree of development and scientific certainty that will in time entitle it to rank as a real profession. But, in spite of these evidences of progress, the present condition of agriculture and of the farmer himself, is far from satisfactory. Guess-work, random efforts, "cut and try" methods still characterize the practice of most farmers. Waste is manifest on every hand — waste of time and strength and substance. We see it in field culture, in stock rearing, in orcharding, in short, everywhere; while the scanty fruits of toil are often more than half appropriated by those who carry them to the ultimate consumer, or who, with very little productive labor, manage, by the tricks of trade, to fatten and flourish upon margins and corners. Thus it has been from time immemorial, and thus it will continue to be until farmers shall better understand the situation about them, and organize in self-defense.

One of the chief difficulties thus far has been, that farming is wholly individualized. This accounts in great part for its prostration at the feet of every interest that is organized and cohesive. All great human achievements are the results of united effort. Our whole social system is union, from the country log-rolling to the confederacy of states. Farmers cannot afford to ignore the rest of the world. We are sadly behind, and whatever may be the cause, a closer union can do much toward removing it. There is a want

of organized, intelligent, associated effort. If the farmers of this country were properly united, if a close bond of union were established, from the district club or grange, up through town, county, state and national organizations, so that sure and reliable information could be secured and promptly distributed, untold advantages and important results would follow. It is too late to re-open the question of educating the farming community for its own sake, as well as for the sake of all other classes. Agriculture supplies the principal material and support of all other forms of labor, while it renews and restores their waste, by an unfailling supply of fresh bodily and mental power. The rural population forms the substratum of society. From its ranks are recruited, the supply of the most reliable and successful business and professional men, and the most efficient and useful women. The necessity of keeping pure the fountain head is too plain to admit of argument, and every means should be employed to secure the highest possible development of that interest which forms the bed-rock upon which all others rest.

I feel assured that it is unnecessary to attempt any extended argument to convince the intelligent members of this convention of the importance of a properly conducted agricultural society as an educating agency, and of its beneficial influence, direct or indirect, upon every industry of the country. It educates socially—old friends meet and new acquaintances are formed. Friendly intercourse with neighbors lightens toil, tempers the pangs of temporary adversity and heightens the pleasures of prosperity. It educates intellectually; mind comes in contact with mind, free discussion is had—objections are considered and friendly emulation and wholesome criticisms are indulged in. Here, as in politics or ethics, every question has two sides, and truth can only be reached, or agreement secured, by a fair and honest interchange of opinion. The results must be seen in improved culture, better fruits, better stock, better implements, better methods of using them, higher hopes, wiser faith. It is highly encouraging to witness the growing activity which is now manifest in the organization of local agricultural societies. These farmers' clubs and town granges are becoming a power in the land, as well as useful agencies in promoting and imparting agricultural science. Many

false theories will be advocated, no doubt, but agitation and intelligent discussion can scarcely fail to end in good. These local clubs, organized for the mutual improvement of their members, are so many normal schools, whose work it is in part to help prepare teachers in the science and art of agriculture. At these neighborhood meetings of practical farmers, the results of individual experiments are brought together and compared, new discoveries are communicated, errors are combatted, and a higher and better knowledge of the theory and practice of farming is secured. The means employed by the town or district grange or club to secure the culture and improvement of its members must chiefly be the library and stated meetings for the discussion of such questions as most nearly concern the little community of farmers who are represented. In some localities, the town market fair has been introduced with advantage.

But as the chief end is information and encouragement, the first mentioned means are by far the most important. It is in the club meetings that one or two intelligent and earnest men, having themselves learned a more excellent way are enabled to reform the methods and substantially change the practice of a whole neighborhood. The association is composed of those who know each other as neighbors. Its members are thus easily led into such inquiries and expression of opinions as observation and experience has suggested, and an ambition is stimulated to make common to all the successes of the most fortunate of their members. The very quickening of the mind which naturally grows out of these discussions is one of the most valuable fruits of the local organization. Because of his isolation and of the quiet nature of his employment, the mind of the farmer tends to grow, or rather to remain dull and inactive. He needs to be repeatedly shaken up to prevent him from becoming hopelessly routine and old-fashioned in his methods. But stir him up, set his intellectual powers into active operation at frequent intervals, and he at once becomes a thinking, progressive man, not only ready to learn from others, but competent to devise and investigate for himself. These are a few of the benefits of town and neighborhood organizations, but there are many others that might be enumerated. The office of the county society, though different, is scarcely less important.

It cannot convene its members for frequent discussions, nor in other respects supply the place of the local club, but it can gather together, annually at least, the farmers and their products, and thus afford opportunity for all to see the best results that have been achieved by the most successful farmer, stockbreeder, fruit grower, mechanic, manufacturer, housewife, and artist, of the whole country.

The primary object of agricultural, horticultural and household exhibitions is not merely to award premiums. The great central idea, besides the social and moral development is, that by bringing to one place occasionally, animals and articles of superior excellence as *models*, so that they can be conveniently seen, studied and compared, every one may have an opportunity of becoming acquainted with the appearance, at least of whatever is best and most profitable of its kind; the horse of the fittest proportions, either for work or for speed, the cow best suited for milk or butter, or as breeder, the hog that promises the greatest returns for a given amount of care and food, the sheep best adapted to each farmer's circumstances, either for wool or the market, or both, and so on through the whole range of stock, and fruits, household, arts and manufactured products. Every one, by careful inquiry, is enabled to learn much of the means by which these best results were secured, and may, perhaps, be put in the way of obtaining their like for his own use and advantage. The chance is offered to see and acquire the most approved of everything in the way of implements, machinery, and various mechanical devices, for the convenience of the farmer and his working force, for the saving of labor and for the better execution of his work. Add to these advantages the stimulus which one derives from the discovery of his inferiority in practical farming, and the encouragement another receives from his recognized superiority, and we have some of the special fruits of the industrial exhibition, the planning and management of which constitutes the chief work of the county society.

But aside from these direct and special advantages to the farmer, there are some other fruits which grow out of these annual exhibitions, the indirect benefit of which should not be overlooked. They give encouragement to the mechanical and manufacturing classes by affording them an opportunity to exhibit their inven-

tions and products, and by furnishing an impartial though interested umpire to pass upon their merits and test their relative values. The direct benefit of this accrues to the mechanic and manufacturer himself, but the farmer also secures advantages; first, by being aided in reaching proper conclusions as to the relative value of things invented and manufactured for his use; secondly, by afterwards reaping the fruits of the inventor's stimulus, in the form of still better machinery. Finally, the social benefits secured by the intermingling of individuals at the annual county fairs, are of very considerable importance. They afford temporary rest from overwork—extend the farmer's field of observation—help cure his prejudices—enlarge his views—quicken and strengthen his sympathies with his fellows, and thus better fit him for intelligent co-operation in whatever promises to improve his condition and exalt and dignify his calling.

The state society and state board take up and carry on the work of county organization; by operating upon a larger scale, they possess the advantage of bringing together from a wider area such products as have gained a local superiority, and thus enable the state to make comparison of the progress of whole communities. But they have another important work to do—that of systematically gathering in stores of information from every quarter of the world, and disseminating it through the medium of their publications, and through the channels conveniently afforded by all subordinate societies of every grade. The fruits of such works, well and wisely done, are not perishable with the year, but enduring as time. These publications afford not only a means for the careful sifting of innumerable facts, but also a practical guidance in the application of scientific knowledge. Holding to these views, I deem it a ground of satisfaction and of pride to the Wisconsin State Agricultural Society, as well as to all the citizens of our state, that its publications have taken, and now hold a prominent place in the appreciation of the agricultural public of this country. How much good they have accomplished by their able discussion of principles and the fearless advocacy of far reaching and comprehensive views of industrial policy, we cannot well estimate. As Wisconsin now numbers a

population of over a million, many of whom, if they can be brought together at this season of the year with the results of a new twelve months experience fresh before them, will be able to contribute something to the common stock of information, we hail the State Agricultural Convention as a new and valuable educating agency. It is one of the most hopeful tokens of agricultural progress, that farmers are beginning to meet in conventions like the present to discuss practical affairs. It is evidence that they are beginning to think about their joint needs and to provide for them. What are our joint needs? This begets thought and discussion, and in my opinion there can be no popular and effective co-operation without such consultation. There can be no strength developed to assist in correcting evils without healthy co-operation. The good that shall come out of these deliberations will depend entirely upon the manner in which they are conducted, and the tone and temper which pervade them. In view of this, let our discussions at this time be characterized by definiteness, directness of speech, and, above all, by scrupulous care in the statement of facts.

The industrial college is now entering as a new factor in determining the material progress of the world. That it must become a very important one, seems plain, when we reflect upon the rapid development of the sciences, and their applicability to the practical acts. Should any allusion to this new agent seem foreign to the subject which is more immediately under consideration, I beg you to bear in mind that *the college of agriculture and mechanical arts is the offspring of the agricultural societies of the country*; that it must look to them for support and encouragement, while it becomes to them and to their members in turn, a fountain head of scientific truth. The industrial college is not only the fruit of associated effort, but is, in and of itself, little more than an association of scientific men indirectly aiming at practical industrial results. Let those who assume this work prosecute it with an eye single to the end for which they were ordained to priesthood in science, and these colleges will become a powerful agency for good.

If we attempt to pass from the foregoing instrumentalities for agricultural advancement, and consider questions of co-operative effort in general, and in the true province of government in regard

to the control of its industries, we are at once brought face to face with various questions of political economy and of social and governmental science. How far may legislation wisely go in its efforts to solve the difficult and ever-present problem of the transportation of produce at fair and equal rates? What shall be the limit of class legislation, or shall it be indulged in at all? To what degree would industrial legislation be improved by increasing the number of farmers in our legislative bodies, and how far would it be wise for farmers to work together to this end? These are all questions as to the value of associated effort in the interests of agriculture, but to decide them aright would require more study and more philosophy than I have been able to bring to bear upon them. The problem is not demonstrated to the entire satisfaction of all, whether the order known as the "Patrons of Husbandry" has its foundation in a true social philosophy. Its existence, however, is evidence of the fact that the great farming community of the United States feel the need of understanding each other better, and of co-operating to secure a more rapid improvement of their condition as an industrial class. It is a hopeful sign, that farmers are beginning to realize that their condition, absolute and relative, is not what it should be, and in attempting to cure the evils which are felt to exist, many worthless and some vicious remedies will no doubt be at times applied. Of one thing bearing upon this general subject I am perfectly certain, that no plan for making the great body of the farmers of Wisconsin, and of the whole country, practically wise and influential, can compare with the great scheme of popular, industrial education. **Knowledge is power.**

The true method, then, is to augment the *man*, and not the circumstances that surround him. Education develops the power to control circumstances, and "when you secure causes, you secure effects also." Education *develops* men and trains them. The development and training of the whole man then, is the greatest boon that can be conferred upon us, and farmers must become more intelligent if they would realize their dreams of social responsibility, much more if they would aspire to social and political supremacy. To this end there is little danger of bringing to bear too much of associated effort. Let it be borne in mind that



the profession of agriculture can rise only as the farmer himself is exalted in the scale of intelligence. Without a knowledge of the fundamental principles of agricultural science, he has no more reason to expect professional success than the quack in medicine, who knows nothing of anatomy, physiology, pathology or hygiene, and is utterly ignorant of the most approved remedial agents—the patient may get well in spite of the physician. So it is with much of our farming—it is sheer quackery, and that the pitiful results which we witness are not far worse, is owing to the great beneficence of nature, whose patient endurance of all sorts of violation of her laws, is a never ending marvel. When we think of the delicacy of organization of both plant and animal—of the numberless circumstances which, in one way or another, modify their growth and determine the degree of their development, and of the laws but half revealed, in accordance with which the most complete results can alone be obtained—even the wisest are amazed at how little they know of their life's business—what then shall be said of the great multitude, whose practice warrants the conclusion that they have no idea of the manner in which the plant makes its growth, or the animal is developed—who laugh at all theories of selection, whether in planting or in breeding?

It is a great mistake to suppose that the farmer needs less intellectual culture and material discipline than those who are engaged in other occupations. There is no business in life that requires for its successful pursuit a more active mind, broader views, or a more thorough training than that of the farmer. Scarcely a science can be named within the whole scope of human research, but has a bearing upon his occupation; and upon some of the most intricate of these, unconsciously perhaps, he builds all of his successes, and scatters the wrecks of all his failures. Agriculture not only deals with soils—their composition and degrees of fertility—but with everything that pertains to animal and vegetable life. To make agricultural labor popular, and, in the best and truest sense, profitable, it must be associated with the highest intelligence. There must be more brain work and less muscular effort. The grand problem is to secure the greatest returns, the highest aggregate of satisfaction, with the least expenditure of effort. The question of cheap or reasonable rates of transporta-

tion is an important one, and demands investigation; but one of even greater moment among farmers to-day is, how to marshal the forces of nature to their service, and properly economize the myriad agencies of production that lie wasting about us. Make men intelligent, and they soon find shorter and easier ways of reaching a given end. We can never expect to eliminate physical labor. The necessity for its use is an inexorable law of our being. But we may rely too much upon it. Make labor intelligent and you increase its value by as much as mind is superior to matter. We yield to the superiority of intellect, but not to brute force. The spirit of improvement is abroad in the land. The electric spirit of the age is beginning to take hold of the plodding farmer.

Agriculture will henceforth demand intelligence, close observation, good sense,—in short, science. He who would succeed must have in him all the elements of an earnest man, be of no slow blood or indurated brain. I would have the farmer know how to produce a perfect crop, and a perfect animal, and then how to reap the largest net returns for his labor. This is briefly said, but what a world of particulars it involves! What a variety and vast amount of knowledge it implies. A knowledge of soils and their varied adaptations—of manures and of their most judicious application—of the best methods of preparing the soil, planting the seed, and of cultivating, harvesting and curing the crop—of the laws of climate and climatic relations—of the physiological principles of breeding and of feeding—of the laws of political economy, especially so far as they apply to the question of demand and supply. I would have him capable of protecting his own interests, whether it be done through the press, in halls of legislation, or by such judicious and effective combination with his fellow farmers, as would save him from falling between the upper and the nether millstones of unscrupulous middle-men and soulless corporations. Further than this, I would have him fully competent to meet all the varied duties of citizenship. To these ends, I invoke the associated, systematic and persistent effort of all who would elevate our noble calling, promote the best good of society, and raise the standard of our common humanity. Then we shall see agriculture recognized as one of the learned professions—more

honorable, and withal, more inviting than any other pursuit in the whole range of civilized life.

The address was listened to with marked attention, and those portions relative to co-operation among farmers, and the organization of co-operative societies, warmly applauded.

Eli Sherman moved that a committee of three be appointed by the chair, on Resolutions. Adopted.

A paper was then read by Hon. John L. Mitchell, of Milwaukee, Vice President of the State Agricultural Society, upon the subject of "Horses," which, with other papers read before the convention, may be found under the head of "Practical Papers."

"Short Horns." Paper by C. H. Williams, of Baraboo, Vice President of the society.

"Devons." Paper by John H. Carswell, of Richland county. In the course of some extempore remarks, Mr. C. alluded to Devon cattle which had turned the scales at 1,600 and 1,800 pounds, and that instances were on record of their weighing 2,000 pounds.

Mr. Richmond, of Whitewater, inquired where such record could be found, whereupon the speaker referred him to the report made by Mr. Roach to the United States Agricultural Bureau for that information.

"Ayrshires." Paper by Chester Hazen, of Winnebago county, President of the Wisconsin Dairymen's Association.

"Sheep Husbandry." Paper by Eli Stilson, of Oshkosh, Vice President of the State Agricultural Society. At the close of this valuable treatise, Mr. Stilson stated that he had received specimens of wool from South America, with a minute description of the same, accompanied with a request that the State Agricultural Society should pass upon its quality. Said he would send it to the agricultural rooms for inspection.

"Alderneys." Paper by Judge Geo. E. Bryant, of Madison.

"Poland-China Hogs." Paper by Hon. M. Anderson, of Dane county. This statistical and descriptive treatise was read by Mr. Anderson, prefacing it with the remark that, as the subject was by no means a poetical one, he hoped to be pardoned if he confined himself to dry matters of fact.

A cordial invitation to visit the University of Wisconsin was

extended to the convention by Prof. Daniells, who stated that that institution had a department devoted to agriculture, which he would be pleased to have them examine, and observe what was there being done to promote the interests of the farmer.

Edward Porter desired to know if the papers read before the convention were to be discussed, and upon being assured by Secretary Field that such was the intention, he offered a few pertinent suggestions upon the method of curing pork and bacon. He severely criticised the manner in which our hogs were prepared for shipment to foreign markets. The imperfect methods pursued by our pork-packers, were the reasons why American pork and bacon were of an inferior quality, and brought a lower price in the markets of the world, than the far-famed English bacon. This was no fault of men who raised the hogs, but of the packers who cured it, and he hoped the day was not far distant when the evil might be remedied.

Adjourned until 2 P. M.

#### *Afternoon Session.*

The chair announced the following committee on resolutions: Eli Sherman, W. D. Hoard and J. M. Kellogg.

“Soils—their Preservation and Renovation.” Paper by Secretary Field.

“Diversified Industry on the Farm.” Paper by D. M. Morrow, of the *Western Farmer*.

“Diseases and Remedies.” Paper by Dr. Wm. Horne, of Janesville.

“General Farm Husbandry.” Paper by Dr. C. L. Martin, of Janesville.

“Ayrshires.” Paper by Jonathan Stoddard, of Sheboygan county. Read by Secretary Field, by request.

The committee on resolutions asked leave to make a report at this time, which was granted. Whereupon the committee submitted the following

#### PREAMBLE AND RESOLUTIONS.

WHEREAS, In the nature of present agricultural affairs, there is an admitted inadequacy of remuneration for agricultural labor,

and an apparent undue degree of profit in certain other pursuits ; and,

WHEREAS, In various ways the farmer is being forced by combinations of railroads, dealers and manufacturers, to the payment of exorbitant rates of freight, commissions, and for manufactured articles, and that it is evident that the true reason for this lies in the united and co-operative action of these several interests, and in the disunited and uncombined action on the part of the farmers ; and,

WHEREAS, Complaint, without sharp, practical, intelligent action on our part to counteract these growing evils, is worse than folly ; and,

WHEREAS, Self-preservation is our law, as well as that of others ; therefore,

*Resolved*, That we, as farmers and others interested in the emancipation of agriculture from the thralldom of all unnecessary trammels, do recommend to the farmers of this state to form themselves into clubs, granges and other societies, for the intelligent discussion of the grievances before mentioned.

*Resolved*, That we recommend united action by such clubs and societies in the purchase of farm machinery and farm supplies, for the reason that if the sellers combine to sell, our only safety lies in a like combination to buy.

*Resolved*, That we recommend these clubs and societies to unite in sending delegates once a year to meet in convention, to take into consideration questions of vital interest to Wisconsin agriculture.

*Resolved*, That we urgently recommend a greater degree of study, and a better understanding of the demands of various markets, and the distinctions there established, and the importance of the dissemination of such knowledge among the people.

*Resolved*, That as the burdens of taxation are grievous, compelling the farmer to practice the strictest economy in order to pay his taxes and meet other demands, this convention would earnestly recommend to our officials, a corresponding economy in the management of our public affairs.

*Resolved*, That farmers and the entire agricultural interests, should be more effectually represented in the state and national assem-

blies, and that our interests should not be sacrificed to corporations and monopolies, and we recommend sharp criticism of the acts of our officials in this respect.

*Resolved*, That cheap transportation of our products is one of the many ways to ensure better profits and lessen the labor of the farm, thereby affording farmers, their wives, sons and daughters, those educational advantages so freely offered, and yet often beyond their ability to accept, and we demand of our legislators specific action on this question.

On motion, the resolutions were unanimously adopted.

Mr. Amaziah Richmond, of Whitewater, read a brief paper upon "Breeds and Breeding." Mr. R. said he made a distinction between races and breeds. That a race could not be improved by crossing with other races, but that each race could be improved by good care and feed, and by breeding only from those possessed of certain desirable characteristics.

The Merino sheep he believed to be a distinct race, and all things considered, he thought them the most profitable for the farmers of Wisconsin. Thought agricultural societies ought to encourage the breeding of each race of domestic animals pure and distinct, and to that end should offer much larger premiums for pure than for graded stock. Gave some of the peculiar characteristics of the Devon cattle, claiming that they were hardy, made excellent working oxen, were of good size, matured early, and made choice beef. Spoke in high terms of the Galloway cattle; that they were a superior, large breed, took on flesh quickly, with little feed, and were truly valuable.

Mr. Favill suggested that inasmuch as the legislature, now in session, were deciding on what railroad corporation they should confer the St. Croix land grant, he would recommend that that honorable body be invited to bestow a portion of it upon the State Agricultural Society, for the purpose of establishing an Experimental Dairy Farm. Mr. Favill was requested by the chair to put his statement in the form of a motion, but he insisted it was only a suggestion, though he must say he should like to see his idea practically developed.

A delegate asked for information in regard to the utility and value of

## MARKET FAIRS.

W. D. Hoard, of Jefferson county, was called for, who responded that he could only speak upon this subject so far as it related to one line of product, to wit: dairying. The whole matter lies in one question, how shall we market our produce? The solution of this question soon pressed itself upon the attention of our dairymen, and to take the first step, they organized a market fair, and held their first market day at Watertown. Commission men and dealers in Milwaukee, Chicago and other places, and the cheesemakers throughout the state were invited to attend. They came, but it soon became evident that the dealers were not satisfied, and they took every opportunity to hinder and discourage the enterprise. Dealers began to ignore the market days. Nothing daunted, the dairymen looked elsewhere for a market, and commenced shipping cheese to New York, and even to London direct. They soon discovered that Wisconsin cheese ranked as high in those distant markets as that made in the state of New York. High freights was one difficulty that must be overcome in some way, and the best way was to establish these market days, collect our products together at some point, and combine to secure the lowest rates possible. The dairymen of Jefferson county had received a proposition to transport their cheese to Liverpool for 95 cents per hundred. In no other way could as favorable figures have been secured, with as little trouble and expense as by this system of market fairs. What had been realized by the dairymen he was convinced might be secured by farmers in any other line of produce, by means of similar agencies.

Dr. C. L. Martin desired to know how farmers' clubs could be formed for shipping their pork without the necessary capital?

Mr. Hoard illustrated that point by citing the case of a farmers' club in Illinois, which formed an organization to dispose of their pork. They made a statement of the number and kind of hogs they had to sell, which they sent to various pork packers. This large amount of pork, controlled by a single organization, which might be acquired by a single purchase, soon attracted the attention of dealers, and the result was, they sold to them direct, at the highest market price, and saved a large percentage that usually goes to middlemen in such transactions.

Mr. J. E. Thomas, of Sheboygan, regarded such associations with favor, and regretted that they had not been formed in Sheboygan county. The cheese-makers, especially, had suffered by non-co-operation. They had shipped some cheese, but the return discounts for shortage had annoyed them exceedingly. Now he was glad to observe the dairymen were arousing to the necessity of combining their individual interests. They were prospering. According to the statement of banks at Sheboygan, their deposits were about \$600,000, a great part of which was deposited by the farmers. But the one thing needful was combination for the purpose of attracting the attention of dealers.

Mr. Eaton, of Green county, expressed himself in favor of the free discussion going on in the convention. He regarded it quite as good as listening to the fine essays which had been read. The dairymen might be able to form combinations, and secure better prices for their produce; but he had been an officer of a farmers' club in his county, and found it difficult to establish such co-operative efforts, and if any one present could offer any plan that would meet the exigencies of the case, he, for one, would be glad to know it.

Mr. J. W. Leffingwell explained briefly the aims and objects of the Patrons of Husbandry. He was a member of the organization, and regarded it a good thing. If there was anything better, he wanted to join it. The order was organized about five years ago, and had been gaining slowly since. There are about one hundred granges in this state. He was satisfied they had done good, and were capable of doing much more, if rightfully directed. In his estimation, they possessed elements that would subserve the best interests of the farmer, if they did not prove a remedy for all ills afflicting that calling.

Mr. Hazen said he was a member of the Patrons of Husbandry, and believed in them. They were useful—combining farmers for their own protection. Arrangements were made with merchants in Oshkosh, whereby members could get goods at the low price of ten per cent. above cost. Thus far the order had been of real value to the farmers in his section. Attempts had been made, by a counter-combination of merchants, to run them out, but they did not succeed.



Edward Porter said that he had more trouble to raise his produce than he had to sell it. He thought from the statements made by some of the delegates, one would get the idea that the farmers were the most miserable class of men in the wide world. To look at those assembled, he thought they were well provided for. He opposed the granges and defended the merchants and middle-men, whom he had generally found honorable and worthy men. Many pertinent illustrations were given to fortify this opinion. Lodges and granges were good as far as they went, but they did not help a farmer who failed to take care of his farm.

The discussion was further continued by Messrs. Favill, Anderson and Eaton.

Dr. Strong, of Columbia county, asked if a member of the Patrons of Husbandry could ride on the railroad cheaper, or get their grain taken to market at more reduced freights, than farmers who are not members.

Mr. Hazen, in reply, stated that they could not; that they did not save expense in that way, but by dispensing with agents, thereby avoiding their charges. The large per centage paid agents for farm machinery—sometimes as high as thirty-three per cent.—was avoided. All this might be saved to the farmer, by proper management, through the agency of the order.

Convention adjourned to meet in the Assembly Chamber at 8 P. M.

#### *Evening Session.*

At 8 o'clock, President Taylor called the convention to order, and introduced Gen. E. E. Bryant, of Madison, who read an interesting and valuable paper upon "Co-operation among Farmers." J. B. Parkinson, A. M., Prof. of Civil Polity and International Law in the University of Wisconsin, was then introduced by the President, who read a truly scholarly and able paper upon "Production and Consumption, Supply and Demand."

Adjourned until 9 A. M., Friday.

#### FRIDAY, 9 A. M.

Convention met. President Taylor in the chair.

Secretary Field read communications from Prof. J. W. Hoyt and Hon. John P. Reynolds, each regretting their inability to be

present, but expressing their warmest sympathy for the efforts put forth by our society to educate the farmers of the state, and sincerely hoped that the great struggle now going on everywhere to better the condition of the American farmer, would be a grand and glorious success.

"Cranberry Culture." Paper by H. Floyd, of Green Lake county.

"Elements of Success in Farming." Paper by G. E. Morrow, of the *Western Farmer*.

"Grain Culture." Paper by A. E. Allen, of Fox Lake.

Mr. Allen was asked certain questions by delegates, to which he replied, as follows:

Q. How much clover do you sow per acre?

A. About six quarts.

Q. Do you prefer a broadcast seeder or drill?

A. I use a gang-plow seeder—one of my own construction.

Q. Did you ever sow plaster upon grain, without seeding with clover?

A. I have, but would not advise it to be done. The best way is to sow plaster upon clover. Plaster will make clover grow, and clover will make wheat grow.

"Fish Culture." Paper by Alfred Palmer, of Boscobel.

A delegate asked Mr. Palmer, how much and what kind of food trout require?

A. If you stock your ponds rightly, not too much, nature will supply nearly all the food they need. The older the ponds, the more animal life accumulates for food. I get livers of the butcher to feed them occasionally. My trout do not cost me ten cents a day for food. They are the cheapest meat I ever raised on my farm.

Q. What was the age of your trout fed the last year, and the average number?

A. My oldest trout were three years old, and the average for the year, some 20,000, large and small. Don't think I paid over twenty-five dollars for food for them for the year. Of course, nature furnished a large amount of food, such as bugs and insects which breed rapidly in the water, and is food much sought after by the trout.

Q. Will they live in hard water?

A. They will. The water in my pond is very hard, and they thrive well. Don't think it makes any difference whether the water is soft or hard.

Mr. Favill was called upon to give his views upon some of the topics under discussion. In regard to the co-operative schemes which had been urged, he thought the farmer was at work at the wrong end of the question. Why quarrel with the markets and the middle-men when the trouble is of our own making? The system of farming and the way it has been carried on was where the fault was to be found. He never knew a strictly grain growing community that ever got rich. It was because they were selling their farms by the bushel. He never knew a stock and dairying community that did not become well-to-do. The dairy business was more certain—its products more stable in price than any other branch of agricultural industry. About eleven bushels of wheat are raised per acre on an average, which sell at \$1.25 per bushel. There was very little profit in such yield—men would grow poor at it. Expenses are too high to make it profitable. The Pacific slope can raise wheat far cheaper than we can. What then shall we do? Raise beef cattle? But what kind of cattle? It costs too much to raise corn to make beef at a profit in competition with Indiana and Illinois. So with horses. So with hogs. What shall we do? His advice was to engage in the dairy business. Not that he would have farmers abandon these other branches of industry, but make them in a certain sense subordinate to dairying. He had not lived long enough to see butter and cheese sold too low to be profitable. He had sold cheese at five cents a pound, and made money. But would it do for all farmers to engage in that business? He did not think there was danger enough in that to warrant any special explanation. He would not advocate dairying, exclusively, for every farmer ought to raise his own wheat, corn, pork, etc., and convert what surplus he may have into a more compact form for transportation. Mr. Favill thought the product of the dairy would not be more than the market would demand, if generally followed, because when overstocked it became lower and the sales increase until the market is cleared, when the prices will again rise. He closed by

saying that his hobby was cheese-making, and he was glad to have an opportunity of talking about it.

Hon. J. T. Kingston, of Juneau, offered some very excellent suggestions upon "pear culture," resulting from his own experience. After planting his trees, he placed around them a covering of gravel. He had tried salt and lime, and found them good; and afterward salt and iron filings, which he regarded as the best. He had eight varieties. The Flemish Beauty was the only one he could call by name. He did not prune the trees at all. In regard to climate, he was satisfied they could, with proper care, be raised successfully anywhere in the state. He made no extra protection for the trees in winter, and had no trouble from blight. He thought blight was caused by an insect stinging the tender branches. The stinging was done in the morning, and it was his practice to go out during the day and break off those branches that had been stung and were wilted, and burn them. He concluded by expressing himself firmly of the opinion that Wisconsin was a good fruit-growing state.

"Dairy." Paper by Mrs. P. Putnam, Dodge's Corners; read by request, by Secretary Field.

On motion of Mr. Thomas, it was agreed that during the afternoon session, no speaker be allowed to speak more than five minutes at one time, nor more than once upon the same question, except by unanimous consent of the convention.

Adjourned until 2 P. M.

#### *Afternoon Session.*

A very brief report of the proceedings was obtained. "Railroad Tariffs," etc., paper by Hon. M. Anderson. "Dairying" and "Grain Raising" were compared in a somewhat informal discussion by Messrs. Favill, Allen, and Anderson, with the weight of argument rather in favor of the former.

A random discussion upon various farm topics then ensued, in which Messrs. Warner, Scoville and others participated.

"Educated Farmers." Paper by T. H. Eaton of Green county.

Mr. Burgess, President of the Newark Farmers' Club, Rock county, sketched a brief outline of that organization, with especial

reference to the benefits they had received from associated efforts in the purchase of agricultural implements.

"Tree Blight." Paper by J. C. Plumb, of Milton.

The question of holding agricultural conventions was discussed, and many pertinent suggestions relative to the purpose and object of such gatherings were made by Messrs. Flint, Geo. E. Morrow, President Taylor, and Secretary Field.

A brief discussion of the Devon cattle, showing their peculiar and valuable characteristics, was held by Messrs. Knight and others.

Mr. Palmer, of Boone county, Iowa, gave a somewhat lengthy and interesting account of the "Short Horns," and of their introduction into his part of the country. They had proved a success, and he highly recommended them.

Mr. Kiser of Dane county, made a few remarks concerning "Short Horns," endorsing the views expressed by Mr. Palmer relative to their hardiness and adaptability to this climate, and for himself, gave a decided preference to them over any other breed. He would, however, advise each farmer to select the breed he prefers, and breed only one variety.

Hon. J. E. Thomas, of Sheboygan made some interesting and highly instructive remarks concerning stables, health of stock, cisterns, etc., which the society requested Mr. T. to put in form of a "paper" for publication in this volume. It is to be regretted that Mr. T. has not found time to do so.

Mr. Thomas wished to know when, and how the proceedings of this convention would be published.

Secretary Field replied that as full proceedings as space would permit, would be published in the forthcoming volume of the society, and that it would be ready for distribution the coming summer.

Mr. Thomas further desired to know if the papers read would be published in the *Western Farmer*.

Secretary Field said that no objection could be made to a synopsis of each paper appearing in the *Farmer*, and that if any paper was especially desired by the public before it could appear in the Transactions he would cordially furnish it to the press.

A resolution was adopted, urging officers of agricultural socie-

ties, clubs, etc., to earnestly encourage the increased circulation of agricultural papers among the farmers of their respective localities, and thereby stimulate a desire to read, and to more fully study and understand their business.

Mr. Kellogg, of Kenosha, and Mr. Hart, of Appleton, made complimentary remarks relative to the convention, and hoped that like gatherings would be held annually. The former said, that farm life presented more opportunities for culture than many other callings, and ought to be improved rightly. He would go home and organize a society in his county, and urged others to "go and do likewise."

The hour for adjournment having arrived, Secretary Field stated that the convention had been a grand and decided success, and on behalf of the society under whose auspices it had been held, he would say, that they felt proud of its inception and final result. It had been an achievement beyond their anticipations, and would stimulate them to renewed effort in trying to make the future annual gatherings more interesting and instructive. He was glad to see so many societies representing the industry of the state present, and hoped that double the number would be represented another year, and each say something for the benefit of agriculture.

This first meeting had been something of an experiment, and many predicted a failure, but it had been a brilliant achievement and success, and would, he doubted not, be fruitful of great good. Said he saw no reason why the great agricultural interests of the country should make war on other interests, callings and professions, as intimated by some delegates present. Human nature, from his knowledge of it, was about the same the world over, and if the delegates composing this convention were engaged in other professions, they would invariably do as others do—make their labor net them as large returns as possible. What the farmers want, is to protect themselves, look after their own business, combine and work together as other great interests do. This should be done not only in town and county, but in the state and nation, and even throughout the world as far as commercial intercourse exists, and see that their interests are properly protected, cared for and made more remunerative, and if need be, wisely, judi-

ciously and intelligently control the legislative and judicial departments of the government. Said the Secretary: Farmers of the state, you have the numerical strength to change and reform abuses if they exist. If you are satisfied that an unequal proportion of the burdens of government rest upon you, and that you are discriminated against so as to be unable to reap a just proportion of the profits arising from your labor, you have the remedy in your own hands. Be just to others, but generous to yourselves.

On behalf of the agricultural society, Secretary Field thanked the Milwaukee and St. Paul and the Chicago and Northwestern Railway Companies for their courtesy and generosity in conveying delegates to and from the convention at reduced rates. The convention then adjourned, with the best of feeling, each seemingly glad that he had attended and contributed something to the general result.

### GEOLOGICAL SURVEY.

I am happy to state that the legislature at its session of 1873, just closed, enacted a law for a thorough geological survey of the state, having for its object, as specified in section two of the act, as follows:

"1st. An examination of the geological structure of the state, including the dip, number, magnitude, order and relative position of the various strata; their richness in minerals, metallic ores, clays, mineral waters, fertilizers, building stones, and other useful materials, the value of such materials for economic purposes, and their accessibility for mining and manufacture.

"2d. Accurate chemical analysis and assays of the various ores, clays, peats, marls, building stones, etc., discovered by the state.

"3d. A careful topographical survey of the lead region, for the purpose of ascertaining as far as possible, the amount of denudation, and the exact position of the mining ground at each locality; also such other topographical surveys as shall be deemed necessary by the corps, also careful barometrical observations on the relative elevation and depression of various parts of the state.

"4th. An examination of soils and subsoils, and observations

upon the animal and vegetable productions of the state, with reference to its agricultural interests."

The sum of nineteen thousand dollars is annually appropriated to carry out its provisions, the survey to commence by the 1st of June, 1873, and be completed in four years. The result of this wise enactment can but be of great benefit to the agricultural and mining interests of the state. From the preliminary surveys recently made by Prof. Murrish, it is demonstrated that vast deposits of iron and other valuable minerals exist in several of the counties of the state, which heretofore have been supposed to contain little or no mineral lands. The new life which has been infused into those having iron interests, by the steadily advancing price, has shown to our people and their representatives the importance of developing the iron interest of this state. These iron mountains are, I doubt not, mines of wealth, which only wait the aid of capital to develop, by the erection of furnaces and the requisite manufactories, to make portions of our state, now almost a wilderness, busy with the hum of industry, and cause an influx of population to consume the surplus products of the soil within our own borders. These iron deposits may be some distance from coal, none having been discovered in the state, and yet there is no difficulty in reducing it with charcoal, the material for the manufacture of which exists in abundance in close proximity to these mountain mines, such as maple, beech, oak and pine, each making a good coal. It may cost a trifle more to reduce the iron with charcoal than with the common coal, if the latter could be obtained near by, and still it is claimed that the former makes a superior article of iron, being tougher and stronger.

The lead, zinc and other ores of the state which exist in abundance, will be brought also to the attention of capitalists by this survey, and a new and valuable impetus given to these great branches of the vast mineral resources of the state. Altogether, the great mineral interest of the state cannot be over estimated, and the legislature has acted wisely and well, in taking even at this late day, the preliminary steps to attract the attention, not only of our own people, but of the entire world, to the mineral treasures within our state; treasures which, when put in form to be used



by mankind will, I believe, prove of value to the state, equal to her agricultural resources.

#### THE GREAT NEED OF THE STATE

is manufacturing. No state purely agricultural, unless its surplus products could be marketed in an adjoining state, with low rates of transportation, was ever known to become rich. It is true, that the industry of Wisconsin is somewhat diversified. Its lumbering, mining, commercial and many other interests are annually growing and increasing in importance; working more men, and using more of the surplus products of the state, and yet the annual shipments of the great staples of food, such as wheat, corn, flour, beef, pork and cheese, to the seaboard manufacturing states, and to Europe, are rapidly increasing.

Manufacturing is in a healthy condition, and is enlarging its field of operations, but it is not keeping pace with agriculture, and while I would encourage the young men of the state to purchase the cheap and valuable lands along the new lines of railway extending into the northern part of the state, settle upon them, and by their industry and economy, make themselves comfortable homes, increase their possessions and add to the aggregate wealth of the state, I would at the same time as strongly urge them to work at any other class of honorable business, where their taste and talents may incline them, and thereby help to consume the surplus products within our own state. Pennsylvania, with her iron, coal, oil, and other manufacturing industries, is fast becoming a wealthy state. Her farmers find a ready and remunerative market for their products, and are prosperous and happy. Massachusetts, with a soil much inferior in richness to ours, with a climate less favorable, and with no conditions superior, except those derived from manufacturing and commerce, and largely from the former, with her great manufacturing establishments, employing thousands of operatives, and producing a demand for all the varied products of her farms and gardens at paying prices, is rapidly accumulating wealth, and the profits of the labor of the husbandman are retained within her own state, and distributed among her own people.

It is a matter worthy of the consideration of our legislature,

whether it would not be wise economy, highly beneficial to the state, to exempt capital from taxation for a limited number of years, when invested entirely in manufacturing. Whether money now being loaned at high rates of interest, and often to the utter ruin of those who borrow, would not be directed towards, and in, manufacturing enterprises, which would be a great source of progress and wealth to the state. On general principles, I am opposed to exemptions of class property of any kind from taxation, but if demanded by public policy, then it becomes judicious and wise to exempt it. The true policy of the state should be to encourage the building up and extension of the mechanical and manufacturing industries to such an extent that the consuming population would be largely increased, and but little of the enormous products of the state left for transportation to the east. When this is done, we shall all hear less of railroad monopolies, high tariffs and hard times.

### A BRIGHT FUTURE.

Few, if any states of the Union possess more natural advantages, or contain within their limits more of the true elements of wealth and progress than Wisconsin. With a climate healthful, imparting to her people vigor of mind and body, with a soil rich and fertile, producing cereals, fruit and other products in quality and quantity equal to any of the states of a similar latitude, with mines of iron, lead, zinc, copper and other ores of untold value, waiting only the vitalizing hand of capital and industry to make them one of its greatest sources of wealth; with a lumbering interest unsurpassed, furnishing employment for thousands of laborers at remunerative prices, and creating a home market for the products of the soil in that part of the state; with water-power of almost inexhaustible capacity, sufficient at least to turn all the machinery requisite for the manufacture of all the articles used in this and the adjoining states in the form of cloths, farm machinery and implements and wooden ware, with mines, forests of timber and flocks of sheep from which to gather the raw material; with manufacturing industries of every kind springing into life and activity throughout the state, stimulating agriculture, increasing the home consumption of

the products of the soil, saving transportation charges and fees of middlemen, in fact, retaining the earnings of labor within our own state; with railways penetrating the heretofore almost inaccessible portions of the state, opening up to the settler cheap lands of unsurpassed excellence, furnishing good market and business facilities, and inviting the young man to settle along their lines and possess these goodly lands; with common schools and seminaries of learning of a high order, accessible to all her citizens, and to crown all, a State University, which, with the limited means at its disposal, is doing a noble work in furnishing a higher education for her people.

With these resources, and others of material interest which might be named, advanced to their highest capabilities; with the great commercial advantages of lakes and rivers which Wisconsin enjoys, her prosperity and onward march can but be hopeful, and a bright future await her at no distant day.

On behalf of the Executive Board,

W. W. FIELD,

*Secretary.*

State Agricultural Rooms, Madison, April 1, 1873.

# PROCEEDINGS.

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## EXECUTIVE MEETINGS.

STATE AGRICULTURAL ROOMS,

Feb. 6, 1872, 7 1-2 o'clock, P. M.

The executive committee met pursuant to requirement of by-laws; President B. R. Hinkley in the chair.

In view of the non-arrival of some members of the board expected in the morning, it was moved that the board be divided up into committees of three each, for the examination of essays offered for premiums, of which nineteen were presented by the secretary. Carried.

The essays having been grouped into four lots, the president appointed the following committees:

*On Cultivation of Sandy Land, etc.*—Messrs. Field, Fratt and Taylor.

*On Orcharding.*—Messrs. Stilson, Warren and Kingston.

*On Stock Farming, etc.*—Messrs. Mitchell, Martin and Green.

*On Small Fruits.*—Messrs. Williams, Cheney and Hink'ley.

On motion, the committee adjourned to meet again at 9 o'clock, the following morning.

WEDNESDAY, February 7, 1872.

Executive Board met at 9 o'clock, pursuant to adjournment.

Present, all members of the board except Mr. Eaton. President in the chair.

The board resolved itself into the several committees appointed last evening on the essays competing for prizes.

The forenoon was spent by the said committees in reading and discussing the essays assigned to them, and in preparing their several reports thereon.

Reports were submitted to the board, with the view of their being considered at 2 P. M., to which time the board adjourned.

2 P. M.

Board met pursuant to adjournment.

Present, same members as before.

Dr. Martin moved that the reports of the committees on essays be adopted, and that the secretary be authorized to make such revision of the same, for publication, as shall be deemed proper. Adopted.

The following were authorized to be published as Prize Essays.

"Management and rotation of crops of a farm for Mixed Husbandry." By Gustave de Neveu, Fond du Lac.

"Market Gardening." By J. B. Root, Rockford, Ill.

"Practical Management of Sandy Land." By Hon. J. G. Knapp, Madison.

"Dairy Farming." By Rev. S. B. Loomis, Lone Rock.

"Cultivation of the Cranberry." By G. N. Smith, Berlin.

"Planting and management of a Vineyard adapted to Wisconsin." By C. H. Greenman, Milton.

"Cultivation of Small Fruits." By M. de Wolf, Delavan.

The Secretary called attention to newspaper comments concerning gambling devices and games of chance said to have crept in at the last Fair, and enquired whether there was any truth in the said comments.

After some remarks by members, it was moved by Mr. Stilson, and carried, that hereafter no games of chance, of any kind, even those apparently harmless, be allowed upon the Fair Grounds.

The special committee on collections reported as follows :

The committee appointed at the meeting of 1870 to confer with the Secretary concerning the collections in the Agricultural Rooms, would report,

That they have conferred with the Secretary, J. W. Hoyt, and he proposes to donate to the Wisconsin State Agricultural Soci-

ety, all interest that he has, or at any time may have had, in all of those products collected in America, also to all those *agricultural products* collected abroad. Your committee recommend the acceptance of the above proposition.

ELI STILSON,  
W. W. FIELD,  
W. R. TAYLOR.

The report was unanimously adopted.

Secretary Hoyt urged the propriety of the annual assignment of important subjects to the several members of the board for investigation, and that they report at the next subsequent winter meeting, and concluded by moving the appointment of a committee of three to prepare a list of topics to be considered at the meeting of 1873, and to nominate members for assignment to the duty of reporting thereon. Which motion was carried.

The President appointed Messrs. Mitchell, Field and Taylor, to act as such committee.

At this stage of the proceedings, the President called the attention of the board to the fact that he had received, and would now lay before them, a formal communication from Dr. Hoyt, again tendering his resignation of the office of Secretary, and of which the following is a copy :

STATE AGRICULTURAL ROOMS,  
MADISON, January, 1872.

*To the President and Executive Board of the Wisconsin State Agricultural Society :*

GENTLEMEN : After more than twelve years of uninterrupted service as Secretary of the Wisconsin State Agricultural Society, during which period, I have formed an enduring friendship for my several associates in the work of promoting the industrial interests of this state, it is not without regret that I am constrained again to tender my resignation of that office, with the request that the same shall be considered final, and take effect April first of the present year.

That I have so long remained with you, in disregard of manifest interest, leaving now in the height of its prosperity, the institution for which we have mutually labored and sacrificed, will be

sufficient evidence that, in thus retiring, I am actuated solely by considerations of duty to my family, and the desire to execute certain cherished plans, which must lead me into other and somewhat different fields of labor.

To whatever work I may be devoted in the future, I shall continue to feel a deep interest in the society, and in the personal welfare of all with whom I have been connected therein.

I have the honor to remain, gentlemen, very respectfully and cordially,

Your obedient servant,

J. W. HOYT.

On motion of Mr. Field, the resignation of the Secretary was referred to a committee of three, with instructions to report thereon at the next session of the board.

The chair appointed as such committee, Messrs. Field, Cheney and Stilson.

Mr. Field offered the following resolutions, which were adopted:

*Resolved*, That a Finance Committee, consisting of three members of the executive board, be elected at the present meeting, and annually thereafter, whose duty it shall be to audit and allow all claims against the State Agricultural Society, except salaries and premiums.

*Resolved further*, That no claim of any kind shall be allowed by said committee, unless the same shall be fully itemized and accompanied by proper vouchers.

On motion, the board adjourned to meet at 9 o'clock, A. M., of the following morning.

THURSDAY, Feb. 8, 1872—9 o'clock, A. M.

The board met pursuant to adjournment; all the members present.

The Secretary introduced a committee of the State Horticultural Society, who renewed the proposition of last year, for superintending the horticultural department of the state fair.

After some discussion, it was voted that there be appropriated,

as last year, the sum of \$800 for horticultural premiums: *provided*, that *cash* premiums shall be offered to that amount in said department.

The committee retired, and after a time returned, with authority to accept this offer of the board, with the conditions imposed, and to tender the thanks of the Horticultural Society for their liberal action.

Mr. Field, on behalf of the committee on the Secretary's resignation, presented the following report :

STATE AGRICULTURAL ROOMS,

Feb. 8, 1872.

*Mr. President* : The committee to whom was referred the resignation of Dr. J. W. Hoyt, secretary of this society, beg leave to report :

That they have had the same under consideration, and would unanimously recommend its acceptance, and the adoption of the following resolutions :

*Resolved*, That in accepting the resignation of Dr. J. W. Hoyt, the secretary of this society, we regretfully part with a gentleman in whose integrity and ability we have the utmost confidence. Twelve years of mutual labors and sacrifices for the progress of industry in this state have endeared him to us all, both as a brother officer and a friend ; and we hereby tender him the hearty thanks of this society for his fidelity to its interests, assuring him that our best wishes will accompany him in whatever field of labor he may engage.

*Resolved*, That a copy of these resolutions be furnished for publication, and that a copy be presented to Dr. Hoyt

W. W. FIELD,  
RUFUS CHENEY,  
ELI STILSON.

Which report, on motion, and after pleasant and complimentary remarks by several members, was adopted.

Mr. Ludington offered the following :

*Resolved*, That in view of the necessity to act upon the question of a successor to Dr. Hoyt, the Board should first determine



the salary of such officer, and that the same should be fixed at \$2,000 per annum from January 1st.

Which, after considerable discussion, was adopted.

The Board having accepted an invitation from Dr. A. S. McDill to visit the State Hospital for the Insane, then adjourned to meet at 2 1-2 o'clock P. M.

THURSDAY, 2 1-2, P. M.

Board met pursuant to adjournment.

Mr. Field moved that the Board do now proceed to the election of an auditing committee under the resolution which had previously been agreed to. Adopted.

The following gentlemen were elected as such committee: W. W. Field, N. D. Fratt and Rufus Cheney.

Mr. Mitchell, as chairman of the committee on a list of subjects to be considered and reported upon by the members of the Board, reported as follows:

Mr. President: The committee on the assignment of subjects to members of the Board for investigation and to report at the next February meeting, beg leave to report the following titles and committees:

*On Dairy, Farm and Cheese Manufacture*—President B. R. Hinkley.

*On the High Feeding of Breeding Cattle*—Chas. H. Williams.

*On the Recent Progress in Veterinary Science*—Dr. C. Loftus Martin.

*On the Breeding of Trotting Horses*—N. S. Green.

*On the Breeds and Varieties of Hogs Extant in Wisconsin*—Dr. J. H. Warren.

Respectfully submitted,

JOHN L. MITCHELL,  
*Chairman.*

Report adopted.

Mr. Ludington moved that the society proceed to an informal ballot for a successor to Dr. Hoyt in the office of secretary. Carried.

Result of informal ballot.

Whole number of votes cast, 11; of which W. W. Field received 9, F. W. Case and O. S. Willey, one each.

On motion, the board proceed to a formal ballot for secretary.

Result—Eleven votes cast, all of which were for W. W. Field.

Mr. Field thanked the board for the honor conferred, and stated that as his duties of secretary would conflict with that of chairman of the auditing board, he desired the name of John L. Mitchell should be substituted in place of his, which was adopted.

Mr. Eaton called up the subject of suitable provision for the department of fine arts. There should be a building for the works of art, and it was impossible to get a creditable exhibition without it. He moved the appropriation of \$500 for such purpose; provided, that there should be raised and applied to such purpose, under direction of the board, the amount of \$1,000 by the city of Milwaukee. Carried.

Mr. Kingston offered the following resolution:

*Resolved*, That in fixing the salary of the secretary at \$2,000, it was not intended to affect the salary of the retiring secretary.

Adopted.

Dr. Warren offered the following resolution:

*Resolved*, That the salary of the president for the current year be \$500, payable quarterly. Said compensation to be in full for services and expenses. Lost.

Mr. Mitchell moved that there be appointed a committee of three to co-operate with a similar committee appointed by the State Horticultural Society, in securing appropriate legislation for the encouraging of forest tree planting. Carried.

Mr. Taylor moved that a committee consisting of Messrs. Clark, Mitchell, and the secretary, be appointed to consider the propriety of petitioning the legislature for an increase in the number of copies of Transactions at present printed and published by authority of the state, and to take such action in the premises as shall seem to them proper. Carried.

The board then took up the premium list, and proceeded therewith as far as to "Division B," when an adjournment was taken to 7 o'clock P. M.

7 P. M.

Board met pursuant to adjournment.

Present : all members of the board.

Revision of premium list resumed.

The revision of regulations for the management having been taken up, Mr. Ludington offered the following resolution :

*Resolved*, That the superintendent of each department of the Wisconsin State Agricultural Society, be empowered to hire what help may be required in his department, and have full charge of all matters pertaining to his department, subject to the approval of the President.

Which, after much discussion, was adopted.

Bills having been audited for the payment of the expenses of members attending the meeting, on motion, the board adjourned *sine die*.

PLANKINTON HOUSE,

MILWAUKEE, Sept. 23, 1872.

The executive board of the Wisconsin State Agricultural Society met in the commodious and elegant rooms prepared for them by the generous and hospitable proprietor, W. H. Cottrill, Esq., at 7 1-2 o'clock P. M.

President Hinkley in the chair. Present. Messrs. Hinkley, Ludington, Taylor, Fratt, Mitchell, Greene, Williams, Stilson, Warren, Kingston, Martin, Cheney, Clark, Eaton and Field.

The president made some general remarks relative to the condition of the grounds ; that a new fine arts hall had been erected, which was not only ornamental but useful ; that he congratulated the society upon now being able to place the finest works of art in a building where they could be protected and displayed to the best advantage, and that on behalf of the society he thanked the liberal and enterprising citizens of Milwaukee who contributed so generously towards the erection of this fine structure. That the building of this fine hall had given an additional hall for manufactures, which he hoped would enable exhibitors in that interesting department ample room to display their articles, as he was

aware that room had been very limited at the exhibitions of 1870 and 1871. That the buildings were all in excellent condition for exhibitors, that the stalls for horses and cattle had been put in the best possible state of repair, and that many of them were then full; in fact, that everything in each department necessary for an interesting and successful exhibition was then in readiness, and all he desired was to see a change of weather, so that the exhibits could be put in place, and the people leave their homes to come and examine them. He was glad to see each superintendent of the different departments present and prepared to attend to their respective duties, as the success and harmony of a fair depended upon their active and efficient labors.

Secretary Field stated that, as the weather had been so unfavorable—having rained incessantly for the previous twenty-four hours—it would be impossible for exhibitors to make their entries by the time specified in the premium list, and that he thought it advisable to keep the books open until Tuesday evening. It was so ordered by the board.

Superintendent Greene said there could be no trials of speed on the following day, even though the rain should cease, and the weather prove fine, as the track would not be in proper condition.

Adjourned until 8 P. M., Tuesday.

OFFICE OF THE SOCIETY, PLANKINTON HOUSE,

MILWAUKEE, Sept. 24, 1872.

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

President Hinkley in the chair. Full board present.

Secretary Field presented a communication relative to the appointment of a State Entomologist, which had been handed him by Professor I. A. Lapham, of Milwaukee; action upon which was postponed until the meeting of the Executive Board, in February, 1873.

Secretary Field said that from the number of entries made, particularly in the stock, manufactures and machinery departments, he was warranted in saying that the display would exceed any exhibition previously held by the society.

Supt. Eaton stated that in consequence of the rainy and disagreeable state of the weather it had been impossible to get articles in his department delivered upon the grounds until late that day, hence there must be delay in their proper arrangement.

Adjourned till 8 P. M., Wednesday.

OFFICE OF THE SOCIETY, PLANKINTON HOUSE,

MILWAUKEE, April 25, 1872.

Board met.

President Hinkley in the chair.

Quorum present.

Secretary Field read a circular letter which, upon consultation with members of the executive committee, had been prepared by him, and sent to the several district and county agricultural societies, farmer's clubs and other industrial organizations of the state, urging upon them the importance of co-operation in industrial pursuits, and requesting them to send delegates to the agricultural convention to be held at Madison, under the auspices of the state society, commencing February 4th, 1873, and to continue four days.

On motion of Secretary Field, a committee, consisting of Prof. J. W. Hoyt, Prof. W. W. Daniells and George E. Morrow, was appointed by the chair to prepare such general questions for discussion at said meeting, as in their judgment, would tend to the promotion of industrial education. Matters of a local nature were discussed briefly by several members, when an adjournment was carried to 7 1-2 P. M. Friday, to adjust accounts and pay premiums.

OFFICE OF THE SOCIETY, PLANKINTON HOUSE,

MILWAUKEE, Sept. 26, 1872—7 1-2 P. M.

Board met.

President Hinkley, Secretary Field, Treasurer Ludington, and Auditing Committee Mitchell, Pratt and Cheney present.

Claims were settled and premiums paid, the session continuing until 10:30 P. M., when an adjournment was had until 8 A. M., Saturday.

OFFICE OF THE SOCIETY, PLANKINTON HOUSE,  
MILWAUKEE, Sept. 27, 1872.

Board met.

Present, President Hinkley, Secretary Field, Treasurer Ludington and Auditing Board, Messrs. Mitchell, Fratt and Cheney.

The payment of premiums and adjustment of claims continued until 12 M., when the board adjourned until the 10th of October, to meet at the office of Treasurer Ludington.

OFFICE OF HON. HARRISON LUDINGTON,  
TREASURER OF THE SOCIETY,  
MILWAUKEE, Oct. 10, 1872.

Pursuant to adjournment, due notice of which had been given in the daily papers of Milwaukee, President Hinkley, Secretary Field, Treasurer Ludington and John L. Mitchell, chairman of the Auditing Committee, met at the Treasurer's Office at 9 A. M., to continue the payment of local bills and premiums, remaining in session until 6 P. M., with an adjournment from 12 M. to 1.30 P. M.

A very large proportion of the claims having been presented and paid, Secretary Field stated that it did not seem necessary for the board to continue longer in session, as the remaining claims could be adjusted by him upon application at the society's office at Madison, and if any action of the auditing board was required, it could be had at the December meeting, when the entire committee would probably be present.

On motion, the board then adjourned *sine die*.

DECEMBER MEETING.

STATE AGRICULTURAL ROOMS,  
MADISON, Dec. 3, 1872.

In conformity to the by-laws, the executive board met at 7 1-2 P. M.

President Hinkley in the chair.

Secretary Field presented the order books, bills and vouchers,

kept in his office, and Treasurer Ludington made a full report of the financial condition of the society, showing the receipts and expenditures for the year, and presenting vouchers for all moneys paid out.

On motion, the auditing committee proceeded to examine and compare said books, vouchers, etc., of the Secretary, with the vouchers of the Treasurer, and finding them correct, unanimously approved the same.

Adjourned to 9 A. M., the following day.

WEDNESDAY, Dec. 4, 1872.

Board met.

President Hinkley in the chair.

Secretary Field said that a tax certificate had been issued to Timothy Brown, of Madison, for unpaid taxes of 1870, on the fair grounds of the society, and that Judge Vilas, who was present, would make a statement relative thereto. The Judge came forward and briefly stated that this matter was brought to the attention of the common council of the city of Madison, soon after the issue of the certificate, and that he had supposed, until his attention had recently been called to it, that it had been paid by the city, and the certificate cancelled, as the grounds were exempt from taxation for 1870, having been purchased Dec. 2d, 1869. He said that doubtless it had been an oversight on the part of the city fathers, and that if properly brought to their notice again, would receive prompt and just consideration.

J. W. Hoyt then offered the following preamble and resolution:

WHEREAS, information has been received by this board that the fair grounds of the society at Madison, to-wit: the grounds purchased by the society of the widow and heirs of William D. Bruen, deceased, have been sold for delinquent taxes, and that the certificate of purchase is now held by Timothy Brown of this society; and,

WHEREAS, the facts are as follows, to-wit:

1st. That the said property was purchased by the society, by its president and secretary, on the 2d day of December, 1869, as will appear from the contract entered into by and between the said

officers of the society and Judge Guild, administrator of the said Bruen estate.

2d. That when the said purchase was made on the day aforesaid, the said property became exempt from taxation under the 4th subdivision of section 2 of chapter 130 of the general laws of 1868; and,

3d. That the tax levied upon the said property was levied in the year 1870, after it had become exempt under said provision; and,

WHEREAS, this society has by no act of whatsoever nature invalidated its claim to the privileges and immunities conferred by said law of the state; therefore,

*Resolved*, That the president and secretary of this society are hereby instructed to lay the foregoing facts before the common council of the city of Madison, and to request that honorable body to take such action as will effectually and fully release the said property from all taxes heretofore levied, and from the consequences of the sale hereinbefore mentioned. Adopted.

On motion, the board adjourned *sine die*.

#### FEBRUARY MEETING, 1873.

##### STATE AGRICULTURAL ROOMS,

MADISON, February 4, 1873.

Pursuant to the requirement of section 3 of the by-laws, the executive board of the Wisconsin State Agricultural Society met in the rooms of the society in the Capitol, at 7 1-2 P. M., Tuesday, the 4th day of February, 1873.

Present: Messrs. W. R. Taylor, President; B. R. Hinkley, ex-President; Rufus Cheney, C. H. Williams, J. L. Mitchell, Levi B. Vilas, Eli Stilson, Saterlee Clark, J. G. Thorp, J. H. Warren, C. L. Martin, N. D. Fratt, J. O. Eaton, J. T. Kingston, F. J. Blair, I. A. Lapham, T. C. Douseman and W. W. Field.

President Taylor in the chair.

Secretary Field moved that the first order of business be the reading of the "general regulations," as published in the premium list of 1872, and that the same should be adopted for 1873, unless objected to. Carried.



Under the head of "supervision," that portion relative to "superintendents" was amended so as to require superintendents to "make a written report of the character of their respective departments on or before the meeting of the executive board in February following."

Subdivision 4 of "rules applying to the horse and cattle department exclusively" was, on motion of C. H. Williams, amended so as to read as follows: "In case of a tie vote, another committeeman shall be called in by the superintendent, and his vote shall be confined to the animals receiving the greatest number of votes, and shall be final."

On motion of J. H. Warren, an amendment was adopted, striking out that clause in "declaration and payment of premiums" which declared premiums forfeited if not claimed before the annual meeting of the society in February.

"Official List of Premiums" of 1872 was next taken up and adopted as the classes and premiums of 1873, except as hereinafter specified.

Class 4—"draft horses," was amended by extending it, the same as class 3—"horses for general purposes."

C. H. Williams moved that class 18—"herds," be so amended as to read as follows:

Best bull and 5 cows or heifers over 1 year old, \$100.

Second best, \$60.

Third best, \$40.

Best bull and 4 heifers, under 2 years old, \$60.

Second best, \$40.

Third best, \$20.

#### *Sweepstakes.*

Best bull of any age, \$50.

Second best, \$25.

Best cow of any age, \$40.

Second best, \$20.

On reading the classes relative to swine, J. H. Warren said, that in his opinion, no changes were needed in this department; that the premiums offered by the society, and the liberal special

prizes given by the pork packers of Milwaukee, had resulted in a fine exhibition.

Adjourned until Wednesday, at 9 A. M.

WEDNESDAY, 9 A. M.

Full board present.

President Taylor in the chair.

"Field Products," Class 26, being under consideration, Secretary Field said that he thought the premium on wheat low—much lower than other products, and that a large 1st and 2d premium, in his judgment, ought to be given on best sample spring wheat, regardless of variety. Let the best take the premium, but make it large enough to be worth competing for. He thought exhibitors would be better satisfied than by receiving so small a premium as the society had usually offered upon each of the numerous varieties. This subject was quite generally discussed, some members claiming that some varieties of spring wheat flourished better upon old lands, and others better upon new; that, while one variety might be more productive and profitable upon the prairie soils, another might be better upon the openings or more clayey soils of the state, and hence we should encourage the exhibition of the different varieties adapted to these varied conditions, and that, while the premiums were small, and ought to be increased, the society should give premiums to each of the good varieties.

On motion of Secretary Field, the list was extended to include "Odessa," and the premiums increased to \$7 for 1st, and \$4 for 2d premiums.

Class 28—"Garden Vegetables." A copy of The Western Farmer for one year was given as premiums instead of a volume of the "Transactions," as heretofore. This class was further amended under "samples of honey and sugar," by adding thereto the following:

"Best extracted honey," \$5.00.

Best honey extractor, \$3.00.

The best method of handling bees, to be demonstrated on the ground; the bees to be retained in the hive, \$10.00.

Adjourned until 2 P. M.

## AFTERNOON SESSION.

Division C, embracing "machinery, manufactures and works of art," was carefully considered in detail, and adopted with slight additions of articles to certain classes, the premiums remaining substantially the same, with the exception that the *Western Farmer* was in several classes substituted for other premiums heretofore given.

Class 52, "millinery," and class 53, "needle, shell and wax work," were transferred to the department of fine arts.

Division D, "natural history," was considered, and after a brief discussion, was adopted, with amendments, making the premiums definite, instead of discretionary, and adding thereto the following:

Best exhibition of live fish artificially reared, showing the different stages of growth, \$30.

Second best, \$20.

Secretary Field laid before the board a resolution, which had been postponed from the September meeting, relative to the appointment of a State Entomologist, which, on motion, was laid over until the next meeting of the board.

Secretary Field moved that the State Fair for 1873 be held the 29th of September, to and including the 3d of October. The motion was seconded, and after a brief discussion adopted by the following vote:

Those voting in the affirmative were Messrs. Warren, Mitchell, Blair, Eaton, Vilas, Hinkley, Douseman, Field and President Taylor—9.

Those who voted in the negative were Messrs. Cheney, Williams, Stilson, Martin, Fratt and Lapham—6.

Dr. Martin moved that the State Fair of 1873 be held in the city of Milwaukee.

Judge Vilas moved to amend said motion, by adding, "and the city of Madison in 1874." The Judge said he thought it might be well to hold it in Milwaukee the present year, as the last fair had not been so successful, financially, as the society had hoped, owing to wet and unfavorable weather; that the grounds, buildings, stalls, etc., would need but a small expenditure of money to put them in the best possible condition for another ex-

hibition, and besides, he believed there had been an implied, if not an expressed understanding among members of the society, that the fair should be so located for 1873. While he did not object, but rather favored locating the fair at Milwaukee for 1873, he thought it eminently proper that it should be at the same time fixed, for 1874 at Madison, as it had often been located for two years in succession, provided that the city of Madison would meet all the requirements of the board in fitting up the grounds and buildings of the society, as he doubted not they would.

Dr. Martin and other members of the board stated that while it was true that the board had at different times located the fair for two years in succession, it had invariably been in consideration of a large expenditure of money by the city where it was located for the first exhibition, and that could not afford the expense without an assurance that it should be held for two or more years, but that in no instance had the committee located the fair for two or more years at different points, and that it would be establishing a bad precedent to do so in this case.

The amendment was lost, and the motion of Dr. Martin agreed to.

Adjourned until Thursday, at 9 A. M.

THURSDAY, 9 A. M.

Board met.

Quorum present.

President Taylor in the chair.

Secretary Field moved that Mr. F. S. Lawrence, chairman of a committee appointed by the State Horticultural Society to confer with this society relative to the joint exhibition of 1873, be then heard; which was agreed to.

Mr. Lawrence stated that the amount heretofore appropriated to their society by the Agricultural Society, for premiums in the horticultural department, had been quite satisfactory, and that he was authorized to say that if the same amount was appropriated for 1873, it would be given in premiums, as formerly, and he thought would be entirely satisfactory to the society and to exhibitors in horticultural hall.

On motion, the sum of \$800 was appropriated to the Horticul-

tural Society, the same to be offered in premiums at the State Fair of 1873.

On motion, the chair appointed Messrs. Mitchell, Douseman and Fratt an auditing committee.

Secretary Field stated that he deemed it a matter of importance that the Wisconsin State Agricultural Society should be represented in the National Convention, which was to convene in Indianapolis in May, 1873, and he moved that Eli Stilson, one of the vice presidents of this society, and vice president of the national organization, be elected a delegate to said convention; which was agreed to. Mr. Stilson was empowered to appoint a substitute in the event that he should be unable to attend.

Ex-President B. R. Hinkley moved to reconsider the vote fixing the time, September 29th, for holding the fair of 1873. Carried.

The question then being upon the motion of Secretary Field that the fair be held September 29th to, and including, October 3d, 1873, Mr. Eaton moved, as a substitute, that the fair for 1873, and thereafter, commence on the last Monday in September in each year, which was lost by the following vote: Those voting in the affirmative were Messrs. Martin, Warren, Douseman, Eaton, Mitchell and Field—6. Those voting in the negative were Messrs. Hinkley, Blair, Fratt, Cheney, Stilson, Williams and President Taylor—7.

Ex-President Hinkley then moved to amend the original resolution by a substitute, fixing the time of holding the fair of 1873 from the 22d to the 26th inclusive, of September, which was warmly advocated by Messrs. Hinkley, Stilson, and others, and earnestly opposed by Messrs. Eaton, Field and others, and finally adopted by the following vote: Those who voted in the affirmative were Messrs. Hinkley, Mitchell, Stilson, Martin, Fratt, Blair, Williams and President Taylor—8. Those who voted in the negative were Messrs. Eaton, Cheney, Douseman, Warren, Kingston and Field—6.

The Agricultural Convention being in session, the appointment of superintendents and judges, and the auditing of expense accounts of members in attendance were rapidly dispatched, and the board adjourned *sine die*, the members mostly remaining and taking an active part in the convention.

SOCIETY MEETINGS.

MEETING FOR THE ELECTION OF OFFICERS.

CITY HALL, MILWAUKEE, Sept. 26, 1872.

In accordance with the requirement of article 5 of the constitution of the Wisconsin State Agricultural Society for the election of officers, notice of which had been given by the secretary in the official list of premiums, and in the general programme of the exhibition, a large number of life members met at the City Hall at 8 o'clock P. M., to elect officers of the society for the year 1873. President Hinkley in the chair.

The President, after calling the meeting to order, stated that this was the annual meeting for the election of officers, and desired to know their pleasure relative thereto.

Wm. T. Leitch, of Madison, moved that a committee, consisting of one from the state at large, and one from each congressional district, be appointed by the chair to recommend candidates for officers of the society for the ensuing year.

The motion was seconded and adopted, and the Chair appointed, from the state at large, H. L. Palmer, of Milwaukee.

1st Congressional District—N. D. Fratt, Racine.

2d                   “                   J. W. Hoyt, Madison.

3d                   “                   L. G. Armstrong, Boscobel.

4th                  “                   E. J. Blair, Milwaukee.

5th                  “                   Saterlee Clark, Horicon.

6th                  “                   A. N. Van Norstand, Green Bay.

7th                  “                   J. H. Warren, Albany.

8th                  “                   A. S. McDill, Portage.

In the absence of the committee, Secretary Field made brief remarks relative to the financial condition of the society, and stated that it had been customary to have the treasurer's report for the last fiscal year read at this meeting, but that under a resolution of the society at its annual meeting one year ago, the treasurer's report had been printed and sent to each member of the society, hence the same necessity did not exist, but if the society desired to hear the report, it would then be read.

Hon. Geo. B. Smith said that every member had no doubt received a copy of the report, had examined it in detail if they desired to do so, and moved that the usual reading be dispensed with, which was unanimously agreed to.

The committee appointed to recommend nominees for officers, reported as follows :

*President.*—Wm. R. Taylor, Dane county.

*Vice Presidents.*—1st Congressional District, Rufus Cheney, Walworth county ; 2d Congressional District, Charles H. Williams, Sauk county ; 3d Congressional District, J. H. Warren, Green county ; 4th Congressional District, John L. Mitchell, Milwaukee ; 5th Congressional District, Saterlee Clark, Dodge county ; 6th Congressional District, Eli Stilson, Winnebago county ; 7th Congressional District, J. G. Thorp, Eau Claire county ; 8th Congressional District, John T. Kingston, Juneau county.

*Secretary.*—W. W. Field, Grant county.

*Treasurer.*—Harrison Ludington, Milwaukee.

*Additional Members of the Executive Committee.*—Dr. C. L. Martin, Janesville. N. S. Greene, Milford ; J. O. Eaton, Milwaukee ; N. D. Fratt, Racine ; Nelson Dewey, Cassville ; T. C. Douseman, Waterville ; L. B. Vilas, Madison.

E. Hurlburt, of Waukesha, moved that the report of the committee be adopted.

Mr. Ludington said that before the motion was put, he desired to thank the committee for again placing him in nomination for the office of treasurer, but that the duties for the last two years had largely interfered with other important business, and that he could not longer serve the society in that capacity.

Several members of the society expressed a strong desire that Mr. L. would accept the office, as the deep interest ever manifested by him in the welfare of the society, since his connection with it, had made his services of great value.

Mr. Ludington still declining, on motion, the name of F. J. Blair, of Milwaukee, was substituted, and the motion of Mr. Hurlburt was unanimously adopted.

President Hinkley then declared the several nominees duly elected to the offices for which they had been respectively named by the committee.

Prof. J. W. Hoyt offered the following resolution :

*Resolved*, That the thanks of this society are due to Harrison Ludington, Esq., for the integrity and ability with which he has discharged his duties as treasurer of this society, and we sincerely regret that he declines to serve us in that capacity for another year.

Said resolution was unanimously agreed to.

Saterlee Clark presented the following resolution :

*Resolved*, That the thanks of this society are due, and are hereby tendered to Col. B. R. Hinkley and Prof. J. W. Hoyt, who for so many years have served the society with marked ability and fidelity in the capacity of President and Secretary, and that in retiring from their respective offices they carry with them the best wishes of all the members of the society.

Secretary Field put the motion upon its adoption, and it was carried without dissent.

The society having transacted the business for which it convened, on motion, adjourned *sine die*.

## ANNUAL MEETING OF THE SOCIETY.

STATE AGRICULTURAL ROOMS,

MADISON, Dec. 4, 1872.

The society met at 3 o'clock P. M., pursuant to constitutional provision, due notice having been given by Secretary Field "in one or more papers printed in the city of Madison," as required by article V. of the constitution.

Constitutional quorum present.

President Hinkley in the chair.

The President said that this was the annual meeting of the society for the transaction of general business, and especially to settle with the treasurer by an examination of his books and vouchers, and a comparison of them with the accounts and books of the secretary. The treasurer's report was then submitted, bearing the approval of the auditing committee and the executive board, the former having examined it in detail.



## REPORT OF THE TREASURER.

To the Executive Board of the Wisconsin State Agricultural Society:

GENTLEMEN: The financial transactions of the Wisconsin State Agricultural Society for the year ending Dec. 4, 1872, have been as follows:

RECEIPTS.		
To cash on hand, December 6, 1871 .....	\$5,954 00	.....
Received from advertisements printed with premium list of 1872.....	789 50	.....
Pork packers of Milwaukee, special premium on swine .....	200 00	.....
Milwaukee Chamber of Commerce, special premium on wheat.....	50 00	.....
Plankinton House, Milwaukee, special premium on butter and cheese .....	50 00	.....
Newhall House, Milwaukee, special premium on butter .....	25 00	.....
John L. Mitchell, Milwaukee, special premium on poultry .....	25 00	.....
Reirce & Whaling, iron merchants, Milwaukee, special premiums on farm wagons and plows ...	135 00	.....
Simonds & Brooke, Adler, Mendel & Co., Milwaukee Clothing Houses, special premiums on cloth, etc. ....	100 00	.....
James Vick, florist, Rochester, N. Y., special premium on cut flowers .....	85 00	.....
Ten Life memberships .....	200 00	.....
Entry fees at gate .....	874 50	.....
Ground rent, collected at fair.....	1,396 70	.....
Gate fees .....	9,751 99	.....
Grain sold at fair .....	21 98	.....
		\$19,658 67
EXPENDITURES.		
By cash paid on orders this 4th day of December, 1872, returned and cancelled, said orders covering the following general disbursements—		
For premiums .....	\$6,906 30	.....
Office expenses, including postage, expressage and freight .....	341 73	.....
Expenses of members attending meetings of the executive board .....	306 95	.....
Printing and advertising .....	1,542 57	.....
Superintendence at the fair .....	1,709 50	.....
Clerical service.....	568 75	.....
Police, labor and watch at fair.....	659 75	.....
Livery and omnibus hire at fair.....	137 09	.....
Forage for stock at fair.....	755 02	.....
Music at fair.....	175 00	.....
Expenses of machinery, labor and fuel, for power hall .....	217 35	.....
Interest on land.....	273 35	.....
Salary of Secretary Hoyt to April 1, 1872 .....	750 00	.....
Salary of Secretary Field from April 1, 1872.....	1,000 00	.....

*Treasurer's Report—continued.*

Appropriation for fine arts hall .....	500 00	.....
Refreshments for officers, judges and invited guests	604 39	.....
Amount paid to Horticultural Society, in addition to premiums paid .....	266 00	.....
Medals and diplomas .....	135 41	.....
Flags .....	71 00	.....
Incidental expenses connected with preparation of fair grounds, orders No. 319 and 321 .....	546 89	.....
Miscellaneous expenses, including orders No. 12, 21, 53, 56, 61, 160, 164, 172, 177, 203, 214, 217, 239, 293, 298, 312, 313, 335, 343 and 355 .....	219 21	.....
		\$17,686 26
Balance on hand .....		\$1,972 41

Very respectfully submitted,

HARRISON LUDINGTON,  
*Treasurer.*

STATE AGRICULTURAL ROOMS,  
MADISON, Dec. 4. 1872.

Secretary Field moved that a committee of three, not including members of the executive board, be appointed by the chair to examine the report of the treasurer, and compare it with the records and books of the secretary; which was adopted, and the chair appointed Messrs. S. D. Hastings, Levi B. Vilas and L. G. Armstrong.

No further business of a general nature coming before the society, a temporary recess was had until 6 o'clock P. M., at which hour the president called to order, and the committee submitted the following report:

*To the Wisconsin State Agricultural Society:*

GENTLEMEN: The undersigned, the committee to whom was referred the annual report of the treasurer, would respectfully report that they have carefully examined the footings of the report, and find them correct, and that they have compared the orders paid by the treasurer with the stub-book of the secretary, and find them to agree in every instance.

Quite a number of orders, which have been signed by the secretary, are still in the stub-book undelivered, and an equal, if not a larger, number that have been issued, are still outstanding unpaid.

The treasurer reports the balance in his hands at the commencement of the year.....	\$5,954 00
(An examination of the report of last year shows this to be the amount on hand at the close of that year.)	
He also reports the receipts from various sources, set forth in detail in his report, the sum of.....	13,704 67
	<hr/>
	\$19,658 67
The amount paid out by him during the year, for all of which he has orders properly signed by the secretary, is.....	17,684 06
	<hr/>
Leaving the amount in his hands at the close of the year.....	\$1,974 61
	<hr/>

The balance in the Treasurer at the commencement of the year, is as he states it. So far as the receipts from other sources are concerned, the committee have no means to decide whether the amounts are correct or otherwise, but there is no reason whatever to doubt as to their correctness.

For all the money paid out he has the proper voucher and the committee have no hesitation in saying that they have full faith in the correctness of his report in every respect.

The committee have noticed incidentally, in the course of the examinations they have been obliged to make, that there are no vouchers on file for quite a number of the claims upon which orders have been issued, but as the investigation of this matter was not referred to them, they do not deem it necessary to say anything more than simply to allude to the fact.

Respectfully submitted,

SAM'L D. HASTINGS,

LEVI B. VILAS,

L. G. ARMSTRONG,

*Committee.*

MADISON, Dec. 4, 1872.

Mr. Mitchell moved that the report of the committee be received and adopted; which was agreed to without dissent.

Secretary Field presented a full and detailed account of all orders drawn by the secretary during the fiscal year ending December 4, 1872, with the name, object and amount of each, which he stated would be printed with the treasurer's report, under a resolution of the society, adopted September 28, 1871, and a copy would be sent to each member of the society.

On motion, the society then adjourned *sine die*.

WARRANT ACCOUNT OF THE SECRETARY.

Giving the number of orders issued for the year ending December 4, 1872, the name of the person to whom, and the amount and object for which each was drawn,

No.	To whom and for what issued.	Amount.
1	Rufus Cheney, expenses at December meeting	\$16 00
2	Satterlee Clark, services as sup't manufactures dep't.	30 00
3	Satterlee Clark, expenses at December meeting	10 00
3 <sup>1</sup>	W. R. Taylor, expenses at December meeting	3 00
4	B. R. Hinkley, expenses at December meeting	13 00
5	W. W. Field, expenses at December meeting	12 00
6	Harrison Ludington, superintendence at fair	56 00
7	D. P. Webster, premium	5 00
8	J. O. Eaton, expenses at December meeting	12 00
9	Susan Worth, premium	2 00
10	Harrison Ludington, expenses at December meeting	13 00
11	Wm. Beck, police services at state fair	50 00
12	Parks & McLaughlin, posting bills	9 00
13	Bloedel & Mueller, medels and engraving	60 61
14	R. Porsch and Botschafter, printing and advertising	8 50
15	Merchants' Union Express Co., express charges	13 50
16	R. Hughes, premium	15 00
17	Atwood & Culver, printing and advertising	181 90
18	E. W. Keyes, P. M., postage stamps	20 00
19	American Merchants' Union Ex. Co., express charges	1 80
20	Geo. A. Mason, for Horticultural Society	266 00
21	Blair & Persons, crockery and cartage	20 83
22	E. W. Keyes, P. M., box rent and postage	2 90
23	F. W. Case, stationery for secretary's office	3 85
24	C. A. Butties, premium	9 00
25	J. W. Hoyt, salary as secretary	750 00
26	E. W. Keyes, P. M., postage stamps	12 00
27	Ferdinand Koehn, services in secretary's office	4 75
28	C. Loftus Martin, superintendence at fair	25 00
29	C. Loftus Martin, expenses at February meeting	15 00
30	W. W. Field, expenses at February meeting	21 00
31	J. T. Kingston, expenses at February meeting	23 50
32	N. D. Fraitt, expenses at February meeting	23 00
33	B. R. Hinkley, expenses at February meeting	17 50
34	C. H. Williams, expenses at February meeting	14 00
35	W. R. Taylor, expenses at February meeting	13 00
36	Rufus Cheney, expenses at February meeting	20 00
37	J. O. Eaton, expenses at February meeting	10 00
38	Eli Stilson, expenses at February meeting	23 95
39	Order not issued	
40	J. H. Warren, expenses at February meeting	18 00
41	Harrison Ludington, expenses at February meeting	15 00
42	Norris & Co., flags	24 00
43	C. H. Williams, expenses at February meeting	14 00
44	Mrs. Mary Shanks, premium	3 00
45	S. B. Loomis, premium on essay	25 15
46	G. de Nevue, premium on essay	24 15
47	O. S. Willey, premium on essay	25 00
48	J. G. Knapp, premium on essay	25 00
49	Atwood & Culver, printing extra pages of Transactions	202 00
50	A. Merchants' U. Ex. Co., express charges	3 45

## Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
51	Wm. J. Park & Co., twine and wrapping paper .....	\$5 20
52	E. W. Keyes, P. M., postage stamps .....	20 00
53	Geo. R. Cook, engraving medals .....	3 40
54	Mason Brothers, stationery .....	5 50
55	A. Merchants' Union Express Co., express charges .....	2 15
56	Prairie Farmer Co., electrotypes .....	2 00
57	W. J. Park & Co., stationery .....	5 25
58	W. W. Field, salary as secretary .....	100 00
59	U. S. Ex. Co., express charges .....	35
60	Joseph Henry, secretary Smithsonian Institute, express ch'gs ..	11 65
61	Chas. H. Clarke, electrotype .....	6 00
62	W. W. Field, salary as secretary .....	100 00
63	W. W. Field, salary as secretary .....	100 00
64	Sentinel Printing Co., advertising .....	10 00
65	Geo. A. Bruen, semi-ann'l int. on note and mortgage of society ..	136 85
66	E. W. Keyes, P. M., postage stamps .....	30 00
67	E. W. Keyes, P. M., box rent and postage .....	3 58
68	A. M. U. Ex. Co., express charges .....	4 00
69	A. M. U. Ex. Co., express charges .....	1 25
70	E. W. Keyes, P. M., postage stamps .....	20 00
71	W. W. Field, salary as secretary .....	200 00
72	E. W. Keyes, P. M., paper stamped wrappers .....	10 64
73	E. W. Keyes, P. M., postage stamps .....	10 00
74	E. W. Keyes, P. M., box rent and postage .....	3 58
75	Sentinel Printing Co., large posters .....	160 00
76	W. W. Field, salary as secretary .....	100 00
77	Milwaukee News Co., printing .....	478 72
78	E. W. Keyes, P. M., postage stamps .....	10 00
79	E. W. Keyes, postage and paper stamped wrappers .....	10 00
80	W. W. Field, salary as secretary .....	100 00
81	W. J. Park & Co., books and stationery .....	34 40
82	O. H. Perry, advertising .....	7 50
83	Stone & Beach, advertising .....	5 00
84	D. W. Ballou, advertising .....	5 00
85	E. W. Keyes, P. M., postage stamps .....	10 00
86	U. S. Ex. Co., express charges .....	1 45
87	Allen & Hicks, advertising .....	6 00
88	J. H. Keyes, advertising .....	5 00
89	W. W. Field, salary as secretary .....	300 00
90	E. P. Allis & Co., labor in Power Hall .....	51 95
91	J. W. Wood, premium .....	30 00
92	J. B. Hazelton, premium .....	30 00
93	A. S. Hoyt, premium .....	55 00
94	P. Putnam, premium .....	90 00
95	Wiley & Woodard, premium .....	15 00
96	F. S. Capron, premium .....	53 00
97	D. Huntley, premium .....	27 00
98	G. W. Horton, clerk at fair .....	30 00
99	H. W. Hewitt, clerk at fair .....	20 00
100	F. S. Capron, premium .....	9 00
101	W. F. Smith, premium .....	46 00
102	Miss Kate Peffer, premium .....	16 00
103	Wm. Reid, premium .....	21 00
104	Williams & Severence, music .....	175 00
195	J. H. Warren, superintendence at fair .....	59 00
106	G. P. Peffer, premium .....	45 50
107	T. Davis, premium .....	46 00
108	D. Crinklaw, premium .....	20 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
109	John Taylor, premium .....	\$75 00
110	John Southe, premium .....	85 00
111	D. Williams, clerk at fair .....	20 00
112	T. S. Redford, premium .....	30 00
113	J. C. Meacham, premium .....	10 00
114	H. Gooder, premium .....	50 00
115	J. Stoddard, premium .....	88 00
116	D. McVean, premium .....	20 00
117	J. H. Paul, premium .....	85 00
118	G. Lawrence, premium .....	15 00
119	J. G. Putnam, premium .....	30 00
120	S. J. Hodge, premium .....	15 00
121	E. S. Higgins, premium .....	30 00
122	John Plankinton, premium .....	30 00
123	E. Porter, premium .....	105 00
124	C. M. Cottrill, premium .....	30 00
125	C. C. Parks, premium .....	585 00
126	Geo. H. Daubur, premium .....	45 00
127	J. T. Kavanaugh, premium .....	30 00
128	B. R. Hinkley, watchman and general work at fair .....	120 00
129	Eli Stilson and assistant, superintendence at fair .....	46 00
130	M. Tower, premium .....	10 00
131	Geo. Wolf, premium .....	21 00
132	Simon Ruble, premium .....	95 00
133	Thomas Irving, premium .....	70 00
134	E. Chapin, premium .....	25 00
135	D. P. Webster, premium .....	13 00
136	Miss Edith Newcomb, premium .....	6 00
137	G. J. Kellogg, premium .....	37 50
138	E. & J. Smith, premium .....	108 00
139	Rufus Cheney, superintendence at fair .....	121 00
140	C. Loftus Martin and assistant, superintendence at fair .....	84 00
141	Saterlee Clark and assistant, superintendence at fair .....	189 00
142	N. S. Greene and assistants, superintendence at fair .....	90 50
143	Simon Ruble, premium .....	50 00
144	R. L. Porter, premium .....	10 00
145	Mrs. Polly Buck, premium .....	2 00
146	Peter Wakem, premium .....	55 00
147	J. A. Warden, premium .....	35 00
148	J. B. Cross, premium .....	20 00
149	F. C. Curtis, premium .....	1 00
150	H. A. Jay, premium .....	25 00
151	A. B. Douglas, premium .....	45 00
152	Miss S. B. Botiker, premium .....	23 00
153	John Bush, premium .....	90 00
154	H. W. McCafferty, premium .....	55 00
155	H. A. Shaw, night watchman at gate .....	12 00
156	M. H. Thompson, premium .....	15 00
157	Mrs. Alexander Mitchell, premium .....	49 00
158	R. Barnett, premium .....	10 00
159	N. D. Fratt and assistants, superintendence at gate .....	284 00
160	M. K. Washburn, general work .....	4 00
161	V. Basinger, premium .....	45 00
162	J. G. Spranger, premium .....	10 00
163	W. N. Pennell, premium .....	5 00
164	Mrs. Maria Lenz, care of reception hall .....	10 00
165	McFetridge, Burchard & Co., premium .....	95 00
166	E. C. Sage, premium .....	29 00

## Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
167	A. H. Swan, premium .....	\$15 00
168	H. Boorse, premium .....	2 00
169	C. H. Hall, clerk at fair .....	45 00
170	Wm. Kitzrow, premium .....	32 00
171	E. Wuerst, premium .....	2 00
172	W. W. Field, traveling, hotel and incidental expenses .....	86 40
173	Geo. W. Stoner, clerk at fair .....	45 00
174	J. S. Rowell, premium .....	324 00
175	N. D. Fratt, superintendence at fair .....	36 00
176	R. H. Sabin, premium .....	15 00
177	Wm. Dowd, horse for marshal .....	16 00
178	W. R. Taylor, assistant marshals, police, and watchman at fair .....	403 75
179	H. Isaacson, premium .....	15 00
180	A. Middlemass, premium .....	21 00
181	Mrs. N. B. Carr, premium .....	4 00
182	W. M. Ormond, premium .....	60 00
183	A. Kirkland, premium .....	7 00
184	Wm. Brady, premium .....	210 00
185	D. H. McArthur, superintendence ticket office .....	30 00
186	N. J. Swan, forage .....	257 85
187	Wm. Hunt, premium .....	10 00
188	F. Ludington, premium .....	96 00
189	O. S. Willey, and ass'ts, superintendence Horticultural Dep't. .....	93 00
190	J. W. Baker, ass't superintendence Agricultural Dep't. ....	30 00
191	J. F. Birchard, premium .....	15 00
192	Robert Anderson, clerk at fair .....	50 00
193	B. R. Hinkley, services and money paid out during the year ..	350 00
194	Milwaukee Sentinel Printing Company, printing .....	56 00
195	A. Hutchins, ticket seller .....	20 00
196	Frank Mann, ticket seller .....	20 00
197	Mrs. A. H. Cutting, premium .....	26 00
198	Mrs. Mary Fratt, premium .....	4 00
199	Wm. Simpson, premium .....	8 00
200	Eliza Breck, premium .....	20 00
201	J. Pilgrim, premium .....	10 00
202	A. J. Springer, premium .....	2 00
203	E. B. French, money refunded in overpayment of entry fee. ....	2 00
204	W. O. Stillman, livery .....	68 70
205	John Taylor, lumber .....	2 50
206	E. J. Grover, forage .....	206 00
207	E. J. Grover, premium .....	10 00
208	G. W. Limbocker, clerk at fair .....	45 00
209	C. F. Fisher, forage .....	232 76
210	H. Bohn, premium .....	4 00
211	W. M. Ormond, premium .....	10 00
212	Wm. Rhodes, premium .....	25 00
213	Ed. S. Bean, ticket seller .....	30 00
214	A. B. Baker, extra services in agricultural hall .....	5 00
215	W. E. Main, and three assistants, ticket sellers .....	100 00
216	A. H. Main, chief clerk in ticket office .....	61 00
217	H. Heyn, ribbon .....	3 60
218	J. L. Mitchell, services at fair .....	48 00
219	Mrs. W. H. Butterfield, premium .....	6 00
220	John Aitkin, premium .....	51 00
221	F. W. Case, clerk at fair .....	30 00
222	C. H. Williams, superintendence at fair .....	48 00
223	Howard Newnham, assistant and watchman in fine arts dept. ..	24 00
224	Henry Handy, premium .....	8 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
225	M. J. Cantwell, printing and stationary	\$48 00
226	Democrat Company, advertising	7 50
227	Geo. N. Church, premium	10 00
228	C. E. Westbrook, premium	120 00
229	Williams & Petherick, advertising	10 00
230	J. W. Parks, premium	132 00
231	E. B. Thomas, premium	53 00
232	S. B. Smith, premium	14 00
233	Nels. T. Kravige, premium	5 00
234	R. M. & W. Andrus, premium	3 00
235	H. M. Thompson, premium	5 00
236	U. S. Express Company, express charges	3 15
237	Wm. Welch, premium	25 00
238	Mrs. J. B. Joy, premium	6 00
239	Mrs. D. A. Oakley, rosettes	7 68
240	Gazette Printing Company, advertising	6 00
241	John Jeffers, premium	90 00
242	James Magson, premium	110 00
243	Mrs. R. Lapham, premium	4 00
244	John J. Ross, premium	250 00
245	Wm. LeRoy, premium	50 00
246	Geo. C. Stevens, premium	20 00
247	R. Richards, premium	155 00
248	Geo. Murray, premium	353 00
249	P. M. Perkins, premium	5 00
250	Isaac Anthony, premium	20 00
251	J. B. Duclas, premium	20 00
252	E. M. De Puy, premium	15 00
253	John Matthews, premium	80 00
254	F. Bell, premium	20 00
255	Chas. Cook, premium	20 00
256	H. W. Eaton, assistance in fine arts department	8 00
257	E. P. Dickey, premium	30 00
258	O. N. Russell, premium	30 00
259	H. H. Bennett, assistance in fine arts department	8 00
260	Luther Rawson, premiums	149 00
261	H. S. Durand, premiums	178 00
262	Grand Chute Club, premium	10 00
263	James McNee, premiums	20 00
264	S. A. Tenney, premiums	15 00
265	M. L. Butterfield, premiums	38 00
266	D. McGeoch, premiums	20 00
267	A. & P. Hamburt, premiums	30 00
268	O. Cook, premiums	80 00
269	L. Eastman, premiums	20 00
270	D. Kelley & Son, premium	5 00
271	A. F. Pratt, premiums	35 00
272	Rodney Seaver, premiums	80 00
273	M. Robinson, premiums	11 00
274	R. B. Allen, premium	8 00
275	P. A. Van Vracken, premiums	11 00
276	Ph. Best & Co., premium	3 00
277	John Dearsley, premium	2 00
278	E. P. Richardson, premium	2 00
279	J. S. Harvey, premium	10 00
280	No certificate issued.	
281	George Murray, premiums	15 00
282	Evening Wisconsin, printing tickets and advertising	148 75



## Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
283	H. B. Pearson, coal.....	\$14 40
284	C. Hazen, premiums.....	35 00
285	F. N. Lydston, assistant superintendent fine arts dep't.....	38 00
286	G. D. Norris & Co., flags.....	47 00
287	Whitnall & Ellis, premiums.....	38 00
288	Rice & Austin, premiums.....	30 00
289	Mrs. F. Jones, premium.....	1 00
290	O. J. Smith, premium.....	3 00
291	F. Ludington, 3 cords wood.....	18 00
292	Strickland & Co., stationery.....	5 10
293	A. D. Seaman & Co., use of furniture at fair.....	6 00
294	Riggs & Roth, grain for fair.....	58 41
295	J. O. Eaton, superintendence at fair.....	36 00
296	D. T. Pilgrim, premiums.....	24 00
297	H. B. Staines, premium.....	10 00
298	Wm. Lovering, drayage.....	8 00
299	Hyde & Bruce, livery.....	15 00
300	C. H. Jacobs, premium.....	7 00
301	Mrs. A. F. Kellogg, premium.....	3 00
302	Geo. Jeffrey, premium.....	18 50
303	James Eager, premium.....	9 00
304	Shein Bros., premium.....	10 00
305	S. H. Seaman, premium.....	105 00
306	E. H. Stone, premium.....	7 00
307	A. H. Jones, premium.....	2 00
308	L. Mock, premium.....	10 00
309	Miss Julia A. Hamilton, premium.....	5 00
310	H. W. Roby, premium.....	15 00
311	Arnold & Yale, power for power hall.....	116 00
312	Parks & McLaughlin, posting bills.....	1 00
313	H. Bredfeld, drayage.....	21 00
314	Milwaukee News Co., advertising.....	30 50
315	J. M. Thomas, premium.....	10 00
316	Mrs. C. A. Folsom, premium.....	2 00
317	Chas. Elson, appropriation for fine arts hall.....	500 00
318	C. D. Richards, premium.....	2 00
319	Chas. Elson, labor, lumber, and sundry incidental expenses.....	412 35
320	Burnham & Post, livery.....	10 00
321	Mahew Bros., lumber.....	182 04
322	A. L. Boynton, livery.....	13 00
323	German Printing Co., advertising.....	31 25
324	S. Wetherbee, livery.....	30 59
325	H. Ludington, 981 dinner tickets.....	490 89
326	Peirce & Whaling, premium.....	11 00
327	Mrs. Wm. Miller, premium.....	6 00
328	Mrs. W. G. Benedict, premium.....	4 00
329	W. F. Whitney, premium.....	25 00
330	Mrs. Salina Stevens, premium.....	4 00
331	Arnold & Yale, labor in power hall.....	17 00
332	Matthews Bros., premium.....	7 00
333	John Esch, premium.....	25 00
334	J. Lewis & Co., premium.....	10 00
335	J. O. Eaton, drayage.....	4 00
336	Milwaukee police, services at fair.....	50 00
337	E. B. Thomas, premium.....	8 50
338	Geo. P. Peffer, premium.....	10 00
339	E. W. Keyes, P. M., postage stamps and box rent.....	9 63
340	C. P. Root, premium.....	19 00

Warrant Account of the Secretary—continued.

No.	To whom and for what issued.	Amount.
341	P. Putnam, premium.....	\$2 00
342	Mrs. H. P. Yale, premium.....	13 00
343	Julius Vogel, rollers.....	1 80
344	E. Elliott, premium.....	5 00
445	Rodney Seaver, premium.....	5 00
346	Watrous, Hutchin & Co., advertising.....	10 00
347	Morrow Bros., advertising.....	15 00
348	L. Woodard & Co., premium.....	10 00
349	Mrs. E. B. Thomas, premium.....	70 00
350	Miss Kate Peffer, premium.....	10 00
351	D. & M. Park, premium.....	5 00
352	Porsch & McKenny, advertizing.....	5 00
353	Mrs. Salley Bell, premium.....	8 00
354	F. W. Case, clerical service.....	48 00
355	F. W. Case, map of Wisconsin, bought in 1871.....	1 50
356	Gen'l John Woolley, premium.....	14 00
357	Am. M. U. Ex. Co., express charges.....	11 75
358	E. McIntyre, premium.....	2 00
359	No order issued.....	.....
360	Wechselberg, Brown & Co., premium.....	20 00
361	H. G. Roberts, premium.....	4 00
362	H. H. Bennett, premium.....	10 00
363	A. J. Philips, premium.....	3 00
364	A. M. U. Ex. Co., diplomas.....	50 00
365	Atwood & Culver, printing and advertising.....	109 95
366	U. S. Ex. Co., express charges.....	1 00
367	J. S. Stickney, premium.....	17 00
368	R. P. Hoy, premium.....	10 00
369	James McAlpine, premium.....	8 00
370	Bloedel & Mueller, medals.....	189 01
371	J. M. Wheeler, ass't supt. at fair.....	12 00
372	W. J. Park & Co., stationery.....	9 85
373	U. S. Ex. Co., express charges.....	1 00
374	H. Ludington, 227 dinner tickets.....	113 50
	Total amount of orders issued by the secretary.....	\$17,917 22
	Amount of orders No. 239, of 1870, and 315, 341, 354, 364, 389, 390, 391 and 392, of 1871, paid by the treasurer.....	-204 90
		\$18,123 12
	Amount of orders Nos. 9, 234, 249, 253, 255, 257, 262, 267, 270, 270, 276, 341, 345, 353, 363, 368, 369, 370, 371, 372 and 373, not received by the treasurer at the close of the year, Dec. 4, 1872.....	435 86
	Total amount of orders paid by the treasurer.....	\$17,686 26

## EXHIBITION OF 1872.

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This fair, being the nineteenth of the society, was held on the grounds known as the Cold Spring, in the city of Milwaukee, which were generously furnished to the society by the public-spirited citizens of that city. These grounds had been used by the society for their annual exhibitions of 1870 and 1871, and were in excellent condition. To make the grounds more attractive, however, and to offer better facilities for the numerous exhibitors in the fine arts department, the city of Milwaukee proposed, early in the season, to donate the sum of one thousand dollars to erect a fine arts hall, provided the society would furnish one half of the above sum, which they cheerfully did, and the hall was erected, furnishing extensive and satisfactory accommodations in this department. The erection of this hall also gave an additional hall for manufactures, so that this important department had enlarged room. The executive board had great reason to believe that the fair would prove the most attractive, interesting and profitable to the people of the state of any exhibition ever held by the society, and while their hopes and expectations were fully realized as to the attractiveness of the exhibition, yet the wet and unfavorable weather of Monday had a depressing influence upon the officers of the society, lowering their expectations of large financial returns, and abating the energy and enthusiasm of exhibitors to that extent, that many, having made entries, did not place their articles on exhibition, and thousands who had made arrangements to attend changed their minds with the change of weather and remained at their homes.

A very correct idea of the weather was given in the Milwaukee *Sentinel* of the 22d, and in the Milwaukee *News* of the 23d, which I here copy, as follows :

*From the Sentinel.*

“On Saturday night, while closing their accounts for the week, Old Probabilities and Pluvius got into a dispute after the manner of those who dwell below the skies. Jupiter, it appears, had for some time been jealous of an assumption of authority on the part of his colleague, who has proven himself but an odd, eccentric character, at best. The latter, under commission of our government, had on several occasions predicted rain when Jupiter's stock was too low to furnish the supplies called for, and at times would take it upon himself to do a little “simmering” on his own responsibility. This procedure did not please Pluvius, who alleged that it was inimical to his reputation as a careful guardian of his trust.

“As we have stated, the little disagreement between the partners culminated in a flare-up on Saturday night, and, in spite of the good offices of old Sol, resolved itself into a dissolution for the time being. Pluvius, to show his disregard of all the little rules and regulations of Old Probabilities, did as he pleased from that time until yesterday afternoon, to the astonishment and dismay of the good citizens of Milwaukee. The thunder roared and the rain poured, until the populace bethought themselves of arks, in fear of a second flood.

“The streets formed the beds of rushing torrents, to the dissatisfaction of contractors, and basements with their wealth of stores were converted into cisterns and pools under the wrath of “Jupe,” as he was familiarly called by the partner responsible for his irate state.

“Early yesterday afternoon Old Sol succeeded as an intermedator, and now everything moves on as regularly as before. Business suspended during the forenoon began to resume its wonted round, and many were they who were obliged to betake themselves to the task of counting the costs.”

*From the News.*

“The sun rose on Monday morning behind dark clouds that shut out from his view everything terrestrial. Though old Sol strove hard to peep out at Cold Spring and see how matters were going on there, still, such was the violence of the rain-storm that

enveloped our city and vicinity, that the old fellow had to remain satisfied with what he had seen last week. The weather up to Saturday night was all that could possibly have been desired, and every one hoped that we were to have an uninterrupted succession of fine days for the fair. But the sultry weather of Saturday foreboded rain, and as night came on the clouds gathered in the northwest and southwest and the bright flashes of lightning foretold the coming storm. Sunday dawned in a way that was decidedly disheartening. The leaden sky grew heavier and heavier as the day advanced, with occasional patterings of rain. With early night the rain came and poured steadily in unceasing torrents till noon yesterday. The rain-fall was accompanied by the most vivid flashes of lightning and heavy claps of thunder that followed each other in rapid succession. So long continued a thunder storm has not been known for twenty-five years. From Sunday afternoon till Monday noon the thunder and lightning were frequent and at times of the very heaviest description. Monday morning the rain poured down in torrents, falling steadily in heavy sheets. At noon there was a cessation in the storm, and the sun almost broke through the scattering clouds, but soon retired behind the thick veil as the sky again darkened with the portents of continued rain. Soon there was a sudden breaking forth of sunlight and then the clouds and the sun strove for the mastery with doubtful success. Yesterday afternoon the clouds came and went, but the sun seemed to promise better weather to-day when he retired from view."

Tuesday, the day of the formal opening, the weather was more promising, although somewhat fickle, "alternate rain and sunshine prevailing." The grounds were in terrible condition from the three days of incessant rain, and but few visitors were present to listen to the President's opening address, which was delivered at 2 o'clock P. M., in front of the executive office. The office of entry was kept open until 9 P. M., hence the class books could not be delivered to the judges until Wednesday morning, and then, as usual, few of those selected answered to "roll call," but the board was fortunate in securing efficient persons to fill the vacancies, with little trouble, the superintendent of each depart-

ment attending to that duty in person. The work of the judges was faithfully and efficiently executed.

Wednesday, the weather was more favorable. The storm had passed. The mud, under the influence of the sun and drying wind, had nearly disappeared, and notwithstanding the forbidding state of the weather for the two days previous, causing many to remain away, who under a more favorable condition of the elements would, no doubt, have been present; yet it was a reasonably successful day for the society, raising a hope in the minds of the officers, that, financially, the exhibition would not prove a failure, as they had feared at the opening.

The Milwaukee *Sentinel* of Thursday morning says:

"Yesterday opened with a clear sky and nothing of an unpleasant nature save a strong wind which made it chilly work in the city and on the fair grounds. The sun shone brightly, and, besides aiding to dry the muddy streets, by noon mitigated considerably the effects of the cool atmosphere. Under these favorable circumstances a large crowd was naturally expected to visit the fair grounds to examine the many things on exhibition. And this expectation was verified. Numbers of people from the towns of the state arrived by the early trains, and by two o'clock in the afternoon a much better assemblage of visitors than had even been looked for was present on the grounds. Entries to the number of 2,507, against 2,645 last year, had already been made; the attendance of citizens of Milwaukee and the state is even now well assured, and it only remains for the weather to continue propitious to make the whole affair a success so far at least as the remaining days of the week are concerned. Old Probabilities should make it his especial business to attend to the matter.

"The entry and class books were closed at an early hour, and the judges were well at work long before the day was over. Rapidity of action was necessary on all sides, and thus the great agricultural event is now fairly in running trim. The exhibition of horses, according to the programme, although not exciting especial interest until the racing commenced, was carried out successfully. Live stock in all of the departments presents the most complete and best showing that our people have had a chance to witness for a long time. Every stall is occupied, and there are

some first-class and well-known horses. Cattle take up one hundred and thirty-seven stalls, sheep nearly as many, and hogs something over eighty. These, of course, embrace every breed, size and color. An interested crowd lined the whole side of the grounds during the afternoon, and was ready with praise for some of the handsome animals. The rain proved a benefit in one respect, if no other, that is, guaranteeing plenty of water for the herds.

"When the band called the crowd to witness the trials of speed quite a large number of spectators gathered along the home stretch to witness the sport."

Thursday, generally the great day of the State Fair, was cloudy, chilly, damp and uncomfortable, and yet with these discouraging and adverse circumstances to overcome, the number of visitors was large, and the receipts encouraging to the board, who were made happy in the assurance that they would be able to pay their premiums and other liabilities on demand. The annual address was delivered from a platform erected adjoining the fine arts hall, by Hon. George B. Smith of Madison—subject, "Labor and Capital"—and can be found in this volume under the head of "Addresses." Mr. Smith's address was listened to with marked attention by a large and intelligent audience. Remarks were also made by His Excellency C. C. Washburn, President Twombly of the University of Wisconsin, and Secretary Field, which can be found also under the head of "Addresses." Friday, the last day of the exhibition, was mild and beautiful, and the citizens of Milwaukee, particularly the ladies, who had been waiting for a mild atmosphere and agreeable travelling, turned out in considerable numbers, filling the grounds better than is usual the closing day of a state fair.

The Milwaukee *News* well says, relative to the exhibition:

"The fair is over. We had one day of fine weather, Friday; one day that was barely tolerable, Thursday; one day that was cold and piercing, Wednesday; and one day that was rainy and cold, Tuesday. Monday was a disheartening time, the rain pouring down. Altogether the weather has been very bad and has produced the worst effect upon the exhibition. These fairs, of

course, depend in a great measure upon the weather for the degree of success they have. It is useless to expect the people to turn out and see the very finest exhibition in the world, if it rains or is cold and threatening, while if the weather is fine they will crowd to a fair that is only up to the standard of mediocrity. The people in the interior of the state are apt to get discouraged if the early days of the fair are unpleasant, and postpone their contemplated tour to the city altogether.

"The exhibition just closed was one of the finest, perhaps the very finest State Fair, ever held in Wisconsin. The entries were ahead of those of any former year, and the show in the various departments was unusually attractive and worthy of attention. So far, all was very well. But the weather interfered with the success of the exhibition. Monday should have seen the entries completed and the work of arranging the articles designed for exhibition fairly finished. The rain poured down in torrents on that day, and the result was that Tuesday was occupied in doing what should have been done on Monday. The delay was most noticeable in the department of fine arts. There was no small amount of complaint concerning the tardiness here. But when it is considered that the owners of fine paintings and pictures are perfectly justified in objecting to expose their possessions in this line, to even the possibility of damage, and that no show can be made unless the wherewithal is provided, we think the matter will be satisfactorily explained.

"The attendance at the fair was far short of last year, owing to the causes already mentioned. On Thursday the grounds were tolerably well filled, but that was the only large day. The others ranged from bad to worse, according to the condition of the sky and the looks of the clouds. No part of the programme, however, was neglected.

"The officers of the State Agricultural Society pursued the even tenor of their official way as unruffled as you please. The amount of labor performed by these gentlemen, and the constant annoyances of all descriptions to which they were subjected daily and hourly, and every day and every hour during the fair, exceeds belief. But they were always courteous and obliging and never failed to put themselves to any amount of personal inconvenience



that would accommodate any one who applied for information or assistance. The gentlemen of the press are especially indebted to the entire corps of officials for unremitting attention and constant kindness.

“For ourself, as we gazed at the cows standing so serenely and beautifully in the stalls; at the hogs that grunted so melodiously as they shook their fat sides; at the sheep with their rich coats of wool; the hens, those traveling manufactories of the nourishing and healthful egg; the ducks and geese that are so good to eat when they are dead and cooked; the corn, potatoes, melons, beets and such, we longed to be a farmer. From our earliest youth it has always been the summit of our ambition to arrive at some station in life where we could earn our daily bread by the sweat of a hired man’s brow. Hitherto a frowning providence has blasted our ardent hopes, but yesterday, and all during the fair, as we stood surrounded by these rich products of Wisconsin’s skillful farmers, the desire seized us with tenfold strength. We do not, however, see our way clearly to it just yet.”

Special reports of interest, will be found under the head of “Superintendents’ Reports,” giving a somewhat detailed account of each department.

All things considered, the exhibition was a success. The display in each department was good, and in the stock and machinery departments never excelled in the state. The receipts were some \$13,000, which, with the funds in the treasury, enabled the society to meet promptly its liabilities, with a small balance on hand at the close of the fiscal year.

OPENING ADDRESS.

BY B. R. HINKLEY, PRESIDENT.

Delivered on the Fair Grounds, Sept. 24, 1872.

*Gentlemen of the Wisconsin State Agricultural Society:*

FELLOW CITIZENS: Notwithstanding the unfavorableness of the past season in some portions of the state, and the present distractions of an exciting political canvass, the producing classes of our people have been so far successful in their labors as to have been encouraged to bring, in great variety and number, the products of their industry to this place of our annual gathering. And there is also good reason to believe that the attendance of visitors will show that all the adverse influences combined have not been sufficient to make this exhibition an exception to the long list of successes which have characterized the fairs of this society, and which have contributed to give it high rank among the leading agricultural societies of the Union.

In proceeding to inaugurate this exhibition, I am constrained by the unalterable purpose that this shall be my last personal utterance in an executive capacity, to make my "Opening Address" an occasion for a brief review of the society's past history, as well as for an enunciation of the principles in accordance with which its affairs have been administered during my official connection with it, and with which, in my judgment, they require to be administered in the future in order to accomplish the objects for which it was formed.

The society was organized and put into operation in that year, memorable in the history of industry, when in the Crystal Palace, at London, there were gathered together in one place the representatives and products of all the civilized nations of the world—the year 1851—just twenty-one years ago.

The constitution they adopted, like the one now in force, declared the objects of the society to be "to promote the advancement of agriculture, horticulture and the mechanic and household

arts." It thus comprehended within its plan the use of such measures as shall be deemed best calculated to encourage all branches of industry. The name "Agricultural" was given it because of the special importance of the agricultural interest, and for the sake of a convenient title.

As a measure of prime importance, it contemplated the holding of an annual exhibition, where should be collected sample products of the year's industry, as well as specimens of the most approved breeds of animals of every sort adapted to our state, and the best machinery and implements, together with new inventions, and where the whole people of the state should be privileged to assemble for the purpose of comparing them, of exchanging views, and, last of all, for that recreation and social intercourse of which the farming class in this country have always had too little for either their health, their material advantage, or their social manners.

It also proposed to itself the scarcely less important work of encouraging experiments with new varieties of plants and breeds of animals, as well as with new methods of cultivation, breeding, etc.; of collecting information concerning these and all other industrial subjects from every available source, and of diffusing it through the medium of an annual publication. This was and is its work as prescribed in its own constitution, and in the law clothing it with corporate powers.

The management of its affairs was entrusted, under the provisions of the constitution, to an executive committee, consisting of a president, one vice president for each congressional district, a secretary and treasurer, and seven members chosen from the state at large.

The first exhibition was held in Janesville in 1851. It was a slim affair, but it was the beginning of an important work, and led to the formation of county organizations, many of which have long since eclipsed this pioneer effort of the state society.

Since that date, fairs have been held annually, except in the years 1861, '62 and '63, when, owing to the occupation of its grounds by government troops and the general disturbance of social and industrial affairs, the annual exhibition was postponed.

How successful these exhibitions have been, *as such*, will appear

upon an examination of our annual reports. How successful they they have been, as an influence, leading to reforms in agricultural practice; to the introduction of better breeds of stock of every kind; to the improvement of farm machinery and its general use; to the influx of immigration based on the demonstration they have made of the fertility of our soils, the favorableness of our climate, etc; contributing to the success of railways and the necessary internal improvements, stimulating the inventor, the artisan and the manufacturer to greater effort, and helping to secure to Wisconsin a high standing as an enterprising and prosperous commonwealth, —how much they have done for the state in all these ways, can hardly be estimated. We have a right to assume, however, that they are entitled to much credit on these accounts, and that those who have been bold enough to deny their great utility, have thereby convicted themselves of a narrowness and short-sightedness of which any citizen claiming to be intelligent has reason to be ashamed.

We have confirmation of the correctness of this view in this very fact of a radical change in sentiment on this subject. Farmers who, at first, not only did not voluntarily place themselves on the list of exhibitors, but were seldom seen to show their faces at the Annual Fairs, have at length become their efficient promoters. Manufacturers vie with each other in the extent and attractiveness of their displays, and the railway companies, in the most cordial spirit, offer the society those necessary facilities for transportation which were formerly most grudgingly granted, or denied altogether.

The general utility of our exhibitions is further endorsed by the liberal patronage they receive from an intelligent public. No fairs in the United States—except those of St. Louis, which, with the advantages of a location central to the great valley of the Mississippi, and the home patronage of over three hundred thousand fair-going people, have assumed the proportions of a national exhibition—have been more numerously attended than ours, notwithstanding the extent of our area and the sparseness of our population.

In the planning and management of our exhibitions, we have assumed their main uses to be these:

First, the encouragement of the more enterprising, by awarding to them the distinction they deserve for their efforts to produce better results in their several departments of industry; by making some partial compensation for such efforts, in the form of substantial prizes; by bringing to the place of exhibition multitudes of observers from all portions of the state, so that the superiority of their results may be widely known and appreciated, and, finally, by announcing their successes through the medium of the press.

Secondly, to place before the less enterprising and less informed such models of excellence in their respective branches of industry as will at once awaken in their minds a desire for improvement, and show them the path to success.

Thirdly, by bringing all classes of the people together, for objects of common interest, to promote that friendly intercourse which leads to mutual respect and intelligent co-operation.

Fourthly, to furnish an occasion for needed relaxation and recreation to multitudes of our hard-working people, who, but for some such opportunity to blend entertainment with instruction, would rarely or never escape the round of unceasing toil.

If these are not the proper objects of such exhibitions, and if we have not named them in the order of their importance, then has this society erred in its understanding of them, and in the management of this branch of its work.

We may confess that there has, at times, been manifest a disposition to over-estimate the importance of some one of these objects at the expense of the others, and that there has always been need of a steady and resolute effort to keep them in their proper relations and thus hold them in the most judicious equipoise. There is, in fact, some appearance of such a tendency to-day; and I need hardly point out to you that it is on the side of reversing the order of objects as I have named them. I hope there is not so much danger of the society's giving fatal prominence to the recreation and sporting element as should excite serious apprehensions in the minds of its best friends, but I nevertheless deem it well to throw out this caution.

We began our trials of speed as a means of proving the quality of our horses and of encouraging such careful breeding as is calculated to improve the stock of this state. This was well, but

let us see to it that the race course does not absorb such undue attention as to discourage those unobtrusive but substantial industries upon whose fostering care depends the permanent prosperity of our society and the real welfare of the state. They who would administer the affairs of the society wisely in these respects, must not see too narrowly. They must take broad and impartial views of the whole field, and give to each interest the encouragement its importance demands.

Touching the office of the society as a collector, digester and diffuser of information relative to the several branches of our state industry, I find it the more easy to speak freely because that important duty has almost exclusively devolved upon another than myself, and for at least a dozen years has been so well performed that none but words of high commendation can be justly spoken of it.

In all, we have published ten volumes of what we call the Society's Transactions. These volumes, besides the good they have accomplished at home, have found their way into the leading libraries of this country and of Europe, and are now eagerly sought by various industrial and scientific societies and institutions, in all parts of the world. They are not only the authoritative representations of the resources and industry of Wisconsin, they also serve to mark for the political economist, social philosopher and historian, of whatever country, the height to which our state has risen in the scale of material, and even social development. They also abound in information and doctrine of the most universal application. Together, they contribute a series of reports to which any member may properly, and with pride, assign a conspicuous place in his library.

It is a ground of congratulation that the late legislature, by a vote entirely unanimous, saw fit to provide for the issue of the last and all subsequent volumes of our transactions in editions of five thousand copies, instead of three thousand, as heretofore.

Financially considered, this society has been no less successful. It has never failed to pay promptly every dollar awarded in premiums, nor to meet every other obligation. For a time it received three thousand dollars from the state treasury per annum, in aid of

its fairs; but this appropriation was voluntarily relinquished in 1862, and the re-instatement of it has never yet been asked for; so that this is the tenth year of our independence of all aid in the way of money appropriations—a condition of which, so far as I have information, no other State Agricultural Society, or Board of Agriculture in the Union can boast.

Our annual receipts have advanced from a few hundred dollars, to twenty-seven thousand seven hundred and forty-seven dollars. The treasurer's last report shows this to have been the total receipts for 1871, and that after paying all premiums and meeting all obligations, including over two thousand six hundred dollars due on real estate, there was still left in the treasury a balance of five thousand nine hundred and fifty-four dollars.

It thus appears that in the use of the various means contemplated by the constitution and the law, the society has been generally successful, and is hence entitled to the public confidence. I trust, now that it has struggled through and escaped the perils of infancy, and is "twenty-one," it will not content itself with rivaling the past, but go forward in a career of increasing and unexampled prosperity.

In retiring from the onerous and responsible position with which your confidence has honored me for so many years, I shall lose none of the interest I have always felt in the prosperity of the society, but continue, as heretofore, to labor for the advancement of its interests.

My relations with every member of the executive board, from the beginning to the end of my term of office, have been so remarkably cordial and pleasant, that, notwithstanding the arduous labors and anxieties which have been inseparable from the faithful discharge of its duties, I shall think of them with unalloyed pleasure and satisfaction, and I can hardly wish anything better for the society, and certainly nothing better for its official members, than that all future boards may be characterized by the same harmony and spirit of cordial co-operation.

Having detained you so much longer than I had intended with these general remarks, I will only repeat my annual appeal for the hearty and faithful co-operation of all who have been entrusted with duties of any sort pertaining to this present exhibi-

tion. Some of the duties devolved upon you will be found very onerous; others, especially those of the awarding committees, are delicate and oft-times perplexing; all are **responsible**, and challenge the earnest endeavor of each to perform them in a thoroughly faithful manner.

I now formally pronounce the Nineteenth Annual Exhibiton of the Wisconsin State Agricultural Society, open to the public inspection. I trust that its opportunities, furnished at so great a cost in labor and money, will be highly appreciated and duly improved by the people of all portions of the state.

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## ANNUAL ADDRESSES.

Delivered on the Fair Grounds, September 26, 1872, by Hon. Geo. B. Smith, Governor C. C. Washburn, J. H. Twombly, D. D., President of the University of Wisconsin, and W. W. Field, Secretary of the Wisconsin State Agricultural Society.

### LABOR AND CAPITAL.

BY HON. GEO. B. SMITH.

*Mr. President and Fellow Citizens:*

Whoever, by the inspiration of genius, shall discover some plan, some principle, by which labor shall receive a just proportion of what it produces, will be the most distinguished benefactor of his race. It has been said of Adam Smith, that by the publication of his "Wealth of Nations," he contributed more towards the happiness of man than has been effected by the united abilities of all the statesmen and legislators of whom history has preserved an authentic account. The great discovery that he made and illustrated, was simply that gold and silver were not wealth, but merely the representatives of wealth, and that wealth consisted solely of the value which skill and labor can add to the raw material—that money is of no possible use to a nation or a people, except to measure and calculate their riches.



These discoveries of a great thinker absolutely revolutionized the whole trade and commerce of the world, diminished the causes and of course the chances of war between nations, and thus increased the happiness of mankind. But how much greater good would flow from the discovery of some principle by which labor would receive its just reward and have its due influence in the affairs of men! The great principle discovered, illustrated and enforced by Adam Smith, applied to and affected nations directly, and individuals as an incident. If this rule can be reversed, and some plan hit upon which will affect individuals directly, and the whole people incidentally, I will not say that the millennium will have come, but peace, prosperity and good will surely prevail on earth to an extent never yet realized.

#### ANTAGONISM OF CAPITAL AND LABOR.

Capital and labor ought not to be antagonistic, but somehow they are so; and they have been so among all commercial and civilized peoples so far back as we have any intelligent account of time, and, so long as commerce and trade are carried on under the present system I do not see how it can possibly be otherwise. It is true that many causes of the difference of prosperity between persons are directly connected with the individual man, and are plainly to be accounted for from the difference in inclination, habit, disposition and temperament. Thus we can easily see why one man is more thrifty and prosperous than another. But why whole classes of people should fall under this rule is not so easy to discover; and certainly it cannot be attributed to the cause just assigned. When we reflect that all wealth is the product of labor, and that the great mass of mankind must labor, it must be a matter of surprise that capital so seldom aggregates in their hands, and it is equally a matter of surprise that it is mainly found in the possession, and under the control of the comparative few. It is a strange spectacle, that the few are and have been enabled at all times to control absolutely, when they would, both the capital and labor of every people, while the many who produce the wealth are toiling on, year by year, in humble circumstances and in comparative poverty. That this is so will be apparent to all, when you reflect that whenever the country is depressed by a

partial famine, or from any cause, labor always relies upon and looks to capital for relief; and it is a just tribute to capital to say that on such occasions it is seldom applied to in vain. But the wonder is, considering that capital is but the result of labor, that labor should ever be humbled to ask for charity.

#### WHY CAPITAL HAS THE ADVANTAGE.

There are many causes which produce a conflict between labor and capital, and which give capital an advantage over labor, some of which it may be profitable to mention here.

(1.) Capital is organized and labor is not.

(2.) Somehow, capital in every country has been especially favored by legislation. It is, in fact, protected and defended in a thousand ways, where labor finds no protection, no defender.

By means of this special and partial legislation, small sums of money have been aggregated and concentrated under the management of one or a few men, for the accomplishment of a given object, and thus the power of capital is increased a thousand fold over unorganized and unprotected labor. By this and similar means, both in reference to small and large sums of money, capital is not only favored by legislation, but labor is actually made all the while to increase and magnify the importance and influence of capital, and of those who have it.

Capital, however, has one advantage over labor which is not derived from, nor is it aided especially by, legislation. That advantage is, that it works all the time. It never sleeps, never tires, while those who labor must rest, must sleep.

There are other reasons, but those we have mentioned are enough to show why labor and capital are always in conflict, and why capital always triumphs when it will.

#### THE REMEDY WITH THE PEOPLE.

The remedy for all this has never yet been found in legislation; and I am sure we need never look to legislation for the remedy; for there is nothing that capital so certainly controls as legislation. When we pass the ordinary routine of legislation for the prevention and punishment of crime, and to meet and regulate the ordinary municipal affairs of towns, counties and the like, the result

of it is now, and always has been, in the interest of capital, rather than of labor. There is, in fact, no place where the controlling influence of capital is more visible than in the matter of legislation. There has never been wisdom, honor, or virtue enough in the legislative department of government to resist it. It is here that capital fairly riots and revels in its power—not in one legislature, but in all; not alone in the states, but in the nation, as well; not only in this country, but in all countries. This is true; so we need not look in that direction for relief against this evil, nor indeed for relief against any evil that rises above an assault and battery, or a common larceny, and the like. The remedy for this evil, and for all evils that affect peoples, lies somewhere among the people, and some time we may hope that it will be discovered. Let some great genius come forth and point out the means by which labor shall at all times reap its just reward and have its just influence in the affairs of men, and the world will sing his praises with grateful hearts to the end of time.

It is claimed by writers on political economy that the true relation between labor and capital is that of partners; and that, but for the favoritism that legislation has everywhere shown to capital, they would work together in harmony and in fairness. Whether this be true, or not, it is not my purpose now to discuss. But if it is so, if right legislation can restore a just equilibrium between capital and labor, and secure to labor a just and fair share of what it earns, then the remedy is in the hands of the laboring men of this country; and if they act honestly, and act wisely, the remedy might be applied, and the work accomplished within a twelve month. We have seen that the capital of the country is in the hands of the few, and we know that they act together and for their interests. Suppose the laboring interest should do the same, just once, what a revolution it would work in this country and in the world! And, if it acted wisely, what a blessing would be conferred upon mankind by this one exercise of manly independence and self-respect!

#### RELATIONS OF LABOR TO AGRICULTURE.

But it may be asked what has all this to do with agriculture. I answer that it has everything to do with it. It has something

to do with every branch of industry, and with every phase of industrial interests in all the land.

**Agriculture is labor.** It is unorganized, individual labor, which is more thoroughly diffused throughout the whole country, and more immediately connected with every other branch of industrial pursuit than any other labor. A glance at the census returns of 1870 will show how many are engaged in each of the industrial pursuits. The whole number is 11,906,073. Of this number, 5,922,471 are engaged in agriculture; 2,707,421 in manufacturing mechanical and mining pursuits; 1,191,288 in trade and transportation, and 2,084,893 are rendering personal and professional services. These 5,922,471 people engaged in agriculture, producing every variety of product raised on our soil, do not fix the price of a single bushel of grain, or of any single article raised, grown or produced by them. The price of wheat is dictated by capital, and accepted by the producer. And so it is with everything, even down to the few pounds of butter that are taken to the village store in exchange for goods at the merchant's price. As it is with the product of labor, so it is with labor itself. The price is fixed by capital, and any attempt to demand or insist upon higher wages, or more pay, is regarded as a kind of disgraceful revolution, and in the end is unsuccessful, and in almost every instance results disastrously to those who make the demand. Thus we see, that 11,906,073 American citizens engaged in the various industrial pursuits, producing annually by their labor all the real wealth that is produced in this country cannot fix the price of their products, or name the price of their daily labor. Much less can they fix the price of what is taken in exchange for all this labor. Even to the little that falls to them in the end, the price is fixed by capital.

#### PARTIALITY OF LEGISLATION.

And if you examine carefully the legislation of our country (and it is as liberal here as anywhere, and perhaps more so,) you will find it discriminating in every way in favor of capital and against labor; and when this end is not secured directly by legislation, it is even more discriminating and unjust by custom.

Capital adds a profit every time an article of general use

changes hands, and, by a reverse rule, it deducts something from every agricultural product, while it is undergoing the same process; and with a singular refinement of financial rascality, every possible change is anticipated, and this deduction is made while it is in the hands, or just as it leaves the possession, of the producer. Thus the producer, for what he has to buy, is all the time paying the highest possible price that capital can demand, and he is receiving only such compensation as capital and cupidity will offer for what he has to sell.

Capital is organized and vigilant. It looks all the time to its own interest and advancement. It smothers its passions and prejudices when it is in danger. It is persistent in its demands for protection, and it is wise, liberal and munificent in the means it uniformly employs for success. It is never hampered by plat-forms, and it is seldom deceived by candidates. One virtue it has of which labor cannot boast—it is true to its friends, it pays liberally for services rendered, and never deserts a friend.

Our statute books, state and national, are full of laws for the protection of capital, but it would bother an antiquarian to find one for the protection of labor. The arts and sciences are in some sense the pets of capital, and hence they have found some protection in legislation. But, singularly enough, just in proportion as these have been protected, labor has been burdened and made to pay for it, with the usual profit added.

#### THE BURDENS UPON AGRICULTURAL INTERESTS.

Our government has intended to be generous to labors of the brain, while it has cruelly neglected the labors of the hand. But in this particular the government has compelled its toiling and producing millions to contribute this bounty. I do not complain that the government is generous to inventors, but the way in which it is accomplished is of doubtful propriety. Every year the agricultural interests of this country are paying millions of tribute, not to the poor inventor of agricultural implements, but to the capitalist, who, taking advantage of the poverty of the inventor, purchased his right for a trifling sum; and it is a scandal upon honest legislation that repeated renewals of patents are obtained in order that the price may be kept up. All this is the

busy work of capital, while labor is compelled to contribute to its own discomfiture in supporting and aiding those who so unjustly burden it. Again, trifling improvements are annually made to agricultural implements, so as to keep up the price to the old standard, that capital may be richly rewarded at the expense of thoughtless, careless labor. What is true of agricultural implements, is equally true of other inventions which are in general use. In reference to all these, the labor of the country is paying heavy tribute, not to the inventor for whom the law was designed, but to the gambling and unscrupulous speculator for his skill in robbing the inventor of his invention. This is the rule; there may be exceptions to it.

LET LABOR ORGANIZE.

Is there no remedy for all these and kindred evils in this country where the people can make and change their own laws at will? Is there not intelligence, manhood and independence enough in the laboring masses to think out, and perfect some system which shall reserve and preserve to itself a just and fair reward for its toils, privations and hardships—some just share of what it produces? In other words, is it not possible to establish some just and fair relation between capital and labor so that they may be partners indeed, rendering honorably and honestly what is justly due to each other? It would seem that something in this direction might be accomplished, but it can only be done—indeed the first step cannot be taken to that end—until there is some organization of the agricultural and laboring interest. Various efforts have at different times been made for this purpose, and they have thus far failed. But it by no means follows that success in that direction is unattainable.

Banks are established, railroads are built, and all great enterprises where capital takes the lead are accomplished only by organization, and in all such cases the general management of such affairs is entrusted to agents more or less faithful and capable, but always well paid. Attempts of this kind have been made by the agricultural interests, but on the first failure, in consequence of the incapacity or dishonesty of its agents, the enterprise has been given up in despair. Banks, railroads and other great enter-

prises of capital have met and are constantly meeting with similar losses, but the organization is never abandoned for that reason. Each one interested shares his proportion of the loss, and the business goes on with a more perfect organization, and with additional securities against future losses; and it is not discouraged because in spite of every precaution losses still occur.

Labor can no doubt be organized—not so readily and perfectly, perhaps, as capital, but still it can be organized so as greatly to improve its condition. How this may be done is beyond the scope of this address; but that it may be done, and that it will be done, I cannot doubt. Labor may yet have its Wall street as well as capital. Why not?

#### CAPITAL THAT IS INSEPARABLE FROM LABOR.

I have used the words "labor" and "capital" in this address in their more general and comprehensive sense, without stopping to define the precise and technical meaning of either term. But, to avoid misunderstanding, I will say here, that in many particulars, capital and labor are inseparable; so that neither can move without the aid and co-operation of the other. This is true especially of agricultural and mechanical labor. But in both instances, capital forms so inconsiderable a part in the general result attained, that I have chosen simply to notice the fact, and to speak of it in general terms as labor. I have felt at liberty to do so, because it is quite certain this is not the capital that organizes and fixes the price of products and labor. The implements of a farmer and the tools of a mechanic are indeed capital, without which he can accomplish little or nothing. They are a kind of special capital which wears out with use, while the capital of which we are speaking increases in value, and gathers strength and influence by use. This capital, in fact, reproduces itself, while the other wears out periodically, and has to be renewed or reproduced by labor. Of this class of capital is machinery for manufacturing, houses, barns, fences and the like, which, in the aggregate, amount to a vast sum of money, as indeed do agricultural and mechanical implements. But after all it is dead capital, constantly decreasing in value, and constantly requiring labor to keep it in repair. This is not the capital that controls

legislation, fixes the price of agricultural products and the value of labor everywhere. All wealth is not necessarily capital in the sense in which we use that term. But all capital is necessarily wealth.

#### CREDIT, A MORE DANGEROUS ENEMY TO LABOR.

There is, however, a substitute for capital, which is credit; and this is often so managed as to take the place and serve the purpose of capital; and, so far as it goes, its influence over labor is even greater and worse than that of capital proper. It is a more reckless and dangerous enemy to labor than capital; for in its operations it has everything to win and nothing to lose. Credit mainly produces "corners" in stocks and "corners" in grain. Some money is used, but real solid capital is too conservative and too sensible to risk such ventures. Sometimes these "corners," in grain especially, seem to work to the advantage of labor by raising the price of products. Such, indeed, is the first effect of it; but in the end, in most instances, labor is made to suffer and pay the losses. The recent wheat "corner" in Chicago will illustrate this truth. At first, wheat brought a greater price, and a few who could get their wheat to market profited by it. But afterwards, when the "corner" was broken, wheat fell below what it was before, and below what it probably would have been but for the "corner," and the great bulk of wheat subsequently being brought to market, had to be sold for a less price. Thus it is that labor is made to suffer by this infamous gambling operation. Gambling in stocks, gambling in wheat, gambling in gold, is none the less gambling because men of respectable standing engage in it. "Corners" in stocks and "corners" in grain are bold attempts to rob and steal, and they should be prohibited and punished like any other theft. If labor was mindful of its duty and true to its interests, it would be done at once. It could not, however, be done without a struggle, for capital would not passively submit to be deprived or abridged of its ancient right to rob and to steal. But, as time goes on, we may reasonably hope that great and salutary reforms will be effected in this respect.



## PROSPERITY OF WISCONSIN AND ITS TRIBUTARY TERRITORY.

Having now finished what I intended to say on the subject of labor and capital, I will ask your attention for a few moments while I speak of our own state, of its growth and prosperity.

Within my recollection, Wisconsin was not yet organized into a territory, and when I came here to reside, it had only a population of fifty thousand. It now has a population of one million and fifty-four thousand, and is the fifteenth state in point of population in the Union. The exhibition at this fair is the very best evidence of our wealth and prosperity as a people.

Iowa and Minnesota were once a part of Wisconsin, and the southern portion of Dakota Territory was at one time a part of the county of St. Croix in this state. Iowa has now a population greater than that of Wisconsin, and Minnesota has a population of over four hundred thousand. Still west of these states is the young and thriving territory of Dakota. During the past summer I visited southern and central Dakota, going west from Chicago by the Northwestern railway and so on to Sioux City—a beautiful and prosperous place away on the western border of Iowa on the Missouri river, and from thence up the river a distance of 180 miles by water (although but 66 miles by land) to Yankton, the delightful capital of Dakota. Returning, I came by land across the Missouri bottom lands back to Sioux City, over one of the richest and most beautiful sections of country that I have ever seen. Most of it was cultivated and bearing crops that it was a wonder to see. Again, in company with a party, I visited Dakota, passing through Minnesota on the Winona and St. Peters railroad, from Winona to New Ulm, a distance of 212 miles, and from there we took carriages, baggage wagons and camp equipment and went away to the west boundary of Minnesota, and still on forty miles into Dakota, far beyond the settlements. All the way we passed through a country of marvelous richness and beauty, well watered and lacking nothing except timber to make it almost a paradise on earth. In going from New Ulm to the west line of Minnesota, we crossed the Little Cottonwood, Big Cottonwood, Red Wood, Yellow Medicine, Lac Que Parle and other streams, only a few miles distant from each other, which makes it one of

the best watered regions in the west. Southern Dakota is equally well watered by the Big Sioux, Vermillion and James rivers, and numerous beautiful lakes. Along the banks of these streams, both in Minnesota and Dakota, is to be found all the timber in that country.

Dakota seemed to me a colony of Wisconsin, so many of our people have settled there. Many of our people have also settled in Iowa, and still more in Minnesota, so that everywhere you travel in that direction, you can scarcely appreciate that you are out of your own state. Still we are increasing rapidly in population and wealth. And it was pleasant, I assure you, to observe how kindly the people everywhere remembered their old homes in young Wisconsin.

What I wish to say in conclusion is, that we are deeply interested in the advancement and improvement of that section of country, and in any system of internal improvement which shall bear their products through our state to market. Wisconsin, Iowa, Minnesota and Dakota, and even the country still farther west, have a common interest and a common destiny; and we should stand together and work together in harmony, to accomplish a more perfect equality, and a more just and equitable division between labor and capital.

#### SPEECH OF GOVERNOR WASHBURN.

Upon being introduced, the Governor said that he had told the worthy Secretary of the Society that he must not expect to hear from him at any length. The reason why he had said that was, that he knew how hard it would be to obtain a hearing after the able speaker selected for the occasion should be heard. But having listened to his speech with great interest, he felt impelled to depart from his intention not to speak, so far as to say that while he agreed with very much his friend, General Smith, had so well and ably said, he would not by his silence assent to some statements that had been uttered, which in his judgment were erroneous, and calculated to produce discontent where none should exist. He did not assent to the proposition that there was any natural antagonism between capital and labor. Their interests are identical, and when they work in harmony both are prosperous; when

they are persuaded that they are enemies and act accordingly, both suffer. The discovery made by Adam Smith, which was described in such rosy hues, as having lessened the causes and chances of war, and added to the happiness of mankind, hardly prepared us for the gloomy view which was to follow.

Capital is the result of labor. A farmer without any implement of husbandry can accomplish little; he may grovel with his hands in the earth and force from nature a precarious existence. Place in his hands a simple hoe, and you give him capital with which his labor is rendered ten-fold more effective, and he soon adds to his capital a plough, and so on to the end of the chapter.

Now it is said that the price of labor is controlled by capital. I deny the fact, and my friend has read Adam Smith to little purpose not to have discovered that the unerring laws of supply and demand control this whole question. When the harvest is plentiful and the laborers are few, then labor brings a high price; but when there are more laborers than work to be done, then there is competition among those who have their labor to sell, and labor is cheap. This you have seen illustrated this season in Chicago, in a remarkable degree. There, so far from capital controlling labor, the competition of capital has sent labor up to unprecedented prices. Nor does capital control the price of wheat. The same unrelenting law of supply and demand regulates that. If wheat is low, it is because the wheat growing countries produce more than is wanted for consumption, and no combination of capital is possible to keep down the price of wheat, when there is great competition among buyers, resulting from a short crop. Now every farmer is to some extent a capitalist, and their true interest is co-operation. Let them combine their capital with their labor, and instead of sending all their hard earnings abroad to pay for foreign gewgaws, which they do not need, or to New England for articles of necessity that can just as well be fabricated near home, and railing at their hard fortune and the oppressions of capital, erect manufactories at home. They will find *that* the true philosopher's stone. Set your surplus labor at work, and you will soon have abundance of capital.

He had seen on the fair grounds some of the finest sheep in the world. Why should their wool be sent to New England to be

manufactured into cloth and then brought back here, when with our unsurpassed water-powers, our healthy climate, our cheap subsistence and unemployed labor, we could manufacture as cheaply as any other country? When you buy a yard of cloth made in Wisconsin you know what you are buying. Honest cloth—none of your shoddy, such as Great Britain sends here every year by the millions of yards. Indeed Great Britain imports rags from all quarters of the globe, which she grinds up and works into cloth. In a single year she has imported as high as 700,000,000 pounds of rags. These imports come largely from southern Europe and Africa, and ten chances to one that you free American citizens, whom I now address, who are too proud or too foolish to wear American cloth, have now upon your backs the cast-off rags of some Italian beggar or some other more disgusting object.

He said that he had observed with great satisfaction on exhibition here a beautiful display of shawls made by the Waukesha Manufacturing Company, equal to any made at Paisley or Huddersfield, and good enough for the best lady that treads the earth, and she that would not be satisfied with such a shawl ought not to have any, and the husband, having a wife too proud to wear such, ought by the laws of the state be entitled to a divorce *instantly*.

He desired to see agriculture and manufacturing go hand in hand, and then we should have real prosperity.

No country can become rich by the exportation of grain or coarse materials. All the profit is absorbed, and always will be, by the cost of transportation.

In raising products for a distant market this question of transportation cannot be too carefully taken into consideration. To send a bushel of wheat to Liverpool or Glasgow costs more than its value at the place of production, while to send the products of the dairy will not cost over one-twelfth of its value. To raise wheat for export ruins the farm, while the dairy farm is constantly increasing in value. He would not further depart from his purpose of not making a speech than to say that he congratulated the farmers on their excellent display, which gave abundant evidence of the state's progress and their independence.

## ASSOCIATED EFFORTS BY WISCONSIN FARMERS.

BY SECRETARY FIELD.

*Mr. President, Ladies and Gentlemen :*

I rise for the purpose of presenting a few brief thoughts relative to the importance of associated effort among the farmers of the state. I think I state a fact when I say that in no period of the world's history has there been such interest taken in agriculture as at present. Even the political excitement of a presidential campaign, such as has seldom been witnessed in this republic, does not palsy in the least the efforts which are pushing forward this great foundation and preservative interest of mankind. Wisconsin, particularly, is alive to the importance of the work, as witness the fine stock, magnificent products of the soil and dairy, machinery with a finish almost equal to parlor furniture, manufactured articles of the finest make, mostly from our own factories, and works of art now on exhibition upon these grounds. One can behold this great interest from a more favorable stand-point by taking a drive through the country and seeing the well cultivated farms, the beautiful residences and well-filled barns, viewing the railways of the state opening up to the farmer additional market facilities, with more remunerative prices for his products, beholding the farmers' clubs and county agricultural societies organizing for social culture and for the diffusion of general information relative to their high calling, taking a look at our common schools and higher seminaries of learning, particularly the State University, now just filled to its utmost capacity, where the sons and daughters of farmers are receiving an education fitting them to take high rank among any of the callings or professions of life. With these thoughts one's mind becomes engrossed with the occupation of the tiller of the soil, and he is led to exclaim that they who, as cultivators of God's green earth, are enabled to make for themselves a competency, increase the wealth of the country, raise their sons and daughters to habits of industry and economy, give them a common school education, so that the foundation may be laid whereby with energy and industry they may acquire the

broadest culture, and rise to the highest usefulness in society, should be honored equal to any profession among mankind.

But, Mr. President, is the farmer occupying this high and exalted position which his calling entitles him to? Is there not an idea prevalent that the labor necessary to the tilling of the soil is undignified, debasing and degrading; that in the division of labor as marked out by the Creator and the customs of society, the path we have pursued, and which we hope our children will follow, is less dignified than that marked out by those pursuing other avocations of life for themselves, their sons and daughters? Why is it that the young men, on graduating at our universities, select some other calling than that of farming, when their education then well fits them to cultivate the soil scientifically and successfully, with a practice which a few years of experience would give them? One reason is that they think they can accumulate wealth more rapidly, and another is that they see that labor upon the farm is not considered by society as dignified and honorable as some of the professions or other avocations of the human family. Such notions were conceived in ignorance, and are fostered and encouraged by those possessed of pride, conceit and aristocratic notions, and who are constitutionally opposed to labor, and who in all ages of the world have preyed upon the industry of others. I doubt not the industry of this country has suffered largely in consequence of this pernicious idea; and that hundreds of our brightest intellects are moving in the direction of trades and professions, so that the avenues to each are full, and where, as Daniel Webster once remarked relative to the profession of law, that there was little room except "up higher," simply because they feel that it is more dignified, a higher and more elevating calling.

Young men, if that is your idea, stop a moment and let us reason together. What labor of the head or hands can be more honorable than that of tilling the soil in a scientific and practical manner, as from this source all real wealth is obtained. All other trades or avocations of man are entirely dependent upon the surplus wealth of the husbandman. He is the great central planet around which all the lesser lights must revolve. His is the great moving power that is pushing forward the army of progress and civilization, which is making this country to bloom with beauty,

and fit it for the abode of a higher type of mankind. Only a farmer—labor undignified—tilling the soil degrading! If the farmers of the United States were organized, as those engaged in other pursuits are, from the farmers' club to a national organization, with sure and reliable information, each with the other, as I hope some day to see them; if they would read and think, observe, discuss, experiment and combine, as men in other branches of business who are successful do; if they would elevate to places of public trust men of integrity, ability, and of power; men who are competent to represent this great industrial constituency in the county office, or the state or national legislature; men who know our wants, and knowing, dare to and have the ability to maintain them, we would hear no more talk or expressions of that kind, except from those troubled with a softening of the brain, or some other mental disease equally alarming. My brother farmers, our numbers—to say nothing of our high and noble calling—should command respect. What we want is that associated and combined effort which gives power.

We want education, and right here let me say that had I the power, I would have every child in the land receive at least a common school education, if possessed of sufficient mental and physical capacity to attain it. I think no greater duty devolves upon society than to see that all have an education. The state, in the enactment of laws for the support of common schools, takes this ground, but it only goes half way, by saying that Mr. A. shall pay, according to the valuation of his property, for the education of Mr. B.'s child; but it stops there, and does not say that Mr. B. shall send his child to school to receive the benefit, as in my judgment it should do. We want unity of action and purpose; we want to command the situation and not forever be "hewers of wood and drawers of water" for others. We want by concentrated effort to say something about the price of what we sell and what we buy. Now we do neither; but the signs of the times are hopeful. I see a growing feeling among the farmers and producers of the state to organize and combine so as to stimulate and promote their general welfare and the public good. Farmers' clubs, county agricultural societies, and other industrial associations, are organizing all over the state. Some of the former are holding weekly

meetings and discussing topics which relate particularly to their interest as producers, and with the best of results.

One of the greatest hindrances to agriculture is that farmers who are possessed of limited education, but who are practical, observing men, are reluctant in giving the public the benefit of their experience, fearing that some one of greater scholarship, but perhaps less brains, will question their intellectual culture and attainments. In the club-room, among his neighbors, there is little restraint of this kind, hence the most beneficial results of his experience are obtained, which otherwise might be lost to the cause of industry. The county, district and state agricultural societies are accomplishing much good. Viewed as social gatherings merely, they are promotive of the highest results. There is a want of social culture in the rural districts, and more particularly among the new and sparsely settled portions of our state, and yet there is nothing, which for our comfort, happiness and enjoyment is of more importance. Man has a social nature, and he needs to have it cultivated by mingling in society, and having those rough corners polished down so as to fit him for higher enjoyment, and that he may exert a happy influence upon those with whom he is brought in daily contact. I am glad to see ladies, farmers' wives and daughters, taking an active interest in these social and industrial gatherings. Why should not woman take an interest in the domestic department of industry? Why should she not write essays, and take part in the practical discussions pertaining to gardening, household and dairy, poultry, bees, fruits and flowers, works of art, etc.? A refining and elevating influence would thus be promoted, industry receive an accession of moral force and strength heretofore unknown, and the grandest and most noble results follow. All of these valuable agencies ought to be utilized into one harmonious whole, working together towards one common end. I would not infer by this that the least feeling of jealousy or rivalry exists between such local, state or national organizations, but that this unity of purpose and organized effort would give additional strength and stimulus, and exert that healthful influence which is so essential to any pursuit in life, by diffusing information among the people, such as individual or separate effort could never accomplish. To aid in my feeble way in bringing



about this desirable result, upon consultation with the Executive Committee of this society, I issued the following circular letter in the month of August last, and forwarded a copy to each of the clubs, and other local agricultural societies so far as known in the state:

STATE AGRICULTURAL ROOMS,

MADISON, August, 1872.

*To Farmers' Clubs, County and District Agricultural Societies:*

GENTLEMEN:—The Wisconsin State Agricultural Society has long felt the importance of more intimate and practical relations existing between Farmers' Clubs, County and District Agricultural Societies, and the State Agricultural Society. Article II of the constitution of this society provides that "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." While presidents of some of these local societies have acted under this provision of the constitution, the larger part have not. The most friendly relations have ever existed between such local societies and the state society, and yet there has seemed to be a want of that associated effort, and practical, efficient co-operation which seems so essential in a great work of industrial education. Each has been fruitful in good results in its own limited sphere, but we believe that much higher and more practical results ought to be and can be attained by the harmonious and co-operative action of thinking, reading, observing, practical and scientific men of the state meeting annually together, where essays pertaining to any department of industry may be read, where the experience, observation, and results of private enterprise and scientific research may be fully discussed, and spread before the people of the state for the advancement of industrial education.

To endeavor to attain these higher results, the Executive Committee of this society has decided to call a meeting at the Capitol during the coming winter—time to be fixed at the State Fair in September—in which active workers in all departments of industry are cordially invited to participate, and especially do we extend to farmers' clubs, county and district agricultural societies

throughout the state, an earnest invitation to elect one or more delegates at their next club meeting, or annual fair in September, to attend said meeting; and the secretaries of said societies are respectfully requested to forward to the secretary of this society the names of such delegates as early as practicable, that correspondence may be had with them relative to the time of said meeting, topics to be discussed, etc.

In behalf of Industrial Education,

W. W. FIELD,

*Secretary Wisconsin State Agricultural Society.*

B. R. HINKLEY, *President.*

I trust all of the local societies have elected or will elect delegates to this agricultural convention. Send us one or more of your intelligent, active workers; men who are deeply imbued with the importance of industrial education, and who are thoroughly posted in topics which have been discussed before your club or society. Let essays be prepared by such delegates, be read and discussed by such convention. Also let questions be discussed relative to experiments, or individual observations upon the farm, as, for instance, deep and shallow plowing, subsoiling, renovating exhausted soils, pulverization of the soil, new and improved seeds, value of different fertilizers, management of the soil so as to retain its original fertility, and the numerous other topics which would arise at these meetings. Then, sir, after these societies had done all the good in their associated capacity, that could be done, I would have the state society send delegates to the National Agricultural Congress, composed of practical, observing and scientific men, who have made agriculture a profession; men who have wrung from the soil a portion of their worldly goods, and are willing, anxious and able to impart to others the manner by which it was acquired.

Mr. President, with your co-operation and that of the intelligent members comprising the Executive Board of this society, with President Twombly and Prof. Daniells, of the State University and Agricultural College, with the Morrow Brothers, of the *Wisconsin Farmer*, with active, industrial workers connected with our state and local societies, and with other scientific and prac-

tical men of the state, who I doubt not will interest themselves in the cause very cordially, we can place such organization upon a firm foundation, quicken agriculture and the kindred arts, establish social unity and good feeling, raise the standard of social, moral and intellectual culture, and place the producers of the state upon a higher plane of usefulness and power, where they rightfully belong. I would not make this united and associated effort political, except to the extent that I would give legislators of all political shades—and they are numerous just now—and those who are candidates for state and national political preferment to understand that our interests must be specially cared for, fostered and encouraged by the enactment of wise and equitable laws, that the burdens of taxation must be equally distributed, that we must not be discriminated against by exemption of a certain class of property from taxation; in fact, that the industry of the country, which underlies and sustains all other interests, must be respected, for we have the numerical and mental strength to command and enforce it. Look over the list of occupations of men filling places of trust to-day, from the county up through the state, to the highest positions of responsibility and power in the nation, and what do you see? Do you find them filled by those whose constituency is larger than all other avocations and pursuits combined? By no manner of means. If you will take the trouble to look over the occupations of the members of the 42d Congress, you will, I think, infer that we are a nation of lawyers. Many of these gentlemen are, no doubt, high-minded, honorable men, and will well represent the views of their constituents, but, Mr. President, the point I desire to make is, that an agricultural constituency should demand as their right an agricultural representative; not that I would have farmers occupy all places of responsibility and trust, but I would have them fill a majority of them, it being the great and leading interest of the country. We should bear this idea fully in mind, that no class of people, all other things being equal, can so well be represented as by those who are engaged in the same calling, avocation or pursuit. When we, as farmers, fully realize and appreciate our true position in society, and demand that these high representative trusts shall be conferred upon us, we shall obtain them, and we ought not to before.

Now, sir, I find no fault with these gentlemen for obtaining these positions of honor, trust and emolument; but, sir, what I do complain of is that the great producing class of the country should allow themselves to be duped and deceived into the support oftentimes of men who have not a single interest in common with the industrial classes, and who strive for place and power the more effectually to feed and fatten upon the industry of their fellows. In closing, let me urge upon you the importance, as farmers, of associated and united action for the advancement of industrial education and your general welfare. You can never reach that high and dignified position which you ought to attain until you do. In this day of steam and electricity which quickens and stimulates every enterprise we must watch with care the great and material interest of agriculture, and see that it fall not behind in the march of progress.

### THE VALUE OF MIND POWER.

BY DR. J. H. TWOMBLY, PRESIDENT OF THE STATE UNIVERSITY.

*Mr. President, and fellow-citizens of Wisconsin:*

I congratulate you upon this auspicious occasion. The day, with its balmy air and genial sunlight, awakens emotions of pleasure, and the exhibitions which greet us on every side are fitted to give us a lively satisfaction in the productive industry and artistic skill of the people of our state. Here are the valuable products of the pastures, the fields, the gardens; here too, are exhibitions of mechanical skill that would do credit to the oldest states of the country; rare specimens of domestic diligence and good taste, and a display of the fine arts of which every one may well be proud.

This exhibition, like hundreds of a similar character annually occurring in this country, shows in the most gratifying manner the improved domestic and social condition of agriculturists, mechanics, and kindred classes. I do not style these *the* industrial classes, for there are other classes who toil with an assiduity, with an intenseness of application, never surpassed by those who

pursue the different kinds of handicraft. Many are the men who, in the quiet hours of night, while common laborers are wrapt in slumber, tax brain and vital force to develop ideas which shall give direction to a nation's thought and a nation's life. These also are laborers, and form part of the great industrial corps. But what we witness here indicates particularly, the progress of the so called industrial classes.

In the last few centuries, progress has been made by all ranks in society, but a far greater advance has been made in the intellectual and social status of the different classes engaged in manual labor, than in that of the classes occupied with the pursuits of literature, statesmanship and professional life.

Three hundred years ago, the common laborers of England and Germany were in a condition of extreme degradation. Many of them passed their lives in rude hovels, destitute of floors, and of every article an American would call furniture. Straw laid upon the ground formed the carpet by day and the couch by night, and this cheap and abundant material was not wasted by frequent changes. In many other countries of Europe, their condition was still worse. They furnished muscle—others supplied thoughts. The laborers of America have always stood pre-eminent in regard to intellectual and social privileges, yet their advancement in the last fifty years has been marked, I had almost said marvelous. In every part of the country, are farmers and mechanics who have made large attainments in knowledge, and whose homes give unmistakable evidence of affluence, enterprise and mental culture. In a word, the world has moved.—slaves have been liberated, serfs elevated, labor crowned with wreaths of honor, and laborers introduced to the fruitful fields of science, the higher realms of thought.

The varied display of products now before us, whether of the spade, the plane, the needle or the pencil, strikingly illustrates the correlation of interests in civilized and progressive society. The toilers at the plow, the forge, the loom and the easel; the tar at the mast head, the banker at his desk and the scientist with his fossils, render reciprocal support in the struggle of life. Strike down a single branch of industry, many others suffer; give to one, by legitimate means, new life, others are vitalized.

The great purpose of this Annual Fair is to stimulate skill, to increase and direct mental power. There is danger of taking such a view of practical pursuits, so called, that the man shall be regarded as a machine, an instrument for promoting his calling. Wealth, material good, is not the end of labor, but manhood, a higher and a nobler life. We should not seek merely better fruits, grasses, cattle and implements of husbandry, but better men, more intelligent and happier homes. Numerous influences contribute to this end, but the most cursory discussion of them is out of place at the present hour. I will speak of but one of the many topics suggested by what we witness to-day—

#### THE VALUE OF MIND POWER.

All around us are wonderful forces. They throb in the soil of the hill and the valley, occasionally sending forth spontaneous products, yet ever challenging the skilled industry of man, and yielding their highest results only at the behests of science. There are forces in water to float navies, to drive the spindle and the loom, and to send freighted trains across the continent; forces in the air suited to vegetation, and to the development of physical power; forces in the sunlight to aid the processes of nature, art and life, and everywhere there are forces and fixed laws adapted to the ends of mechanism. All these can be controlled and subordinated to the interests of man, but *only* by the power of cultivated mind.

In accurate and vigorous thinking, developed in action by stern will, we find the essentials of true growth. If we trace out the progress of society, we shall discover that every advance has been the result of earnest, logical thinking. For centuries mental stupor prevails, intellect seems paralyzed—at length a strange event breaks up the general routine, a grand idea bursts upon the mind of a thoughtful man, flings him out among the stars to solve the problem of the universe, and humanity is lifted to a higher plane of intellectual life.

The geographer logically concludes that there is another continent, sets his prow toward the undiscovered land, and westward guides the star of empire. Nations are electrified by his discovery; his discovery is the result of earnest and protracted

thinking. All progress achieved in social order, and all improvements in our valuable industries, are the products of thought.

Every plow, every cultivator, every work of art, shown to us to-day, is the result of thinking. What the soul is to the living man, thought is to social progress. The merely muscular man is but a machine, an embodiment of force, and as such may be estimated at so many pounds avoirdupois, and his value to the world, as physical force, would be no greater than half a dozen tons of anthracite. Give him now the power of thought, and he will quicken the mental activities of his age, and send new currents of mental life onward through the centuries.

Thinking is the prerequisite of skilled labor, and this, in our times, is the only successful and profitable labor.

The following facts show how the value of iron is enhanced in England by labor :

Five dollars' worth of common iron, converted into ordinary machinery, is worth .....	\$20 00
Five dollars' worth, into large ornamental work .....	225 00
Five dollars' worth, into neck chains .....	6,930 00
Five dollars' worth, into table knives.....	180 00
Five dollars' worth, into needles.....	355 00
Five dollars' worth, into pen knife blades .....	3,285 00
Five dollars' worth, into polished buttons and buckles.....	4,439 00

Thought gives value to soils as well as to minerals.

It is by the application of science that the long worn fields of Massachusetts are made to produce more wheat per acre, than the rich prairies of the west.

It is by systematic and scientific cultivation that thirty-six millions of people derive the means of subsistence from the limited territory of France.

Every industry is based upon a science, and did the farmer who delves in his fields understand the science of the soils and the principles of his vocation, as well as the geologist understands the principles of his favorite pursuit, the farmer and the scientist would work with equal honor. The only means of protecting labor is to educate the laborer. Leave the man uncultivated, and tariffs and laws discriminating against capital are of no avail. Our farmers and mechanics, if they but knew it, have the nation

in their hands. Let them be studious ; let them think vigorously, and coin waste moments into ideas, and the sceptre of national power is theirs. To attempt the protection of labor mainly by civil enactments is too wild a project to merit sober consideration. Laborers must protect themselves by the cultivation of their higher powers. Increase the intellectuality of the toiler, and he will have means of protection which will give him a spirit of independence, and challenge public respect.

I will not pause here to criticise the premiums offered for excellency in various kinds and grades of animals, yet I will suggest that an association, aiming to increase the social and intellectual culture of the people, and annually giving thousands of dollars in premiums upon swine, sheep, cattle and horses, might wisely appropriate a few hundred dollars to secure the right education of the thousands of young men of this state who are soon to control the great interests of the commonwealth. The establishment in the Agricultural College of the State University, by this association, of a few scholarships worth \$100 each per annum, would accomplish far more to secure generous products in the fields and workshops, than the appropriation of an equal amount for the presentation of race horses. Brains, not hoofs, must protect our great industries. I commend this practical suggestion respecting the establishment of scholarships, to the favorable consideration of the gentlemen whom I address.

Give to our youth good morals and the power of earnest thought, then our political institutions will be perpetuated, our great industries will be honored and promoted, our seminaries of learning will be fountains of life to the nation, and the glorious banner which proudly floats above us to-day, and which has been so recently baptized with the blood of your sons and your brothers, will wave in triumph through the centuries.



## REPORTS OF SUPERINTENDENTS.

## SHEEP DEPARTMENT.

BY ELI STILSON, SUPERINTENDENT.

This department was fully represented in the fair of 1872, in all the different classes of sheep, showing the deep interest that is taken in sheep husbandry by Wisconsin farmers; and as higher and better farming in the west must depend largely upon mixed farming and the keeping of domestic animals in connection with grain growing, and sheep being the best of all stock to maintain the fertility of the soil, hence the interest taken in this department is truly gratifying. It might seem unnecessary to particularize where all did so well, but we will give a brief sketch of the stock on exhibition in this department.

*Class 19—Merinos.*

A. & P. Humbert, of Caldwell's Prairie, made numerous entries and showed some very fine sheep, and J. H. Paul, of Genesee, did honor to himself and his flock by his exhibition.

O. Cook, of Whitewater, was on hand with some fine specimens of his flock.

J. W. Park, of Dodge's Corners, made a fine display of good sheep.

George C. Chaffee, of Whitewater, had several pens of sheep on exhibition.

L. Eastman, of Pleasant Prairie, showed some very fine sheep from his noted flock, and so also did Messrs. Clapp & Son., of Kenosha, exhibit some very fine sheep bred by L. Eastman.

Daniel Kelly & Son, of Illinois, were on hand with several pens from their large and fine flock.

J. G. Putman, of Neosha, exhibited a few good sheep.

*Class 20—Cotswolds.*

C. C. Parks, of Waukegan, Ill., made a large exhibition of excellent sheep in this class, and so also did E. Porter, of Waukesha,

who has been so long and favorably known as a long-wool breeder. Wm. Rhodes of Salem, made a good exhibition, and G. H. Lamberton of Lamberton, had several pens of Cotswold sheep from his well known farm. F. Ludington and F. S. Capron did honor to their flocks, and A. F. Pratt of Waukesha, had several entries of good sheep.

*Class 21—Long Wool, not Cotswold.*

In this class the exhibition was not as large as in class 20, but it was good. Here again E. Porter made a fine exhibition, and C. C. Parks had several pens of excellent sheep. G. H. Lamberton made several entries of good sheep. John Mathews, of Darlington, had several entries, and among them was probably the largest buck ever shown in the state. Peter Wakem of Madison, had a few good ones on exhibition, and also I. S. Hazletine of Richland Center, and a few others.

*Class 22—Southdowns.*

C. C. Parks was also well represented in this class by some good sheep, and G. H. Daubner made a successful exhibition. M. Tower, of Omro, was represented by some good specimens from his flock, and so also were Peter Wakem, Luther Rawson, of Oak Creek, and Thomas Hatchard and G. H. Lamberton.

*Class 23—Fat Sheep.*

E. Porter, C. C. Parks and F. S. Capron monopolized the honors, and, in this class we find the goat obtruding himself among the sheep, as of old, although it was said he should be "separated, and on the left hand." George Bryant, I. S. Hazletine, J. Mathews, A. F. Pratt, and James Toay were the exhibitors. But, as the paradise of the goat has lately been found in one of the isles of the Pacific, where he is "monarch of all he surveys," we do not look for a very rapid development of the goat interest in this country, except in perhaps certain localities, although the wool of the Cashmere goat is truly valuable and susceptible of being manufactured into a great variety of dress goods.

## SWINE DEPARTMENT.

BY J. H. WARREN, SUPERINTENDENT.

The number, and especially the quality, of swine exhibited at our annual fair at Milwaukee, September, 1872, was very fine indeed, and gave evidence that this branch of stock breeding is receiving, throughout the state, that attention it justly deserves, and it is very gratifying, both to the society and to those visiting our fairs, to see this department so improving as to compare favorably with other departments, and also with exhibitions of swine at the annual fairs of other western states.

For several years the state of Wisconsin fell far behind other western states in this, one of the most profitable productions of the farm, but, from present indications, it is evidently rapidly recovering, and will, in a few years, make a better showing of swine products than it has heretofore done. To Messrs. Plankinton & Armour, Layton & Co., Jas. T. Woolley, Van Kirk & McGeoch, and L. Farlan, pork packers of Milwaukee, the society is under obligations for their liberal special premiums for swine, which have done much to bring out exhibitors and stimulate competition. It is hoped they will be disposed to continue their generous encouragement of improvement in this department in which they are so vitally interested.

In numbers, the Chester Whites, Berkshires and Poland-Chinas took the lead and seemed to be *the* breeds most esteemed by swine growers in general, while the Cheshire and Essex were represented by fine specimens, giving evidence of worthy claim to public favor.

The exhibition as a whole was a complete success, and gave evidence conclusive to the thousands who visited it, that in no class of farm stock is there a wider range between the good and poor, the profitable and the unprofitable, and that to be successful, the swine grower must have a good breed, and that to obtain such, he need not go out of his own state.)

MACHINERY DEPARTMENT.

Hon. W. W. FIELD, *Sec'y Wis. State Agr'l Society*:

SIR—I have the honor herewith to present the report of the committee on machinery, which, from the known intelligence and ability of its author, will, I trust, be found satisfactory to our board, as well as to the numerous exhibitors in this department of our State Fair, which greatly surpassed that of any previous exhibition.

We can now point with pride to the great achievements in machinery; and were evidence wanting of the fertility of our soil, or the lumbering resources of our state, this last exhibition would satisfy all, of our superior advantages for the investment of capital and the employment of skilled labor.

That the people understand this, is proved by the increasing interest in every thing that pertains to this branch of productive industry.

Agriculture being the basis of all legitimate prosperity, too much encouragement cannot be given the invention or manufacture of machines for its development. With such encouragement, we may confidently predict a glorious future for Wisconsin.

As the possessors of such resources, and with the promise of so bright a future, we cordially invite all seekers for homes to come among us. There is still room for the educated labor of the hands, and for mental labor as well; room for the wealthy, room for the poor.

We want men and women who are willing to work, and we promise, on our part, all the encouragement which a now prosperous and future great state affords. To all exhibitors we tender our cordial good will for their attendance and exhibits, which contributed so much to the interest and success of our fair. To John Brownell, of Dayton, Ohio, for the splendid engine manufactured by himself, which furnished the power to operate the machinery on exhibition, we would express our entire satisfaction.

The thanks of the society are especially due to the proprietor of the Reliance Works, Hon. Edward P. Allis, for the display of ma-

chinery and manufactured articles, which constituted so large a part of the show in Power Hall.

Such enterprise well deserves the encouragement of our state, and must be, as it is, a just source of pride to the citizens of our commercial city, Milwaukee.

In conclusion, I am pleased to unite with you in mutual congratulations over the general success attending our late fair, notwithstanding the unfavorable weather. It was the best exhibition ever held in our state, if not in the northwest.

All of which is respectfully submitted.

R. CHENEY,  
*Sup't. Machinery Department.*

REPORT OF SPECIAL COMMITTEE.

AGRICULTURAL MACHINERY.

MAJ. RUFUS CHENEY, SUPERINTENDENT.

SIR:—The exhibition in this department, as a rule, showed no diminution of interest in improved machinery for farm use, either on the part of manufacturers, or of visitors.

Under the head of reapers and mowers, there were 35 entries, several showing two or three sizes of machines, viz:

*Combined Reapers and Mowers.*

	Made at
Ohio Champion .....	Springfield, Ohio.
Excelsior Self-Raker.....	Akron, Ohio.
Little Champion.....	Janesville, Wis.
Underwood .....	Newark, New Jersey.
Valley Chief .....	.....
Dodge Reaper and Mower.....	Auburn, New York.
Williams' Combined.....	.....
Johnston Combined .....	Brockport, New York.
Russell Combined .....	Canton, Ohio.
Kirby Combined .....	Auburn, New York.
Cayuga Chief Combined .....	Auburn, New York.
Manny's Combined .....	Rockford, Illinois.

*Reapers.*

Esterly Sweep Self-Raker .....	Whitewater.
Wood's Self-Raker.....	Hoosack Falls, N. Y.
Warner's Harvester.....	Prairie du Sac.
Buckeye Table Raker.....	
Johnston's English Harvester .....	Brockport, N. Y.
Buckeye State Reel Raker.....	Portsmouth, Ohio.
Burdick Self-Raker.....	
Johnston Self-Raker.....	Syracuse, N. Y.
Bradley's American Harvester.....	
Beloit Single Self-Raker .....	Beloit.
Marsh Harvester .....	Rockford, Ill.

*Mowers.*

Acme.....	Rockford, Ill.
Iron Clad .....	Wyandott, Mich.
Eureka. (Adsit & Jackson).....	
Buckeye .....	
New Clipper .....	Yonkers, N. Y.
Sprague Mower.....	Chicago, Ill.
Kirby Mower .....	Auburn, N. Y.
Improved Climax.....	Corry, Pa.
Sherwood Prize Mower.....	
Cayuga Chief Mower .....	Auburn, N. Y.
Meadow King Mower.....	Trumansburg, N. Y.

We note some peculiar features of the above machines:

*Otis Champion Reaper.*—The weight of rake and platform is carried between the drive wheels—the ingenious method of connecting pitman, and tilting lever to raise and depress the guards.

*Esterly Reaper.*—This Wisconsin machine is too well known to need any special commendation. The ease with which the rake can be controlled and the draft regulated is, however, particularly noteworthy.

*Wood's Reaper.*—Among its new features this year, are large, drive wheels and quicker motion, extension fingers for short grain; the whole platform can be raised or lowered as required.

*Excelsior Reaper.*—Cast iron frame, controllable rake, drives from main shaft.

*Little Champion Reaper.*—Adjustable socket on pitman, to prevent binding—gearing very simple.

*Buckeye Table Rake Reaper.*—The rake compresses the bundle and delivers it on the side of the table; has an overhanging reel independent of the rake.

*New Clipper Mower.*—Geo. Worthington, Milwaukee, agent; several sizes on exhibition; frame all iron, with steel bar, cast steel guards and shoes, boxes of chilled iron. (This house also exhibited the Johnston harvester and combined reaper and mower, their collection being one of the best on the ground.)

*Kirby Reaper and Mower.*—These popular machines were fully represented, and showed several new and desirable features, proving that the manufacturers are determined to keep up the reputation of their machines.

The same remark may properly be used in regard to the Cayuga Chief, Marsh and Manny machines, of wide celebrity, while the later and less known makers are quick to adopt all improvements, and press for the first rank.

*Sherwood Prize Mower.*—S. L. Sheldon, Madison, exhibited this machine, which was found to possess several valuable features, in the form of great simplicity of construction, ease of draft and management, making it a peculiarly desirable machine.

*Hunter's California Grain Separator.*—C. E. Whittemore & Co., Quincy, Ill. A capital Machine for farmers, millers, elevators, effecting the clearing and separating of grain with great success; light and cheap, but well made and durable.

*Clover Hullers and Cleaners.*—Three of these were shown, of approved manufacture, and known to the public.

*Threshing Machines.*—The display in this department was comparatively meagre, the bad weather hindering several heretofore constant exhibitors. We had,

Threshers.	Made at	Exhibited by
Russell . . . . .	Massillon, O. . . . .	L. J. Bush & Co., Milwaukee.
Watertown . . . . .	Watertown, . . . . .	Smith & Bennett.
Sweepstakes . . . . .	Canton, O . . . . .	C. Aultman & Co.
Pitts . . . . .	Springfield, O . . . . .	Reinhart, Ballard & Co.
Burnham's . . . . .	Milwaukee . . . . .	C. T. & J. Q. Burnham.

The "Watertown" has a spiral cylinder, insuring even action, and threshes grain as fast as it can be delivered to it; a capital machine—runs with a climax power.

The "Burnham" machine is a new candidate for public favor, and appears to be well constructed and fully up to the desired mark.

*Gang Plows.*—By A. N. Humphrey, Brodhead; has a lever arrangement for conveniently regulating the plows in the ground; is well and carefully made.

*Street Crossing Plows.*—Messrs. Peirce & Whaling's Special premium was competed for by the Moline Plow Co., John Deere, Moline, Dorsch & Matter of Milwaukee, and C. C. Thomson, Rockford, Ill., the first two parties named taking the 1st and 2d premiums.

*Seeders.*—Of these there were entries by eleven parties, the machines being generally well known, and approved by practical use in our state, the list comprising

Seeders.	Made at
Prairie.....	Janesville,
Lake Mills.....	Lake Mills.
Manny's.....	Rockford, Ill.
Esterly's.....	Whitewater.
Gorham.....	Rockford, Ill.
Force Feed.....	Springfield, O.
Rowell.....	Beaver Dam.
McShery's.....	Dayton, O.
Fountain City.....	Fond du Lac.
Workman.....	Ripon.
Van Brunt.....	Horicon.

The "Rowell" machine has a valuable improvement by which the apparatus is made to readjust itself at once after passing an obstruction.

The "Van Brunt" machine is distinguished by a new and improved form of tooth, claimed to be a great success in practice.

*Drills.*—The Buckeye Force Feed, made at Springfield, O., and the McSherry machine, from Dayton, O.

*Horse Rakes.*—Ten entries under this head gave to the visitors



ample opportunity to examine and canvass their various peculiarities and advantages. We subjoin the list:

Horse Rakes.	Made at.	Exhibited by
Dayton Sulky . . . . .	Dayton, O. . . . .	Dayton Machine Co.
Bay State . . . . .	Fond du Lac . . . . .	H. & G. O. Trowbridge.
Taylor . . . . .	Dayton, O. . . . .	B. C. Taylor.
Lock Lever . . . . .	Alliance, O. . . . .	Coates, Gray & Co.
Jerdee . . . . .	Madison . . . . .	L. & M. P. Jerdee.
Hollingsworth . . . . .	Dayton, O. . . . .	E. J. Lindsay, Milw'kee.
Pacific . . . . .	Dayton, O. . . . .	E. J. Lindsay, Milw'kee.
Ithaca . . . . .	Cleveland, O. . . . .	A. J. Hayes.
Buckeye Lock Lever . . . . .	Canton, O. . . . .	J. B. Wilson.
Chubb's Improved . . . . .	Grand Rapids, Mich. . . . .	G. Worthington, Mil.
Tompkins Co. . . . .		W. C. Raynor, F. du Lac.
Improved Sulky Wood-Tooth . . . . .	Horicon . . . . .	H. Barber & Co. *

*Anderson's Universal Feed Steamers.*—Made by H. Brown, Madison—a very convenient apparatus for the purpose.

*Bullard's Hay Tedder.*—Shown by Geo. Worthington, Milwaukee, is a valuable machine, which has given farmers great satisfaction.

*Corn Planters.*—The only one meriting attention was shown by J. B. Wait & Co., of Grand Haven, Mich.

*Cultivators.*—Ten entries under this head, viz.:

Cultivators.	Made at
Walking Horse Hoe . . . . .	Ft. Atkinson.
Wheel . . . . .	Mapleton.
Hawk Eye . . . . .	Moline, Ill.
Eureka . . . . .	Moline, Ill.
Grand Detour . . . . .	Dixon, Ill.
Garden Hand . . . . .	Evansville, Ind.
Star . . . . .	Rockford, Ill.
Western . . . . .	Moline, Ill.
Gorham's . . . . .	Rockford, Ill.
Hill's Improved . . . . .	Madison.

*Farm Gate Hinge.*—An improvement by E. A. Bushnell, effecting the purpose of enabling the farmer to lift his gate over obstructions; easily put on.

*Corn Stalk and Weed Coverer.*—A. A. Brown, Lake Mills.

A very ingenious contrivance, which can be attached to any plow, and is a simple but very ingenious device, it is said, in practical use.

*Farm Wagons.*—In the competition for the special premium offered by Messrs. Peirce & Whaling, John Lowth, of Monroe, received the 1st, and John Esch, of Milwaukee, the 2d prize.

*Sewer and Water Pipe.*—W. C. Turner, agent, Milwaukee, showed the various sizes of the Ohio Vitrified Pipe, which is claimed to be proof against the action of all acids and gases, heat and cold, exhaust steam, etc., being thoroughly vitrified.

Berthlet's cement sewer and drain pipes also attracted much attention. It was arranged in form of an arch, showing the manner in which it could be connected. They claim much in its praise.

#### MISCELLANEOUS MACHINERY.

The variety and number of the articles entered for exhibition in this department testified to a very gratifying increase in the interest felt in its success; and the throng of curious visitors from day to day, examining the numerous machines, was very great. Altogether, the show in Power Hall was the best ever made by the society. We notice briefly the various articles, some of them deserving much fuller mention than we are able to give them:

*Mortar and Brick Elevator.*—Miles Shepherd, Pontiac, Mich. This is a valuable improvement, saving the wearisome labor of men carrying loaded hods to the upper story of buildings, this machine running up four hods at a time with great facility. It runs by either hand or power, and is cheap and apparently durable.

*Axle Lathe, Aren's Patent.*—Robert Williams, Cordova, Ill. An ingenious and useful machine for fitting axles for thimble skeins.

*Bellows, Circular and Common.*—W. E. Waterhouse, Mil. A decided improvement on the ordinary bellows for smiths' use.

*Lath Bolters.—Power Saw Swedge.—Saw Swedge for gang or single saws.*—G. M. Hinkley, Milwaukee. These various implements are

admirably adapted by the inventor and maker for the purposes indicated, and are found to be very efficient in practical use.

**FILER, STOWELL & Co.**, Milwaukee, had on exhibition and in operation a large variety of machinery and tools, mostly applicable to saw mills, among them being: saw mill carriage and head blocks, saw jointers, axle lathe, gang lath mill, samples of saws various sizes, steam gauges, self oilers, etc., etc. The machinery made by this firm is widely and favorably known throughout the Northwest.

**O. L. PACKARD**, of "Packard's Machinery Agency," Milwaukee, added greatly to the interest of the exhibition by a valuable collection of samples of machinery sold by him, some of them in operation. Among his stock were four-sided iron frame stickers, shingle-mill and jointer, shingle buncher, sturtevant blower, hand and power bolt cutters, poney planer (in operation), double shaping machine, etc.—all first class machines, specially adapted for the western trade.

*Heater and Lime Catcher—Pump for Feeding Boilers.*—**James Shinff**, Milwaukee; home inventions, simple and well arranged for their purpose, and effective in practical use.

*Iron Shears*—**G. W. Marshall**, Big Spring; an ingenious labor-saving machine, which would, we judge, be an economical attachment to any smith's shop.

*Portable Trip Hammer*—**G. B. Cubberley**, Milwaukee; this home invention, worked out by the practical daily needs of a mechanic, cannot be commended too highly. It worked for itself, in the hands of a boy, and made many friends.

*Agricultural Steamers*—Three sizes, for cooking food for stock, by **Geo. Worthington & Co.**, Milwaukee, and **J. F. Antisdell**,—all of them compact, handy, easy to manage, and creditable to the inventors, makers, and exhibitors.

*Fanning Mills*—**Blake & Elliott**, Racine, had four of their well known mills running; **H. H. Brinton**, Chicago, the "Monitor" mill; **A. P. Dickey & Co.**, Racine, three of their machines, favorably known for years; while a new competitor for public favor appeared, made by **J. S. Rowell**, Beaver Dam, called the **L. D.**

Carpenter Angle Seive Mill, having a curious and novel construction of the sieves, bringing about with complete success a separation of the different varieties of seeds into different receptacles.

*Road Scraper.*—Steel bottom; A. P. Dickey & Co., Racine; worthy of special mention.

*Harvester Sharpener.*—Connell & Sturges, Newark, O.; a neat, convenient little machine, ingeniously adapted for sharpening the teeth of reapers and mowers.

*Climax Saw Gummer and Filer.*—H. J. Perkins; very high claims were made for this machine, which was in operation by power, and its work proved quite satisfactory to mill men, who examined it with interest.

*Clothes Dryers.*—Two were shown, one by E. B. Winship, Racine, the other by J. Ernest, Dunleith, Ill.

*Potato Bug Destroyer.*—Shown by B. F. Perry & Co., Madison; displays considerable ingenuity, and certainly a laudable purpose. Unfortunately no convenient opportunity occurred to ascertain whether the little striped pest would “down at its bidding.”

*Four Ton Victor Scales.*—Morton, Hull & Co., Chicago, Ill., had in operation one of their large scales, which are claimed to possess decided advantages, commending them to public favor.

*Buckeye Stump and Grubbing Machine.*—W. B. Trout, Watertown. This is a strong and durable machine, and must be very effective in use.

Hoffman, Billings & Co., Milwaukee, exhibited the well-known Knowles Steam Pump, for which they are agents. Also samples of hand and power pumps, hydraulic rams, rubber hose, packing and belting; also a variety of brass fittings and other brass goods, of which they are extensive manufacturers. This firm deserved and obtained much attention to their display of goods.

#### WHOLESALE DEALERS IN MACHINERY.

ARNOLD & YALE, wholesale dealers in machinery, Milwaukee, exhibited various sample machines for which they are agents, among them a power morticing machine, iron scales, a magnificent large, double-door fire-proof safe, heater and lime catcher, pres-

sure blower and exhauster, all reflecting credit upon the makers. Messrs. A. & Y. are agents for the Brownell & Kielmeier steam engines, two of which were in Power Hall, one a 12x24, stationary, and the other 10x16, driving the machinery in the hall.

E. P. ALLIS & Co., Reliance Works, Milwaukee, occupied the east end of the building, with a very extensive display of articles in their line. This house, at the special request of the officer in charge of the department, went to a large expense in placing on the ground a collection of machinery, etc., showing what manufacturers are doing in our state. They had on exhibition of steam engines, an 8x12 cylinder, 15 horse power pile driver, engine and boiler, the boiler making steam for a 7x16 stationary engine in operation, and driving a portable feed mill, Hutchinson corn sheller and Wright's steam pump. Also three other steam engines, respectively of 30, 40 and 75 horse power. They also exhibited the Stillwell heater and lime catcher, 2 large steam governors, 4 Leffel water wheels of different sizes, the Harris mill stone dressing machine, sets of mill stones, spindles and pinions, samples of heavy shafting and pulleys (one of the latter 12 feet in diameter), samples of cast iron water-pipe from 3 to 30 inches in diameter, boiler and radiators of Union Steam Heating Apparatus, etc.; and in their specialty of mill building, they had a complete portable two run flour mill with bolts, elevators, smutters, etc., the same as they made to order for the Japanese government, and a great variety of mill cleaning machinery from different popular makers.

THE MILWAUKEE AGRICULTURAL WORKS were well represented, by an assortment of well made grain cradles, scythe snaths and hand rakes, which they manufacture extensively.

C. A. BUTTLES, Milwaukee, whose specialities always merit attention at our fairs, had in this department handy step ladders, the celebrated Doty Washing Machine, and a very climax of convenience in a small way, a rotary hand power meat and vegetable cutter.

*Press and Strainer.*—W. D. Medberry, Sparta, exhibited a novel contrivance for this purpose, showing much ingenuity in

adapting means to the end in view. The same party had also a convenient sack and bag holder.

While the exhibition in this department largely exceeded that of any previous year, we still cannot refrain from remarking upon the great portion of the live industry and inventive genius of our state still unrepresented. How much would the amount, attractiveness and real value to both exhibitors and visitors be increased, if manufacturers throughout the state would see their interest in bringing, at these annual gatherings, their works and wares, directly before the eyes of an intelligent public.

Respectfully submitted,

W. W. WATSON,

*Chairman.*

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#### FRUIT AND FLOWER DEPARTMENT.

BY O. S. WILLEY, SUPERINTENDENT.

The exhibition in this department was much less in extent than it had been for a number of preceding years. There were a number of reasons for this, mainly confined to two. The amount of fruit raised in the state was much less than formerly, and of that raised, a much larger proportion was injured by insects, so much so, as to make it sometimes almost impossible to obtain perfect specimens from trees bearing full crops. There did not seem to be any lack of interest by exhibitors. All were anxious to do the best they could, but most collections were of less magnitude than usual. I note some of the principal exhibitors. If any are omitted, it is unintentional. Among professional exhibitors, I found in his usual place, G. P. Peffer, of Pewaukee, with 90 varieties of apples. This was a fine show, but not up to his usual quantity; showed pears in quite a variety, also plums and grapes. Took second premium, two first on sweepstakes, embracing in his collection beside apples, 17 crabs, 18 pears, 3 plums, 20 grapes, 3 raspberries, 2 cranberries and one each of quince, blackberry, barberry, chestnut, fig and currant.

G. J. Kellogg, of Janesville, had 60 plates of apples. Took the third premium. This fruit is good, and displays care in the selec-

tion by Mr. Kellogg. In this collection was a large and fine display of grapes. Took the first prize. All well ripened.

A. G. Tuttle, of Baraboo, did not like the idea of being outdone, and he was on hand with an unusual fine display of 63 varieties of apples, and took first premium. Sauk county, perhaps, can beat the world; one thing is certain, the fruit from that section seems to be very fine, and hard to compete against. His three Fameuse, as well as largest apple, carried off the prize. Mr. Tuttle's grapes were fine, but only took the third prize.

W. Wolf had 58 varieties of apples, and took the fourth premium. Mr. Wolf is an enthusiastic cultivator. Showed the heaviest apple and took the second premium on pears. Hope to see him again, with plenty of his German friends.

H. M. Thompson, of St. Francis, had on exhibition ten varieties of well grown and correctly named apples, and five varieties of grapes, which last took third premium.

Mrs. Alex. Mitchell, by her gardener, James Pollard, exhibited a fine collection of peaches, grown in tubs, under glass. These proved quite an attraction, for many looked upon them as the first fruit of the kind ever seen growing. Mrs. Mitchell's foreign grapes were also very attractive.

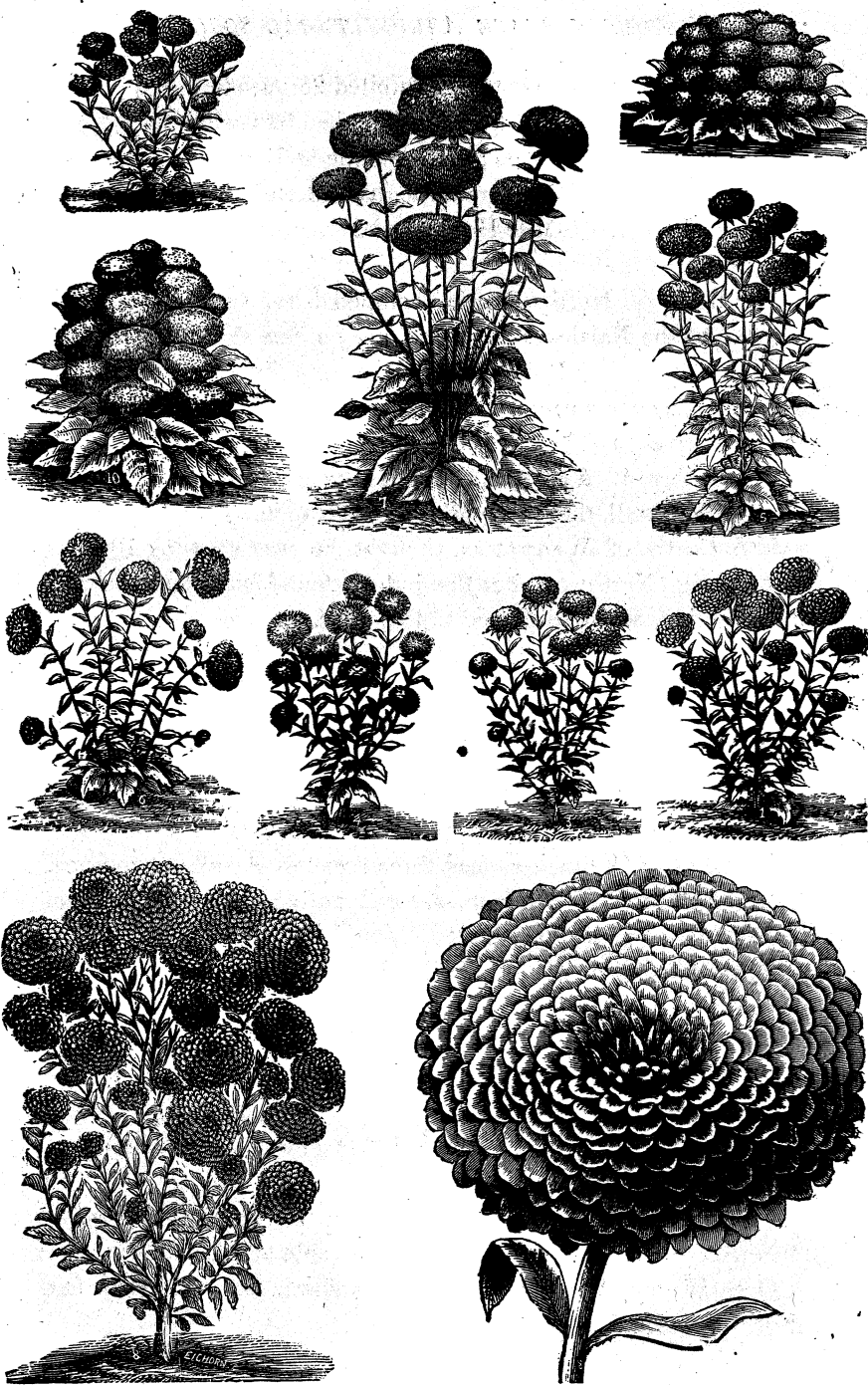
C. H. Greenman, of Milton, had the best collection, by far, of grapes. Others had more varieties, but these were particularly well ripened, and bunches very perfect. Took the first prize.

A singular coincidence in the premiums on grapes was that, in every case, whether single variety or more, the Delaware was in the list, thus showing the very high estimate that was placed upon it.

J. H. Jones, of Milwaukee, took the second premium on foreign grapes, shown on the vine growing in the boxes, and attracted a great deal of attention.

L. Woodard & Co., of Marengo, Ill., exhibited 85 varieties of correctly named apples. These were not strictly in competition with the other exhibitors, as the State Society only opened their doors to those of the state; but the committee, in view of the superior merit of this collection, awarded a gratuitous premium equal to the first.

The Non-Professional Cultivators were out in very good force.



*Asters, in Bloom.*



C. H. Jacobs, of Wauwatosa, exhibited 28 varieties of apples.

Mrs. J. W. Park, of Dodge's Corners, had 53 varieties of apples, and quite a variety of pears; all very fine and attractive.

D. B. Pilgrim, of West Granville, had 23 varieties of apples.

George Jeffrey, of 5-Mile House, had 27 varieties of apples, crabs, and grapes.

W. Reid, of North Prairie, competed for best 10 varieties adapted to the Northwest, and had, also, a fine show of grapes.

E. B. Thomas, of Dodge's Corners, was a lively competitor in the same department of apples and pears, and carried off his full share of prizes.

D. Huntley, of Appleton, did not take any premiums for best 10 varieties; still, they were good to look upon.

L. S. Curtis, of Wauwatosa, thought he was showing 10 sorts best for the Northwest, but the judges found but one which, in their opinion, could be placed in this class.

Daniel Gilser, of Painesville, had some very fine apples, but not as well named as was desirable.

L. Lawson, of Oak Creek, had Fameuse apples, that were famous.

F. C. Curtis, of Rocky Run, had four splendid specimens of Blue Pearmain, also the heaviest apple in this class.

D. Morgan, of Wauwatosa, had three varieties of well grown pears.

Mrs. J. B. Joy, of Madison, showed native or wild plums of more than ordinary quality.

F. S. Lawrence, of Janesville, had twenty-two varieties of grapes, all very attractive, and more than one envied him his success, and wished they might go and do likewise.

W. C. Priest, of Fond du Lac, put in his claim for best five varieties of grapes, and was reasonably successful.

D. P. and J. O. Myers, of Fox Lake, showed three varieties of Concord grapes; only fair.

M. Robinson, of Milwaukee, had extra fine Concord grapes.

Nursery grown trees attracted considerable attention.

O. S. Willey, Woodard & Co., of Madison, showed very fine fruit, ornamental trees and evergreens.

F. K. Phoenix, of Bloomington, Ill., fruit trees of apples, pears, plums and cherries.

Greenman, McGraw & Day, of Whitewater, had fine apple trees.

Stickney & Baumbach, of Wauwatosa, showed an especially fine lot of fruit and ornamental trees, also evergreens in large variety.

A. G. Tuttle, of Baraboo, had a superior collection of apple and pear trees, but arrived too late to enter into competition. This class can easily be made an interesting feature of the fairs, and one that I hope to see more fully developed—both for the interest of purchaser and grower.

A special attraction of the fair was Vick's special premiums. This drew out a lively competition among florists, and I think will result in much good in developing the floral interest in the state.

James Vick of Rochester N. Y., made a large and fine display of cut flowers, and of a very commendable nature, considering the great distance the flowers were brought. The committee recommended that instead of giving Mr. Vick a premium of "a few paltry dollars, the society give him the highest premium ever awarded to any exhibitor in our state, viz., a silver medal, suitably inscribed, and a diploma. We believe that this high honor is justly due to Mr. Vick, on account of the exceedingly meritorious character of his exhibition."

Other exhibitors in the floral department were Whitnall & Ellis, of Milwaukee, who excelled in their fine foliage plants. A case of Calladiums was much admired by all, as well as their beautiful collection of cut roses.

Mr. Dunlap's collection was creditable alike to his taste and skill as a cultivator, while Mr. Middlemass occupied equally as much room with a choice collection of a large variety well adapted to the wants of trade.

Close by these we found the large collection of W. Kitzrow, an old and expert florist.

These were the principal professional florists, and the premiums were about equally divided between them. All showed much taste and skill in the collection and arrangement of plants, cut flowers and bouquets.

Miss Kate Peffer competed, in her lively, pleasant manner, with the others na med, on cut flowers, and is deserving of much credit

for receiving several first prizes after expressing by heavy wagon, her pets a day's ride.

Mrs. Alex. Mitchell, by her gardener, J. Pollard, brought out and occupied the usual amount of space with choice specimen plants which attracted much attention, also a case of floral designs, bouquets and cut flowers.

Among the amateurs, H. W. Roby excelled them all with pot plants. Of these we may say, we seldom see a better private collection, and they received their full share of attention and premiums.

Mrs. Yale excelled in the culture of balsams; her show was fine.

Mrs. Parks and Mrs. Thomas, both are entitled to much praise for their efforts to please the people. As Wednesday, September 5, was a terrible day, yet with enthusiasm and courage these two ladies, up with, or far ahead of the lark, drove twenty miles, and were ready for duty on the fair ground by six o'clock in the morning. With fingers stiffened with cold, they arranged their flowers in fine order and carried off their full share of prizes.

H. G. Roberts' gladiolus, and Mrs. Plum's dahlias looked well and were creditable to the growers.

A very attractive floral design was placed on the table by Miss S. B. Bodtker, of Milwaukee, consisting of a rustic rural house, with twining vines overhead. The house was not of an elaborate architecture, but square in form, sided up with Lima beans. The internal arrangements we did not examine, but presume it to have been of the most modern style. In front, with rake, hoe and spade by his side, sat the venerable sage of Chappaqua, attired in corn husks, as if he had sought a little shade and rest while he wrote "What I Know about Farming." The design was original and well executed.

Altogether, we may say, this portion of the exhibition was a success, and satisfactory to exhibitors and people, for the public were permitted to look upon a better class of plants and flowers than of any previous year. It has not been my purpose to extol one exhibitor over another — all did well. Far less grumbling was heard over award of premiums than ever before, either creditable to the good judgment of the committees, or the common sense of the exhibitors.

DEPARTMENT OF FINE ARTS.

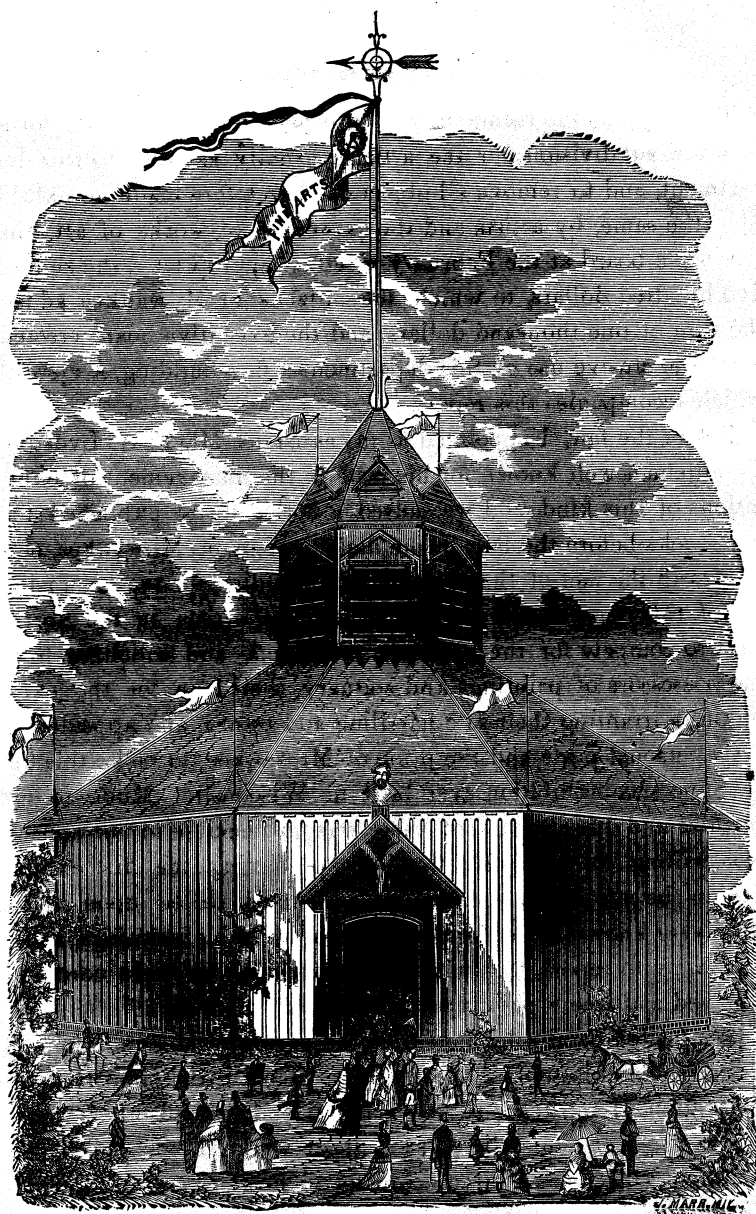
BY J. O. EATON, SUPERINTENDENT.

To carry out the recommendation in my report of 1871, for a separate subdivision for the articles usually assigned to this department, and to remove all objections heretofore made to exhibiting the same, by artists and the possessors of works of art, the executive board at the February meeting, appropriated the sum of five hundred dollars, to which the citizens of Milwaukee added the sum of one thousand dollars, and the executive board erected for the exclusive use of this department a fine building, a view of which accompanies this report.

Before the fair, I appointed as my assistant, Mr. F. A. Lydston, a gentleman well known for his taste in the management of exhibitions of this kind, and we caused a notice to be published for two weeks before the fair, in the daily papers of Milwaukee, setting forth the fact of the erection of a building for the exclusive use of this department, and calling upon all artists in the northwest to compete for the society's premiums, and soliciting from the possessors of paintings and statuary, their loan for the exhibition, warranting their safe handling and return, and appealed to their personal pride and the pride of Milwaukee, to make this the best fine arts exhibition ever held in Wisconsin. Much to our surprise and disappointment, there was no response to our appeal. Not willing to relinquish the hope of having the first exhibition in the new hall a success, we personally called upon many who were known to be the possessors of valuable paintings, and I am happy to report, that with few exceptions, we were cordially received and freely permitted to select for ourselves.

We made liberal selections from the parlors of Messrs. Mitchell, Roundy, Froeklestein, Andrews, Mix, Rood, Strickland, H. & J. Ludington, Hempstead, Hawley, Miller, Kellogg, and others whose names are not remembered; to all of whom I wish to tender the thanks of the executive board for their kindness in contributing to this department.

The contributions for the society premiums, although not as numerous as we had hoped, were in number and value very credita-



*Fine Arts' Hall.*

ble. A list of the premiums awarded in this department will be found in its appropriate place in this volume. Among the successful competitors will be found the names of W. Hunt, J. B. Staines, E. H. Dewey, F. A. Lydston, W. Cohler, W. Leist, Clark & Sherman, Charles Keller, G. F. Epende, W. O. Lydston, Mrs. J. T. Kavanaugh, Miss J. A. Hamilton, Miss Chase and others.

The exhibition of stereoscopic views of Wisconsin scenery, by H. H. Bennett, of Kilbourn City, chromos by the Milwaukee Oleograph Company, penmanship by the Spencerian Business College, lithograph and steele engraving by the Milwaukee Lithograph Company, carving in marble by A. Merrill, of Milwaukee, and specimens of sculpture by E. P. Knowles, of Madison, were each of high order, a credit alike to the exhibitors and the state.

I have set forth in detail our efforts to make this department a success for this reason: A weekly journal of Milwaukee, during the fair, and for some time after, endeavored to make it appear that this department was a failure, that its managers and the judges were incompetent to discharge their duties. Against the judgment of this editor (in whose paper the society did not advertise), we have the reports of the correspondents of the Chicago press, that it was a success, and a much finer exhibition than that of other western states.

In conclusion, I would recommend that the amount usually expended in collecting paintings for free exhibition, be added to the premiums offered, and that, in future, this part of the exhibition be left to the pride and liberality of the citizens where the fair is held.

## PREMIUMS AWARDED.

## HORSE DEPARTMENT.

*Class 1—Thoroughbred Horses.*

- Best stallion, 4 years old and over, J. J. Ross, Mineral Point, \$50.  
 Second best, Wm. Welch, Madison, \$25.  
 Best stallion, 3 years old and under 4, Wm. Brady, Peoria, Ill., \$30.  
 Best brood mare, 4 years old and over, Simon Ruble, Beloit, \$30.  
 Best filly, 3 years old and under 4, N. M. Ormond, Milwaukee, \$15.  
 Best filly, 2 years old and under 3, H. N. McCafferty, Columbus, \$10.  
 Second best, Simon Ruble, Beloit, \$5.  
 Best sucking filly foal, Simon Ruble, Beloit, \$10.

(C. C. PARKS,  
 H. B. CRANDALL,  
 S. HAYT,  
 Committee.)

*Class 2—Roadsters.*

- Best stallion, 4 years old and over, Wm. Leroy, Hartland, \$50.  
 Second best, A. L. Hoyt, Fond du Lac, \$25.  
 Best stallion, 2 years old and under 3, Geo. C. Stevens, Milwaukee, \$15.  
 Second best, Geo. C. Stevens, Milwaukee, \$10.  
 Best stallion, 1 year old and under 2, Richard Richards, Racine, \$10.  
 Best sucking stallion foal, E. Chapin, Mukwanago, \$10.  
 Best brood mare, 4 years old and over, A. L. Hoyt, Fond du Lac, \$30.  
 Second best, E. Chapin, Mukwanago, \$15.  
 Best filly, 2 years old and under 3, Richard Richards, Racine, \$10.  
 Second best, Geo. Murry, Racine, \$5.  
 Best filly, 1 year old and under 2, Geo. C. Stevens, Milwaukee, \$10.  
 Second best, Richard Richards, Racine, \$5.  
 Best sucking filly foal, Geo. Murry, Racine, \$10.  
 Second Best, P. M. Perkins, Burlington, \$5.

(C. C. PARKS,  
 H. B. CRANDALL,  
 S. HAYT,  
 Committee.)

*Class 3—Horses for General Purposes.*

- Best stallion, 4 years old and over, Thomas Irvin, Mukwanago, \$30.  
 Second best, J. A. Warden, Minnesota Junction, \$15.  
 Best stallion, 3 years old and under 4, Isaac Anthony, Fond du Lac, \$20.  
 Second best, Geo. W. Church, Menomonee Falls, \$10.  
 Best stallion, 1 year old and under 2, Geo. Murry, Racine, \$8.  
 Best brood mare, J. B. Duclas, Black Earth, \$20.  
 Second best, Simon Ruble, Beloit, \$10.

Best filly, 3 years old and under 4, K. Isaacson, Black Earth, \$15.  
 Second best, D. P. Webster, Mukwanago, \$10.  
 Best filly, 2 years old and under 3, Richard Richards, Racine, \$10.  
 Second best, Geo. Murry, Racine, \$5.

(SAMUEL DRAKELY,  
 S. J. WILSON,  
 BENJ. MARK.  
*Committee.*)

#### *Class 4—Draft Horses.*

Best stallion, 4 years old and over, Thomas Irvin, Mukwanago, \$40.  
 Second best, Peter Wakem, Madison, \$20.  
 Best stallion, 3 years old and under 4, Peter Wakem, Madison, \$15.  
 Best brood mare, 4 years old and over, Simon Ruble, Beloit, \$20.  
 Second best, Joseph Pilgrim, West Granville, \$10.  
 Best filly, 3 years old and under 4, E. M. De Puy, East Troy, \$10.

(SAMUEL DRAKELY,  
 S. J. WILSON,  
 S. HAYT.  
*Committee.*)

#### *Class 5—Jacks and Mules.*

Best jack, John Matthews, Darlington, \$20.  
 Second best, F. Bell, Brookfield, \$10.  
 Best jenny, John Matthews, Darlington, \$20.  
 Second best, F. Bell, Brookfield, \$10.  
 Best pair working mules, John Atkin, Brookfield, \$10.  
 Second best, J. W. Park, Dodge's Corners, \$5.

(SAM'L DRAKELY,  
 H. B. CRANDALL,  
 E. B. MINER.  
*Committee.*)

#### *Class 6—Matched Horses and Mares.*

Best pair matched horses, E. S. Higgins, Milwaukee, \$30.  
 Second best, A. H. Swan, Wauwatosa, \$15.  
 Best pair roadsters, C. M. Cottrill, Milwaukee, \$30.  
 Second best, S. J. Hodge, Hartford, \$15.  
 Best pair farm horses, Charles Cook, Milwaukee, \$20.  
 Second best, R. Barnett, Eureka, \$10.  
 Best pair draft horses, Simon Ruble, Beloit, \$20.

(GEORGE A. MASON,  
 S. HAYT,  
 E. ENOS,  
*Committee.*)

#### *Class 7—Geldings or Mares for Single Harness.*

Best gelding or mare for single harness, John Plankinton, Milwaukee, \$30.  
 Second best, M. H. Thompson, Milwaukee, \$15.

(GEO. A. MASON,  
 S. HAYT,  
 E. ENOS,  
*Committee.*)



*Class 8—Trotters.*

Best and fastest trotting stallion over 5 years, John Bush, Ives Grove, "Hero," \$100.

Second best, V. Bassinger, Racine, "Andrew Jackson," \$50.

Best and fastest trotting mare over 5 years old, J. S. Rowell, Beaver Dam, "Badger Girl," \$60.

Second best, E. P. Dickey, Racine, "Lady Mack," \$30.

Best and fastest trotting gelding over 5 years old, C. C. Westbrook, Manchester, "C. Westbrook," \$60.

Second best, E. C. Sage, New Lisbon, "Thunder," \$30.

Best and fastest trotting matched span, over 5 years old, C. C. Westbrook, Manchester, \$60.

Second best, O. N. Russell, Waupun, \$30.

## SWEEPSTAKES ON TROTTING.

Best and fastest trotting, J. S. Rowell, Beaver Dam, "Badger Girl," time, 2.31-2.32½, \$300.

(GEO. A. MASON,  
J. L. BURNHAM,  
C. SIMMONS,  
SIMON RUBLE,  
*Committee.*)

*Class 9—Running Horses.*

Two mile heats, best 2 in 3, weights for age, J. J. Ross, Mineral Point, "Canada," time 3.54, first premium, \$200.

Second best, Wm. Brady, Peoria, Ill., "Bob Lamar," \$100.

Mile heats, best 2 in 3, weights for age, Wm. Brady, Peoria, Ill., "Bob Lamar," time 1.53¾, first premium, \$100.

Second best, A. B. Douglass, Brodhead, "Souvenir," \$50.

Best running colt, mile dash, N. M. Ormond, Milwaukee, "Lady Milford," three years old, time 2.20, \$50.

Second best, H. W. McCafferty, "Columbus," filly two years old, \$25.

(GEO. A. MASON,  
C. SIMMONS,  
SIMON RUBLE,  
*Committee.*)

*Class 10—Sweepstakes on Horses.*

Best stallion and five of his colts, Geo. Murry, Racine, grand silver medal and \$100.

Best brood mare, with foal by her side, Simon Ruble, Beloit, grand silver medal and \$50.

S. B. DAVIS,  
GEO. A. MASON,  
H. B. CRANDALL,  
*Committee.*

## CATTLE DEPARTMENT.

*Class 11—Short Horns.*

Best bull, 4 years old and over, C. C. Parks, Waukegan, Ill., \$30.

Second best, C. C. Parks, Waukegan, Ill., \$20.

Best bull, 3 years old and over, T. S. Redford, Lisbon, \$30.

Second best, G. Lawrence, Waukesha, \$15.

Best bull, 2 years old and under 3, C. C. Parks, Waukegan, Ill., \$30.

- Second best, Geo. Murry, Racine, \$15.  
 Best bull, 1 year old and under 2, Geo. Murry, Racine, \$30.  
 Second best, E. & J. Smith, Rochester, \$15.  
 Best bull calf, 6 months and under 12, C. C. Parks, Waukegan, Ill., \$15.  
 Second best, Geo. Murry, Racine, \$10.  
 Best bull calf, under 6 months, C. C. Parks, Waukegan, Ill., \$15.  
 Second best, J. C. Meacham, Genesee, \$10.  
 Best cow, 4 years old and over, C. C. Parks, Waukegan, Ill., \$25.  
 Second best, C. C. Parks, Waukegan, Ill., \$15.  
 Best cow, 3 years old and over, C. C. Parks, Waukegan, Ill., \$25.  
 Second best, Geo. Murry, Racine, \$15.  
 Best heifer, 2 years old and under 3, C. C. Parks, Waukegan, Ill., \$25.  
 Second best, Geo. Murry, Racine, \$15.  
 Best heifer, 1 year old and under 2, Geo. Murry, Racine, \$25.  
 Second best, Geo. Murry, Racine, \$15.  
 Best heifer calf, 6 months old and under 12, C. C. Parks, Waukegan, Ill., \$10.  
 Second best, C. C. Parks, Waukegan, Ill., \$5.  
 Best heifer calf under 6 months old, C. C. Parks, Waukegan, Ill., \$10.  
 Second best, Geo. Murry, Racine, \$5.

(GEO. E. BRYANT,  
S. LAYTON,  
Committee.)

*Class 12 — Devons.*

- Best bull, 4 years old and over, Luther Rawson, Oak Creek, \$20.  
 Second best, W. F. Smith, Elkhorn, \$10.  
 Best bull, 2 years old and under 3, Luther Rawson, Oak Creek, \$20.  
 Best bull, 1 year old and under 2, Jonathan Stoddard, Greenbush, \$20.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best bull calf, under 6 months, Hiram Gooder, Rochester, \$10.  
 Second best, Luther Rawson, Oak Creek, \$5.  
 Best cow, 4 years old and over, W. F. Smith, Elkhorn, \$15.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best cow, 3 years old and under 4, Hiram Gooder, Rochester, \$15.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best heifer, 2 years old and under 3, W. F. Smith, Elkhorn, \$15.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best heifer, 1 year old and under 2, Hiram Gooder, Rochester, \$15.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best heifer calf, 6 months old and under 12, Luther Rawson, Oak Creek, \$6.  
 Second best, Luther Rawson, Oak Creek, \$3.  
 Best heifer calf under 6 months old, W. F. Smith, Elkhorn, \$6.  
 Second best, Luther Rawson, Oak Creek, \$3.

(RICHARD RICHARDS,  
DAVID RHODA,  
D. M. ASPINWALL,  
Committee.)

*Class 13—Ayrshires.*

- Best bull, 4 years old and over, H. S. Durand, Racine, \$20.  
 Best bull, 2 years old and under 3, Jonathan Stoddard, Greenbush, \$20.  
 Second best, Grand Chute Club, Appleton, \$10.  
 Best bull, one year old and under 2, Jonathan Stoddard, Greenbush, \$20.  
 Best bull calf 6 months old and under 12, T. S. Capron, Oconomowoc, \$10.  
 Best bull calf under 6 months old, D. Hundley, Appleton, \$10.  
 Second best, James McNee, Emerald Grove, \$5.  
 Best cow, 4 years old and over, Jonathan Stoddard, Greenbush, \$15.  
 Second best, H. S. Durand, Racine, \$10.  
 Best cow, 3 years old and under 4, James McNee, Emerald Grove, \$15.  
 Second best, H. S. Durand, Racine, \$10.  
 Best heifer, 2 years old and under 3, H. S. Durand, Racine, \$15.

- Second best, D. Huntly, Appleton, \$10.  
 Best heifer, 1 year old and under 2, H. S. Durand, Racine, \$15.  
 Second best, Jonathan Stoddard, Greenbush, \$10.  
 Best heifer calf, 6 months old and under 12, T. S. Capron, Oconomowoc, \$6.  
 Second best, H. S. Durand, Racine, \$3.  
 Best heifer calf, under 6 months old, H. S. Durand, Racine, \$6.  
 Second best, Jonathan Stoddard, Greenbush, \$3.

(RICHARD RICHARDS,  
 DAVID RHODA,  
 D. M. ASPINWALL,  
*Committee.*)

*Class 14—Alderneys.*

- Best bull, 3 years old and under 4, H. S. Durand, Racine, \$20.  
 Best bull, 2 years old and under 3, J. A. Warder, Minnesota Junction, \$20.  
 Best bull, 1 year old and under 2, Lloyd Breck, Summit, \$20.  
 Best bull calf, under 6 months old, H. S. Durand, Racine, \$10.  
 Second best, H. S. Durand, Racine, \$5.  
 Best cow, 4 years old and over, H. S. Durand, Racine, \$15.  
 Best heifer, 2 years old and under 3, H. S. Durand, Racine, \$15.  
 Best heifer, 1 year old and under 2, H. S. Durand, Racine, \$15.  
 Second best, H. S. Durand, Racine, \$10.  
 Best heifer calf, under six months old, H. S. Durand, Racine, \$6.  
 Second best, H. S. Durand, Racine, \$3.

(RICHARD RICHARDS,  
 DAVID RHODA,  
 D. M. ASPINWALL,  
*Committee.*)

*Class 15—Grade Cattle and Working Oxen.*

- Best grade cow, 3 years old and over, E. and J. Smith, Rochester, \$15.  
 Second best, E. and J. Smith, Rochester, \$10.  
 Best grade heifer, 2 years old and under 3, E. and J. Smith, Rochester, \$15.  
 Second best, Hiram Gooder, Rochester, \$10.  
 Best heifer, 1 year old and under 2, S. A. Tenney, Durham Hill, \$15.  
 Second best, E. and J. Smith, Rochester, \$10.  
 Best heifer calf, under 6 months old, F. Ludington, Milwaukee, \$6.  
 Second best, E. and J. Smith, Rochester, \$3.  
 Best yoke working oxen, Luther Rawson, Oak Creek, \$20.  
 Second best, Luther Rawson, Oak Creek, \$10.  
 Best 2 year old steers, Luther Rawson, Oak Creek, \$10.

(LEWIS CLARK,  
 E. G. FOWLER,  
 D. B. RUDD,  
*Committee.*)

*Class 16—Milch Cows.*

- Best milch cow of any breed, 4 years old and over, E. & J. Smith, Rochester, \$30.  
 Second best, M. L. Butterfield, Waukesha, \$15.  
 Best milch cow of any breed, 3 years old and under 4, M. L. Butterfield, Waukesha, grand silver medal and \$20.

(LEWIS CLARK,  
 E. G. FOWLER,  
 D. B. RUDD,  
*Committee.*)

*Class 17—Fat Cattle.*

Best pair fat oxen, 5 years old and over, D. McGeoch, **Wauwatosa, \$20.**  
 Best fat cow, steer or heifer, E. & J. Smith, Rochester, **\$10.**

(LEWIS CLARK,  
 E. G. FOWLER,  
 D. B. RUDD,  
*Committee.*)

*Class 18—Herds.*

Best bull and 5 cows, or heifers over 5 years old, C. C. Parks, Waukegan, Ill.,  
**\$100.**

Second best, Geo. Murry, Racine, **\$50.**

Best bull of any age or breed, Geo. Murry, Racine, **\$50.**

Second best, C. C. Parks, Waukegan, Ill., **\$25.**

Best 5 calves, male and female, under 1 year old, of any breed, C. C. Parks,  
 Waukegan, Ill., **\$25.**

Second best, Geo. Murry, Racine, **\$15.**

Best cow or heifer of any age or breed, C. C. Parks, Waukegan, Ill., **\$40.**

Second best, C. C. Parks, Waukegan, Ill., **\$20.**

S. LAYTON,  
 RICHARD RICHARDS,  
 J. W. WOOD,  
*Committee.*

## SHEEP DEPARTMENT.

*Class 19—American Merinos.*

Best buck, 2 years old and over, John H. Paul, Genessee, **\$20.**

Second best, A. and P. Hamburt, Caldwell's Prairie, **\$10.**

Best buck, 1 year old and under 2, J. G. Putnam, Neosho, **\$15.**

Second best, A. and P. Hamburt, Caldwell's Prairie, **\$10.**

Best pen 3 buck lambs, A. and P. Hamburt, Caldwell's Prairie, **\$10.**

Second best, O. Cook, Whitewater, **\$5.**

Best pen 10 ewe lambs, John H. Paul, Genessee, **\$30.**

Second best, O. Cook, Whitewater, **\$10.**

Best pen 3 ewe lambs, 2 years old and over, L. Eastman, Pleasant Prairie, **\$20.**

Second best, O. Cook, Whitewater, **\$10.**

Best pen 10 ewe lambs, 1 year old and under 2, O. Cook, Whitewater, **\$20.**

Second best, John H. Paul, Genessee, **\$15.**

Best pen 3 ewe lambs, 1 year old and under 2, J. G. Putnam, Neosho, **\$15.**

Second best, O. Cook, Whitewater, **\$10.**

Best pen 10 ewe lambs, John H. Paul, Genessee, **\$20.**

Second best, O. Cook, Whitewater, **\$10.**

Best pen 3 ewe lambs, O. Cook, Whitewater, **\$10.**

Second best, D. Kelly & Son, Chicago, Ill., **\$5.**

The committee on American Merinos, in making their report, would say that they have found a very large number of first class sheep on exhibition, and in some instances have found it difficult to decide which were entitled to the premiums. We also find the interest in fine wooled sheep largely on the increase. We would say to the wool growers of the state, take care of the sheep, and they will take care of you.

(R. T. GRAVES,  
 M. H. SMITH,  
 C. K. STEWART,  
 J. P. HARLOW,  
*Committee.*)

*Class 20—Long Wool Cotswold.*

- Best buck, 2 years old and over, C. C. Parks, Waukegan, Ill., \$20.  
 Second best, C. C. Parks, Waukegan, Ill., \$10.  
 Best buck, 1 year old and under 2, Wm. Rhodes, Salem Station, \$2.  
 Second best, F. Ludington, Milwaukee, \$10.  
 Best pen 3 buck lambs, Wm. Rhodes, Salem Station, \$10.  
 Second best, A. F. Pratt, Waukesha, \$5.  
 Best pen 3 ewes, 2 years old and over, C. C. Parks, Waukegan, Ill., \$20.  
 Second best, C. C. Parks, Waukegan, Ill., \$10.  
 Best pen 3 ewes, 1 year old and under 2, T. S. Capron, Oconomowoc, \$15.  
 Second best, C. C. Parks, Waukegan, Ill., \$10.  
 Best pen 3 ewe lambs, C. C. Parks, Waukegan, Ill., \$10.  
 Second best, E. Porter, Waukesha, \$5.

Your committee are of the opinion that no better exhibition of Cotswold sheep was ever made in the state.

(N. A. SPOONER,  
 GEORGE KEYS,  
 MATTHEW TOWERS,  
*Committee.*)

*Class 21—Long Wool—not Cotswold.*

- Best buck, 2 years old and over, John Matthews, Darlington, \$20.  
 Second best, E. Porter, Waukesha, \$10.  
 Best buck, 1 year old and under 2, E. Porter, Waukesha, \$15.  
 Second best, C. C. Parks, Waukegan, Ill., \$10.  
 Best pen 3 buck lambs, E. Porter, Waukesha, \$10.  
 Second best, E. Porter, Waukesha, \$5.  
 Best 3 ewes, 2 years old and over, John Matthews, Darlington, \$20.  
 Second best, E. Porter, Waukesha, \$10.  
 Best pen 3 ewes, 1 year old and under 2, E. Porter, Waukesha, \$15.  
 Second best, E. Porter, Waukesha, \$10.  
 Best pen 3 ewe lambs, E. Porter, Waukesha, \$10.  
 Second best, E. Porter, Waukesha, \$5.

The exhibition of class 21, your committee regard as very fine.

(N. A. SPOONER,  
 GEORGE KEYS,  
 MATTHEW TOWERS,  
*Committee.*)

*Class 22—Southdowns.*

- Best buck, 2 years old and over, Peter Wakem, Madison, \$20.  
 Second best, M. Towers, Omro, \$10.  
 Best buck, 1 year old and under 2, C. C. Parks, Waukegan, Ill., \$15.  
 Second best, G. H. Daubner, Brookfield Center, \$10.  
 Best pen 3 buck lambs, G. H. Daubner, Brookfield Center, \$10.  
 Best pen 3 ewes, 3 years old and over, C. C. Parks, Waukegan, Ill., \$20.  
 Second best, G. H. Daubner, Brookfield Center, \$10.  
 Best pen 3 ewes, 1 year old and under 2, C. C. Parks, Waukegan, Ill., \$15.  
 Second best, G. H. Daubner, Brookfield Center, \$10.  
 Best pen 3 ewe lambs, C. C. Parks, Waukegan, Ill., \$10.  
 Second best, G. H. Daubner, Brookfield Center, \$5.

(E. PORTER,  
 GEORGE KEYS,  
 JOHN MATTHEWS,  
*Committee.*)

*Class 23—Fat Sheep.*

- Best fat sheep, not less than 3, E. Porter, Waukesha, \$10.  
 Second best, T. S. Capron, Oconomowoc, \$5.  
 Best Cashmere buck, I. S. Hazleton, Brookfield Center, \$15.  
 Best Cashmere ewe, I. S. Hazleton, Brookfield Center, \$10.  
 Best Cashmere kid, I. S. Hazleton, Brookfield Center, \$5.]

E. PORTER,  
 GEORGE KEYS,  
 MATTHEW TOWERS,  
*Committee.*

## SWINE DEPARTMENT.

*Class 24—Chester Whites.*

- Best boar, 2 years old and over, John Taylor, Waupun, \$15.  
 Second best, John Taylor, Waupun, \$10.  
 Best boar, 1 year old and under 2, Rodney Seaver, Darien, \$10.  
 Second best, J. B. Cross, Milwaukee, \$5.  
 Best breeding sow, 2 years old and over, J. B. Cross, Milwaukee, \$15.  
 Second best, John Taylor, Waupun, \$10.  
 Best breeding sow, 1 year old and under 2, John Taylor, Waupun, \$10.  
 Second best, Rodney Seaver, Darien, \$5.  
 Best breeding sow, with litter of pigs not less than 4, John Taylor, Waupun, \$15.  
 Second best, M. Robinson, Milwaukee, \$10.  
 Best boar pig, under 1 year old, John Taylor, Waupun, \$10.  
 Second best, Rodney Seaver, Darien, \$5.  
 Best sow pig, under 1 year old, Rodney Seaver, Darien, \$10.  
 Second best, John Taylor, Waupun, \$5.

(L. B. PATTEN,  
 E. WING,  
 W. D. BOISE,  
*Committee.*)

*Class 24—Berkshires.*

- Best boar, 2 years old and over, Richard Richards, Racine, \$15.  
 Second best, F. Ludington, Milwaukee, \$10.  
 Best boar, 1 year old and under 2, Richard Richards, Racine, \$10.  
 Second best, S. H. Seamans, Wauwatosa, \$5.  
 Best breeding sow, 2 years old and over, Richard Richards, Racine, \$15.  
 Second best, David Crinklaw, Marengo, Ill., \$10.  
 Best breeding sow, 1 year old and under 2, David Crinklaw, Marengo, Ill., \$10.  
 Second best, Richard Richards, Racine, \$5.  
 Best breeding sow, with litter of pigs, not less than 4, F. Ludington, Milwaukee, \$15.  
 Second best, W. M. Ormond, Milwaukee, \$10.  
 Best boar pig, under 1 year old, Richard Richards, Racine, \$10.  
 Second best, F. Ludington, Milwaukee, \$5.  
 Best sow pig, under 1 year old, James Magson, Walworth, \$10.  
 Second best, Richard Richards, Racine, \$5.

(L. B. PATTEN,  
 E. WING,  
*Committee.*)

*Class 24—Poland China.*

- Best boar, 2 years old and over, J. Jeffers, Darien, \$15.  
 Best boar, 1 year old and under 2, A. F. Pratt, Waukesha, \$10.  
 Best breeding sow, 2 years old and over, J. Jeffers, Darien, \$15.  
 Best breeding sow, 1 year old and under 2, A. F. Pratt, Waukesha, \$10.  
 Best breeding sow with litter of pigs, not less than 4, Rodney Seaver, Darien, \$15.  
 Second best, J. Jeffers, Darien, \$10.  
 Best boar pig, under 1 year old, A. F. Pratt, Waukesha, \$10.  
 Second best, Rodney Seaver, Darien, \$5.  
 Best sow pig, under 1 year old, Rodney Seaver, Darien, \$10.  
 Second best, J. Jeffers, Darien, \$5.

(L. B. PATTEN,  
 E. WING,  
*Committee.*)

*Class 24—Essex.*

- Best boar, 1 year old and under 2, Richard Richards, Racine, \$10.  
 Second best, R. B. Allen, Hartford, \$5.  
 Best breeding sow, 2 years old and over, J. Jeffers, Darien, \$15.  
 Best breeding sow, 1 year old and under 2, G. P. Pepper, Pewaukee, \$10.  
 Second best, Richard Richards, Racine, \$5.  
 Best breeding sow with litter of pigs, not less than 4, J. Jeffers, Darien, \$15.  
 Second best, Richard Richards, Racine, \$10.  
 Best boar pig under 1 year old, Richard Richards, Racine, \$10.  
 Second best, J. Jeffers, Darien, \$5.  
 Best sow pig under 1 year old, J. Jeffers, Darien, \$10.

(L. B. PATTEN,  
 E. WING,  
 W. D. BOISE,  
*Committee.*)

*Class 24—Special Premiums.*

[Offered by Messrs. Plankinton & Armour, Layton & Co., James T. Woolley, L. Farlan, Van Kirk & McGeoch, pork packers of Milwaukee.]

- Best boar of any age or breed, J. Magson, Walworth, \$50.  
 Best sow of any age or breed, J. Magson, Walworth, \$50.  
 Best boar and sow of any age or breed, with 5 pigs of same breed, F. Ludington, Milwaukee, \$50.  
 Second best, Rodney Seaver, Darien, \$25.  
 Best 6 pigs under 8 months old, Richard Richards, Racine.

F. LAYTON,  
 WM. PLANKINTON,  
 P. MCGEOCH,  
 C. MEINERT,  
*Committee.*

## POULTRY DEPARTMENT.

*Class 25.*

- Best trio gray dorkings, Henry Handy, Palmyra, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio white dorkings, S. H. Seamans, Wauwatosa, \$3.  
 Best trio black Spanish, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio Polands, S. H. Seamans, Wauwatosa, \$3.

- Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio Hamburgs, P. A. Van Vracken, Wauwatosa, \$3.  
 Second best, P. A. Van Vracken, Wauwatosa, \$2.  
 Trio silver spangled Hamburgs, S. H. Seamans, Wauwatosa, worthy of special notice.  
 Best trio game fowls, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio white Leghorns, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio buff Cochins, S. H. Seamans, Wauwatosa, \$3.  
 Second best, Henry Handy, Palmyra, \$2.  
 Best trio partridge Cochins, Henry Handy, Palmyra, \$3.  
 Second best, S. H. Seamans, Wauwatosa.  
 Best trio light Brahmas, P. A. Van Vranken, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio dark Brahmas, P. Best & Co., Milwaukee, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio Houdans, P. A. Van Vracken, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best trio bantams, S. H. Seamans, Wauwatosa, \$3.  
 Second best, John Dearsley, Wauwatosa, \$2.  
 Best pair bronze turkeys, S. H. Seamans, Wauwatosa, \$3.  
 Second best, P. Putnam, Dodge's Corners, \$2.  
 Best pair Muscovy ducks, S. H. Seamans, Wauwatosa, \$3.  
 Second best, E. P. Richardson, Milwaukee, \$2.  
 Best pair of Aylesbury ducks, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best pair Rouen ducks, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best pair Bremen geese, S. H. Seamans, Wauwatosa, \$3.  
 Second best, S. H. Seamans, Wauwatosa, \$2.  
 Best and greatest variety of poultry, choice breeds, shown by one person, S. H. Seamans, Wauwatosa. Grand silver medal and \$15.

Your committee report that in their opinion the display of poultry was more than usually creditable. Many varieties were shown on which no premiums were offered. We would advise a more comprehensive list in the future.

I. J. HOILE,  
 JOHN DEARSLEY,  
 ALANSON FILER,

*Committee.*

## AGRICULTURAL DEPARTMENT.

### *Class 26—Field Products.*

- Best bushel spring wheat—club—J. S. Harvey, Milwaukee, \$5.  
 Second best, A. J. Phillips, West Salem, \$3.  
 Best bushel spring wheat—Rio Grande or China Tea—Wm. Simpson, Sussex, \$5.  
 Second best, R. B. Allen, Hartland, \$3.  
 Best bushel spring wheat—Fife—F. Davis, Oshkosh, \$5.  
 Second best, Joseph Pilgrim, West Granville, \$3.  
 Best bushel white winter wheat, J. W. Wood, Baraboo, \$5.  
 Second best, Wm. Andrews, Reedsburg, \$5.  
 Best bushel rye, J. S. Harvey, Milwaukee, \$5.  
 Second best, Wm. Reid, North Prairie, \$3.  
 Best bushel oats, F. S. Capron, Oconomowoc, \$5.



- Second best, J. W. Park, Dodge's Corners, \$3.  
 Best bushel barley, D. T. Pilgrim, West Granville, \$5.  
 Second best, J. W. Park, Dodge's Corners, \$3.  
 Best bushel buckwheat, F. S. Capron, Oconomowoc, \$5.  
 Second best, D. T. Pilgrim, West Granville, \$3.  
 Best bushel flax seed, F. Davis, Oshkosh, \$5.  
 Second best, Wm. Simpson, Sussex, \$3.  
 Best bale hops, Wm. Graham, Delafield, \$5.  
 Second best, L. S. Palmer, Baraboo, \$3.  
 Best bushel timothy seed, F. S. Capron, Oconomowoc, \$5.  
 Second best, John Aitkin, Brookfield, \$3.  
 Best bushel clover seed, E. J. Grover, Wauwatosa, \$5.  
 Second best, F. S. Capron, Oconomowoc, \$3.  
 Best bushel peas, J. W. Park, Dodge's Corners, \$5.  
 Second best, F. Davis, Oshkosh, \$3.  
 Best bushel beans, F. S. Capron, Oconomowoc, \$5.  
 Second best, J. W. Park, Dodge's Corners, \$3.  
 Best bushel dent corn, J. W. Park, Dodge's Corners, \$5.  
 Second best, National Asylum, Milwaukee, \$3.  
 Best bushel flint corn, E. J. Grover, Wauwatosa, \$5.  
 Second best, John Aitkin, Brookfield, \$3.  
 Best bushel early potatoes (early rose), J. W. Park, Dodge's Corners, \$5.  
 Second best, D. T. Pilgrim, West Granville, \$3.  
 Best bushel late potatoes (Russell), E. M. Du Puy, East Troy, \$5.  
 Second best, O. J. Smith, Wauwatosa, \$3.  
 Best bushel carrots, J. Eager, Milwaukee, \$3.  
 Second best, National Asylum, Milwaukee, \$2.  
 Best bushel turnips, F. S. Capron, Oconomowoc, \$3.  
 Second best, J. Eager, Milwaukee, \$2.  
 Best bushel onions, National Asylum, Milwaukee, \$3.  
 Second best, J. W. Park, Dodge's Corners, \$2.  
 Best 10 pounds tobacco, Nels T. Kravige, Albion, \$5.  
 Second best, M. L. Butterfield, Waukesha, \$3.  
 Best 6 squashes, P. Putnam, Dodge's Corners, \$5.  
 Second best, F. Davis, Oshkosh, \$3.  
 Best 6 pumpkins, P. Putnam, Dodge's Corners, \$5.  
 Second best, E. B. Thomas, Dodge's Corners, \$3.  
 Best dozen watermelons, E. Elliott, Lone Rock, \$5.  
 Second best, J. W. Park, Dodge's Corners, \$3.  
 Best exhibition field products, 5 varieties of cereals, and 12 varieties in all,  
 F. Davis, Oshkosh, grand silver medal and \$30.  
 Second best, J. W. Park, Dodge's Corners, bronze medal and \$15.  
 University Experimental Farm, Madison, exhibition of cereals and garden  
 products, not for competition, diploma.  
 E. Elliott, Lone Rock, 2 stalks joint pop-corn, commended.

Special premiums offered by Milwaukee Chamber of Commerce.

- Best bushel winter wheat—white winter—J. W. Wood, Baraboo, \$25.  
 Best bushel spring wheat—Odessa—H. A. Jay, Prescott, \$25.

In this department there was a much better display than could have been reasonably hoped for considering the extreme drought in many parts of the state. The samples of wheat shown were very fine, and the exhibition from the University Farm at Madison was worthy of high commendation. We look forward with interest to the experiments there being made, anticipating material and lasting benefits to result to the agricultural interests of the state.

GEORGE G. SWAIN,  
 I. J. HOILE,  
 A. SHERMAN,  
*Committee.*

*Class 27 — Garden Vegetables.*

- Best 12 beets, Mrs. E. B. Thomas, Dodge's Corners, \$2.  
 Second best, National Asylum, Milwaukee, Transactions.  
 Best 12 parsnips, J. Eager, Milwaukee, \$2.  
 Second best, R. H. Savin, Milwaukee, Transactions.  
 Best 3 heads cabbage, Mrs. E. B. Thomas, Dodge's Corners, \$2.  
 Second best, D. T. Pilgrim, West Granville, Transactions.  
 Best 12 tomatoes, National Asylum, Milwaukee, \$2.  
 Second best, Mrs. E. B. Thomas, Dodge's Corners, Transactions.  
 Best 12 purple egg plants, J. Eager, Milwaukee, \$2.  
 Best 12 sweet potatoes, G. P. Peffer, Pewaukee, \$2.  
 Best half-peck lima beans, National Asylum, Milwaukee, \$2.  
 Second best, Mrs. E. B. Thomas, Dodge's Corners, Trans.  
 Best exhibition garden products, not less than 10 varieties, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
 Samples winter radish, early sweet corn and evergreen sweet corn, Mrs. E. B. Thomas, Dodge's Corners, highly commended.

I. J. HOILE,  
 A. FILER,  
 JOHN DEARSLEY,  
*Committee.*

*Class 28 — Products of Flouring Mill, Dairy and Apiary.*

- Best barrel winter wheat flour, J. W. Park, Dodge's Corners, grand silver medal and \$10.  
 Best barrel spring wheat flour, J. W. Park, Dodge's Corners, grand silver medal and \$10.  
 Second best, G. O. Ehnerd, West Granville, bronze medal and \$5.  
 Best 25 pounds pure made butter, Mrs. P. Putnam, Dodge's Corners, grand silver medal and \$10.  
 Second best, Mrs. Daniel McVeen, Oconomowoc, bronze medal and \$5.  
 Best 25 pounds butter made at any time, Mrs. P. Putnam, Dodge's Corners, grand silver medal and \$10.  
 Second best, Mrs. Daniel McVean, Oconomowoc, bronze medal and \$5.  
 Best cheese, factory made, C. Hazen, Ladoga, \$25.  
 Best cheese, farm made, Mrs. P. Putnam, Dodge's Corners, grand silver medal and \$10.  
 Second best, D. Huntley, Appleton, bronze medal and \$5.  
 Best cheese, factory made, C. Hazen, Ladoga, grand silver medal and \$10.  
 Second best, E. D. Knapp, Oshkosh, bronze medal and \$5.  
 Best 10 pounds honey, R. H. Sabin, Milwaukee, \$10.  
 Second best, A. E. Thomas, Granville, \$5.  
 Best 10 lbs maple sugar, D. McVean, Oconomowoc, \$5.  
 Best gallon maple syrup, D. McVean, Oconomowoc, \$5.)

## SPECIAL PREMIUMS.

*Offered by W. H. Cottrill, proprietor Plankinton House, Milwaukee, on butter and cheese, and Lansing Bonnell, proprietor Newhall House, Milwaukee, on butter.*

- Best 25 pounds June made butter, Mrs. P. Putnam, Dodge's Corners, \$25.  
 Best 25 pounds butter made at any time, Mrs. P. Putnam, Dodge's Corners, \$25  
 DE. W. C. PRIEST,  
 MRS. A. H. CUTTING,  
 GEORGE KEYS,  
*Committee.*

*Class 29—Household Products.*

- Best 2 loaves Graham bread, Mrs. A. H. Cutting, Racine, \$3.  
 Two loaves rye bread, Mrs. A. H. Cutting, Racine, highly commended.  
 Best 2 loaves white bread, hop yeast, Mrs. A. H. Cutting, Racine, \$3.  
 Best two loaves white bread, milk rising, Mrs. A. H. Cutting, Racine, \$3.  
 Best sponge cake, Mrs. A. H. Cutting, Racine, \$2.  
 Best pound cake, Mrs. A. H. Cutting, Racine, \$2.  
 Best jelly cake, Mrs. A. H. Cutting, Racine, \$2.  
 Jelly cake, lemon, Mrs. A. H. Cutting, Racine, worthy of special commendation.  
 Best gold cake, Mrs. A. H. Cutting, Racine, \$2.  
 Gold cake, Mrs. J. W. Park, Dodge's Corners, highly commended.  
 Best fruit cake, Mrs. A. H. Cutting, Racine, \$2.  
 Best exhibition, bread and cake, Mrs. A. H. Cutting, Racine, grand silver medal.  
 Best still-Catawba wine, Aug. Greulich & Son, Milwaukee, diploma.  
 Muscatella, Angelica and port wine, shown by Aug. Greulich & Son, commended.  
 Best Clinton wine, A. Thomas, Granville, diploma.  
 Best cider, F. C. Curtis, Rocky Run, diploma.  
 Best canned peaches, Mrs. R. P. Elmore, Milwaukee, \$2.  
 Best canned pears, Mrs. R. P. Elmore, Milwaukee, commended.  
 Best canned plums, D. Huntley, Appleton, \$2.  
 Best canned currants, Miss J. H. Park, Dodge's Corners, \$2.  
 Best canned tomatoes, Mrs. J. W. Park, Dodge's Corners, \$2.  
 Best canned gooseberries, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best canned raspberries, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best canned strawberries, A. Thomas, Granville, \$2.  
 Best preserved peaches, Mrs. Wm. Miller, Milwaukee, \$2.  
 Best preserved plums, Mrs. Wm. Miller, Milwaukee, \$2.  
 Best preserved apples, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best preserved watermelon, Belle Anderson, Milwaukee, \$2.  
 Best preserved grapes, A. J. Springer, Milwaukee, \$2.  
 Best apple butter, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best raspberry jam, C. D. Richards, Milwaukee, \$2.  
 Best blackberry jam, Mrs. Wm. Miller, Milwaukee, \$2.  
 Best sour pickled cucumbers, Milwaukee Pickle Company, Milwaukee, \$2.  
 Best pickled peaches, Mrs. E. P. Root, Verona, \$2.  
 Best pickled pears, Mrs. W. G. Benedict, Milwaukee, \$2.  
 Best pickled watermelon, Mrs. C. A. Fulsom, Milwaukee, \$2.  
 Best sweet pickled cucumbers, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best sweet pickled apples, Miss S. B. Smith, Dodge's Corners, \$2.  
 Best tomato catsup, Mrs. J. W. Park, Dodge's Corners, \$2.  
 Best cucumber catsup, Mrs. W. G. Benedict, Milwaukee, \$2.

Mrs. N. D. FRATT,  
 Mrs. J. W. BAKER,  
 Mrs. J. M. PUTNEY,  
*Committee.*

## FRUIT AND FLOWER DEPARTMENT.

*Class 30—Fruits by Professional Cultivators.*

## APPLES.

- Large and excellent varieties—78 in number—L. Woodard & Co., Marengo, Ill., \$10.  
 Best and greatest variety, A. G. Tuttle, Baraboo, \$10.  
 Second best, G. P. Pepper, Pewaukee, \$7.50.  
 Third best, G. J. Kellogg, Janesville, \$5.  
 Fourth best, Geo. Wolff, Thienville, \$3.

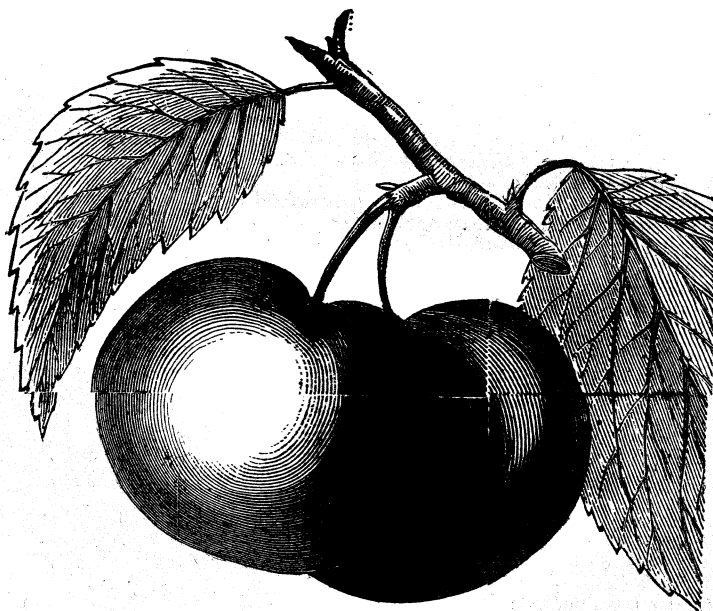
Best 10 varieties adapted to the northwest, G. J. Kellogg, Janesville, \$7.50.  
 Second best, A. G. Tuttle, Baraboo, \$5.  
 Third best, G. P. Pepper, Pewaukee, \$2.50.  
 Best 5 varieties adapted to the northwest, G. P. Pepper, Pewaukee, \$3.  
 Second best, G. J. Kellogg, Janesville, \$2.  
 Third best, A. G. Tuttle, Baraboo, \$1.  
 Best and largest variety winter, A. G. Tuttle, Baraboo, \$7.50.  
 Second best, G. J. Kellogg, Janesville, \$5.  
 Third best, Geo. Wolff, Thienville, \$2.50.  
 Best 5 varieties winter, H. M. Thompson, St. Francis, \$3.  
 Second best, Geo. Wolff, Thienville, \$2.  
 Third best, A. G. Tuttle, Baraboo, \$1.  
 Best 3 Fameuse, A. G. Tuttle, Baraboo, \$2.  
 Second best, Geo. Wolff, Thienville, \$1.  
 Largest apple, A. G. Tuttle, Baraboo, \$1.  
 Second largest, Geo. Wolff, Thienville, 50c.  
 Heaviest apple, Geo. Wolff, Thienville, \$1.

## PEARS.

Best and greatest variety, G. P. Pepper, Pewaukee, \$7.50.  
 Second best, Geo. Wolff, Thienville, \$4.  
 Best three varieties, Geo. Wolff, Thienville, \$3.  
 Second best, G. P. Pepper, Pewaukee, \$3.  
 Best Flemish Beauty, A. G. Tuttle, Baraboo, \$3.  
 Second best, Geo. Wolff, Thienville, \$2.

## PLUMS.

Best and greatest variety, G. P. Pepper, Pewaukee, \$3.  
 Second best, Geo. Wolff, Thienville, \$2.  
 Best Miner, G. P. Pepper, Pewaukee, \$1.



*Imperial Washington Gage.*

*Blue Trocens.*

## PEACHES.

Best show named fruit, Mrs. Alexander Mitchell, Milwaukee, \$2.

## GRAPES.

- Best and greatest variety, C. H. Greenman, Milton, \$7.50.  
 Second best, G. J. Kellogg, Janesville, \$5.  
 Third best, A. G. Tuttle, Baraboo, \$3.  
 Fourth best, G. P. Pfeffer, Pewaukee, \$2.  
 Best 5 varieties, G. J. Kellogg, Janesville, \$5.  
 Second best, C. H. Greenman, Milton, \$3.  
 Third best, H. M. Thompson, St. Francis, \$2.  
 Best 3 varieties, C. H. Greenman, Milton, \$3.  
 Second best, G. J. Kellogg, Janesville, \$2.  
 Third best, A. G. Tuttle, Baraboo, \$1.  
 Best 2 varieties, C. H. Greenman, Milton, \$2.  
 Second best, G. J. Kellogg, Janesville, \$1.  
 Best single variety, C. H. Greenman, Milton, \$1.  
 Best 3 bunches Concord, on one cane, C. H. Greenman, Milton, \$1.  
 Best 3 bunches Delaware, on one cane, C. H. Greenman, \$1.  
 Best single variety, quality to rule, Delaware, G. J. Kellogg, Janesville, \$5.  
 Best show foreign grapes, Mrs. Alexander Mitchell, Milwaukee, \$3.  
 Second best show foreign grapes, J. H. Jones, Milwaukee, \$2.

F. S. LAWRENCE,  
 F. C. CURTIS,  
 CHARLES WATERS,  
*Committee.*

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

## APPLES.

- Best and largest variety, Mrs. J. W. Park, Dodge's Corners, \$10.  
 Second best, George Jeffrey, Wauwatosa, \$7.50.  
 Third best, D. T. Pilgrim, West Granville, \$5.  
 Fourth best, C. H. Jacobs, Wauwatosa, \$3.  
 Best 10 varieties adapted to the northwest, George Jeffrey, Wauwatosa, \$7.50.  
 Second best, E. B. Thomas, Dodge's Corners, \$5.  
 Third best, D. T. Pilgrim, West Granville, \$2.50.

- Best 10 varieties, without regard to adaptation, E. B. Thomas, Dodge's Corners, \$3.  
 Second best, Geo. Jeffrey, Wauwatosa, \$2.  
 Third best, Daniel Gilser, Painesville, \$1.  
 Best 5 varieties adapted to the northwest, E. B. Thomas, Dodge's Corners, \$3.  
 Second best, Wm. Reid, North Prairie, \$2.  
 Third best, D. T. Pilgrim, West Granville, \$1.  
 Best 5 varieties winter, E. B. Thomas, Dodge's Corners, \$3.  
 Second best, Wm. Reid, North Prairie, \$2.  
 Third best, George Jeffrey, Wauwatosa, \$1.  
 Best 3 Fameuse, L. Rawson, Oak Creek, \$2.  
 Second best, Mrs. J. W. Parks, Dodge's Corners, \$1.  
 Largest apple, D. T. Pilgrim, West Granville, \$1.  
 Second largest, Geo. Jeffrey, Wauwatosa, 50c.  
 Four splendid specimens blue pearmain, F. C. Curtis, Rocky Run, commended.  
 Heaviest apple, F. C. Curtis, Rocky Run, \$1.  
 Second best, D. T. Pilgrim, West Granville, 50c.

## PEARS.

- Best variety, E. B. Thomas, Dodge's Corners, \$7.50.  
 Second best, Mrs. J. W. Parks, Dodge's Corners, \$4.  
 Best 3 varieties, Mrs. J. W. Parks, Dodge's Corners, \$3.  
 Second best, D. Morgan, Wauwatosa, \$2.  
 Best Flemish Beauty, Mrs. J. W. Parks, Dodge's Corners, \$3.

## PLUMS.

- Best native or wild, Mrs. J. B. Joy, Madison, \$2.

## GRAPES.

- Best variety, F. S. Lawrence, Janesville, \$7.50.  
 Second best, Wm. Reid, North Prairie, \$5.  
 Third best, E. B. Thomas, Dodge's Corners, \$3.  
 Best 5 varieties, Wm. Reid, North Prairie, \$5.  
 Second best, F. S. Lawrence, Janesville, \$3.  
 Third best, De W. C. Priest, Fond du Lac, \$2.  
 Best 3 varieties, Wm. Reid, North Prairie, \$3.  
 Second best, F. S. Lawrence, Janesville, \$2.  
 Third best, E. B. Thomas, Dodge's Corners, \$1.  
 Best 2 varieties, E. B. Thomas, Dodge's Corners, \$2.  
 Second best, Wm. Reid, North Prairie, \$1.  
 Best single variety, E. B. Thomas, Dodge's Corners, \$1.  
 Best 3 bunches—Concords—M. Robinson, Milwaukee, \$1.  
 Best 3 bunches—Delawares—E. B. Thomas, Dodge's Corners, \$1.  
 Best single variety, quality to rule, F. S. Lawrence, Janesville—Delawares, \$5.

## CRAB APPLES.

- Best variety, Geo. P. Peffer, Pewaukee, \$2.  
 Second best, D. Morgan, Wauwatosa, \$1.  
 Best plate hyslop, D. Morgan, Wauwatosa, \$1.  
 Best plate transcendent, Geo. P. Peffer, Pewaukee, \$1.  
 Best 5 seedlings, Geo. P. Peffer, Pewaukee, \$2.

The past season has been unfavorable for apples, but the show is creditable. The exhibition of grapes is splendid, and shows beyond a doubt that Wisconsin can grow them in great quantities, and in perfection.

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

Committee.

*Class 32.—Sweepstakes on Fruit.*

Best collection of fruits of all kinds by professional and non-professional cultivators, G. P. Pepper, Pewaukee, \$10.

*Class 33—Nursery Trees.*

Best collection deciduous nursery grown trees, Willey, Woodard & Co., Madison, \$10.

Second best, Stickney & Baumbach, Wauwatosa, \$5.

Best collection nursery grown evergreens, Stickney & Baumbach, Wauwatosa, \$10.

Second best, Willey & Woodard, Madison, \$5.

Your committee find a very superior display of 2 and 3 year old apple and pear trees exhibited by A. G. Tuttle of Baraboo, but as they arrived too late for entry, we can only recommend them as worthy of special commendation.

I. J. HOILE,  
WM. REID,  
*Committee.*

## SUMMER FRUITS.

Best plantation raspberries, 2d premium, R. H. Sabin, Milwaukee, \$5.

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

*Class 34—Flowers by Professional Cultivators.*

Best floral design, Whitnall & Ellis, Milwaukee, \$10.

Second best, A. Middlemass, Milwaukee, \$5.

Best collection cut flowers, Whitnall & Ellis, Milwaukee, \$5.

Second best, Miss Kate Pepper, Pewaukee, \$3.

Best basket flowers, A. Middlemass, Milwaukee, \$3.

Best pair round bouquets, A. Middlemass, Milwaukee, \$3.

Best bouquet everlasting flowers, Wm. Kitzrow, Milwaukee, \$3.

Best display dahlias, Miss Kate Pepper, Pewaukee, \$5.

Best 10 named dahlias, Wm. Kitzrow, Milwaukee, \$3.

Best display roses, Whitnall & Ellis, Milwaukee, \$5.

Best 5 named varieties roses, Whitnall & Ellis, Milwaukee, \$3.

Best show seedling verbenas, Miss Kate Pepper, Pewaukee, \$2.

Best show phlox, Miss Kate Pepper, Pewaukee, \$1.

Best show gladiolus, H. G. Roberts, Janesville, \$2.

Best show tuberose, Wm. Kitzrow, Milwaukee, \$1.

Best show green house plants, A. Middlemass, Milwaukee, \$10.

Second best Wm. Kitzrow, Milwaukee, \$5.

Best show green house plants in bloom, Wm. Kitzrow, Milwaukee, \$10.

Best 10 geraniums, Wm. Kitzrow, Milwaukee, \$5.

Best 6 fuchsias, Wm. Kitzrow, Milwaukee, \$3.

Best 6 carnations, Wm. Kitzrow, Milwaukee, \$2.

Best display flowers, raised by exhibitor, Whitnall and Ellis, Milwaukee, \$10.

Second best, Miss Kate Pepper, Pewaukee, \$5.

Best show ornamental foliage plants, Whitnall and Ellis, Milwaukee, \$5.

*To the President and Officers of the Wisconsin State Agricultural Society:—*

GENTLEMEN:—The committee selected to award premiums upon the various exhibits by professional florists desire to make special mention of the exhibition of James Vick, Esq., of Rochester, N. Y. That gentleman, who, by

his untiring perseverance and matchless enterprise, has become the leading seedsman and florist in the United States, has placed on exhibition in your Floral Department, by far the most superb and elegant collection of cut flowers ever shown by any individual or firm in our state. Your committee take pleasure in recommending that the highest premium ever awarded to any exhibitor in the state, viz: a grand silver medal and a diploma, be given to Mr. Vick, believing that this honor is due him on account of the exceedingly meritorious character of his exhibition.

H. W. ROBY,  
MARK DRESSER,  
DR. RISCH,  
*Committee.*

*Class 34—James Vick's Special Premiums.*

Best collection cut flowers, Mrs. E. B. Thomas, Dodge's Corners, \$20.  
Best collection phlox drummondii, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
Best collection balsams, Miss Kate Pepper, Pewaukee, \$10.  
Best collection dianthus, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
Best collection pansies, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
Best collection stocks, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
Best collection everlasting flowers, Mrs. E. B. Thomas, Dodge's Corners, \$10.  
Best collection everlasting flowers and grasses by person under 20 years of age, D. & M. Park, Dodge's Corners, \$5.

H. W. ROBY,  
MARK DRESSER,  
DR. RISCH,  
*Committee.*

*Class 35—Flowers by Nonprofessional Cultivators.*

Best floral design, L. B. Bodtke, Milwaukee, \$10.  
Second best, Mrs. P. Yale, Milwaukee, \$5.  
Best collection cut flowers, Miss J. M. Thomas, Dodge's Corners, \$5.  
Best show best, J. W. Park, Dodge's Corners, \$3.  
Best basket flowers, Mrs. P. Yale, Milwaukee, \$3.  
Second best, Mrs. J. B. Joy, Madison, \$2.  
Best pair round bouquets, Mrs. P. Yale, Milwaukee, \$3.  
Best pair flat bouquets, Mrs. J. W. Park, Dodge's Corners, \$2.  
Best bouquet everlasting flowers, Mrs. J. W. Park, Dodge's Corners, \$3.  
Best display dahlias, Mrs. J. W. Park, Dodge's Corners, \$5.  
Best 10 named verbenas, Mrs. J. W. Park, Dodge's Corners, \$2.  
Best show seedling verbenas, Mrs. P. Yale, Milwaukee, \$2.  
Best show asters, Mrs. J. W. Park, Dodge's Corners, \$2.  
Best show perennial phlox, Mrs. J. W. Park, Dodge's Corners, \$1.  
Best show pansies, Mrs. J. W. Park, Dodge's Corners, \$2.  
Best show dianthus, Mrs. J. W. Park, Dodge's Corners, \$2.  
Best show gladiolus, Mrs. J. B. Joy, Madison, \$2.  
Best show green house plants, H. W. Roby, Milwaukee, \$10.  
Best display flowers raised by exhibitor, Miss J. M. Thomas, Dodge's Corners, \$10.  
Second best, Mrs. J. W. Park, Dodge's Corners, \$5.  
Best show ornamental foliage plants, H. W. Roby, Milwaukee, \$5.  
Wax plant, Mrs. L. Holmes, Fond du Lac, commended.

R. A. KOSS,  
KATE PEPPER,  
H. G. ROBERTS,  
*Committee.*



*Class 36—Flowers by Professional Non-commercial Cultivators.*

- Best floral design, Mrs. Alexander Mitchell, Milwaukee, \$10.  
 Best basket flowers, Mrs. Alexander Mitchell, Milwaukee, \$3.  
 Best pair round bouquets, Mrs. Alexander Mitchell, Milwaukee, \$3.  
 Best show greenhouse plants, not more than 100 varieties, Mrs. Alexander Mitchell, Milwaukee, \$10.  
 Best show ornamental foliage plants, not more than 100 varieties, Mrs. Alexander Mitchell, Milwaukee, \$5.  
 Best show greenhouse plants, not more than 100 varieties, Mrs. Alexander Mitchell, Milwaukee, \$10.  
 Best 6 foliage lawn plants, Mrs. Alexander Mitchell, Milwaukee, \$3.

R. A. KOSS,  
 KATE PEFFER,  
 H. G. ROBERTS,  
*Committee.*

*Class 38—Special premiums offered by Peirce & Whaling, iron merchants, Milwaukee.*

- Best steel crossing plow, W. F. Whitney, Milwaukee, agent for Moline Plow Company, Moline, Illinois, \$25.  
 Second best, Deere & Co., Moline, Illinois, \$10.

*Class 40—Stone Cutter's Work, Brick and other Building Material.*

- Best specimen drain tile, H. Berthlet & Co., Milwaukee, \$3.  
 Best display gas fixtures, W. C. Goodman, Milwaukee, diploma.  
 Fine display ornamental plaster work, John Thompson, Milwaukee, diploma.

E. J. COOPER,  
*Chairman of Committee.*

*Class 41—Metallurgic Products.*

- Best show pig iron, R. P. Elmore, Milwaukee, diploma.  
 Best show castings, E. A. Harris, Milwaukee, diploma.  
 Best bar steel, Peirce & Whaling, Milwaukee, \$3.  
 Best ingot copper, Peirce & Whaling, Milwaukee, \$3.  
 Best sheet copper, Peirce & Whaling, Milwaukee, \$3.  
 Best show babbitt metal, Filer, Stowell & Co., Milwaukee, diploma.

EDWIN HURLBUT,  
 ALBERT McCONNELL,  
*Committee.*

*Class 42—Stoves, Furnaces, Hollow Ware, and articles of Hardware.*

- Best cooking stove for wood, Bucholz & Wergin, Milwaukee, diploma.  
 Best cooking range for families, in operation, H. M. Goodrich, Milwaukee, \$3.  
 Best ornamental parlor stove—Oriental, Wm. Frankfurth, Milwaukee, diploma.  
 Best exhibition brass and copper ware, Wm. Frankfurth, Milwaukee, diploma.  
 Best show hollow ware, G. A. Abert, Milwaukee, diploma.  
 Best steel hammers, in variety, Peirce & Whaling, Milwaukee, \$2.  
 Best horseshoes, in variety, E. McIntyre, Milwaukee, \$2.  
 Best display scales, C. A. Buttles, Milwaukee, diploma.

- Best display plumbers' work, W. C. Goodman, Milwaukee, diploma.  
 Best refrigerators, Cornellie Bros. & Co., Milwaukee, \$3.  
 Best fire proof safes, W. N. Pennell, Milwaukee, \$5.  
 Best ornamental iron work, Bayley & Greenslade, Milwaukee, diploma.  
 Mangle, Wm. Frankfurth, Milwaukee, diploma.  
 Wire screen, Wm. Frankfurth, Milwaukee, diploma.  
 Sample wire work, H. C. Wapler, Milwaukee, diploma.  
 Reversible broiler, O. J. Smith, Wauwatosa, commended.  
 Tinner's furnace, C. A. Buttles, Milwaukee, diploma.  
 Earth closet, C. A. Buttles, Milwaukee, diploma.  
 Portable galvanized iron bake oven, C. A. Buttles, Milwaukee, diploma.  
 Zinc stove board, C. A. Buttles, Milwaukee, commended.  
 Samples tin ware, C. A. Buttles, Milwaukee, diploma.  
 Frammer, beam scale, cradles, Arnold and Yale, Milwaukee, dip  
 Slop hopper, C. H. & G. W. Burr, Milwaukee, diploma.

J. A. ROPER,  
 H. G. HEMERMAN,  
*Committee.*

*Class 43—Special premium offered by James H. Hoes & Co.  
 Milwaukee.*

- Best display solid silver ware, Andrew Robinson & Co., Milwaukee, fine  
 silver plated cake dish, price \$15.  
 Best display silver plated ware, Andrew Robinson & Co., Milwaukee, fine  
 silver plated fruit stand, price \$15.

EDWIN HURLBUT,  
 MRS. AUGUSTA HASSELL,  
*Committee.*

*Class 44—Surgical, Dental, Mathematical and Philosophical  
 Instruments.*

- Best display surgical instruments and abdominal supporters, Hendley & Co.,  
 Milwaukee, diploma.

L. G. ARMSTRONG, M. D.,  
 A. H. VAN NORSTRAND, M. D.,  
*Committee.*

*Class 45—Chemical Manufactures.*

- Best sample yeast cakes, Waterloo Yeast Co., Chicago, Ill., \$2.  
 Best candles, beeswax, E. Werst, Milwaukee, \$2.  
 Best show perfumery, Kierwes & Ludwig, Milwaukee, diploma.  
 Flavoring extracts, Kierwes & Ludwig, Milwaukee, diploma.

L. G. ARMSTRONG, M. D.  
 A. H. VAN NORSTRAND, M. D.,  
*Committee.*

*Class 46—Carriages, Wagon Work, etc.*

- Best double carriage, Wechselberg, Brown & Co., Milwaukee, \$20.  
 Best single top buggy, Rice & Austin, Milwaukee, \$10.  
 Best single open buggy, Rice & Austin, Milwaukee, \$10.  
 Best trotting wagon, Rice & Austin, Milwaukee, \$10.  
 Best pleasure wagon, Sherwin Bros., Milwaukee, \$10.  
 Best double sleigh, L. Mock, Milwaukee, \$10.  
 Best lumber wagon, John South, Monroe, \$10.

Business wagon, Denny & Galeher, Milwaukee, commended.  
 Best display hubs, spokes, felloes and other wagon work, Shadbolt & Boyd, Milwaukee, diploma.  
 Buggy body, Chas. A. Rogers, Milwaukee, commended.

Special premiums offered by Peirce & Whaling, iron merchants, Milwaukee.

Best farm wagon, John South, Monroe, \$75.  
 Second best, John Esch, Milwaukee, \$25.

T. E. BIRD,  
 J. W. BAKER,  
*Committee.*

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

Best parlor set, Matthews Bros. & Co., Milwaukee, grand silver medal.  
 Parlor set, J. S. Farrington, Milwaukee, commended.  
 Best chamber set, N. Brick, Milwaukee, diploma.  
 Chamber set, Matthews Bros. & Co., Milwaukee, commended.  
 Best extension table, Matthews Bros. & Co., Milwaukee, \$5.  
 Best centre table, J. F. Burchard, Milwaukee, \$5.  
 Best book case, J. F. Burchard, Milwaukee, \$5.  
 Best writing table or desk, J. F. Burchard, Milwaukee, \$5.  
 Best spring bed bottom, J. F. Burchard, Milwaukee, \$2.  
 Best display willow baskets, A. Meinecke, Milwaukee, \$2.  
 Best splint baskets, oak or ash, Belle City Basket Factory, Racine, \$2.  
 Best display willow ware, A. Meinecke, Milwaukee, diploma.  
 Bed screen or movable partition, C. F. Raun, Milwaukee, diploma.  
 Easy chair and rocker combined, fancy chair and child's crib, each highly commended.  
 Reception chair, gilt, J. F. Burchard, Milwaukee, diploma.  
 Torrey's weather strips and Fielding's wire window screen, E. Fielding, Milwaukee, diploma.  
 Patent headboard for bedsteads, Wm. E. Briggs, Sparta, diploma.  
 Variety chairs and stools, H. O. Corn, Milwaukee, commended.  
 Swinging cradle and chair, M. H. Prescott, La Crosse, diploma.  
 Ornamental wood carpet, Goldsmith & Co., Milwaukee, commended.

E. J. COOPER,  
*Chairman of Committee.*

*Class 48—Leather and Leather Manufactures.*

Best 6 sides sole leather, Pfister & Vogel, Milwaukee, \$5.  
 Best 6 calf skins, Pfister & Vogel, Milwaukee, \$5.  
 Best display leather, Pfister & Vogel, Milwaukee, grand silver medal.  
 Best single harness, Wm. Leichhammer, Milwaukee, grand silver medal.  
 Best 3 trunks manufactured in Wisconsin, Romadka Bros., Milwaukee, diploma.  
 Horse collars, C. Anstadt, Milwaukee, diploma.

FRANK AVERY,  
 C. J. LEACH,  
 J. C. BROOKER,  
*Committee.*

*Class 49—Paper, Printing and Book Binding.*

Fine exhibition Encyclopedia and Atlas, Milwaukee Monthly Souvenir, and display stereoscopic views, McClintock & Emery, Milwaukee, diploma.

SATTERLEE CLARK,  
*Supt. and member Awarding Committee.*

*Class 50—Textile Fabrics, Clothing, Etc.*

- Best piece doeskin, not less than 10 yards, McFetridge, Burchard & Co. Beaver Dam, \$2.  
 Best piece kersimere or plain cloth, McFetridge, Burchard & Co., Beaver Dam, \$2.  
 Best piece blanketing, McFetridge, Burchard & Co., Beaver Dam, \$2.  
 Best flannel, McFetridge, Burchard & Co., Beaver Dam, \$2.  
 Best gents' blanket shawls, Waukesha Manufacturing Co., Waukesha, \$2.  
 Best ladies' blanket shawls, Waukesha Manufacturing Co., Waukesha, diploma.  
 Best display articles of above kind, McFetridge, Burchard & Co., Beaver Dam, grand silver medal and \$10.  
 Best suits mens' clothing, J. Lewis & Co., Milwaukee, \$10.  
 Best exhibition gents' silk hats, Gunther, Hanson & Jenner, Milwaukee, diploma.  
 Best exhibiton fur and fur goods, Gunther, Hanson & Jenner, Milwaukee, grand silver medal.  
 Fine display beaver cloth and yarn, McFetridge, Burchard & Co., Beaver Dam, diploma.

Special premiums offered by Simonds & Brooke, H. Friend & Brothers, and Adler, Mendel & Co., Clothing Houses, Milwaukee.

- Best piece doeskin, McFetridge, Burchard & Co., Beaver Dam, \$40.  
 Best piece kersimere, McFetridge, Burchard & Co., Beaver Dam, \$25.  
 Best piece flannel, McFetridge, Burchard & Co., Beaver Dam, \$20.

JOHN WOODS,  
*Chairman of Committee.*

*Class 51—Domestic Manufactures.*

- Best 10 yards flannel, Mrs. Sally Bell, Greenfield, \$4.  
 Best 10 yards woolen cloth, Mrs. Sally Bell, Greenfield, \$4.  
 Best 15 yards wool carpet, E. H. Stone, East Troy, \$4.  
 Best 15 yards rag carpet, Mrs. N. B. Carr, Madison, \$4.  
 Best pair woolen stockings, Mrs. Rachel Lapham, Milwaukee, \$2.  
 Best pair woolen mittens, Mrs. Rachel Lapham, Milwaukee, \$2.  
 Best 2 pounds woolen yarn, Mrs. J. W. Park, Dodge's Corners, \$2.  
 Best pair cotton stockings, Mrs. Polly Buck, Milwaukee, \$2.  
 Best knit counterpane, Mrs. W. H. Butterfield, Horicon, \$3.  
 Best silk quilt, Mrs. W. H. Butterfield, Horicon, \$3.  
 Best single carpet coverlet, H. Boorse, Milwaukee, \$2.  
 Best white quilt, Mrs. A. F. Kellogg, Brookfield, \$3.  
 Best wrought shawl, Mrs. Alex. Kirkland, Jefferson, \$3.  
 Best white wove counterpane, E. H. Stone, East Troy, \$3.  
 Best exhibition of taste and skill in cutting and making ladies' dresses, by other than professional manufacturers, Mrs. A. H. Cutting, Milwaukee, \$5.  
 Best gent's shirt, (hand made), Mrs. C. P. Root, Verona, \$3.  
 Best rug (domestic), Mrs. Salina Stevens, \$4.  
 Best pair woolen socks by girl under 15 years of age, Miss Park, Dodge's Corners, \$2.  
 Best specimen darning by girl under 12 years of age, Miss Root, Verona, \$1.  
 Best display of this entire class by one exhibitor, Mrs. J. W. Park, Dodge's Corners, \$5.

*Class 52—Millinery.*

- Best ladies' sacks, Miss S. B. Bodtker, Milwaukee, \$3.  
 Best variety ladies' underclothing, Mrs. C. D. Finch, Milwaukee, diploma.

MRS. J. J. ROSS,  
*Chairman of Committee.*

*Class 53—Needle, Shell and Wax work.*

- Best sample plain sewing, Mrs. C. P. Root, Verona, \$4.  
 Best sample plain sewing by child under 12 years of age, Miss Root, Verona, \$3.  
 Second best, Miss Hattie Smith, Dodge's Corners, \$2.  
 Best crochet work, Miss S. B. Bodtker, Milwaukee, \$4.  
 Second best, Mrs. Alex. Kirkland, Jefferson, \$2.  
 Best fancy knit work, Mrs. C. P. Root, Verona, \$4.  
 Best tidy by girl under 12 years of age, Miss Lillie B. Webster, Mukwanago, \$3.  
 Second best, Mrs. C. P. Root, Verona, \$2.  
 Best specimen landscape embroidery, Miss Edith Newcomb, Whitewater, \$4.  
 Fine embroidery, Leat Herman, Milwaukee, diploma.  
 Best ladies' embroidered slippers, Miss S. B. Bodtker, Milwaukee, \$2.  
 Best worsted embroidery, Mrs. Mary Fratt, Racine, \$4.  
 Second best, Mrs. Alex. Kirkland, Racine, \$2.  
 Best floss embroidery, Mrs. Jas. McAlpine, Milwaukee, \$4.  
 Second best, Miss S. B. Bodtker, Milwaukee, \$2.  
 Best silk embroidery, Mrs. Jas. McAlpine, Milwaukee, \$4.  
 Second best, Miss S. B. Bodtker, Milwaukee, \$2.  
 Best work in wax, Mrs. A. H. Cutting, Racine, \$2.  
 Second best, Mrs. H. M. Kellogg, Milwaukee, \$1.  
 Best sample shell work, H. G. Roberts, Janesville, \$2.  
 Best sample bead work, Miss Edith Newcomb, Whitewater, \$2.  
 Second best, Mrs. F. Jones, Milwaukee, \$1.  
 Best exhibition ladies' head dresses of manufactured hair work, Miss E. M. Phillips, Milwaukee, diploma.  
 Fine specimen chenille embroidery on velvet, Miss Edith Newcomb, Whitewater, diploma.  
 Fine embroidered ottoman, Miss Helen Gillick, Milwaukee, diploma.  
 Best needle threading thimble, C. R. Ford, Havana, Ill., diploma.

MRS. A. H. CUTTING,  
*Chairman of Committee.*

*Class 55—Works of Art.*

- Best portraits in oil, from nature, W. Hunt, Milwaukee, grand silver medal and \$10.  
 Best original landscape in oil, from nature, H. B. Staines, Milwaukee, grand silver medal and \$10.  
 Second best, Miss S. J. Dodge, Milwaukee, \$10.  
 Landscape in oil, California scenery, F. A. Lydston, Milwaukee, commended.  
 Best animal painting in oil, from nature, E. H. Dewey, Canton, Ill., grand silver medal.  
 Best fruit painting in oil, from nature, F. A. Lydston, Milwaukee, grand silver medal.  
 Best portrait in crayon, from nature, Miss S. J. Dodge, Milwaukee, diploma.  
 Best India ink photograph, Mrs. J. T. Kavanaugh, Milwaukee, \$10.  
 Best portrait in India ink, Wm. Kohler, Milwaukee, diploma.  
 Best water color (stipple) photograph, Mrs. J. T. Kavanaugh, Milwaukee, \$10.  
 Best oil photograph, Mrs. J. T. Kavanaugh, Milwaukee, \$10.  
 Best specimen sculpture (marble), N. Merrill, Milwaukee, grand silver medal.  
 Best specimen statuary (marble), E. P. Knowles, Madison, grand silver medal.  
 Best specimen statuary (terra cotta), Wm. Leist, Milwaukee, diploma.  
 Best specimen wood engraving, Thomas Van Bowens, Milwaukee, diploma.  
 Best specimen pencil drawing from nature, W. O. Lydston, Milwaukee, grand silver medal.  
 Second best, Miss Julia A. Hamilton, Milwaukee, \$5.

- Best specimen photographs and other sun pictures made by exhibitor, Clark Sherman, Milwaukee, diploma.  
 Best gilding on glass, by exhibitor, Charles Keller, Milwaukee, diploma.  
 Best collection stereoscopic views of Wisconsin natural scenery, H. H. Bennett, Kilbourn city, diploma and \$10.  
 Best exhibition penmanship, Spencerian Business College, Milwaukee, diploma.  
 Best specimen pen drawing, G. F. Epeneder, Milwaukee, diploma.  
 Best exhibition in lithography, Milwaukee Lithograph and Engraving Company, Milwaukee, diploma.  
 Best specimen portrait sculpture, E. P. Knowles, Madison, diploma.  
 Display artists' materials, F. B. Collingbourne, Milwaukee, diploma.  
 Painting on porcelain ware, Blair & Persons, worthy of special notice.  
 Pencil drawing (Paul and Virginia), Miss Annie Kunkle, Milwaukee, commended.  
 Oil painting (figures), Miss Emma Chase, Janesville, highly commended.

H. DIANDRER,  
 E. R. PERSONS,  
 O. MARSHALL,  
*Committee.*

*Class 56—Miscellaneous.*

- Crystal fountain, S. T. Harkee, Milwaukee, diploma.  
 Bird cages, H. C. Wapler, Milwaukee, diploma.  
 Wisconsin manufactured tower clock, D. G. Powers, Milwaukee, diploma.  
 Paper hangings and decorations, T. B. Collingbourne, Milwaukee, diploma.  
 Marble draught apparatus, Otto Zweitush, Milwaukee, diploma.  
 Best show cigars, Henricks & Netzhammer, Milwaukee, diploma.  
 Calisthenic master, Col. H. E. Eastman, Milwaukee, diploma.  
 Ladies' work stand, Chas. Wittie, Ke Koskee, diploma.

SATTERLEE CLARK, Sup't.,  
*and member of Awarding Committee.*

*Class 57—Ores, Woods, etc., of Wisconsin.*

- Best collection of woods in Wisconsin, J. M. Thomas, Dodge's Corners, \$10.  
 Best collection illustrating the birds of Wisconsin, J. G. Spranger, Milwaukee, \$10.  
 Best collection of insects of Wisconsin, Dr. P. R. Hoy, Racine, \$10.  
 Case of insects collected in Wisconsin by Master Lyman J. Plumb, 13 years old, of Milton, commended.  
 Collection of insects, E. P. Allis, Jr., Milwaukee, commended.  
 Collection of insects, Miss Dora L. Park, Dodge's Corners, commended.

DR. I. A. LAPHAM,  
 DR. S. W. WILSON,  
 J. W. WOOD,  
*Committee.*

# MISCELLANEOUS ADDRESSES.

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## SUGGESTIONS TO NORTHWESTERN FARMERS.

ADDRESS BY HON. FREDERICK WATTS, COMMISSIONER OF AGRICULTURE.

Delivered before the Minnesota Agricultural Society, Sept. 19, 1872.

### *Farmers and Citizens of Minnesota:*

As the curiosities of literature attract the attention of the philosopher, so do these natural curiosities which grow out of the mouths and lungs of the earth, the development and growth of plants, their life and death, their products and uses, attract the attention of farmers. There is no occupation of life to which the teachings of science are so applicable as that of agriculture, and no teaching so useless and deceptive when unaccompanied by practical experience.

For more than forty years, have I been engaged in conducting the operations of a farm, not so much with the view of pecuniary profit as for the indulgence of an ardent love for the study of the mysteries of the art of farming. I shall be indulged therefore in the discussion of a subject so familiar to you.

The first and great leading idea which presents itself with regard to the management of the farm is, rotation of crops. Wheat is the great staple commodity of your state; and while the genial nature of your soil, the delightful character of your summers, and the natural instincts, of reason forbid the cultivation of this grain alone, I fear you are prone to forget that there are certain and fixed principles, dictated by natural laws, over which you have no control, which must be observed in the course of farming. It is not worth while to inquire into the mysterious influences which the growth of one plant exerts upon the production of that which succeeds it; it is enough that we do know and to some extent act

upon a knowledge that a rotation from one crop to another is essential to the successful growth of any.

It is a fact within the knowledge of every observing man, that the average product per acre of wheat everywhere throughout the United States has diminished in quantity, and the grain itself has degenerated in quality. Acquired knowledge of the science of agriculture, improved skill in the use of that knowledge, and the greater experience in the application of both; the ingenuity of the mechanic coming to our aid to supply us with such instruments as almost superceded the drudgery of labor; notwithstanding all these, wheat, the great leading crop of the country, has fallen off.

Why is this, in a period when the same efforts of science and industry in England have increased their crop nearly five bushels to the acre? It is because, while they not only study to know what crops, and what rotation of those crops are best adapted to their soil, they pursue that rotation with a determination of purpose with which no accident or exigency is allowed to interfere. While the growth of the various root crops enters largely into their system of cultivation, it is because experience has taught them that it is an essential item in a proper course of rotation, and conduces to the growth of wheat. Now, while the root crop may or may not be congenial to your soil and climate, or may or may not conduce to the maintenance of your wheat crop, it is well that you should learn the lesson of experience. And I here take occasion to suggest that moisture is the prominent characteristic of England, and that there is no part of the United States so dotted with lakes and traversed by rivers as the State of Minnesota, and, therefore, perhaps, no part of it is so well adapted to the growth of wheat.

There is a fitness of things in the rotation of crops which commends it to our judgment. It is adapted to our necessities. We must have bread because it is the staff of life; we must have meat, because it is essential to the growth and strength of man; we must have gardens and fruits to furnish the enjoyments of life and the comforts of health. The wheat crop supplies our bread; corn enables us to make our meat; rye, oats and grass to feed the animals which supply our labor; and, therefore, it is a part of God's plan of creation that these crops should alternate, and that



their successful growth should be dependent upon one another. He is a daring man, and will ultimately be an unsuccessful farmer, who runs counter to this plain dictate of Providence.

Hessian fly, midge, army worm, and diverse and nameless insects depredate upon the wheat crop, and in the eastern states, smut and mildew prevail to a great extent, and we are prone to attribute these to any cause which will relieve ourselves from the imputation of bad farming. Our daily observation is that vermin always attack a poor and diseased animal, and the analogy is perfect with regard to the depredations upon the poor and worn out earth. Exhaustion is productive of vermin, vermin of disease, disease of death. Again, we are too much in the habit of treating the occupation of the farmer as a die cast upon the board of chance, to be consigned to the exigencies of time and season, when, on the contrary, all our work should be so performed as to anticipate time and season, and provide for their contingencies.

There is one other subject to which I desire to direct your special attention; the selection of seed. There is no more common idea than that the seed degenerates from long use. No idea is more erroneous. If the general principle were true that vegetation degenerates by cultivation, the world would have long since come to an end. The opposite conclusion is true, that cultivation is the improvement and life of vegetation, and that, by a selection of the best seed, the best roots and best animals, improvement is always the result. If a farmer, wanting fifty bushels of seed wheat, will run a hundred bushels through a winnowing mill until he reduces them to the quantity required, he will improve his crop from five to twenty per cent. This is not a new idea; it has the authority of ages, for Virgil, in his *Æneid*, and in his own peculiar language, much more emphatically and beautifully expresses it:

I have seen the largest seeds, tho' viewed with care,  
Degenerate, unless th' industrious hand  
Did yearly cull the largest.

I have neither time nor opportunity now to discuss the subjects of stock raising, wool growing, or cheese and butter making, for all of which your natural facilities are such as are seldom bestowed upon any people, and I am pleased to know that they have al-

ready attracted your attention. They are to be reckoned among that diversity of agricultural employment which necessarily leads to a rotation of crops.

To those who have put their hands and hearts to the work of promoting the great interest of agriculture, there is a pleasing consolation, and encouragement, too, in the reflection that they are upon the flood-tide of public favor; that those they benefit now look with confidence upon the efforts they make; that while fluctuations of business, the casualties of commerce, the interruptions of trade, the disturbances of society itself, are but incidents of the moment, only occurring to be as soon forgotten; that while amid the other and conflicting elements of busy life, the pleasing anticipations and profitable speculations of one class are the dreadful forebodings and dire calamities of another, all classes unite in the fervent prayer, the kindly sympathy, the liveliest hope that success may crown the effort of the farmer. Do we appreciate this? Do we now feel that our art commands the study of the philosopher, the science of the scholar, the eloquence of the statesman; that the whole world, with a unanimity which no other subject can command, lifts up its sympathizing voice to cry, "God speed the plow."

There is a reason for this, and it is found in the fact that the product of this art contributes more largely than any other to human happiness, and that the art itself is better adapted to human skill. These are important considerations. How shall we promote this great art, is a question which addresses itself to all of us with a force which must command our attention.

First, then, study to know the subject which thus excites our common interest. Is it enough to understand that if the earth be stirred and the seeds be sown, their product and all else is a natural result of God's providence? Is it enough that we should be told and believe that the plow is the best implement with which to till the earth, and that the seed sown by the hand of man is all that is necessary to enable us to drag through the natural period of our existence, thus made toilsome and miserable? Is it enough for ourselves to know that we but live and have our being? Is that large portion of mankind which is engaged in that work of the world content thus to grovel and

crawl, only occasionally to be started into an attitude of amazement at the prodigious products of the minds of men around us, and again to relapse into the contemplation of our own inferior condition? We answer emphatically, No!

With regard to our occupation, we should rather look upon this lovely earth of ours as the beautiful landscape of God's creation imbued with the powers of life, to breathe and feed, yielding its elements and products to the nursing and delicate operations of our hands. While we follow the plow, we should perceive its use; we should see in it how the polished mind of man has infused mechanical science into its structure; we should mark well the work it has to do, and its adaptation to the work; we should contemplate those seeds we commit to the earth, and believe it not the work of chance that they grow, and that they, too, are imbued with the germinating powers of life and light, and characterized in their existence by the qualities of good and bad; and we should know that perfect analogy which characterizes life in its conception, growth in its progress, the product of its results, and the final death of all vegetable as well as animal creation.

But above all and over all, we should contemplate ourselves; that we are a part of the special work of God's hands, placed here and employed to direct and govern all these things. They are not artificial objects, on which we are to expend our happy thoughts and lives; they are the delightful things of nature on which you operate, and nature co-operates with you in all your labors, and sweetens them to your contented spirits. Rest upon this as a grand secret of your constant attachment to agricultural pursuits. You work with nature and only modulate and benefit by her functions, as she takes up and quickens and completes the work of your hand.

There is a moving, living, acting principle in your labors which distinguishes them from other pursuits. The earth yields its strength and increase to the seeds you cast upon it, to the cattle that walk upon it; the winds seem to blow, the rains to fall and the waters to run for you; the very frosts and snows of winter give salutary checks to the rankness of vegetation, lighten the soil, and destroy what is noxious; and every principle of animal and vegetable organization and existence co-operates to support and enrich you.

There is a charm in this which must last while the spirit of man feels and acknowledges the strivings of his own mind and the power of God around him.

We do not reason thus, but we feel it, and it is this mysterious and acting charm which has infused its sweetness into the hearts of all rural people in all ages of the world.

That you are not as intelligent and well informed as a parallel grade of society in towns, we must allow; that you are as truly aware of and united to support your interests, we do not mean to assert. Your scattered and isolated mode of life weighs against you on these points; but that you have more sincere hearts and a sounder morality is as indisputable; you have pureness of purpose, a simplicity of mind, as well as manners, that are more than an equivalent for the polish and conventional customs of society, and withal, a cordiality which is only to be found in the good, homely, hearty hospitality of a country house.

I have thus endeavored to make the impression that, while you have much to learn, yours is a happy condition of life, and that your pursuit is so essential, and its improvement so important to yourselves and the world at large, as to claim for it a high place in the estimation of mankind; and it is for you to make that claim, for the world never respects a man who does not respect himself.

We must take our place then, in that race of honorable competition in which all the trades and occupations of life have entered, and whose goal is the honor and glory of exalting their own profession, and adding so much to the sum of human happiness.

Who possess advantages superior to yours? With every quality of soil, and with the climate which breathes into all the essential vegetables the breath of life, and into man the atmosphere of health, what do you want but to call into action the native strength of your own hands? But that mind which gives direction to the hands must be a cultivated mind, for we should never cease to remember that "intellect" is that talent which the goodness of God bestowed upon His own image; not that it should be buried in the earth, and restored upon the return of its Lord and Master in its original simplicity, but that it should be cultivated, enlarged, and appropriated to His great design. It is demanded

of us that we should put our hand to the noble work of education, and especially that we should direct that education as a course of study which will fit the mind and adapt the energies of the body to that expansive, interesting and delightful subject in which you are engaged, and to which the world has yet done so little.

It is for you, then, at all times and under all circumstances, to demand that, in the practical workings of society, your interests shall be cared for; that while common schools and literary societies receive the fostering care and bountiful endowments of the Government, the farmers' school demands the like support.

We would have you, too, constantly to summon yourselves to the bar of your own consciences, to contemplate the duty you owe to your own children, to compare the life of ignorance, as it gropes along in its difficult path, that seems to have no other object than that it may breathe and live and die, with the brightened intellect of the intelligent man, who acts under the influence of thought, who moves in a sphere of usefulness and thrift, and whose steps mark the path he treads through life.

To the merchant and mechanic, the active and energetic motive powers of busy life, we address ourselves and ask you to look with favor upon any project which shall have for its object the education of the farmer. The busy marts of men are filled with the products of his labors; his success and his profit contribute largely to the trade and commerce which are the products of your enterprise. While the abundant yield of the husbandman enriches him, the result is favorably felt in every department of the merchant's counting-house or the mechanic's shop. As then, you move, and make your impress upon the minds of men, let your actions be tempered with the idea that all business, whether in the merchant's store, the mechanic's shop, or the mariner's ship upon the ocean, is dependent for its working elements upon the products of the farm.

To the professor and the student, to you who already possess the lights of reason and enjoy the fruits of knowledge, we will not appeal in vain that your influence may be thrown into the scale of agricultural progress; that, while you have in your own hands the helm of power which gives direction to the elements of government, you will always have in mind that to promote the truth

and the efficient principles of political economy, to expand and increase the influence of that virtue, whereby alone we may hope to maintain our own free government and laws, is to educate the farmer.

We ask of the statesman, while he advocates the interests of his constituents at the bar of the senate; of the lawyer, who advocates the cause of his client at the bar of justice, and of that sacred office which advocates the cause of man at the bar of heaven, that they may ever remember the magnitude of your temporal as well as your eternal welfare.

Let us not forget to exhort her, whose influence is always so strongly marked upon the character of men to their grave, to think of these things—the mother, whose affections root so deeply in the existence of her child, whose anticipations are so often stimulated to painful anxiety for its welfare, who watches its progress in life with an eye to doubt and danger, whose hopes may be elevated to the Giver of all good, that he has smiled graciously upon the career of her darling child, or whose faithful forebodings may be realized in the spectacle that he is despised by the society of men and frowned upon by the attributes of heaven.

In conclusion, I have a word to say with regard to these, your annually occurring exhibitions. Here is a reality. You meet your friends who are embarked in the same enterprise of life, and whose thoughts and hearts are congenial to your own. You see many of whom you before had but heard; and here, too, you learn to realize the force of numbers, of intelligence, of the strength of which you are composed, and that power which may be wielded at your will. You carry to your homes, in your mind's eye, the beautiful models of your art, and judgment of their use, the calculation of their value, and you see the marvelous productions of your fruitful soil, which serve to expand your own views to the extent of the workings of your own skill. These are the delightful points in your life, to which the memory recurs with pleasure; they are safety valves which let off the pent up monotony of a country life; and, therefore, we would have you remember that these exhibitions are yours; that while you are their authors and finishers, no one of you should ever fail to be their friend and patron.

## ADDRESS

BY GOVERNOR C. C. WASHBURN.

Delivered before the Northern Wisconsin Fair, at Oshkosh, October 3, 1872.

I have often wondered what might be the reason why those gentlemen who compose our agricultural and mechanical associations, in selecting persons to address them on occasions of this kind, should so often make choice of those whose every day pursuits and life labors have been devoted to entirely different channels from their own, and whose knowledge of the subject upon which they are required to speak is, at the best, but of a theoretical character.

The only solution of this question that my mind has been able to discover, consists in that common infirmity of our natures which causes us to derive pleasure from the reflection that we are wiser than those who undertake to instruct us. If I have been selected upon any such principle, I beg to assure you that you have made no mistake, for candor compels me in the outset to declare unto you, that what I know about farming, is—if possible—even less than the knowledge of Uncle Horace; for, although born and brought up on a farm, amid the rough, bleak and sterile hills of New England, my labors at farming terminated almost as soon as they began, and before my acquaintance with the fertile and teeming acres of this glorious western country; and, considering the difficult and unpromising lot of agriculturists of the last generation, could one be blamed, whose natural inclination toward hard labor was not excessive, for abandoning, while yet a boy, a pursuit which promised, at that time, only a bare subsistence as the scanty and dearly earned reward of never ending labor?

In my earlier years, the life of a farmer was one of patient, prolonged, unremitting toil, with but a slight recompense awaiting him even at the end of long years of persistent industry. At that time, few of those multitudinous modern miracles, which now serve to lighten the labors of the husbandman, had an existence.

The farmer had to plod his weary way from early morn till dewy eve behind the old-fashioned, cumbrous plow. The cultivator, the reaper, the mower, and the threshing machine were yet in the perhaps uncreated brain of their subsequent discoverers. Then, the back breaking sickle was the only instrument for the cutting of grain, while the threshing was still accomplished, as in the old Scripture days, beneath the hoofs of cattle, or the grain beaten out upon the threshing floor under the now obsolete flail. The spinning wheel and hand loom were inmates of every house, however humble, and few were the farmers' daughters whose nimble fingers were not employed in producing the indispensable home-spun, fortunate indeed if the supply was not exhausted more rapidly than it could be produced.

Not many of the lads of to-day would consider it a privilege to be permitted three months' attendance at district school in the winter season, at the expense of wading some miles every day through the snow drifts, after doing "the chores" in the midwinter twilight, before daybreak. In those primitive days, when the son of some unusually well-to-do farmer was enabled to enter college, he was the wonder and the envy of the surrounding community. Now-a-days, we have substituted the music of the piano for the buzz of the spinning-wheel, and the only yarn spun by our daughters is street yarn, very inferior to the good old-fashioned cotton or woolen fibre. Our boys go to college, and our girls to a fashionable boarding-school, the means of education having been multiplied to an extent even beyond the imagination of the good people of forty years ago.

Witness our noble State University in which all of our citizens take so just a pride, and the other collegiate and normal institutions, almost too numerous to mention, so thickly scattered over the entire country. Our public school edifices of to-day compare more than favorably with some of the eastern colleges of forty years ago.

How different the condition of the farming population of to-day from that of the last generation! The many labor saving machines — too many to enumerate — serve to render their labor almost a pastime in comparison. Who, then, as he contemplates their improved condition, but feels his heart swell with gratitude



to the author of every good and perfect gift; and who have greater cause for thankfulness to the good God than the fortunate people who occupy this great and magnificent country? Your lines have indeed fallen in pleasant places, and as you survey your chosen home, where there lingers scarcely a trace of that primal curse which doomed all mankind to eat bread in the sweat of their faces — you might well exclaim with the poet—

“It is a goodly sight to see  
What Heaven hath done for this delicious land!  
What fruits of fragrance blush on every tree!  
What goodly prospects o'er the hills expand!”

That veracious traveler, Captain Lemuel Gulliver, in his voyage to Brobdnag informs us that while interviewing the King of that country, the sagacious monarch remarked, “Whoever could make two ears of corn, or two blades of grass to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together;” and I hesitate not to give it as my opinion that the gentlemen who have devoted themselves in this state to the introduction of the noble breeds of stock, which you have seen here to day, have done more to benefit your state than all your governors, senators and congressmen combined have done in the past or will do in the next half century.

But, while I may not be able to tell you precisely what you ought to do to still farther enhance your prosperity, there are some things I shall venture to say that you ought not to do.

The great mistakes of modern farming, as almost universally pursued in the United States, consist in the attempt to obtain continued crops without suitable return to the soil; the popular ignorance or carelessness concerning the true system of rotation of crops; and—last but not the least—the general craving for cultivating more land than can be properly attended to. I need not tell you, perhaps, what every farmer knows, that the method of cultivation habitually pursued in Wisconsin tends directly and speedily to the utter impoverishment of the soil. This is demonstrated to the most superficial observer by facts too well known to escape notice.

When I was a boy, the great wheat producing district of the country was the Genessee Valley, in the State of New York. But,

by the short sighted system of continued cropping of wheat, wheat, wheat, nothing but wheat, that once fruitful valley has ceased to be a wheat producing region, leaving the vast mills at Rochester to fall back upon the grain fields of the West for supplies. The very same result has occurred, in a lesser degree in the older counties of this State. The production of wheat is becoming year by year more and more difficult and precarious, and is gradually being abandoned as being no longer profitable; the farmers being unwillingly compelled to turn their attention to other products.

The desire to make money as rapidly as possible, regardless of the welfare of future generations, is perhaps the fundamental error of our farming population, which it is but just to acknowledge they only share in common with the great majority of the remainder of the community. This mistake,—for it is a mistake, and a very grievous one,—leads the average farmer, first to perpetrate the farther blunder of attempting to cultivate too much land; and secondly, regardless, of the inevitable consequences to the land cultivated, to raise only that crop which affords the largest immediate return. In this manner, he acts upon the assumption, “After me, the deluge;” for it is perfectly manifest that at no great distance of time in the future, there must be an end to this penny-wise pound-foolish method of cultivation, as there must, of course, be a limit to the supply of virgin soil, so that his successors can no longer hope to plant new land when the old shall have been worn out.

We shall do well to profit here by the experience of the old mother country. In England, the soil has increased in fertility ever since the landing of William the Conqueror, down to the present day; so that lands which have been under cultivation for a thousand years are really more productive than when first turned up by the plow; and the annual rent per acre paid by the tenant farmers of Great Britain is not unfrequently equal to the fee simple title of the best lands of Winnebago county. This arises from their wiser system of cultivation, and more particularly from their economy of fertilizers, which are carefully saved everywhere in Europe, instead of being permitted to run to waste as with us. The amount of valuable compost, annually wasted in

the drainage of our large cities is sufficient, if it were to be utilized, to renovate half the worn-out lands in the entire nation.

In 1869, I availed myself of an opportunity to visit the far famed sewers of Paris, and found them as clean and pure as the rain water conductors upon our houses ; in fact, scarcely anything but the rain water was permitted to escape into the river Seine, which forms their avenue of escape ; whereas the Mississippi and its various tributaries receive each year, from the numerous cities on their banks, millions of dollars worth of the most valuable fertilizing agents, which are wastefully permitted to be lost in the salt sea by our careless and extravagant countrymen, although the need of these very fertilizers is becoming greater each year. It must indeed be self-evident that the various chemical elements withdrawn from the soil in the production of any particular crop should be forthwith returned to it again, in one or another form, in order to maintain our farming lands in their original fertility. The sun, the wind, the snow and the rain are *not* by themselves sufficient to renovate wornout land, as some of our farmers appear to believe.

Much can be done toward replenishing the soil by diversifying the character of the crops ; more, perhaps, by paying greater attention to the raising of stock ; and in the splendid exhibition of fine animals we have witnessed here to-day, I hail the promise of a higher standing of farming excellence at no very great distance of time.

The simple and yet all sufficient remedy for our previous mistakes, and the true secret of success in the matter of properly replenishing the soil, consist in the consumption of the productions of that soil as nearly as possible upon the land where they are raised. The product may be consumed either by the brute creation or by human beings. In the first case, every farmer must determine to unite the business of stock raising with the production of the food required to feed himself and his stock. In the latter resort, the consumption of the crops by human beings implies the fact of a population very much larger than would be employed in the cultivation of the products consumed ; that the labors of this surplus population will be devoted to other industries than agriculture ; which leads me to remark that the chief need of our

farming population here in Wisconsin is more population, more consumers, not engaged in agricultural pursuits.

In other words, it is the best interest of our farmers to create and foster manufacturing industry of any and every kind. Every new farm that is opened here increases the number of competitors, thus tending to lower the value of the agricultural productions, whereas every individual employed in manufacturing pursuits increases the number of consumers, thus enlarging the market for the production of the farmer, and enhancing the value of his crops. The importance of a manufacturing town located directly in the midst of a farming community, will thus be seen to be inestimable to that community. The various perishable commodities that do not permit of prolonged transportation—such as fruits and vegetables—must be consumed in the immediate vicinity of their production. It is, therefore, with no ordinary satisfaction that I witness the rapid multiplication of manufacturing towns and villages throughout our thriving state, hailing them as I do, as the greatest of blessings—next to good health and a clean conscience—to our deserving agriculturists.

In raising productions to be consumed in a distant market, the question of transportation is one to be very carefully considered. To convey a bushel of wheat from Winnebago county to the consumer in New England, costs at least forty per cent. of its value, while to transport beef, pork, wool, butter and cheese to the same point, will absorb but from five to ten per cent. of their respective values. If the destination be Great Britain, the proportion is even greater. Thus it will be seen that the farmer must study how best to concentrate his ultimate production; it will be found more profitable to feed away a large portion of our surplus grain to stock, and ship the cattle or their butter and cheese, than to send forward the grain.

The assured condition of the agricultural interest of Wisconsin is beyond all question, and we may look forward to the day when our fair young state shall take equally high rank as a manufacturing state. The growth of the various mechanical industries has been continuous and without check or hindrance; in 1860, the census returns indicated a value of about \$27,000,000, in manufactured products of different kinds; in 1870, this had increased

to the large total of \$78,000,000, and the increase since 1870 has been in a still greater ratio. This showing is a subject of congratulation to all our citizens, indicating as it does the speedy approach of a day when our people shall have become truly self-supporting in every sense of the word.

No state in the American Union can show more numerous or exhaustless water privileges. Here, almost at your very doors, there extends a nearly continuous and unbroken water power from lake Winnebago to Green Bay, the great lake acting as an inexhaustible reservoir and regulator. You might search this great country from end to end, and fail to find a superior in its many natural facilities for manufacturing, to the valley of the lower Fox river. With our enormous extent of lake navigation, providing almost unequalled opportunities for our shipments—situated in the heart of the chief grain-producing districts, directly in the way of the trade of the great northwest, only now commencing to be opened up, what a magnificent future opens before us! Great as has been our progress hitherto, who shall dare to say that greater still is not in store for us?

I can hardly be expected to advise the experienced farmers I see before me as to the best methods of cultivating the soil. Politicians rarely make good practical agriculturists, and when they attempt to play that role they are more than apt to make a failure; but even an unskilled man cannot fail to know, that in the raising of stock, the true policy to pursue is, to breed from the best blood to be had. It costs no more to raise a fine thoroughbred horse, a full-blooded Durham, or a pure Chester White, than the expense incurred in the raising of comparatively worthless breeds, while the marketable value of the former is double or treble that of the latter.

The importance of furnishing shelter and protection for stock from cold and wet is well known, but not always adequately appreciated. The farmer who fails or neglects to provide such protection, little realizes his true interests, besides being a disgrace to humanity in forgetting the comfort of the poor, dumb creatures dependent upon him. To sustain life in the animal creation requires a much larger amount of food in a cold than in a warm climate. The Esquimaux readily consumes ten or twelve pounds

of the seal or walrus flesh in a single day, washing it down with a half gallon of train oil; while in the torrid zones, small quantities of food of the lightest and simplest character, amply suffice to supply all the recuperation the human system requires.

In like manner, cattle that are well and warmly housed during our severe winters in this latitude, will keep fat and sleek upon about one-half the amount of food the same animals would require without suitable shelter.

The raising of sheep is beyond all doubt a branch of husbandry, that can be pursued among us with great advantage; and is one well adapted to keeping up the land. Concerning the different breeds, there is a very great diversity of opinion as to which is the best. To my own poorly instructed mind, it has appeared likely that the farmer would find it most for his pecuniary advantage to turn his attention largely toward the sheep which produce the long combing wools, such as the Cotswolds, the Lincolnshire and Leicestershire breeds, rather than the Silesians, or the fine Spanish Merinos. The former are excellent for their mutton, as well as for their long and heavy fleeces, which (because of the many modern fabrics now being manufactured requiring long coming wools) bring a price equal to the finest Merinos. I must instance the example of our thrifty Canadian neighbors, to fortify my opinion in this regard. They have turned their attention quite extensively to the breeds first mentioned. My principal object, however, in mentioning this subject is to elicit discussion out of which the real facts may be made to appear, as I apprehend that my friend Stilson would have little or no difficulty in presenting reasons why the finer wools are more profitable for our Wisconsin farmers.

There is yet another subject about which I think I ought to scold the agriculturists of this state, and that is in relation to their extravagance and carelessness in the use of agricultural machines; a degree of shiftlessness generally prevailing among the farmers in this particular, which would, in any less favored community, prove their utter ruin.

In my own section, which I presume is no worse in this regard than the remainder of the state, every farmer appears to think that he must have his own reaper, mower, horse rake and threshing

machine, because his neighbor has them, and he is not willing to be outdone; and even if he has not the money on hand to pay for them, he is almost always too ready to listen to the syren song of the insinuating agent for the sale of those implements; and is, not unfrequently, persuaded to load himself down with debt, for that he might have done without; trusting to the, perhaps doubtful, luck of the future to be able to pay when the debt becomes due. A large proportion of the embarrassment of the farming community arises in this way, when by a little kindly reciprocity among neighbors, none need have felt the want of these implements.

But, worst of all is the fact, that when these costly machines have been obtained, they have not reasonable care given to their preservation. Instead of seeing them properly housed for the winter after harvest, and well greased and oiled to preserve them against the ravages of rust and decay, they are left in the field without any cover, exposed to the sun, the wind and the rain, from the close of one season to the beginning of the next. The expensive paint, of course, scales off, the seams open, joints become loosened, the iron oxidizes, and finally a machine which, with proper care and attention bestowed upon it, would have done good service for eight or ten years, is thrown aside utterly ruined and worthless after its second or third season. A friend of mine told me last winter, that in traveling from Madison to Waterloo—a distance of thirty miles—he counted sixty odd reapers wintering in the open field. Could the farmers of any other country practice such unthrift and escape starvation?

I have already alluded to our schools, and the many convenient means of affording an education to our youth of both sexes. It has sometimes occurred to me that the facilities for education were *too* numerous, and to be obtained *too easily*. Mankind is so strangely constituted that we value only those things that are difficult to acquire; and that which can be had for the asking, is seldom esteemed very highly. The young man who does not have to struggle for an education rarely realizes its true value, and thus too many come to misapprehend the true *object* of education. The cunning hand and the cultured brain should be taught to work together, and in harmony with one another; and, as a long

step in this direction, I should be glad to see established, in direct connection with our schools, a system of *work-shops* for the practical instruction of young machinists, engineers, etc.

The idea appears to be prevalent now-a-days that the main object of an education is to enable one to obtain his living by his wits. Yet we hear not a little from the stump and elsewhere, every year (generally just before election), about "the dignity of labor, the enviable position and honorable character of the laboring man," etc., and, if this is really the general opinion, why is it that we see so many young men trying to escape from their fortunate fate, giving us in their struggles such a multitude of third-rate lawyers, indifferent preachers, death-dealing doctors, or poor politicians.

It is not because such men shrink from physical employment, because you may see them trudge all day behind a dog, with gun on shoulder, wading swamps and crossing morasses for the proud satisfaction of bagging a poor woodcock or snipe; but if one was required to exert himself to the same extent in any *useful* labor, he might argue against it in the same manner as a young man I once knew, whose father having refused to "come down" as liberally as the youth deemed essential—the latter declared he would go off and learn the carpenter's trade and disgrace the family.

I am afraid that a considerable proportion of the superfluous talk we hear now-a-days concerning the "dignity of labor"—"our sturdy yeomanry," etc., etc., comes from a class of men with whom it is generally easier to preach than to practice, and whose great anxiety is to escape from that which they so strongly recommend to others, upon the same principle which led Artemus Ward to insist upon a vigorous prosecution of the war to the last drop of blood of his *wife's* able-bodied relations!

Fortunately, the measure of success which such persons meet with is insufficient, in most cases, to render their example a very dangerous or contagious one, as a few years suffices to leave them far behind in the contest for the many good things the world has to offer; for in life it is pretty much the same old story in all kinds of competition—the prizes are won by those who "stitch" and strive, rather than by those who shirk, and are ashamed of



the honorable employments that contented their hard-working parents before them.

Happy is it that comparatively few among us here in Wisconsin entertain such foolish notions, and that the great mass of the community can still look proudly up to Heaven in the very midst of their labors, grateful for their many blessings, and calling no man "master!"

Before closing, I feel that I ought again to congratulate you upon your generally happy and prosperous condition; and when we contrast the situation of the country as a whole with what it was but seven short years ago, we must be overwhelmed with amazement, and should be with thanksgiving. Now, at peace among ourselves and with the whole world. Then, two millions of men withdrawn from the pursuits of peace, devoting themselves to the forging of implements of death and to the killing of one another:

"You forge the coulter now,  
The coulter of the kindly plow.  
Sweet Mary mother bless your toil,  
May its broad furrow still unbind  
To genial rain, to sun and wind,  
The most benignant soil."

In the earnest hope that a kind providence will continue to bestow upon you an ever increasing measure of happiness and prosperity, so that future seasons may witness many displays of the products of your industry, rivaling, if not surpassing, the proud exhibition you make here to-day, I will no longer detain you from the many objects that challenge your attentive observation and well-merited praise.

## ADDRESS

BY STEPHEN FAVILL, LAKE MILLS, PRESIDENT NORTHWESTERN DAIRYMEN'S ASSOCIATION.

At the Seventh Annual Meeting, Whitewater, January 21, 1873.

*Gentlemen of the Convention :*

I come to you to-night with words of congratulation and good cheer. The favorable auspices under which we meet augurs well for the success of the convention. The welcome we have received to the hospitalities of the city, and the invitation of the citizens to share their homes with them during our stay among them, clearly proves that nothing will be lacking on their part to make our meeting one of both pleasure and profit.

And not only this, but the circumstances are favorable in other respects. The past season has been one which, in the main, has been favorable to the interest we represent. The early and the latter rain promised have been ours. Feed for our herds, for both summer and winter, has been and is abundant. The condition of the atmosphere has been favorable for the manufacture and handling of dairy goods, and, best of all, prices for dairy products have been such as to stamp the season as one of profit to the careful dairyman.

The improvement in our market has been highly gratifying. This improvement has been brought about in part by the improved quality of our goods. And again, we have extended our markets; we have opened communication with the outside world with gratifying results. The experiments in sending cheese to New York and to London have been very satisfactory. The prices obtained for our goods in these markets have satisfied us that with proper attention to the quality of cheese wanted in these markets, they may still be made useful to us. The reports from the dairy boards of trade of Illinois and Wisconsin which are to be made to the convention will show this matter up more fully.

I desire briefly to review the history of the dairy interest in the

northwest. My recollection reaches back to the early settlement of Wisconsin, and my experience as a dairyman reaches back fully twenty-five years. I then made cheese and sold it for five cents per pound. I had cheese on exhibition at the first State Fair held in Wisconsin, and after the fair, sold it in Janesville for six cents per pound, and thought I was getting a very high price. But it is the dairy history since the organization of the factory system of which I design more especially to speak.

The rapid growth of the dairy interest in the northwest is a matter of surprise to many. I am not able to give exact figures in regard to the development of this interest in the west, but approximate them nearly. At the second meeting of this Association, held in Belvidere, Ill., in 1867, not more than thirty factories were represented, and that I think was about the number in the territory now embraced by this Association, and now Wisconsin alone has had in operation the past season more than 100 factories, with a fair prospect of increasing the number to 150, the coming season. I think it safe to put down Illinois as equal in numbers to Wisconsin, and Iowa and Minnesota at 25 each, making in all 250 factories in operation in the northwest the past season, and this number is likely to be increased at least 100 the coming season.

In view of the rapid multiplication of cheese and butter factories, and the large diversion of capital and labor from grain raising and other agricultural pursuits to dairying, many persons have feared that the business was to be over-done, and the result would be that the prices of dairy goods would go so low as to leave no profit to the dairyman.

That the predictions of these fearful ones have not been fulfilled in the past, we all well know. True, the low prices of July and August of '71 caused some fears among dairymen that more cheese was being made than could be sold at paying prices. But the result of the fall trade clearly proved that such was not the case, but that the low prices were owing, in good part, to our own folly and mismanagement in putting our goods upon the market in too large quantities, at the wrong time.

And the question is still asked, with a good deal of earnestness, "Is there no danger, seeing so many are turning their attention to

dairying, that an over supply will be the result?" And they point us to the hop trade and the wool trade, and the pork and tobacco trade, and say, "See how these things go."

Of course no one can say positively that such will not be the case in the distant future, but I think we may safely say it is not likely to occur in the present generation. These same questions have been asked and the same fears expressed for the last forty years. I can remember, fully forty years ago, when the attention of the farmers of Herkimer county, New York, began to be turned to dairying, these same questions were asked and these fears expressed. But you all know that their fears were groundless. The demand has been fully equal to the supply during these years, and I think it safe to conclude that, with the improved quality of our butter and cheese, the demand will keep pace with the supply. Some of you may want to know my reasons for coming to such conclusions. I will give them briefly :

We must remember that we cannot increase our dairy facilities at once as is the case with many other branches of agriculture. We can double our stock of swine in one year, and we can double our stock of sheep in two years, or we can increase the area of any kind of grain to any extent desired in one year. But not so with the dairy ; it requires years to materially increase the milking stock of the country.

Notwithstanding the large increase in dairy products in the last ten years in this country, the census of 1870 shows that since 1860, the increase of population was very nearly as great as the increase of dairy stock.

And then, again, the increase in dairy products will be mainly in the west ; indeed, it has been so for the last few years. Reports from the old dairy districts of the east show a decrease instead of increase in their products. A variety of causes have conspired to produce this result, among which abortion among the cows has a very prominent place.

And here, gentlemen, is another cause for gratitude on our part. This scourge of the eastern dairymen has not yet reached us. Some of you may not be aware of the alarming extent to which this prevails among the dairy herds of the east. The commission appointed by the legislature of the state of New York to investi-

gate this matter two years ago, report that nearly ten per cent. of all the cows abort, thus rendering them worthless for dairy purposes.

There are many reasons which I might give (would time permit) why I think it would be entirely safe for farmers to turn their attention to dairying to the extent of the capacity of their farms. And here I would say, there are many farms in the west that are not naturally adapted to the dairy. I will comprise what I have to say upon this point in a single sentence. Unless the farm is naturally or can be artificially supplied with an abundance of pure water, it is useless to expect success in dairying, for an abundance of pure water is as much a necessity as food for the dairy cow. And then again, there are a good many farmers in the west who are not naturally adapted to dairying. They lack a dairy education (but this they might acquire), and they lack the *patience* and the *perseverance*—qualities so necessary to the successful dairyman. If there are any of this class present who are thinking of going into the dairying as a business, to such I would say, be sure that you count the cost before you decide the matter. The successful management of the dairy is so different from the management of the grain farm, that you want to consider well your qualifications before deciding. Don't forget that he that would succeed with the dairy must give it his constant, personal attention. It is night and morning, 365 days in the year. I would not be understood as saying that it is any harder work than raising grain; indeed, I do not think it is as hard work (for I have tried both), but it is the confinement to which many object, and against which they sooner or later rebel.

One thing more on this point. If you are going to make dairying a success, you must go into it for a permanent business. You want to make up your minds to follow it as long as the Dutch justice told the young couple that were getting married, matrimony would last. It was to last their whole lifetime, if God Almighty permitted them to live so long. I would not be understood as discouraging persons from going into dairying for a business, but what I want is to have them go into it understandingly, so that they may make it a success. Those that think of engaging in dairying for a few years only, and expect to make their fortune and retire from business, are sure to be sadly disappointed.

That many persons in this part of the state are thinking of substituting the cow for the plow, I am quite certain, and I am equally certain that many more must do so soon, or bankruptcy will stare them in the face. We now hear complaints on every hand about hard times, and the farmers all agree that something must be done. They agree that the system of farming hitherto pursued by most western farmers will not do any longer. They have been selling their soil by the bushel for the last 25 years, until they have nearly exhausted it. True, this does not apply to all, as this gathering of intelligent dairymen before me clearly proves, but the masses have done it until their soil is impoverished and financially they are nearly bankrupt.

Then comes the question, what shall be done? It is not my purpose at this time to attempt to point out the remedy for these evils. I feel confident that the remedy is within reach, and we have only to open our eyes to see it. But I desire to offer a few words of advice to the dairymen of the audience, and I feel that perhaps this is unnecessary, for I suppose most if not all of you know as much about the business as I do (if not more.) But it is upon the principle that line upon line, and precept upon precept, here a little and there a good deal, is beneficial to most persons, that I presume to offer a little advice to you.

Gentlemen, to you I would say (if you have not already done so), get the very best breeds of dairy cows to be had in this country or in any other, remembering the best is the cheapest always, and when you have them, be sure that you give them the very best of care, for it is worse than folly to expect satisfactory financial results from a half fed and poorly sheltered cow.

It is not my province to go into the minutiae of the proper management of dairy stock. This subject is to be discussed by other members of the convention, and those too that will be able to do the subject better justice than I can.

I have said, give your cows the very best of care. All dairymen do not agree as to what this means, some claiming that high, and others that moderate feeding is the most profitable. Without taking sides with either party (for both sides are sustained by good arguments), I will just repeat the old adage, and, gentlemen,

it is true as it is old, "He that would get good milk in the pail must first put it in the mouth of the cow."

Stick to your business. The advice of the Dutch justice is as applicable to you as to those just engaging in the business. Do not be tempted by the temporary ups of other branches of agriculture, to change. You know by experience that it is not an easy thing to get together a herd of really good cows, and you know too, by experience, that the better the cow, the larger the profits derived from her. Then I repeat, gentlemen, stick to your business. Study to know it more thoroughly, and to such as do thoroughly learn their business and carry it on with energy and skill, I feel very confident I am not promising too much when I say that the profits of the dairy one year with another, will be decidedly larger than those of other branches of agriculture.

A word to the manufacturers of butter and cheese, and I will leave this subject for others to discuss who are better posted in the matter than I am. To you, ladies and gentlemen, I would say, make yourselves masters of your profession. The future success of the dairy enterprise in the Northwest depends largely upon you. If from want of proper knowledge on your part, or from carelessness, you turn out only common or inferior goods when they ought to be first quality, the business must suffer, and you and you alone will be to blame.

I hold that with good milk, the cheese maker is to blame who does not at all times turn out first class cheese. I do not forget that there are times when from the condition of the milk, we shall be unable to make first quality of cheese, and perhaps no one will be to blame for such a state of things. But such times are the exception and not the rule. We must not (and I say *we*, because I am one of you), seek to cover up our faults by charging too much to bad milk, but study to know the true condition of the milk, and then learn how to handle it. I repeat then, know your trade thoroughly before you attempt to take the foreman's place, and when you do take such place, strive always to excel in the quality of your goods.

## FARMER OF THE FUTURE.

BY HON. C. G. WILLIAMS.

Address delivered at the Dane County Fair at Madison, September 19, 1872.

*Mr. Chairman, Ladies and Gentlemen:*

I saw recently in the columns of a public journal that an Eastern savant, journeying westward and crossing the prairies of Illinois by the usual traveled routes, had obtained some fine views of the country from the doors of the baggage car, and received various valuable hints from the baggage master and brakeman as to the products of the soil; and having returned eastward, would soon publish a treatise upon "practical farming," for the enlightenment and guidance of the Western agriculturist.

With similar opportunities and like advantages, I am invited here to-day, and, I suppose, expected not only to interest, but to instruct a gathering of Dane county farmers in the details and duties of their chosen avocation. Fully appreciating the compliment, I must nevertheless decline the proffered invitation. Carefully prepared tables of statistics, close analysis of the soil, the component parts of guano and the mysteries of bone dust, have not only a charm for the ardent theorist, but an actual fascination for the experimental farmer; and I am happy to know that these things have not only been tested in the arithmetic and the laboratories of science, but have been actually applied to the affairs of practical life, until it is now settled that the Hon. Horace Greeley has succeeded in producing upon his own farm, potatoes at something like five dollars per bushel, and string beans at twenty cents a bunch.

This simple announcement is a philosophy in itself—is a reiteration of that safe and fundamental maxim, known to all men of success, namely: "Attempt the prosecution of no branch of business, with the practical details of which you are not thoroughly acquainted, and to the duties of which you are not fully inured."

Horace Greeley could never have published his Tribune so well, but for the active interest he took in the affairs of the practical



agriculturist; and the successful farmer would never have attained so marked success, but for his readings of the agricultural reports in the Tribune, or some other equally valuable papers. But when the editor and farmer exchange places in practical life, then it is one finds that the hoe he wields yields a bread so expensive in the "sweat of his brow" that he has no faculty to manage it, while the other discovers that the "cylindrical hoe" whose iron nerves he is expected to touch and control, casts out a bread of instruction whose mysteries he has never sufficiently studied. Yet, as the editor could never survive without the bread of the soil, so the intelligent and successful farmer must languish and die without the bread of the types—each to his own calling, both honored alike by success.

So of other vocations; they have no exchangeable values, in the synonymic sense of the term. "A gentleman farmer," as the phrase is used conventionally, is but another word for failure—another sad rendering of "shabby gentility." But it is no better with the hard fisted farmer. He becomes restive and ambitious; his thirst for sudden wealth and independence increases; he invests in stocks or railroad securities, and the shrewd director or wily operator manages the rest. He has embarked in a business of which he knows nothing, and his chances for gain are about equal with one who should furnish the capital to establish a faro bank, and then relinquish all right to direct how the establishment should be run.

But no more with the farmer than with the merchant, the lawyer or the student, who abandons a calling wherein success has attended upon his efforts, to engage in the active business of tilling broad acres. Unless backed by a fortune or a gold mine, the sheriff's levy and the auctioneer's flag close the last scene of his agricultural drama.

Emerson has said in substance, though not literally, that the man of culture from the city has placed his mansion in the country, commanding a golden sunset and a fine ocean view. Here, removed from the heat and turmoil of the town, surrounded by his books and works of art, he can let his great brain throb on grandly. Of a fine morning, engaged at his desk, prosecuting his literary daily task and feeling a little fatigued, he refreshes him-

self by his usual morning walk. Seeing, in his garden, at the root of a thrifty onion stalk, a root of a purslain, he plucks it away; but behind it is another, and another, at which the good man plucks and picks, and picks and plucks, until he discovers that the thread of his thought has escaped him; and he returns to his study to work on, only to find in the evening that the adamantine purpose of the morning has *been thwarted by a dandelion!* And yet the old maxim loses nothing; for just as great a man is he "who makes two blades of grass grow where only one grew before."

It is only when things are jangled and out of time, that heart burning and discontent dog at the heels of human effort. It is too often in this country as George Francis Train says it is in England, under their law of primogeniture. The eldest son, of course, receives all the landed estate, and the others must be provided for in the church, the army or the navy.

This is productive of strange confusions in the choice of parents. They flip up the soldier and he comes down in the pulpit: they toss aloft the clergyman and he lands on the deck of the war ship. The natural navigator is sent into the air, and he comes down stranded on dry land.

And so with us. There is too much of the feeling among some of the substantial farmers that their boys should be a little better than their fathers before them, and follow some other calling supposed to be a little more genteel than the bare tilling of the soil. And so the "flipping" process goes on all over the land. Boys are hoisted through college, and hoisted into professions and other employments, to find themselves utterly routed and confounded, powerless and discouraged. A kindness was intended them, but a positive injury has been done under the mistaken belief that mere academic discipline, or a college course of study, was all that was needed to enable them to talk law like Webster, write poetry like Milton, or traverse the stars with Newton. As no popular fallacy is more common or widespread, so none is more fatal. There are hundreds of young men within college walls, to-day, miserable and wretched in the midst of Greek roots and conic sections, who would be absolutely happy in riving rails, or breaking the soil and adding to the wealth of the world. But there is

another fact more lamentable, which is, that many a young man, who can manage his college duties—who is master of Greek and can conquer the calculus, and who fancies he has only to lift his wand over the world to have it lie prostrate at his feet—finds when he enters upon its active duties, that he is as powerless as a child, with no knowledge of men and no tact for business, and wonders why success does not wait up on his efforts. Having mistaken his calling; too proud to go back upon his paternal acres, his hopes are a wreck; his life is a failure! Did it ever occur to him or to his hard-headed, hard-handed father, standing so humble and deferential in the presence of his college-bred son, that in all the active duties of life, in the practical matters of education which go to make up success, the father stands as high above the son as the master above the pupil.

If there is a false ambition on the parent, what shall be said of the child?

I know there are malignant fevers which infest the swamps; that there are direful epidemics which scourge the world; that the insidious footsteps of disease may be traced at high noon, and found under the deep shadows of the midnight hour; but I know of no disease or epidemic so capricious or hard to manage as that which may be denominated the "eighteen year old fever" in boys!

You may have "hoof-ail" among your cattle, or "foot-rot" in your sheep, but I venture to say there is no disease which so tries the heart and reins of the farmer, as this affliction which spreads among his boys! Scotch snuff won't cure it, and counter irritants are powerless to arrest its progress! Nature will have its course, and this is one of the diseases that must have its run. Fortunately, its symptoms are uniform and easily detected. Usually, it is preceded by an eruption of bright buttons, flashy waist-coat, and stunning necktie. The hat, which was of the Jim Crow pattern, has suddenly assumed stove-pipe proportions. The pants, which were easy and flowing, and nicely adapted to the business of manual labor, have now shrunk down to the surface of the flesh; and the human form divine, so charitably covered with graceful fabrics, now skips abroad in the beautiful proportions of the bottled spider, or the nimble movements of the agile grasshopper. The pulse beats high, and the blood flows quickly to

the brain. Certain aromatic oils, or sweet scented odors, rise like incense from the flowing locks that crown the caput; or, in default of these, the extracted oil from a tallow candle leaves them in smooth and plastic beauty. The face, white and soft as the cheek of a child, is now covered with a rank growth of persistent fuzz, dividing it between the pubescent appearance of the Eider duck and the contemplative mood of the solemn goose.

If the physical changes are marked and startling, the intellectual symptoms are no less so. The mother, who has rocked her darling and caressed him up to manhood, finds herself suddenly brought up with a round turn; and she is very decisively informed that her grannyfied airs are no longer to be brooked by a young man of spirit and high ambition. The younger children, when the Jupiter of the household walks among them, learn to flee like chickens at the approach of the hawk; and the father, who has been loved and revered throughout an honorable life time, now finds himself suddenly challenged as the biggest fool in all the neighborhood.

The extent and ravages of the disease are measured somewhat by the circumstance and condition of the patient. Much depends upon the treatment. If met too summarily, it may strike in and become fixed for life; then the result is horrible. Usually, it flows off in poetry to the columns of the local press, or wastes itself on the wide sea of matrimony.

I mention this only that parents may be prepared for its approach. There is really but one danger connected with it, and that is, that those whose business it is to bear with it and control it as best they can, are sometimes liable to yield to the hallucination themselves, and mistake that for a manifestation of genius, which is only one of the morbid symptoms of the transition from youth to manhood. When this mistake occurs—when a doting father or a too fond mother yields up the calm experience of a life time to the wild impulses of a hair-brained boy—then how surely is the victim rushed onward to ruin. But let us not therefore commit the opposite mistake.

I have seen the stern-faced, Christian father chide the rising impulses of his child of genius. I have seen the boy with slight muscle, but finely strung nerves, quivering under the fatigue of

the harvest field, and almost stifled in the smothering dust of the grain thrasher, when the ample means of the father should have made him an early inmate of academic halls. I have seen him torn from school, broken up in his college course, ridiculed in his intellectual efforts, derided for his want of pecuniary means; I have seen him taunted with all this, only to see him, like a true-blooded courser, vault all these barriers to roam the rich fields of literature, art and science, until, to-day he stands in an eastern pulpit as in a Castle Thunder, and flashes the lightning of his pure genius across half a continent. Oh! if there is any man who needs a steady hand and clear brain, it is the intelligent farmer who walks among the children of the soil. For it is from these, and not from the pampered sons of luxury and ease that the professions, the arts, the sciences, the ranks of business are to draw their reinforcements. From the old homestead, under the shadow of the hill, by the sunny side of the grove, in the green fields down by the meadow brooks, come the elements that freshen and purify the turbid waters that roll through the streets of the great cities. Hence, and from the workshops of the land, must come—does come—the “salt that keeps the earth sweet.”

It is a proud thing to be lord of the manor; to rear the blooded stock, speed the flashing share, turn the shining glebe, scatter the golden grain, gather the russet harvest; but the proudest, truest boast of the American farmer is, that he rears the sons who govern the state and guide the nation. Fathers and mothers of Dane county! I know no higher, grander mission vouchsafed to man or woman on God's broad earth; and gladly would I, on this occasion, in earnest yet fitting words, rise to its high behests. I know it is yours to grapple with the hard facts of life; it is your sweat and toil mingled with the soil of Mother Earth that creates the world, or at least forms its basis. You rise early and you toil late. Industry is your capital invested, and frugality your hope of reward. As the vices and frivolities of fashionable life float toward you on the wings of the press, you have the proud consciousness of knowing that in the great hive of human activity you have been no drone, and that you are no pensioner upon the world's great bounties. But are there not some things in which you owe yourselves a higher meed of happiness than you have

ever enjoyed? Would it be safe to call upon any farmer here present, who is not a subscriber to his own local county paper, to signify it by uplifted hands? And yet, my God! only think of it! The official and political duties of the county and different towns, the market reports, the current events of the week—even the marriages and deaths—all a dead blank! I do not know that there is a house in Dane county to which the remark would apply, but I have seen a farmer, owning a brass trimmed harness and riding in a silver mounted carriage, who never expended one hundred dollars for books in all his life. He would turn his stock into the richest clover field to graze, he would select the choicest grains for his animals in winter time, he would expend money freely for the physical comforts of those around him—for he was no miser—and yet this man's family, consisting of eight inmates—sons and daughters—would be left, year in and year out, to browse upon the standard literature afforded by the annual almanac, a battered copy of the Holy Bible, and such transient newspapers as chanced to find their way into the house. This man never mistrusted that he was not faithfully performing the duties of a father, and fulfilling the highest destiny of an American citizen.

Just over the way was a neighbor, no wealthier than himself. He had left a beautiful lawn in front of his house; at odd times he had planted ornamental trees: flowers bloomed in his yard, on the walls of his dwelling he had placed some plain by fine engravings. On his book shelves you would find copies of Addison, of Scott, of Irving, of Shakspeare and the standard poets. You would find a few well selected histories and biographies, treatises upon agriculture, and some of the purest and best works of fiction. His mail was sure to bring him, not only his own local county paper, but at least once a week, one of the leading journals of the east and one of the west, together with the proper periodicals, for the instruction and refinement of his daughters. And yet, the whole had not cost him to exceed the sum of two hundred and fifty dollars, *the price of one good likely colt!* For this small sum, he had set up there, in his little bower of a home, a fountain of knowledge where his sons and daughters could go and drink as fully and freely as his sleek, well fed stock could quaff the crystal waters of the bubbling springs. If any of his children had

a literary taste, this would be sure to awaken it early and bring them in daily contact with the best minds of the world. Such a family does not live in the rural districts alone—they tread all the higher walks of life. Send daughters having these early advantages to our metropolitan town, and saying nothing of the fashionable butterflies that flirt there, you will find that in real intelligence, true refinement, and all the sweet and pure graces of female loveliness, they are fully the equals, if not the superiors, of the best city bred belles.

If I wanted to make a drunkard of my son, I would keep a whisky bottle standing open upon the side-board; if I wished to excite in him a taste for literature, or test the natural inclination of his mind, I would keep a few well selected volumes always within his reach. I would not *drive* him to their perusal, but if he chose it, they should always be there, a free will offering to the better part of his nature. Next to the private book case, is the school district circulating library; but it is not for me to dwell upon it in detail. There is one thing, however, I would gladly see enforced by statute law, under heavy pains and penalties, if it were not better supported by enlightened public sentiment; and that is the establishment of a winter evening debating society in every school district in the state of Wisconsin. Why an institution so beneficial in every respect is so sadly neglected throughout the west is difficult to determine.

It would be a curiosity to see the names of the men in public life, to-day, who started out and received their first encouragement by discussing the somewhat fresh and novel questions: "Whether Columbus was entitled to more credit for discovering America, than Washington was for defending it;" "whether there is greater pleasure in participation than in anticipation;" "which is the more perplexing, a smoky chimney or a scolding wife;" "which could more easily be dispensed with, *fire* or *water*;" and last but not least: "How did the milk get into the cocoon shell?" But better these startling and momentous questions than not to discuss at all. There is nothing which so sharpens the intellect, provokes research, promotes accuracy of knowledge and clearness of statement, trains the mind to calmness under opposition and dispute, inures it to self-possession under victory or de-

feat, as the conflict of two or more men honestly contending for mastery in debate.

These meetings should be composed of young and old, and in addition to the questions usually discussed, those of local and agricultural interest should be introduced. The rotation of crops, the raising of stock, the adaptation of soil, the prospects of the market, and the laws governing prices might be made intensely interesting ; and interspersed with these, should be others involving finance and taxation, both state and national ; the organization of town and county government ; the laws of the highway ; the conduct of schools, and the needed reforms in any one of these departments. In this way, not only would the machinery of government be as familiar as household words, but an active interest would be created to investigate these matters as they appeared in the columns of the public prints. Thus would the young be brought in contact with the hard, practical experience of their elders ; age would gain some from the fire of youth, and all be better prepared for the active duties of practical life. Let these investigations be carried on in any neighborhood for three years, and a man would no more think of consulting his attorney as to the law of the town, the school or the highway, than he would think of going to an astronomer to find out the hour of sunset.

Members of this society, and citizens of Dane county : Pardon these crude suggestions, thrown off in the hurry of hasty composition. I would by no means assume to *lecture* you upon the details of agriculture, or your duties as citizens of this great republic. But when I reflect upon the taunting statement of the eccentric Carlyle, that "America is governed by the scum of her society ;" when I remember the corruption of our great cities, and that some of our most powerful journals dare not unmask their batteries against local vices, lest the parties in power lose political prestige ; when I see how popular elections are carried ; when I behold moneyed corporations of all grades and character, extending their reach, grasping, organizing, centralizing power, and controlling to a fearful extent the legislation of the country, both state and national ; when I see rising above the horizon, a cloud no "bigger than a man's hand," but which may overspread the



whole heavens; then it is that I turn once more in trusting faith, to the farms, the fields, and the forests of America, as the places whence are to come the electric spark of patriotism, and the thunderbolts of power which shall purify the air, and cleanse again the national sky.

This, fellow citizens, will be, must be so; or Carlyle's remark is true; and the ground is already broken, where shall stand the tomb of popular liberty in America.

As in the past, so will it always be in the future; upon the shoulders of the American artisan, and the American agriculturist, rests the fair fabric of American freedom. Bearing such heavy burdens, sharing such vast responsibilities, I have but one desire, which is to see you enjoying more of the comforts, more of the good things of this world, within your easy reach.

I trust the day is not far distant when more spacious, better ventilated, and therefore more healthful sleeping apartments, will be the rule, not the exception, in all your houses; when hot and clod water baths, easily and cheaply supplied from the reservoirs on your kitchen stoves, shall be a thing of daily convenience; when on every farm the ice house, costing nothing in money, and but a day or two of labor and care, shall stand with its welcome contents, to charm away the summer heats and cool the fevered brow of disease; when the tired laborer returning from the field, covered with the dust and perspiration of the day's toil, shall merge from the cleansing bath, to retire to a slumber at least as sweet and refreshing as that which greets the well-groomed draft-horse of the stall.

Then shall broad, level roads skirt your possessions, and forest trees planted by your own hands line the wayside, tempering the edge of the prairie blast and rivaling in beauty New England's sweetest rural scenery; and *then* let the culture of art and music, not in extravagant, but liberal allowance, come where the birds sing! Come where the flowers bloom! Then shall you walk crowned the true monarch of the earth, the fairest type of man's best achievements.

And when you shall be called hence to other fields; when other sounds shall fill your ears; when the harvest song of labor shall blend with the choral music of the stars, and you shall journey on

toward the land of "green pastures, by the still waters," may your hearts be lightened by the consciousness of noble deeds performed; may your feet be guided by the rhythmic music of Heaven's sweet approval.

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## ADDRESS.

BY HON. JOHN L. MITCHELL.

Delivered at Richland County Fair, September, 1872.

*Ladies and Gentlemen:*

I feel that my presence before you, in the role of would-be orator, calls for an excuse. It comes from a desire to respond to the wishes of my friends, and not from any expectation that I can either enlighten or amuse.

My friend Waggoner has accused me, and in print, of being a practical farmer. The poets are permitted a certain license; I presume something of that kind must be allowed to the secretary of an agricultural society. Moreover, on the eve of a presidential election, these newspaper men take strange liberties with people's characters.

Notwithstanding your worthy secretary, I have not as yet reached that serene point of practicality from whence I can issue to you infallible receipts for the growing of long ears on the corn-stalks, or short ears on the mules' heads, but I am trudging towards it. I am not as yet a practical farmer, but I am trying to become one; without vanity be it said, I know of no more worthy ambition.

The subject, agriculture, is a broad one; as broad in fact as the fields that the sun shines on. But these fields have their fence corners; in them springs the tangled second-growth, and underneath nod the uncultivated flowers. I will pull one of these and call it one of the duties of a farmer. I trust that in my hands it may not prove a nettle.

To keep strict account; to consult the advantages of climate, soil and situation; to manure abundantly; to plough deep; to select the earliest and plumpest for seed; to save the best for breeders—these are among the economical duties which every farmer understands. If he fails, he fails through neglect or from inadequate means; too often the former. It is not to such duties as these that I would ask the attention of my superiors in practical knowledge.

The farmer's duty that I have in view is this: Let him magnify his office; let him make much of his calling; let him be proud of and happy in his avocation.

As the world wags, it is easy to be proud, but it is difficult to be happy; in every walk of life, this matter of happiness seems to depend on a ready digestion and a genial philosophy. But to the farmer, his surroundings and his healthful out-door exercise should yield both.

Civilization has divided us into city livers and country livers. By city livers, I mean those that are aggregated together in greater or less numbers, who do not earn their livelihood directly from the fruits of the soil; and by country livers, I mean those that are scattered over the face of the land, who cling closer to mother earth, and draw, at first mouth, their sustenance from out her bounteous bosom.

For a person living in the immediate vicinity of a city that is fast swelling to the proportions of a metropolis, and on a lonely road at that, it may not be prudent to make any comparisons between the two, to the detriment of the former. However, these cities, these vast depots for the collection and distribution of material, shine with deceptive lustre. To the rural mind, they are as the cliffs of Mexico to the Spanish invaders; gold from afar off, mica when obtained. In these gather-alls the fag ends predominate. Here damaged butter, doctored milk and debilitated vegetables engage in dyspeptic rivalry. Here, rumbling wheels and the organ-grinder make music all the day. Here, disdainful of the shirt-sleeve uniform of the rustic, a cockade is stuck in a man's cap and called, not maccaroni, but a livery. Here, the fire of money making is blown to a white heat, and the white appears as the countenance of the money-maker, unless he dyes it at the next

door grocery. These are some of the attractions which tempt the country boy from the breezy upland and the teeming meadow, from the corn-husking and the winter's colt-breaking, to a life, which, for the most part, ends in the deadening drudgery of the desk. Here, the successes are few, the failures many; especially after a wheat corner.

As women are angels without wings, and as their rights are hovering in the air at this present moment, both gallantry and discretion forbid them to be forgotten. Should the robust country girl, in a fit of weakness, grow envious of the feeble fashion, flounce and flummery of the town, let her become reconciled to them, as the blacksmith was to his wife's scratching. When asked why he didn't scratch back, he answered, "It amuses her and does not hurt me."

To quote the words of a distinguished statesman, uttered at an agricultural fair in this state, "We find to-day that the principal cause of the peril which threatens France is that when its cities fail, its country perishes. We see that Frenchmen despise the country; Englishmen love it; Americans tolerate the country, but don't love it."

These words were full of the fate of France. May they foreshadow no ill for America.

There is another phase of aggregated existence. It is the manufacturing. In this country, there is a school of politico-economical thinkers, who look with more reverence at a brick smoke-stack than they do at a church steeple. Their ambition is to found manufacturing districts.

When the little houses of the laborers are packed together like sardines in a box; when the men are tired from the hammering; when the women are beet-red from the cooking; when the children are satisfactorily black from the dust and soot of the place, then these enterprising gentlemen subside to a blissful inactivity, especially if they own property in the neighborhood. In one respect their undertaking is good; it puts meat in many a hungry mouth. But, in my opinion, there might be a more beneficent power than theirs; to have the clutch of a giant and pluck the humble dwellings where they stand, and strew them, as the sower does his grain, broadcast over the land, there to fructify forever.

An illustrious man in dying called for more air ; it would have been better to have given it to him before he came to that pass.

There are yet other gentlemen who carry their heads high, who affect to look down upon the tiller of the soil. These are the commercial gentlemen. The farmer, however, is not to be tarred with the same rope with those that go down to the sea in ships, for he treads nearer to the Creator than they do. With them, it is perpetual moving day ; they are ever busy toting their traps from place to place, in the hope, sometimes a vain one, of enhancing their value. But the farmer drops a seed in the furrow ; the earth and the sun and the air conspire together, the seed assumes new form, the plant expands and yields an hundred fold. This is the miracle of vegetation to which he has ministered. But he has a higher function still. The word agriculture means, in strictness, the working of the field or ground. It has, however, been given a wider sense, and includes the breeding and rearing of domestic animals. It is said, that he that causes two blades of grass to grow where but one grew before deserves well of his country. How much more deserving is he who stands sponsor for a litter of pigs, or is the indirect parent of twin lambs ! He beats the grass grower by one degree, for the lambs eat the grass and man eats the lambs. The greatest usefulness of the farmer is in the improvement of his live stock, and the after effect on his less intelligent or less well to-do neighbors.

What has made England the greatest modern benefactress of the world ? Not her constitution, not her conquests, not her colonies (colored fictions on the map), but her pigs, her poultry, her stately short-horns, and her steel limbed thoroughbreds.

The awkward squad of words which have thus far been mustered, have been arrayed right loyally under the banner of agriculture. But there are two sides to every question, and the farmer, if not an actual culprit, stands a suspicious character. He is charged with using up the earth's surface by continual cropping. He is accused of wearing the worsted from off, what the irreverent call, the Almighty's footstool. In this, at least, he has a negative defense. For, if he is fraying the outside, those that descend into the vulcan holes of iron and coal mines, are tearing the very stuffing out of this venerable piece of furniture.

Want is a stern master; and if the first settler did skin a little with grain, it was that his cabin might rise, and that his nakedness might be clothed. With increasing capital, animals—those locomotive fertilizers—will browse on every hill side, and will return to the yearning soil that which has been filched from it. The farmer is too sagacious to deteriorate his property, except from dire necessity.

If any one here present has caught the flimsy and unconnected threads of these remarks, let him tie them in a love-knot and dedicate it to unadulterated nature and her chief cook and bottle-washer, the farmer; of all workers, the least pretentious; of all workers, the most deserving.

When another year shall have rolled around, and you are come together with your cows and your pin-cushions, your hogs and your horses, your pumpkins and your pleasant faces, may you have an address more worthy of your generous attention.

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## ADDRESS

Delivered at Dane County Fair, Sept., 1872,

BY WILLIAM R. TAYLOR, COTTAGE GROVE, PRESIDENT STATE AGRICULTURAL SOCIETY.

*Fellow Citizens:*

Near the close of another season, when the farmer and fruit-grower are able to estimate the result of the year's planning and labor, we are met in this annual festival to celebrate our successes—to compare with each other in friendly rivalry, the fruits of our various industries and skill, and to study such lessons as the occasion offers. If in the agricultural and horticultural departments of industry, we have less to boast of than in some other years, the severe drouth has spared us the mortification of ascribing it wholly to our own inefficiency—an apology which, thanks to a Providence bountiful in the good things of fertile soil and an unusually favorable climate is only now and then furnished us.

As it is, there may be danger that we shall take undue advantage of this circumstance, and saddle upon Providence the entire responsibility of partial failure, and so allow ourselves to escape that self-condemnation which justice demands should be passed upon our ignorance of principles and methods we ought to have learned, and our lack of the necessary promptness and thoroughness in what we do know to be essential—for it is evident that the commonest principles of agriculture, by which I mean those that are most simple, which pertain to the most ordinary practical affairs, and which find confirmation in every day's experience—are disregarded by the majority of our farmers, who neither prepare their lands, nor sow, nor cultivate, nor harvest, nor preserve and market their crops, in accordance with such rules as are now universally recognized; and, secondly, it is no less evident that, to the extent of our failure to observe, investigate and reason, concerning matters which most intimately concern us, and determine our success in farming and to encourage others who are willing to devote themselves to this work, we are culpable for the general ignorance which prevails in regard to the possible modifications of climate, and especially the means of guarding against the various causes which deprive men of so large a share of the legitimate fruits of their labor.

The days when the faults of men in all these respects could be charged upon Providence with the approval of even the most intelligent are passed. It is now the conviction of every thinking mind that things never happen in this world, nor often occur except as the consequence of general laws which it is the province of man to find out, and when discovered, his duty to obey; in other words, that in most cases, an acknowledgement of failure on our part is equivalent to a confession of our own faults and deficiencies. For this reason, I feel it my duty even at the risk of repeating some things I have said heretofore, to urge the importance of a better system of general farm management. First of all, it is high time that we learned that hobby riding is not so safe in farming as in social and political affairs—where it is mainly by taking up one evil and concentrating the attention of the country upon it that progress is made. Farming is a complex profession, embracing many departments, and requiring that all

of them shall be pursued simultaneously, though with an energy proportionate somewhat to the relative and varying importance of each. Little variation would be necessary if the whole body of farmers were directed by unerring judgment and controlled by one will, for in that case there would be such a division of labor as would meet the demands of society, and also yield the best returns.

But as it is, the great community of farmers is only an aggregation of individuals, each acting on his own responsibility and interest on the largest immediate advantage. It not unfrequently happens that one branch of industry is overdone to the serious neglect of others, and in the end to the injury, if not ruin of those who have suffered themselves to be led astray. Our experience in growing sorghum, hops, and worst of all, wheat, offers glaring illustrations of this. There are also symptoms of a tobacco mania in some quarters from which it is to be hoped the country at large will be spared. There must be diversity, at least as it regards the great leading branches of agriculture, and in each of these branches, there must be such diversity as will insure the farmer against those overwhelming misfortunes which are liable to follow the staking of everything upon the issue of a single experiment, and such proportion in diversity as will insure the most remunerative returns for his labor and the capital invested; in short, the farmer must not only *not* abandon his fortune to hap-hazard, but he must intelligently look over the whole field of industry, and calculate the probabilities of deficient production or over production in its several branches with some degree of correctness. What I said last year concerning the great importance of stock raising, both as being profitable in itself and essential to keeping up the fertility of the soil, was true, in my opinion, every word of it; and although I have not the most satisfactory evidence that my declarations then were instrumental in reforming the practice of many if indeed any of the farmers of Dane county, I am induced to reiterate them with emphasis, since in these matters, as well as in morals, line upon line, and precept upon precept, are the only means of effecting salutary changes.

We have a very respectable showing already in the department of stock raising, numerically considered. But even in this respect,



we have little to boast of, while in the breeding of pure blooded animals and the most approved crosses of these, we are more backward than several other counties, with no more advantages than ours now has. So true is this of cattle, that when wealthy stockmen of the far west appeal to the officers of the State Agricultural Society for information as to where in *Wisconsin* there can be procured a car load of "pure Durham and Devon cattle, they are of necessity referred to Fond du Lac, Waukesha, Racine, Milwaukee, and perhaps other counties. For the credit of the capital county, I hope this necessity will not long continue.

In the class of Alderneys and their crosses, we have a few specimens that will compare favorably with any of their kind in the State. In Ayershires, I know of none to speak of. It is quite likely that in the aggregate, we have in Dane county a considerable number of the more popular breeds, but excepting a very few of our more enterprising fellow citizens, I know of no full herds of either Durhams or Devons in Dane county. The same may be said in general terms of sheep. A few of our farmers have taken special pains to procure purely bred Merinos, Leicesters and Cotswolds, and have succeeded in making them profitable. But ours is in no proper sense a prominent wool growing county. In the horse department, we have done but little better. Some of our citizens have introduced superior animals for breeding purposes, and have done much to improve the horses of the county and state, but enough has not been done in this way to distinguish ours from other communities. The farmers of Dane have not all learned the simple lesson, that it is just about as cheap to raise a colt that will bring hundreds of dollars when ready for market, as to raise one that will bring tens or fifties. In swine, our people are generally doing much better. The slab-sided, long-nosed, bristle-haired hogs of our fathers have disappeared, and pork-raising is beginning to receive the attention its value demands. Yet many of our farmers still fail to appreciate the superiority of improved breeds which a few are raising with so much profit. With better stock, too, will come better care, for men take pride in their best flowers, their best horses, their best cattle; and as the standard of excellence is raised, inferior animals will be found unprofitable, and will be speedily sent to the shambles.

In the cultivation of farm crops, we are considerably advanced beyond the practice when the Dane County Society was first organized, as we are likewise in orcharding and gardening. But the number is still legion of those who continue in the old rut made by their fathers, who ignore the value of manures and hoot at, or at least disregard, the theory of rotation—who deny the importance of deep plowing, and rolling and pulverizing according to the season and soil — who can see no advantage in underdraining for the orchard, if indeed they are enterprising enough to have any orchard — and who either have no gardens, or at best a dismal weedy patch, the cultivation of which is wholly left to the “women folks,” already overtaken by the laborious round of cooking, house-cleaning, washing, butter making and family sewing, etc., etc.

To sum it all up in a few words — for I must not detain you much longer — we are still as a farming community, far short of the most creditable or the most economical practices. This display of the products of the farm, the orchard, the vineyard, the dairy, the garden and work shop is indeed truly excellent, doing credit alike to the industry and skill of the producer, and to his enterprise in bringing them in such condition and quantity to this our annual fair. But it should not be forgotten that these are but samples of the best of our products. It is the cream that naturally rises to the surface on such occasions.

If these comments on our farm management are not flattering to our pride, they are none the less deserved. It would be much more gratifying to me to have used only words of commendation, but I have deemed it my duty, as the official head of a society organized for the purpose of correcting the faults of our industry, to point them out unsparingly.

On the side of the mechanical industries and of public improvements, I am glad of the opportunity to speak encouragingly. Our beautiful county seat is now accessible by rail from as many points of the compass as any county seat in the state, and our manufacturing industry has received such an impetus as to encourage the hope that in the near future, it will figure not inconspicuously in the general industry of the country. At present, however, it is true that we are even more backward in manufac-

tures than in agriculture. I hope to see the day when there will be made a finer display in manufacturers' hall, and in the machinery and implement departments of the products of our *own* mechanical industry than is found by this entire collection of both home and foreign products here to-day, large and attractive as it is.

It but remains for me in the further discharge of this official duty to congratulate the members of this society, and the people of Dane county in general on the successful issue of the efforts which, for several months past, have been earnestly and persistently put forth by the officers and exhibitors here assembled, to make this exhibition worthy of the county and of the cause our society was organized to promote; to thank in the most cordial manner, and in the name of the society, the several enterprising and liberal gentlemen who so strongly supplemented our prize list by the offer of many handsome special premiums, and to urge the utmost faithfulness upon all who are charged with the laborious duties of superintendence, or with the difficult and delicate duties of comparing the large number of articles shown in the several classes, and of pronouncing upon their relative merits.

A few words more. The primary object of fairs is not merely to award *premiums*. The great central idea of agricultural, mechanical, horticultural and household exhibitions, aside from that social and moral development, is that by bringing to one place occasionally, animals and articles of superior excellence as models, so that they may be conveniently seen and studied, every one may have an opportunity of becoming acquainted with the *appearance* at least of whatever is best and most profitable; the horse of the most just proportions either for work or speed; the cow that tells best, either as breeder, milker or butter maker; the hog that appears the most economical in producing the greatest return for a given amount of corn and food; the sheep best adapted to each farmer's circumstances, either for wool, the market or both, and so on in general terms through the entire range of manufactured products. Considerations like these, with a view to bring from without and add to the very excellent aggregate within Dane county, induced the officers to solicit, and those enterprising manufacturers and dealers, Fuller, Williams & Co., S. L. Sheldon,

The Madison Manufacturing Company and others, to give for this purpose samples of their valuable farm machinery, and the others, other articles for the same objects. If then machinery prizes were offered for herds and superior animals *from without Dane county*, our own breeders will understand that such restriction had its origin in no other notion than a desire to increase as largely as possible the magnitude, attractiveness and usefulness of the fair. So far from being a disparagement of our home stock, it was a compliment to it, and was so intended by the officers of the society, whose aims, if they would accomplish the objects of the organization, would rise above considerations of individual interest, and adopt such measures as are best calculated to advance the common good of all. The exhibition of the Dane County Agricultural Society for 1872 is now open and ready for inspection. May it prove an occasion of much pleasure and of great profit to all.

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## ADDRESS

BY J. S. STICKNEY, PRESIDENT WISCONSIN STATE HORTICULTURAL SOCIETY.

Delivered at the annual meeting of said society, February, 1873.

*Gentlemen of the State Horticultural Society:*

In again meeting and greeting each other at this our annual conference, I trust we all come bearing full and complete notes of the year's experiences and observations, which shall make this meeting equal to any former one as the record of a year's real progress in this our chosen calling.

Our observations being made from such different standpoints, and under such varied circumstances, will differ very widely; and conclusions arrived at may sometimes be almost contradictory. It is this which gives zest and point and real value to our discussions.

The past, though not an abundant fruit season, has perhaps given us its full share of hints and suggestions of improvements

to be made and obstacles to be overcome. The codling moth has very plainly said to us, "in seasons of abundance, there may be apples both for you and us, but in seasons of scarcity, we shall need them all." Shall we fold our hands and allow this declaration to be fulfilled, or have we sufficient ingenuity and perseverance to beat these little worms?

Blight in various forms has given us here and there a touch; not to do serious harm, but just to show us what it could do when circumstances favored. This is the great barrier between us and a full supply of pears. Shall we do without the pears, or put forth new and stronger efforts to grow them? I am not willing to give them up, and will here repeat my suggestions of a year ago, that we, as a society, take up with greater force and earnestness the culture of pears, plums and cherries, and not, as heretofore, pass them by as things almost or quite beyond our reach. As to their treatment, I have little to recommend with certainty, but for the pears would suggest that they be planted on the highest good soil at command, and exposed to all the winds that blow. That only standard trees be planted, and those of one and two years' growth, and headed very low. That the soil be deeply worked and thoroughly drained, but not highly manured. That a medium, well matured growth, and low, broad head should be the rule. That protection should be given by mulching and by shading the trunk and larger branches on the south and west, during the heat of summer and the alternate heat and cold of February and March. That as special fertilizers, we experiment carefully with ashes, salt and the refuse of iron forges. Why I make this suggestion is because every long-lived and really successful pear tree which I can remember, from my youth up, has been aided by a majority of these favoring circumstances, while thousands under any and almost every other treatment have failed; some after yielding a few crops, but most without bearing a single specimen.

Observation for the past three years has driven me, much against my will, to the conclusion that both pears and apples are much safer from blight when fully exposed to the winds than when sheltered by trees or buildings. Whether we should seek protection for its benefits in winter, or avoid it on account of this dan-

ger in summer, is an open question which we may profitably discuss.

The success of a few with grapes, and the splendid exhibitions made at our fairs, are doing a good work, by exciting a very general desire and determination to have a better supply of choice grapes for home use. The great wine producing fever has mostly subsided, leaving behind but few who mourn; but to encourage and foster this growing of grapes, as healthful and luxurious food, until choice, ripe clusters in their season are abundant on every table, is noble work for us to do, and for which we shall never blush. That such a supply may be had, with only moderate effort and expense to the grower, none can doubt who have carefully observed the success of all who have judiciously planted.

In this matter of grape culture, as indeed in all horticultural practices that we would make wide-spread and general, we must study simplicity. "The million" cannot be educated up to that thorough preparation of soil, or that systematic after-culture set forth in most horticultural books. I should be sorry to advocate anything slack or slipshod, but I think we may properly say to all planters, while deep soil and thorough drainage are necessary to your success, they are generally not expensive, or difficult to obtain. Nature may have prepared them ready for use, or any needed changes may be easily made by team and plow, while only occasionally is it absolutely necessary to use the spade and costly hand labor. So take courage, and if it is not convenient for you to incur large expense, do not give up, or postpone the planting, but go to work hopefully with the common means at your command.

A carefully kept trellis of grapes is a beautiful sight, but just as healthy vines and just as choice fruit may be supported by a few rough stakes, and the pruning and trimming absolutely needed is very simple and easy.

A bed of strawberries kept nicely in hills is very attractive, and may pay well for the time and labor bestowed upon it, but the fact that you cannot give this extra care, need not diminish your supply of strawberries. A few rows planted in good common soil, and tended entirely with horse and cultivator will yield abundantly.

An apple orchard planted in the best locality you have, though it may not be all that you could wish, will rarely fail to make paying returns. If your ground is too wet, and tile draining is beyond your reach, then plow into high ridges and plant on top of these. If your soil is poor, and manure is not at hand, then use muck, or leaf-mould from the forest. Apply all fertilizers at or near the surface, instead of spending time and money to bury them deeply.

You will constantly hear of new and very choice varieties, but if the three or five dollars necessary to their possession is not in your pocket, console yourself by planting the best kinds within your reach—such as you have seen living and growing thriftily and bearing constant and heavy crops—and your net income shall not be diminished thereby.

Having given this much of license to the general planter, it is but just that we add a word of caution in self-defense.

It is this: While being encouraged by the foregoing, it is not expected that you will use it as a cloak to greater omissions and carelessness, but that you consider this the least that you must dare to do, and strive to do just as much better as circumstances will permit. If, after planting, you leave your trees to the tender mercies of grass and weeds, if you delegate your hogs to do the cultivating and your cattle the pruning, please exonerate us.

While it is desirable that new kinds be fully tested, and while large collections of varieties in the hands of skillful cultivators are very valuable as illustrating the comparative merits of each, yet there will be found in these large collections but few varieties that will help the general planter to put cash in his pocket, or bushels of fruit in his cellar; and herein our fruit exhibitions often mislead the casual observer. Fifty or one hundred varieties by one exhibitor are a pleasing sight, and the owner may well feel proud of them; but to the seeker after knowledge, they "tell no tales." They are there like children at a school exhibition, in their good clothes and on their good behavior, with the thing they don't know, or don't do carefully withheld.

The fact that three to six varieties yield all the paying income of every orchard is taught, and the lesson repeated by every year's

crop, and yet we go steadily on growing and showing the fancy kinds with the same honors and attentions as those that pay.

As a people, we are prone to forget, and the memory of our blighted hopes, when unusually severe winters have destroyed our favorite trees, is growing dim. The lessons so sharply taught us heretofore must sometime be repeated on the tender varieties that the recent favorable seasons are leading us to plant. Whether it is to come the present cold winter or later, matters little, except that the sooner it comes the less our loss. But is it not our duty as public educators to strongly discriminate in favor of our most hardy and valuable kinds, by offering special premiums for best plates of each, instead of for best collection of five, ten, or twenty kinds into which some that are inferior will always creep?

I have often wondered that with our present supply of good fruits, their use was not more general. Instead of being used irregularly, between meals, and at unseasonable hours, why are they not regularly upon our tables as a part of our daily food? The present skill and facilities for drying, canning and cooking render this easy for the whole year. All consider them a luxury, none doubt their healthfulness or economy, and yet how sparingly are they used.

Small fruits not being in season at the time of our general exhibition, there seems no better way to bring them into notice and test their merits than by premiums for best results as shown by written report, submitted to a proper committee. Such premium last season called out but one response, but I believe another trial will do better, and I think the subject worthy of continued effort on our part. In former meetings, we have given but little time to the subject of timber planting. This, though not as necessary to Wisconsin as to her sister states, is still very important, and worthy of earnest consideration. Every farm should grow its own timber, but instead of this, thousands are hauling fuel and fencing from two to ten miles, and yet making no effort to remedy the evil. On many and even most farms there are waste places, ravines, or hillsides, or land too stony to plow, which would be beautified and improved by trees, and which might thus yield as good returns as the balance of the farm.



Yet through indifference or negligence they are allowed to go on producing only brambles and weeds.

While it is true that almost any kind of timber will pay well for growing, it is equally true that the very best is as easily planted and grown as that which is inferior, while the difference in value after ten or twenty years is immense. This being so, has not he who asks "what shall I plant?" a right to expect from us a more definite and explicit answer than is found in the resolution on page 98 of our Transactions?

This resolution is all right as far as it goes, and with the limited time then at our command, was the best we could do. But, whatever the past year has brought to our notice should be fully discussed, and we should gather all possible facts during the coming season, that we may be able to confidently recommend what is most worthy, and the best modes of treatment.

During our meeting, the subject of sending a delegate to the meeting of the American Pomological Society, to be held in Boston the coming autumn will come up. It seems desirable that Wisconsin fruits should be fully and fairly shown at that exhibition, and, if done at all, it must be done by this society. If we have an abundant crop, we shall doubtless derive much gratification and benefit from the effort. If the season is adverse, we shall be no worse off than others. If we decide to send a delegate, we must each and all of us spare no effort to furnish him abundantly with the very best specimens that can be had.

I have nothing further to recommend, well knowing that, though by your kindness I occupy this chair, there are many others earnestly watchful for the interests of this society, and that, as heretofore, all that is for our good will be brought out by our discussions and acted upon with unity and good judgment.

THE DUTIES OF, AND BENEFITS TO BE DERIVED  
FROM FARMERS' CLUBS.

BY HON. D. E. DAVIS, PRESIDENT OF THE RICHLAND FARMERS' CLUB.

Delivered at the regular meeting of the Society at the Richland (Mo.) Institute, June 15, 1872.

And now, before I begin, I would remind you that I do not propose to lay down any code of immutable laws, or clothe my remarks with grammatical or rhetorical splendor, but to simply give you my opinions, founded upon my own observation, of our wants and needs as a farming community—not only as a community, but as a nation, whose chief corner-stone is imbedded in the various branches of agriculture.

True, we have many other industrial branches—mineral, manufacturing and commercial—yet, to a great extent, they are dependent upon the agricultural products of the soil. Take away any of these branches, and we might possibly exist as a nation by exports, etc.; but take away our agriculture, and our fabric, beautiful as it is, would crumble to dust, despite the efforts of all other interests combined.

Then, if this be true, that the controlling interests of our land are lodged in the hands and brains of our farmers, does it not behoove us not only as farmers interested in this our particular calling, but as patriots looking far into the future, through which our children and all future generations must pass, to do all in our power to keep pace with all branches of industry in this progressive age?

Are we doing this? Let us take a retrospective glance: A hundred years ago we are told that our greatest statesmen were farmers—men who followed no other profession or calling for the support of themselves and their families, and when called upon by the voice of the people to fill places of honor and trust in the formation and control of the government, they did so only from a patriotic sense of duty; then the industries of our nation shaped and controlled our governmental policies with an eye single to the welfare of the governed. How is it now? How many farmers are now to be found in our national councils?

A hundred years ago, our soil was tilled very nearly similar to the manner in which it is now tilled; though now we have some doubtful improvements in harvesting a portion of the soil's production. Go back a hundred years and examine the other branches of the nation's wealth. The broad-ax and whip-saw shaped the finish of our houses; the horse, ox and wind furnished the motive power for carrying on the nation's commerce. The military command, the merchant's order, the newsmonger's communication and the speculator's bid were reckoned to travel from twenty to thirty miles per day; the traveller and tourist weighed well the wear of body or limb ere the journey was commenced. How is it now with these pursuits? Our motive power furnished by the cheapest and yet most powerful of agencies—steam. Communications sent from shore to shore with the speed of thought; timbers and metals fashioned in any and every conceivable shape as if by magic; tourists flying through the country on cushioned seats and beds of ease. Then go back and compare the American intellect of a hundred years ago with that of to-day, and you find it the same. The farmer of then and now are the same; the brain of other industries the same then as now. Then why this discrepancy? Why this difference in the advancement of the several vocations, and why all against the farmer? Why is it that the path we have followed—the path that we expect our children to follow—is less dignified than that marked out by other trades and professions for themselves and their offspring? And why is it that we so often hear it said, that he is nothing but a farmer?

Gentlemen, when you look down deep into the bright eye of your beautiful boy, whom you expect to be an honor and solace in your declining years; whom you are training up to follow your own example, the ennobling, soul-inspiring art of assisting nature in the production of the vegetable wealth of the world—with those words, "nothing but a farmer," ringing in your ears, reverberating through your brain—do you experience no heart-burnings, or desires to avert, if possible, from that child any chance for the application of these odious and humiliating words? Ah, well do I know that you do; and well do I also know that this degrading sentence—that should parch the slimy lips that utter it, and cause that of the listener to curl with scorn—has driven many a fond father to

saddle his boy upon some profession to which he was wholly unsuited, there to drudge and drag out a miserable existence, ending in disappointment, battling against nature's God—when, if left to follow the bent of his nature, something to which he was adapted, he might have been a benefactor of his race.

Now, these are the facts as they exist around us, or at least as they exist in my humble opinion; and if so, there is some cause or reason for their existence. And again, if this be true, it is equally true that there must be a remedy. What is the cause and what is the remedy? Let me tell you what is the cause, and then let us all go to work and hunt out and apply the remedy; or let me tell you what I think is the cause, then I will try briefly to point out the remedy. The cause is, "want of energy and union among farmers."

Let us examine the workings of the whole system. Every other calling, trade and profession, from the bootblack on the corner, all the way up to the politician, machinist, mechanic, merchant, lawyer, physician, minister and the educator, all have their union societies for the protection of their interests, thus enabling them to prey upon our energies and industries, and to keep those whom God intended as his noblest works and masters of the earth, beneath the lowest of the low.

The next question is the remedy. Is there any? I answer, there is. It may take years to successfully apply it, but let us begin—the sooner the better; let the farmers unite and work for the general good. Let them be watchful of their interests. Educate yourselves and your children equal to any in the land, no matter what you may design them to follow. Let all, both old and young, sleep less, work and study more; then will the farmer be the respected and controlling element in the land.

If the farmers in every neighborhood and county in the United States were properly organized, with means of sure and reliable communication with each other, with agricultural organs and periodicals devoted to their interest, sustained by their patronage, the present system of crop reports so damaging to the farming interest would be effectually stopped. But as it is, the bulls and bears of the grain market have some goggle-eyed specimen of corrupt humanity traversing the grain regions at all seasons, ready to

send in the required reports, manufactured expressly for the occasion, sometimes reporting vast acreage, with over-full crops all over the country, when less than a half crop exists, and *vice versa*; sometimes inducing farmers to ship when they ought to store, and *vice versa*; and every time reaping a rich reward, by fraud and falsehood, from the too confiding, unprotected farmer, who sees these reports and knows they do not represent the facts in the case, so far as he and his neighbors are concerned; but supposes that his little circle has been overlooked, or is the only locality misrepresented, and that it would make very little change, every other place is correctly reported, the supply more than equal to the demand, and, of course, he must sell for what he can get, and right then, or he can't sell at all.

Every other branch has some means of protection, and says to us, buy our labor at a remunerative price or we will not sell. Why not, we say in return. My intellect and protection is equal to any; the dollar invested in my farm equivalent to that invested in any other enterprise; pay me the cost of production with a like remunerative profit or I'll keep my produce; you work eight or ten hours per diem, and have time to cultivate your mind, and allow me and mine to work the same hours and have the same time for intellectual improvement, instead of working as we do from dawn till dark, with no time for anything, but that you and I eat and live.

Then my advice to farmers is, work and watch; see that your crops are correctly reported in the proper places and at the proper time; see that laws are made for your protection, and not for purposes of oppression; not for lawyers to construe and you pay for. Say to other trades and professions, whose brittle tenure of life depends upon your efforts, that the farmer is the lord of creation—a power in the land that will be felt and must be respected.

It is true to some extent that the farmers throughout our western states have not the means of giving their children the education they might desire them to have, but it is also often too true that the desire does not equal the means. Where there is a will there is a way is an old adage that loses nothing of truth by age, and if the farmer would only wake up from this sleep that is devouring him, shake off his apathy and lethargy that is engulfing

him and his co-laborers, and base his actions upon this time-honored adage, the results would be different. **Discard this idea that a farmer needs no education ; that anybody can be a farmer ; that every other calling and walk in life is clothed in habiliments of dignity of a finer texture than his, and that he must depend entirely upon the intellect of other professions for the protection and government of his interests.** Just so long as this state of things exists, so long will the farmer be looked upon as "nothing but a farmer ;" a prey to the **greed and avarice of those who are wont to look upon the sunburnt tiller of the field as a something created for his especial use and benefit.**

How often do we hear the gaudy upstart boast that he can make a living without work—live off his own brains, and such like expressions. Now, who must furnish him his living—who must toil to support his idleness? Somebody must do it, for it is an established fact that every human life must be sustained by human labor. **Are you willing that you and your children shall toil from day to day, through sun and storm, to support him and his swarm of worthless butter-flies, who look from their giddy height of arrogance upon you as being nothing but a farmer. No, you are not ; and yet you do it ; and why do you do it? Because he and his class are united and fully organized, while you stand isolated alone, too weak to contend against the united strength of those who, taken singly, are both mentally and physically your inferiors.** Now these are my views of the subject hastily given, (for want of time for preparation, and for which I should perhaps apologize, being my own fault,) conclusions arrived at from close observation. I may have viewed the scene from perhaps a different standpoint than many of you have, from the fact that I, as most of you know, through my short though chequered life have been engaged in many different occupations ; have had many opportunities for watching the workings of the different systems adapted to the needs and wants of the various callings.

Now, in conclusion, let me say to this little club of farmers, and those deeply interested in everything appertaining thereto, that if we will take the proper interest in this matter, it will do us good—will do our neighbors good. **True, we cannot expect to revolutionize the whole system or correct all the existing evils, but we**

can do our part, and in my opinion the time is not far distant when the agricultural interests of our nation will be represented by societies like this, from Maine to the Gulf and from the Atlantic to Pacific shores ; when the voice of the farmer will be heard in the councils of our government, and his influence felt in shaping its politics ; when his energies will not be paralyzed for want of protection, nor his vocation scorned by the educated mind. Then, and not till then, will this odious term, "he's nothing but a farmer" cease to apply, and it will be said of the man who has given the American people the best government the sun ever shone upon, that "he is a farmer."

# PRACTICAL PAPERS.

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## CO-OPERATION AMONG FARMERS.

Read before the State Agricultural Convention in February, 1873.

BY GENERAL E. E. BRYANT, MADISON.

To the more thoughtful of those engaged in agricultural pursuits, it has long been evident that in many respects the farmer is conducting business on principles diametrically opposed to economy. While he works harder and more hours than any one engaged in other manual labor occupations, and with a destructive use of capital; while he is a good producer of genuine wealth, his products possessing great intrinsic value, being everywhere indispensable, he finds that for his labor and investment of capital he receives less returns than should fall to his share. In looking about for the causes of this discouraging result, he is impressed with the fact that so expensive and complicated is the machinery of distribution by which his products are conveyed to the consumers, and his own wants in return supplied by the products of the manufacturer, that the greater share of the profits of the production is absorbed by those employed to effect the exchange.

That a large portion of humanity must be go-betweens to effect exchanges of the products of agriculture and manufacture is true, but it needs no argument to show that the number engaged in mere commerce or the exchange of products should be as limited as practicable. So far only as they save to the producer and consumer time and expense in effecting exchange, are commercial agents or middlemen profitable. The speediest, most convenient and cheapest method of effecting exchanges should be sought for and adopted, and I think all will agree that such an one is that which does not unnecessarily multiply mere go-betweens of traffic.



The present situation, as it is brought vividly to mind by these hard times, forcibly suggests the words of a distinguished writer on the subject of political economy. He says :

“ Commerce is designed to bring the producer and consumer into relation ; that is if it has any object. But in itself it produces nothing ; it adds nothing to the commodities which it circulates. It is obviously, then, for the general interest to reduce commercial agents to the smallest number, and to carry over the excess to some productive employment.”

In our societies, precisely the contrary takes place ; the agents of commerce are multiplied beyond measure ; designed only to play a subordinate part, they have usurped the highest rank ; they absorb the largest portion of the common dividend out of all manner of proportion to the services they render ; they hold the producer in servile dependence ; they reduce to its lowest terms the wages of workmen ; and they extort from the consumer without mercy.

The truth of these words is on every hand manifest. It is found in the fact that while the agricultural interests are wofully depressed, our great commercial centers are growing in wealth and population with almost fabulous rapidity. It is found in the deplorable fact that while the farmers of Iowa are burning corn as fuel, the price of meat, the solvent of corn is so enormously high, even in our western cities, that day laborers are almost obliged to go without it. The butter for which the farmer can scarcely get the cost of production is accounted in the adjacent cities as being beyond the reach of the artizan. As was said by that earnest friend of American labor, Horace Greeley, the machinery whereby vegetables and fruits, for example, are collected from the farms and gardens of the producers, and supplied to the neighboring cities and villages is nearly as expensive and rude as it was in the days of Homer and the elder Pharaohs. It is estimated upon careful calculation that fully one-fourth of the earnings of the poor in cities is absorbed by the profits of retail trade ; and mainly of the trade in what they eat and drink.

On the other hand, the farmer bled in selling is also bled most unmercifully as a buyer. Nearly every article which comes to him from the manufacturer passes through many hands, each

adding to the price, until the amount he pays is like the Irishman's definition of preaching, "all cost and purty much a profit." It is safe to estimate that he pays a trader's profit of from 10 to 100 per cent. over the cost of manufacture and transportation on nearly all that he is compelled to purchase. Submitting to this double toll, is it a wonder that the farmer, the most frugal of men, can scarcely make ends meet, and keep off the dreaded mortgage, which like a millstone drags him down to insolvency? Is it a wonder that he looks over the field with a rueful eye, when he sees but little, if any, added wealth as the result of his unremitting labor and depreciated soil? It is evident that something is wrong here. The fault is not in Providence for sending poor crops. It is not altogether, though in a large measure, in railroads for charging exorbitant freights, nor is it to the extent that some political economists suppose, attributable to tariffs. It lies mainly, I believe, in the fact that the farmers are tolerating a cumbrous, imperfect method of effecting exchanges, and are paying very dearly for it. It is a system which, while it draws legions from the productive walks of life, lacks a single element of economy, and is likened to that system of civil service which multiplies offices, and thus renders the transaction of public business tedious, complicated and expensive, for no other reason than to furnish a government an excuse to employ an exceeding great multitude of officials, which no tax payer wishes to number.

The old times of few and simple wants have gone by. Civilization, as it advances, is constantly increasing our wants, constantly placing before us the temptation of new objects of desire. The list of articles we must purchase is almost certain to increase. On the other hand, the vast and increasing competition in agriculture is likely to keep down the price of farm products, and our western system of farming, as at present conducted, is likely to keep down the yield. It would seem, then, that a system should be devised by which the farmer can buy and sell to the best possible advantage. How this can be done, is a question that is freighted with much importance, and one that is worthy of patient study and careful experiment.

For the accomplishment of this result, various methods have been suggested, and all proceed upon the idea of co-operation or

association in some form, and it is a modified or partial co-operation that I shall venture to suggest.

I am well aware that this idea of co-operation is rather repulsive to the American farmer. His social science has long been summed up in the adage "Let every tub stand on its own bottom." He has cherished the idea of sturdy independence and reliance upon his own resources, until the thought of co-operative effort strikes him as a very thin quality of moonshine. No other class of men are so sure to have an opinion on all subjects as your average Yankee farmer, and none are so sure to be sure that their opinions are right. The thought of submitting his efforts to the direction of others, or investing his capital where he cannot exercise full control over it, strikes his sturdy instincts as a parting with his birthright degrading to his manhood. So marked is this dissociative spirit of the farmer, that he can hardly co-operate in the organization of a church without losing his religion, or in the location of a schoolhouse without jeopardizing the cause of education in his neighborhood. The establishment and direction of a cheese factory is a tremendous pressure upon his milk of human kindness, as he must unite in action with others; each sure to have a different plan of procedure, and each equally persistent that his own idea shall prevail. The county agricultural society is, through the knotty-headedness so peculiar to the farmer, a debating club where questions are decided after hot debate, to the satisfaction of but few, and the lay members generally agree only in regarding the management of the society as a Denmark of rottenness.

Notwithstanding this tendency of the farmer to isolation, and to distrust the views and integrity of the rest of his fellow-men, I shall venture crudely to outline a plan of co-operative effort, which seems to me worth the trial. Steering clear of those radical phases of the subject which run into communism, I shall, also, avoid those other ideas of industrial association which involve a very considerable investment of joint capital, and which, as far as my observation extends, have proved to be failures, owing mainly to the chronic disinclination, before hinted at, of farmers to pull together. Associations or trades-unions of some form are becoming quite common in this country. Every book we buy now costs

us something extra because the printers of the larger cities have formed an association to dictate the price of their labor. Every pair of shoes we buy, and the art of tanning bad leather and making bad shoes in bad styles, have compelled us to buy so many that we almost look upon hoofs with envy; cost us something extra because the Knights of Saint Crispin have leagued together to resist the dictation of trade in the matter of their wages. The increase in the wages of operatives and artizans is in great degree due to co-operative effort, in demanding it, and so, too, is the ten hour system so soon to be supplanted by the eight-hour system, whereby the laborer hopes to make earth a paradise by doing *less work for more pay*. Indeed the present is an age of co-operation. The merchants have tacitly ceased their competition, which they find to be the death of profit, even though it be the life of trade. The great corporations which aspire to the dominion of the continent, are but co-operative societies. Co-operation crops out everywhere, as well among the rogues who form political rings, and get up corners in stocks and produce, as among those more modest and less mischievous knaves who rob clothes-lines and break open safes. With this tendency to unite for mutual strength and protection so rife among the other occupations, it is hardly safe for the farmer to remain a commercial Ishmaelite, "his hand against every man, and every man's hand against him." The hand he holds is altogether too poor for him to play it alone. In his present unorganized condition, he is a mere bushwhacker, confronting organized and well-equipped armies.

The better to convey my idea of the co-operation practicable among farmers, let us suppose it to be in actual operation thus:

In each of the towns of a county there are formed, according to the convenience of neighborhood, farmer's clubs. The regulations are few, and every member who wishes can at any time withdraw, forfeiting only his dues paid in and his interest in the small amount of joint property. It is necessary to leave a large cat hole for the farmer to crawl out, for if you cork him up too closely, he will burst the institution to make space for exit. None but reliable, thrifty men are admitted into the clubs. No scalawags need apply. Men who use their exemptions as a covert from which to make forays upon creditors; who put their property into

their wife's name or elsewhere to hide it from those who trust them; who underdrain their land with mortgages, and top dress their growing crops with chattel mortgages as a shield against executions, are not wanted. Honest men who pay their debts are aware that the merchants' losses from trusting these bummers on the credit system, are charged over in the shape of higher prices to the good customer. Hence our association is composed of men whose paper is good, but scarce at the bank.

These clubs own some articles of property in common or in shares, such as threshing machines, clover hullers, cider mills, weighing scales and thoroughbred animals for the improvement of stock; also books upon agricultural topics, and periodicals published in the same interest. It is found that by systematic regulation as regards use and care of this common property, all the members can derive from it the benefit of full ownership while paying only a fraction of the price and expense of keeping and repairs.

These clubs work in connection with a central society, which for completer usefulness had better be, where most convenient to the County Agricultural Society, though they should tend toward trade centers rather than political. At stated times in the year, each of the members of the clubs gives into the secretary a list of the articles of machinery he desires to purchase. These are made out on blanks furnished for the purpose, specifying kind, quality or other description, and stating terms on which he elects to purchase, reference being had to the contract hereinafter mentioned, and containing an agreement that he will be bound by the terms of such contract as to their purchase, distribution, receipt and payment. These various orders of the members are at once consolidated by the secretary, and the originals and consolidated lists are sent to the secretary of the directors of the central society. He thereupon consolidates and classifies the orders of the several clubs. It thus appears that many farm implements and articles of machinery are to be purchased.

The purchases are to be effected thus: The central society has a body of directors composed of skilled, sagacious men, selected for their known integrity. Their duty as regards purchases is to make contracts with manufacturers and wholesale dealers for the

furnishing of such articles as the members may want. For the faithful performance of this—like purchasing agents for the government—they may be required to take an oath not to be directly or indirectly interested in the contract except as purchasers, and that they will use their utmost endeavors to procure contracts most advantageous to the society. These contracts are made after a careful survey of the field. They are, of course, only in the nature of bids to furnish, and take effect as contracts when and so far as orders are given under them. They are carefully framed so as to bind the vendors to a faithful performance. The contracts or bids are on printed forms and copies of the same and appended price lists are furnished to each of the clubs, and it is with reference to these that members make their orders. The contracting board handle neither the property nor the money, and collusion between them and the bidder need hardly be feared when all is done in open day, and if suspected, can easily be forestalled. For example: A contract to be in force one year is made by the board with the manufacturer of a reaper of established practicability, that the machines shall be furnished to the members of the society at a specified price. The consolidated spring list shows that fifty reapers of this patent are wanted, specifying names of purchasers, place of delivery, etc., and what terms of payment, where different terms are stipulated for, the purchaser in each case elects to be bound by. Upon these orders, the secretary of the board of directors orders fifty reapers of the manufacturer. Enabled thus to dispose of his machines to responsible purchasers without sending out a swarm of agents with whom to divide the purchase money, the manufacturer can make for himself a very handsome profit, and sell his reaper for some thirty or forty dollars less than the usual retail price, after adding the commission of general, local and traveling agents.

The contracts under which they are furnished are carefully drawn, so as to secure the delivery of approved, well made machinery, under a substantial warranty and liberal provisions as to extras. Instead of buying his machine under a warranty which keeps "the word of promise to the ear to break it to the hope," and giving a judgment note in which in fine type are conditions, that he shall have no title till the last cent is paid, and under

which the chances are that he will have to pay a bill of costs, he is thus able to purchase under a general contract wherein his rights are amply protected, both as to terms and warranty.

Again, a windmill of medium size costs, when bought of an eager agent, \$100, and expense of putting up same, \$25 more, besides expense of pump and pipe. It costs the manufacturer not to exceed \$50 to build and transport that same mill. The other \$50 are profits to the manufacturer and the three or four agents who manage to get in between the factory and the well.

On the other hand, the system we are considering furnishes to the manufacturer an agency whereby he may dispose of his mills, employing few, if any, go-betweens. He jumps at the chance of selling to good customers a score of mills at a time, and closes a contract with the board of the society to supply its members with mills at \$60 each, and pumps and pipe at correspondingly reduced prices. Being able to sell without dividing with agents, he can well afford it, and the members without stirring from their neighborhood, get their mills at a saving of from \$30 to \$40, which nearly pays the taxes for the year. In this way, machinery is bought from the manufacturer direct, and the officious agents which infest the farmer's pathway are mustered out of service and remanded to the more productive walks of life.

As to groceries and other merchandise, the society proceeds in this wise: The board of directors, armed with the patronage of from 300 to 500 farmers, go to some merchant centrally located, and say to him: Here is a patronage, sir, which will give you a large, stable, reliable, most desirable trade of well assorted customers. You have the opportunity to furnish hundreds of families their necessaries. We propose to buy our merchandise in three months' supplies. We propose to lay down an established system of payments so that you can rely upon your money, or interest on such accounts as are not balanced by the appointed time. Thus you can forecast the volume of your trade with certainty, and purchase accordingly. But, sir, this splendid patronage is yours only on condition that you banish from your dreams all high price notions, and let us have the goods at a thin margin. For the trade of such a band of customers, there would be the liveliest competition, and the board could close a contract whereby

they appointed some responsible trader as the merchant of the society, who, with such a large and certain business, could furnish them their merchandise at prices much below those which rule under the present system.

Again, it so happens that every year a half dozen members of the society get forehanded enough to buy pianos for their daughters. They determine the kind they want, and, instead of buying of the local dealer, who pockets a commission of from \$100 to to \$125 on each instrument, they buy, through the agency of the society, right from the general depot half a dozen pianos, at a saving of from \$100 to \$125 each. In the same manner, the garrulous vender of sewing machines is dispensed with, and his grandiose vapping is heard no more in the rural household.

The savings in the price of what we buy are to people of small incomes very important items. Every farmer who has prospered knows that his accumulations are the result of savings, "here a little and there a little."

The adjustment of the details of payment for and delivery of the articles thus purchased is attended with some apparent difficulty, but this all vanishes before an established system. Articles of machinery are delivered under the contract at such railway station as the purchasers designate. They are consigned to the purchaser, in care of the secretary of the club. The latter reports the delivery, and the purchaser having assumed the obligations of the general contract, must perform. He must pay his money or deposit his notes in the designated bank in accordance with his agreement, in default of which, by the contract, the whole purchase price becomes due and may be recovered by action. Thus the officers of the society have little or nothing to do with the control of the funds. Out of the small sum paid as dues by the members, a per diem is paid to the secretaries and boards of trade directors for the time actually employed, which need be but little. For greater convenience, the secretary of the central society of the department of purchases at least, had better be the cashier or some officer of the bank, through which the business of the clubs is done. He would gladly undertake the duty of consolidating club orders and making orders upon manufacturers or wholesale



dealers, at stated times, in consideration of the increased business it would bring to his bank.

With the merchant selected to supply the society, each member deals directly, but the rate of profit to be charged, the terms of payment of the accounts, etc., are fixed by the contract.

The advantages of this system of purchases, I believe to be these:

1st. It enables farmers to make their purchases at a very considerable saving in cost.

2d. It would tend to make them systematic in forecasting their wants, regular in their expenditures and payment, and to prevent that habit of incurring numerous little debts here and there, which is the farmers' easily besetting sin and fruitful source of embarrassment.

3d. It costs but little to try it as an experiment, and if it fails, no capital is sunk in its abandonment.

It may be objected that such a course of business would tend to thin out the non-agricultural portion of the rural population. To some extent it might, but it seems to me better that the little trade nursed villages should grow less rapidly, than that the farmers' broad acres should be shingled with overlapping mortgages. It is better that less enterprise and capital were devoted to mere trade and more to manufacture and the development of our mineral wealth and the improvement of our magnificent water powers. If fewer of our young men went to clerking in stores, and manfully turned the tape-reeling, calico-measuring business over to the girls, and went out into the rugged paths of enterprise, where manhood grows strong with struggling—if they sought some pursuit which brought into requisition all the grand capacities coiled up in the brain of the American boy, it would be better for them and for all.

Our system has another device for facilitating traffic. Our farmer is a trading animal and always has something to swap or sell. So our co-operative society holds three or four fairs in the year, after the European custom, for the purpose of trade. Two or three weeks before the appointed fair day, a bulletin is published by the secretary of the society and circulated through the medium of the clubs and otherwise, in which any of the members

can advertise free of charge, whatever he may wish to bring to the fair to sell. Thus farmer A. gives notice that he will have for sale at the fair, a new milch cow. Farmer B., that he will offer a span of roadsters in exchange for work horses. Housewife C., that she will contract to furnish a family or two with butter for the next quarter; and so on.

Thus a wide-awake holiday is had picnic fashion, and buyers and sellers are brought together. A registry of bargains and sales is kept during the fair, in which, when the parties desire it, is briefly noted the nature of the trade. Price, terms, conditions, representation and warranties are set down in a book designed and kept for the purpose, and made evidence of the transaction. The expense of holding such a fair would be but trifling, and could be met by a small admission fee. This custom once started and adhered to till established, would, I am satisfied, be found pleasant and convenient, and would pay.

Touching co-operation in the production and sale of agricultural products, I shall, for want of time, offer but few suggestions. Whatever union of effort is practicable among a class whose habits of thought, life and labor are so unassimilative must be approached gradually. / Co-operation in the manufacture and sale of cheese is an assured success. Whenever established and managed with ordinary prudence, the cheese factory has made better cheese at less expense than was produced in the old way, which made the housewife's labor more toilsome than that of a galley slave. The demand upon the west for this article of food is constantly increasing. The creamery, or butter factory, is equally practicable, and can be established with about the same outlay. The requisition upon the west for butter is growing larger each year; and in this direction, it seems to me, lies the Wisconsin farmer's pathway to better times. / My boyhood was spent in Franklin county, Vermont, now famed in all markets for its butter. On one of those rugged farms where the land was turned up edgeways, so that one acre by survey gave two of surface—but about one and a quarter of bare rock—I used to sit down on a three-legged stool, after a hard day's work, and rest myself milking from a dozen to twenty cows. As long ago as I can remember, the farmers there were poor. It took the combined labor of

man and housewife, boys and girls in summer, and chopping and logging in the winter and sugaring in the spring to pay off the modest store bill and taxes, and square up with the blacksmith, doctor and minister. To-day, they are rich. The dairy has been their mint. In the cheese press, they have coined golden eagles, and in the churn they have wrought fine gold. The cheese factory has abolished a large part of the slavery of their occupation. The creamery, to which they are now turning their attention, will soon dispense with the the greater part of what remains.

But even without beginning with a cheese or butter factory, our farmers can co-operate in this branch of production. Let a club or neighborhood turn their attention to the manufacture of butter, not to the exclusion of other business, but gradually let them work into it, make it a speciality, and study excellence in the manufacture, for, say what you will, excellence in product is the only sure road to profit. Instead of selling their butter a few rolls at a time at country stores, to be taken into a cellar dank with the blended odors of tar, tobacco, codfish, molasses and rum, and dumped into a barrel with other stuff, just a little too yellow for lard and a little too clean for wheel grease, let them have a system of shipping and selling it together. Thus in a short time they can gain for it a reputation in the adjacent larger town, so that it will find an eager demand and the highest prices in the market, precisely as the repute of the lawyer, or physician brings him more business and larger fees. Thus they will find that a half dozen good cows will bring them in a sum which will go far toward paying the taxes and store bills for the year, besides the increase, and pay to the land for keeping.

Again, in stock growing, a club or neighborhood can co-operate to the mutual profit of the members. Let them set about it and start together in bringing out a strain of good beef makers, devoting care and expense to that end. Soon their neighborhood gets a reputation which is a magnet to the butcher and drover, and they can charge extra for the fame of their stock.

These steps in the direction of combined effort, I venture to assert, might be taken without shock to the sense of independence of our hardy tillers of the soil. They are but partial and do not aim to eradicate all the evils of which the farmer complains. In or-

der to bring agriculture into its just relation with the other occupations, a larger and more general union of effort is necessary.

The conviction is gaining ground that the time has come for a general uniting of the agricultural interest of the country to secure cheaper and more uniform rates of transportation ; to secure such modification of the revenue laws as shall prevent the nursing of protected monopolies mainly at the farmers' expense ; and to so regulate our monetary system as to render impossible those gigantic conspiracies by which a forced depression of the market can be caused at the time when the agricultural product of the country is ready to be moved, and by co-operating with masses of consumers to simplify on a large scale the methods of effecting exchanges. Were the agricultural interest fully organized and united for the accomplishment of these objects, it would present a power before which corporations would be but pigmies ; a power to which politicians would hasten to yield something besides the windy compliments of the stump speech. At a time when rings are formed in the interest of particular branches of industry, and large funds raised with a view of controlling legislation and to hinder the fair operations of the laws of trade ; at a time when the money of great corporations has raised the stench of corruption in our legislative halls ; at a time when organized capital employs the ablest talent of the country to further its schemes ; at a time when the press, flaunting the banner of independence, sells its voice or its silence to the monopoly that bids the highest ; at a time when the other industrial occupations are rapidly organizing to insist upon larger returns for their labor, it seems to me not only not improper, but necessary, that the landed interest of the country should organize to assert its dignity, and demand its rights as one of the estates of the realm.

And a body of men possessing such power, and drawn together by such identity of interest, and having such urgent grounds for organization, need not resort, in my judgment, to the doubtful expedient of forming secret societies in order to exert their just influence or claim their own.

Let the farmers of the country stand for their own interests, shoulder to shoulder, manfully in open day, and they can have their will.

## PRODUCTION AND CONSUMPTION, DEMAND AND SUPPLY.

Read before the State Agricultural Convention in February, 1873.

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While human society shall last, and human nature remain unchanged, there will always be grievances to meet and wrongs to be righted. No age nor nation has ever yet escaped this demand upon it, and none need hope to do so. The same impulses and imperfections in human nature, which made the necessity for law and government in the beginning, still exist, and every step in the march of civilization, like a new turn of the kaleidoscope, presents a new phase of relationships and dependencies. To adjust these properly, they must be understood; to understand them, they must be studied; to study them aright, prejudice and passion must give way to sober reason and sound judgment. Perfection, then, in the adjustment of social and industrial relations can never be realized so long as new forces are continually brought into action, and new conditions evolved. This is an age of associations and conventions. The fact is one of encouragement. There is strength in union if properly conserved, and truth comes of fair discussion and healthy exercise of thought. The purpose of these gatherings is not more to cheer and strengthen each individual in his chosen life work, than to discuss its relationships to other interests with which it comes in contact. But I shall not dwell upon the connections and nice dependencies which hinge together or interweave the multiplied industries of the world. I shall content myself in attempting to present some of the fundamental principles of Political Economy which seem to have a general and practical bearing, and whose recognition is necessary to clear the way for righting wrongs and meeting grievances.

The moving impulse in the economic world is human wants, the ultimate object is to satisfy these wants, and the absolute intervening condition to this end is human toil. The science of po-

litical economy assumes as its basis in human nature, that men in their business relations are actuated by self-interest. Many ethic principles may be defended upon economic grounds, but the science of ethics and the science of economy are essentially distinct. The one treats of right and the other of gain. The basis of one is an enlightened sense of duty, the basis of the other is enlightened self-love. Hence follow the laws which govern production and consumption, demand and supply, value and price. Wants, efforts, and satisfactions then, make up the economic circle. Wants and desires are infinite in number and indefinite in degree. Some are primary and vital; others spring into action, only when the more urgent are gratified. The simplest desire soon passes into a taste, and taste, if repeatedly gratified, is soon transformed into an actual want. Here, then, are the springs of wealth—the moving impulse which has brought into being the myriad industries of the world, and which continues to increase, direct and energize them.

But it is a condition of our being, that neither the comforts nor even the necessaries of life shall be obtained without exertion. It is written, "In the sweat of thy face shalt thou eat bread." Toil, too, is irksome. Man is said to be, and perhaps truthfully, a "lazy animal." He aims to satisfy his wants to the utmost, with the least possible expenditure of effort to secure the greatest amount of what is desirable, at the sacrifice of the least that is undesirable; in short to maximize pleasure and comfort, and minimize pain and discomfort, is the problem of economy. But men were not long in learning not only that the same needs and comforts of life could be secured with less effort, but that infinitely more and better satisfactions could be obtained by exchanging services. This plain proposition, so early recognized to a limited extent, men seem to find it difficult to comprehend in detail, and seem disinclined to follow to its logical consequences. In it is involved the whole question of the Division of Labor and the Distribution of its fruits. Its observance marks the beginning and the progress of civilized life, and in proportion as individuals and nations give it full and practical recognition, do they grow in wealth, comfort, and general prosperity. Every man has aptitudes and inclinations natural or acquired, which lead him into

particular departments of industry, but he has desires to acquire and enjoy the fruits of a thousand departments. The very existence of this state of things practically enforces division of labor, and makes exchange necessary. But we are apt to lose sight of the extent to which this division is, or ought to be carried, of the benefits which flow from it, and of the extent to which prejudice sometimes creeps in at this point to disturb correct thinking and acting.

Some of you, no doubt, have seen that pictorial sheet, in the center of which stands a farmer, while around him on the margin are representatives of different trades and professions. The merchant says, "I trade for all"—the railroad manager, "I carry for all"—the lawyer, "I plead for all"—the physician, "I prescribe for all"—and the clergyman, "I pray for all"—while the farmer is made to say, in characters of double size, "I pay for all." Now there seems to be, practically at the present time, an element of truth in this portrayal. But theoretically considered, it is wholly unsound, and we are nearer a remedy when we recognize its theoretic untruthfulness than when we ignore it. The farmer of this country, and especially of the West, through a combination of circumstances, is made to pay out of due proportion for the benefits which he receives, but the injustice can never be righted by any course of procedure which does not recognize the different parties in production.

What is it to produce, and who are producers? In the broadest sense of the term, one who renders a service for which something may be demanded and received in return, is a producer. The service rendered is the product, and the act of rendering it is production. The earth, with her resources, and nature with her agents, animate and inanimate, stand ready to minister to the wants of man. But labor is necessary to appropriate these resources, and to understand and control aright the helps at our command. The difference between the physical condition of civilized man to-day, and his condition two or twenty centuries ago, is due to little else than a better understanding of the properties and relations of things about him, and to his increased ability to harness into his service the gratuitous forces of nature. The accumulated wealth of the world is but the result of the application

of human industry to the materials which God has spread about us. But mind-work is no less essential than that of the body. Its grand office is to direct and economize physical effort.

All industry has been roughly, though not inappropriately classified under three general heads — Discovery, Invention and Operation — and to designate employments falling in one of these divisions as productive, and those falling in another as unproductive, is unscientific to say the least. If we confine our attention to material products only, most we can say is, that some employments are directly, and others indirectly productive. Material production is simply imparting to natural objects qualities which fit them to satisfy human desire — bringing them into shape or position suited to serve a purpose.

Utility is the thing produced — not matter. Man is incapable of producing or annihilating a single particle of matter. All that he can do is to effect change in what already exists. This change may be of three kinds — change in elemental form, change in aggregate form, or change of place. To transmute, to transform, or to transport, is the business of all who are engaged in material production; and all man can do in any case is to supply the conditions, while the properties of matter and the forces of nature complete the work.

The agriculturist effects changes of the first kind mainly. Availing himself of the chemical agencies of earth and air and sunlight, he changes the seed into a new harvest of grains and fruits and vegetables, and these grains, through the aid of animal organisms, into beef, milk, hides, &c. The mechanic and manufacturer effect changes of the second — change in aggregate form. It is their business to shape and fashion the raw material so as to suit and satisfy a thousand purposes and desires. The merchant and the multitude of common carriers, by whatever name or title we designate them, are busied in effecting change of place.

Thus we have the three great departments of industry engaged in material production — the agricultural — the mechanical — and the commercial. To classify labor in one of these departments as productive, and in another as unproductive, is to lose sight of the very nature of production, and of the thing produced. He who transports wheat from Wisconsin, where the desire for it is estim-



ated at \$1.25 per bushel, to the Atlantic seaboard, or to Liverpool, where that desire is estimated in the one case, at \$2.00, and in the other at \$3.00 per bushel, is no less a producer in the strict sense of the term, than he who sowed the seed and stirred the soil as conditions for the harvest.

All forms of productive effort may be united in one commodity. Indeed there are few which do not combine them all. No product is complete till it is made ready to be put to its final use, and no unessential part of the work is to bring it to a market.

I have dwelt somewhat upon this matter of production because it is fundamental. It is not uncommon to hear those whose business it is to transport commodities from one part of the country to another, or to effect and facilitate exchanges, designated as unproductive laborers. The term is an unfortunate one. It creates a false impression, and tends to vitiate right thinking, and right acting upon questions of vital concern. Nothing is gained, but everything is lost by starting with false premises.

Agriculture forms the *base* of the pyramid of production, but not the whole of that pyramid. Four-fifths, perhaps, of the human race are directly or indirectly engaged in it. From this source, the markets and mills of the world are supplied with materials and with workmen also. "Here, after all its hurts, humanity comes for healing. War and pestilence, the fierce contest of the mart, the stifling atmosphere of the mill, may waste our kind in quick or lingering deaths; but still, by the side of the brooks, men will be born to hold up the forms of industry and social order when their supporters faint and fail."

All production implies consumption. One is the direct opposite of the other. But as production does not, and cannot create matter, neither, can consumption annihilate it. As utility is the thing produced, so utility is the thing destroyed. While material production consists in fitting natural objects to satisfy human desire, consumption consists in unfitting them to do so.

Consumption may be voluntary or accidental. In the one case we expect a return; in the other we do not. A gate left unlatched may be beaten in pieces by the wind, or it may be worn out by legitimate use. The only difference is, its consumption in one case serves no purpose, and in the other it serves a very important one.

Consumption for the most part is for the purpose of reproducing. The farmer consumes seed, tools, machinery, labor, food for its sustenance, etc., but expects remuneration in the new crop. The comforts of life are kept in store not by saving, but by perpetual reproduction. To save in the scientific sense is to consume less than is produced, not to consume less absolutely. There are two ways of increasing wealth—by consuming less or producing more. All men are consumers, and must be such. It is a condition of our existence. Most men are producers to some extent. Few live entirely upon public charity. No man in a civilized community produces all that he consumes. By choice, he engages in a particular industry, without choice, he consumes the products of a thousand. The practical question then is, not who are producers, and who are consumers, for all are each. The real difficulty seems to lie in securing a proper distribution of the rewards of industry.

Distribution, like exchange, grows out of the division of labor, and division of labor grows out of the desire of gain. The latter began with the race, and grows with civilization. Even Adam delved while Eve spun. The savage husband hunts the muskrat and the beaver, the deer and the buffalo, while the wife dresses the food and prepares the skins for clothing. Both render services which they exchange with each other. Division of labor and exchange of services began in the family, but have come to know neither clan or kinship.

But the question of distribution brings us face to face with the subject of value. Error at this point is absolutely fatal. A misapprehension of the nature of value will vitiate all reasoning upon questions of economy and finance. The term, value, is a relative one—the thing is a mere relation. Herein lies a difficulty. That which is absolute, we can seize and hold, but a relation, if we watch not, will slip our grasp at every turn. Value implies a comparison. It is the relation which one service or commodity bears to others in exchange—it is in two words, purchasing power.

Value must not be confounded with utility. The latter is capacity to satisfy desire—the abstract quality whereby a thing serves our purposes. Utility may be great and value little—the reverse implies an absurdity. Indeed, objects may have utility

without value, as air and sunlight under ordinary circumstances. But value attaches only where utility is present. Utility is the limit of value. No man will give for a thing more than his highest estimate of its capacity to serve his purpose. An act of exchange is a sort of equalizing of estimates. It implies two persons, hence two desires, and two services rendered. These services may be labor, pure and simple, or may be commodities. If the latter, two important requisites are necessary, 1st, that these commodities be possessed of some utility; 2d, that they have some difficulty of attainment—represent or embody human labor. Four variables, then, must enter into a correct notion of value—two desires and two exchangeable things. Any change in one of these, the others remaining constant, must vary value.

To speak of a thing's having value, is to use language figurative rather than accurate. Nothing is truer than that value cannot reside in anything. The expression is convenient, and perhaps upon that score admissible, and but little harm can come of its use, if the nature of that which is a mere relation is clearly grasped.

It is often said that value depends upon cost of production. But the cost of producing a thing is but one of the four variables which must be considered to determine value. It would be more nearly correct, though not entirely so, to say that the value of a thing depends upon its cost of production, if the cost of producing other things with which it exchanges, and the desires of the parties exchanging remain unaltered. This condition of things is rather imaginary than real. Hence there is very little accuracy in the expression, "Cost of production determines value." If we had a perfect, invariable standard—something which remains fixed and constant, while everything else is subject to change, we might then say with tolerable accuracy, that the value of things measured by this standard, depends upon their cost of production, plus the effect of any alteration in the desires of the parties making the exchanges. The most perfect standard known is gold and silver. Value estimated in them, or in any recognized representative of them is called price.

Value is general, price is specific. Value is purchasing power expressed in any exchangeable thing, price is purchasing power expressed in current money. On the hypothesis that this standard,

gold and silver, or that which represents it, is fixed — a violent supposition, so long as that representative is inconvertible — values, or prices rather, will be governed on the average, and in the long run by cost of production. But at any particular time and place, they will depend upon cost of production, or rather upon what would be the cost of reproduction, plus the effect of cost of supply and demand. Now cost of production is a very indefinite thing. It depends upon the cost of the two essential agents — labor and capital. Three variables, too, must be considered in determining the cost of these agents. In the case of labor these are: 1st, its efficiency; 2d, the nominal wages paid; 3d, the cost of that, whether money or anything else in which wages are paid. In the case of capital, they are: 1st, the rate per cent. which must be paid for its use; 2d, the time for which it must be advanced before returns can come in; 3d, its liability to slow or rapid consumption when in the form of tools, machinery, buildings, etc. These elements of cost are constant and universal. There are others, such as taxes, insurance, etc., which are occasional and incidental.

We are now in a condition to see how sensitive a thing value is, or even price itself, and what opportunities are offered for false reasoning and false conclusions in regard to them. The elements which enter into cost of production are alone sufficient to account for many of the failures in business which we encounter on every hand. How many there are who never "count the cost."

But wants as well as efforts affect values. It matters not how much labor and capital may have been expended, if there is no demand, present or prospective, for the finished product, it is valueless. If there were no division of labor, and no exchange of services — if every man endeavored to satisfy his own wants through his own efforts directly, it is quite clear there would be no such thing as value — no need of money — no such thing as price. Every man's desires would constitute a market for the products of his labor, and his own efforts would determine the supply. There would then be no chance for the operation of the multiplied checks and balances which govern in exchange. In a commercial sense, demand and supply would have no significance.

But just this condition of things never did exist in point of fact, and never will. It precludes the very idea of association.

As civilization advances, individuals and nations learn that true independence comes of the completest interdependence. They produce, not to satisfy an immediate and definite demand, but in anticipation of a general indefinite one. Intelligent foresight is now the grand pre-requisite for successful production, and demand and supply become terms of the highest import.

In the broadest sense, demand is but another expression for the wants and wishes of men, and supply, for the existing means of satisfying them. But the real significance of these terms lies in a more definite and restricted meaning. Demand in this sense must be "effectual"—desire coupled with ability to purchase. And supply is not services and commodities in general, but those which are in the market, for sale. In commercial language, *money* ready to be paid out for products, constitutes demand, and *products* ready to be exchanged for money, make supply. The law of market price is the equation of demand and supply. When these are equalized, the current rate of exchange is determined. But the effect of these modifying agencies upon the prices of all things is not equally controlling.

Exchangeable commodities may be roughly divided into three general classes: 1st. Those of which the supply can be readily and indefinitely increased; 2d. Those of which the supply is absolutely limited; 3d. Those of such a nature that the supply, though not absolutely fixed, can only be increased with difficulty, or after considerable lapse of time. In the first and most numerous class, where supply can be promptly and indefinitely increased, cost of production operates to regulate mainly the *average* price, while demand and supply cause fluctuations only. The harmonious and double-acting law by which these temporary influences are equalized, is one of the most beautiful in the whole science of exchange. Any excess or deficiency in demand, not only tends to check itself, but it is also checked through its influence upon supply; so on the other hand any excess or deficiency of supply meets at once a double check.

A rise of price from increased demand is checked, first, by restricting the number of purchasers; second, by increasing the sup-

ply. A fall in price from excessive supply is checked, first, by enlarging the number who are now able and willing to buy; secondly, by a lessening of the supply through a check in production, or through the action of holders and speculators.

Articles falling in the second class mentioned, those of which the supply is absolutely limited, are less numerous. Ancient sculpture, paintings by the old masters, antique relics, etc., are examples in point. No power can add to the supply, though time or accident may sensibly diminish it. The price which such things will bring is wholly settled by the competition of purchasers. Demand and supply will be equalized when price is carried to that point where competition is eliminated, and there are just buyers enough to take off whatever is for sale.

Those in possession of things of this class have a natural monopoly of the market. But any commodity whatever may be the subject of an artificial monopoly, and the influences which operate are very much the same as in the case of a natural one. If the monopolist sees fit to abuse his power, he can fix the price as high as he pleases, short of what purchasers either could not or would not pay; but he can only do so by limiting the supply. Things which are the subject of a natural monopoly are rather exceptional than otherwise, and have little bearing in the economy of society. But it is very different with those commodities which fall in the third class, for which the demand is urgent and continual, and the supply for some time, at least, very difficult, or even impossible, of increase.

Such is the case with grains and other products of the earth. Most nations depend upon their own harvest to a great extent for subsistence from year to year. When this has been gathered, there can be no further home supply for a twelve month. The mischief which might otherwise flow from this condition of things is very much lessened as nations come to act upon the idea that their true relations to each other is one of interdependence, rather than of absolute independence. In this connection, too, we are enabled to see the important service which a certain class of middlemen are enabled to render—a class against whom, in this day and age of "corners," some prejudice is very apt to exist. The usefulness of the grain dealer consists in great part in his econo-

mizing the supplies of a country, by high prices, during seasons of scarcity, and by his reserving the surplus, during years of abundance, for harder times. The price of any commodity seldom rises in the exact ratio of increased demand, or of diminished supply. It may rise in excess of that ratio, or keep far short of it. Demand not only acts upon price, but price reacts upon demand. The extent of this action and reaction depends much upon circumstances and the nature of the commodity. Our most urgent wants are soonest satisfied. Bread enough is better than a surfeit. It is desires of a higher nature—those which come of civilization and refinement, that grow with what they feed upon. Any excess or deficiency of the common articles of food tells rapidly upon their price. A very general failure of the wheat crop will raise the price not in the ratio of the deficiency, but according to the relations of the diminished supply to the new demand. It has sometimes happened that a failure estimated at one third has doubled and even quadrupled prices.

This brings us face to face with a condition of things which in the northwest, at least, is now made the subject of bitter complaint. It is alleged that the rewards of industry are not being properly distributed—that the railroads and other transporting agencies are appropriating to themselves too great a share—that the profits which should accrue to the farmer are eaten up by the numberless middlemen who intervene between him and the ultimate market, or between him and the manufacturer of the tools and machinery necessary for his use. There is unquestionably much truth in these charges, and some reason afforded for complaint. But if the principles which we have been considering be correct, there is some danger of drawing false conclusions in regard to the nature and extent of the evil, and still more of mistaking or misapplying the remedy. If the prices of wheat and other staple products of the farm are, at the present time, here and elsewhere, relatively low—then supply must be in excess of demand, and the fact that thousands in some quarter of the globe are perishing of hunger affords no proof to the contrary. I repeat, demand must include the means of purchasing to operate upon price. The remedy in the case supposed is plain—the supply must be checked or the existing demand must be made effectual. But if prices at

the West are very low, as compared with what they are on the seaboard or in Europe, it affords strong presumptive evidence, though not positive proof, that some parties in production are being overpaid for the service which they render. To adjust this difficulty is not so easy. If conditions were favorable, it would adjust itself. Of one thing we may rest assured, free and perfect competition in all directions is not afforded, or this state of things would not long exist. Those who control the facilities for transportation have an **artificial monopoly of the market** in them. They are practically **masters of the situation**, and are enabled to fix the price of their services at just such figures as will secure to them the highest possible gross returns. The opportunities for combinations and consolidation, which are now afforded to railroads, seem to preclude, almost absolutely, the idea of healthy competition. The class of railroad middlemen against whom immediate complaint is urged, is not the great body of stockholders, but few of whom receive a respectable dividend upon their means invested, but the so-called transportation lines—the “wheel within a wheel.” It is alleged that these monster freight lines have been permitted to plant themselves in the very gateways of commerce, and to bid defiance to the natural laws of traffic—that for some unaccountable reason, they are allowed not only to fleece the farmer, but also the mass of stockholders themselves, and to fatten upon the industries which the railroads were created to foster. These are serious charges, and ought not to be hastily made, but if substantiated, they call for immediate and searching remedies. If they be true, it looks very much as though some controlling parties somewhere were interested in these abuses, and the fact that the private fortunes of a few railroad kings are annually enriched by millions goes far to justify suspicion.

Railroads at this day are too valuable an enginery in production to be perverted from their true ends and purposes. The people never chartered the right to any man or company of men to so dispose of the use of these great thoroughfares as to defeat the very object for which they were constructed. There is no regulating influence which everywhere and always will secure to the different parties in production a share in the returns exactly proportioned to the service rendered. Government is powerless to do



so if it would, and by unwarrantable interference, it may seriously aggravate the difficulty. Governments have been slow to learn their province in this direction, and individuals have been slower still in dissipating the folly of appealing to legislation for aid in matters which natural laws only, if allowed to operate, can control. All attempts to regulate the wages of labor or the profits of capital by direct interference of statute law are theoretically wrong, and are generally in the end, practically mischievous. For reasons similar in kind, the relations between the farmer and the transporter—the manufacturer and those who intervene between him and the ultimate market—between him and those who put the product to its final use, are difficult of direct legislative control. It is the business of legislation at this point, to see that the best possible conditions are supplied for the free and healthy operation of natural laws. This done, its mission here is ended. Our absolute need, at the present time, of a more perfect water communication with the Atlantic, is unquestionable. And this is needed not simply because heavy freights can thus be more cheaply carried, but also because it would open a broader field for the working of the only laws which can adjust and keep rates of transportation to a fair and equitable standard. Competition pure and simple would cure most of the ills of which complaint is made—meanwhile much may be done to dissipate or to counteract them.

To this end, farmers of Wisconsin, organize associations in every township and county of the state—organize, not for the purpose of making war upon railroads, but to prevent these and every other industrial interest from making war upon you—not war, direct and positive, but that of the indirect and negative kind—that which comes of organized, active effort on their part, with a keen eye always out upon the “situation.” Agricultural associations, great and small, have an invaluable educating influence, if properly conducted. That influence reaches out far beyond the associated circle, and tends to lift this noble profession to higher vantage ground. Let the markets of the world be carefully watched, and prudent foresight be on the alert to take advantage of every favorable circumstance. Above all, let the ground principles which underlie all production and exchange be understood. These, among other things, teach that there is no natural antagon-

ism between the different industries of the world—that they are joint partners in the common work of satisfying the wants and desires of men. But they also teach that these industries are and ought to be, competitors in regard to the distribution of the rewards for service done, and that “eternal vigilance” is no little part of the price of industrial success.

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## HORSES.

Read before the State Agricultural Convention in February, 1873,

BY HON. JOHN L. MITCHELL, MILWAUKEE.

GENTLEMEN:—You have all heard of the expression, “horse sense.” What I have to present to you is horse nonsense—the nonsense of many people, as it seems to me, in a few matters pertaining to the horse. Whether or no I am nonsensical myself, remains with you to judge.

It is not necessary to remind you that a horse has four legs, a head and a tail, unless cruelty has deprived him of this latter appendage. Horse points will not be alluded to, as every American citizen is presumed to know all about them, and it would be insult to insinuate otherwise. The little that is to follow has to do with horses bred for intelligence, activity and endurance, in other words speed horses, and not with those ponderous and slow moving animals that we call draft horses.

To begin with the beginning—and the horse beginning is the thoroughbred; he is the equine aristocrat, and he holds his title by virtue of deeds and not by mere pretension, as is the case with some aristocrats that we know of. The term thoroughbred, as applied to the horse, is generally misunderstood in this neighborhood. Technically, the thoroughbred of to-day is the embodied result in horse hide of breeding for many generations for speed and staying qualities at the gallop. The first we hear of running horses and their systematic breeding, is in England, at the beginning of the 17th century. By borrowing the fleet blood of the

Arab, and mixing it with his own more sluggish strains, and by careful selection of the best specimens for breeders, the Englishman, after a time, produced an animal that was as sure to run and stay, barring accidents, as a short horn is to lay on meat. To maintain this purity of blood and for the prevention of fraud, the English Stud book was instituted. In it, every animal of running lineage is registered soon after it is born. In England, to be absent from the stud-book is fatal to a horse's claim to thorough breeding. America is indebted to her English cousin for the thoroughbred horse, the first importation being made about the year 1750. To establish a claim to the title of thoroughbred, a given horse must trace back on the side of both sire and dam, for at least five generations, to animals registered in the English Stud Book. We have as yet no complete thoroughbred record in this country, but I understand that Mr. Bruce is collecting the material for one. A recent infusion of Arab blood is permitted in thoroughbred pedigrees, as that is held to be the fountain head from whence the stream of thorough breeding flows. It is not often resorted to, as the modern race horse is thought to be superior to his Arabian progenitor. Still, A. Keene Richards and others, have imported the blood of the desert into this country, with the expectation of bettering our running stock. The result, however, I believe has not been satisfactory.

As an example of the requirements of a thoroughbred's pedigree, I will read for you that of Lexington, the best runner of his day himself, and now the most successful getter of race horses that we have :

“Lexington, by Boston.

1st dam by imported Sarpedon.

2nd dam by Sumpter.

3rd dam by Robin Grey.

4th dam by Melzar.

5th dam by imported Highflyer.

6th dam by imported Fearnought.

7th dam by Ariel.

8th dam by Jack of Diamonds.

9th dam by Old Diamond (called Duchess.)

Both Jack of Diamonds and Old Diamond were imported by Gen. Spotleswood, and both were by Cullen's Arabian.

Boston, the best horse of his day, and the sire of Lexington, was by Timoleon, Timoleon by Sir Archy, and Sir Archy by English Diomed."

Now this record from generation to generation has been carefully preserved, and is based upon the most trustworthy information. It is a piece of horse history, as important in its way as Gibbon's *Decline and Fall of the Roman Empire*, with this difference, that it speaks of the rise and progress of a glorious animal, who has been an honor to himself and a fortune to his owner.

The apparant ignorance of most people as to what constitutes a thoroughbred pedigree—the necessity for its being formed on reliable evidence, and not mere guess work and loose say-so, and the paramount advantages to come from diligence and truthfulness in horse breeding as in other business pursuits, are my excuses for presenting the typical case of Lexington's breeding.

**In the state of Wisconsin, there are probably not twenty horses whose thorough breeding can be established, that can show authoritatively that they have been bred any number of generations for the purpose intended, namely, speed at the run. Yet every other man has some wonderful animal that was brought up from Kentucky during the war, that ran many races, the records of which have been destroyed by guerrillas, and the same passes current among the neighbors as a thoroughbred. Such an animal, if it have procreative power, is calculated to do infinite mischief, and to unsettle the popular belief in that truth in breeding, that like begets like, or that a desired quality can be fixed in the produce, if bred for persistently for many generations.**

In close connection with the thoroughbred, whose offshoot he appears to be, is the trotter. Both are bred for speed, the difference being simply one of gait. The systematic breeding of the latter, however, in this country, has begun within a few years, and has not yet been persevered in long enough to impress the fast trot in the produce with the same uniformity that we find the gallop in the thoroughbred. Moreover, we have as yet no recognized standard of trotting breeding. Mr. Wallace is engaged in

forming a nucleus for such a work. The American trotter is now in process of formation, as a distinct family, in much the same way that the English runner was many years ago. In trotting breeding, I wish to call attention to a much abused and popularly misunderstood term; it is the word, "Messenger," the name of a horse generally acknowledged to be the patriarch of American trotters.

Messenger, a thoroughbred and a successful runner, was imported into New York state in the year 1791, and died on Long Island in 1808. It was the misfortune of some of us that he came into the world a grey; he ought to have presented a variegated appearance, and given all horse owners a chance. As it is, every animal that is flea bitten, (having been once grey), and is up to a certain standard of old age and decrepitude, is dubbed a Messenger. Of course there is no such existing thing as a "Messenger." What is more, no horse stands on foot to-day that has tasted the teat of a daughter of Messenger, or sprung from the loins of a son of his. To show you the absurdity of this thing, I will cite the breeding of Rysdyk's Hambletonian, probably the closest living descendant of Messenger, who holds in the getting of trotters much the same position that Lexington does in the getting of runners.

Rysdyk's Hambletonian, by Abdallah:

1st dam by Imported Bellfounder.

2nd dam by Hambletonian (he by Messenger.)

3rd dam by Messenger.

Abdallah was by Mambrino, and Mambrino was by Messenger. Rysdyk's Hambletonian was foaled in 1849, is now 24 years old, and is three removes from Imported Messenger.

The mention of the names, Messenger, Abdallah and Hambletonian, calls up a thought of the manner in which the public credulity is worked upon in the naming of trotting stallions.

The practice among reputable breeders and owners of thoroughbreds is to give each animal a name that shall determine its individuality, which shall be peculiar to itself. The practice, or rather malpractice among stallion-owning trotting men is to merge the individuality of the animal, as far as possible, in that of some noted predecessor in blood, either actual or assumed. The result

is that the country is overrun with a drove of Hambletonian, Abdallah, Mambrino, Clay and Messenger stallions, to the detriment of horse morality and to the confusion of would-be breeders. If this deceptive nomenclature is persisted in, a trotting pedigree will become a delusion and a snare, and a trotting stud book a tangled impossibility. It will be noticed that the animals that really perform under the public eye have, with rare exceptions, names of their own, while those secluded lords of the horse harem, whose reputation shines with a dubious and reflected light, appear to be too valuable to be frittered away in the frivolous sports of the course. The prevailing trotting-horse usage hereabouts is to procure an inferior stallion, to placard the unsuspecting and guiltless brute with the name of some celebrated strain or strains, and thereafter to carefully prevent his qualities being known by public exhibition in a race. The practice of running men, on the other hand, is to give, as I said before, to each horse a name of his own, to train and try the animal on the track, and, if successful, to put him to the stud. This last is the sifting process of breeding, or what Mr. Darwin would call the survival of the fittest. It is this that has made the raising of runners a science, and an approximative certainty; and trotting breeding will never reach that dignity until the same tests are applied.

To conclude, I ask your attention to the irrational attitude of what we call the respectable portion of the community in regard to horse matters in general, and racing in particular. They appear to be in the position of Peeping Tom of Coventry; they are eager to look upon the unadorned charms of the passing beauty, but they shrink from being caught in the act. They want to see the horses go, but they prefer to peek over the top of the fence rather than come in at the gate and be contaminated.

There are doubtless many evil influences that hang about a race track. The correct thing for right-minded people to do, however, is to come straight in and help cut them off. In so doing, let them bear this in mind, that in no case is that generous animal, the racer at fault; and that whatever they may achieve in the elevation of the turf, is in the interest of humanity's next friend, the horse.

## SHORT HORNS.

Read before the State Agricultural Convention in Feb., 1873,

BY MAJ. CHAS. H. WILLIAMS, BARABOO.

I have been a short-horn breeder in a quiet way, for quite a number of years, but on taking up the subject for the purpose of writing an article, was much at a loss to know what to say. In breeding this stock and watching results and the progress of the business, I have become impressed with the belief, that it is an important branch of stock growing, and that it would be a great benefit to many farmers to engage in it. I therefore concluded to devote my paper, mainly, to saying in a brief way, what I could to induce farmers to grow this valuable class of stock.

It has been a commonly received opinion, that thorough-bred short-horns are improved animals brought to their present size, beauty and symmetry of form from some other inferior class of cattle, perhaps the so-called native, by the patient and persistent breeding of judicious and thoughtful men, who, by culling out the poorer specimens and a generous care of the better ones, for a long period of time, at last produced the animals from which the short-horns came. This may be the case, but I sometimes think another view of the question may be the correct one; that the first animals of the cattle kind created, were perfect animals, designed to add to the comfort, convenience and happiness of man—that those animals were stately short-horns, and for a long period afterwards, their descendants continued equal in all respects to the original stock. At a later period, by the carelessness and negligence of man, for whom they were created, these perfect animals began to degenerate a very little each year, until finally after many years, perhaps centuries, they became what is now called native cattle.

At some period in the progress of the world and the downward course of cattle, just when, would be difficult to say, and is not now important, some of the thinking and acting men of that age, conceived the idea that these poor natives, reduced from the

original and perfect animals might be improved and made better. Just how this idea and this improvement were brought about is not now known. It may have been as has been suggested by some writer, that a butcher discovered, in cutting up the carcasses of cattle for his customers that some of them yielded a better profit than others, and being a fair dealing man, offered a larger price for this class of better animals. Soon the dealers in cattle learned that animals of a certain form were more profitable than others, and in their selections of stock to feed for the butcher, bought this better kind. At a later period, it was discovered that some animals of this better form and more value produced calves of somewhat the same form, and the thoughtful men of the day became impressed with the belief that they might grow this better class of cattle.

Thus commenced the improvement in cattle, or as we might say, began the process of reinstating animals of the bovine race, and growing them up to the character and value they occupied when they came from the hands of the Creator.

From Lewis F. Allen's history of short-horns, we learn that short-horns were in existence in the northeastern part of England as early as the year 1700, perhaps a short time before, and that tradition carries them back to a much earlier period.

It would seem then that the process of improving or restoring the bovine race must have begun at quite an early day, if, at the period referred to, one branch of the race had made so much progress.

At the period spoken of, Mr. Allen tells us that down to the latter part of the 18th century, there were active, energetic and thoughtful men engaged in breeding and improving this class of cattle. Little is known of these enterprising men beyond the results of their labors in the rearing of cattle, from which the present short-horns directly descended.

From the early part of the eighteenth century to near the last, there were many persons engaged in breeding short-horns. About the year 1780, a new era in short-horn breeding commenced, when the Colling brothers and others of that day bred more intelligently and systematically, and perhaps made more progress towards the perfect animal than had been previously made. This more systematic breeding soon became quite popular, and was pursued by



many breeders of note, among them Thomas Booth and Thomas Bates, who commenced as breeders about the year 1800, and continued in the business successfully, Thomas Bates for forty years, and Thomas Booth, his sons and grandsons, down to the present time.

In the early part of this century, a few pure bred short-horns were imported into the United States. Since then, frequent and quite large importations have been made, and at this time, pure bred herds of these very valuable animals are to be found in almost every state in the Union, and in the Provinces of the Canadas. More of them are now bred each year in America than in England, where they were first reared. From this brief sketch of the origin and progress of short-horn cattle, it will be observed that for a period of nearly 200 years, at least, breeders have been engaged in an intelligent and patient effort to make better and more profitable to the farmer one family or branch of neat cattle.

In producing a better and more profitable animal, these early breeders, as well as those of a more recent date, have had in view, early maturity, large size, a full development of those parts of the animal from which the best beef is cut, and good milking qualities. Animals intelligently and persistently bred for these very desirable qualities, for a period of 200 years, must have become well fixed in these characteristics, and must be capable of reproducing them, with great certainty, in their offspring.

Within this century, especially in the past 25 years, pure bred Short Horns have increased and spread over the United States and the Canadas very rapidly, and although they have long been popular, and have been owned and bred by many farmers throughout the country, their popularity and the demand for them seems to have increased in proportion to the increased numbers bred, which will be indicated to some extent by the very large prices paid and offered for this class of cattle, and the large numbers sold at public sales.

In the preface to the 10th Vol. of the American Short Horn Herd Book, we learn two cows were imported into Canada in the year 1870, which cost in England 1,500 guineas (\$7500) each, and several American bred cows had been sold at \$3,500 to \$8,000

each, and a much higher price had been offered for a single cow. That \$5,750 had been paid for a bull of American breeding, and \$5,000 offered and refused for an imported English bred bull. Mr. Allen further says there was no sham in these offers, that the above named purchases were *bona fide* transactions, and the offers not accepted, were made by responsible parties having the money to consummate them had they been taken.

As a further evidence of the growing popularity of this class of cattle, we have the results of the numerous public sales held the past year in quite a number of the states and the Canadian Provinces, full reports of which were published in the *Western Farmer*, the *National Live Stock Journal*, and other agricultural papers. I briefly mention some of these sales:

Wm. Stewart, Franklin Grove, Ill., sold 25 females and 11 bulls; females selling at \$135 to \$825 each; bulls selling at \$85 to \$750 each.

Wm. Waifuld, Lexington, Ky., sold 60 females and 20 bulls; females selling at \$25 to \$1,050 each; bulls selling at \$50 to \$650 each.

J. H. Picknell, Harristown, Ill., sold 27 females and 12 bulls; females selling at \$200 to \$1,750 each; bulls selling at \$130 to \$3,000 each.

D. Christee, Paris, Ontario, sold 28 females and 9 bulls; females selling at \$100 to \$675 each; bulls selling at \$35 to \$1,235 each.

J. H. Spears & Son, Tallula, Ill., sold 59 animals at \$110 to \$1,475 each, making an average of \$287.50.

Alexander Hanley sold 27 females and 7 bulls; females selling at \$50 to \$305 each; bulls selling at \$65 to \$500 each.

Cyrus Jones, Towanda, Ill., sold 42 females, averaging \$418, and 14 bulls, averaging \$215.

E. P. Brockway, Ripon, Wisconsin, sold 25 females, averaging \$738.75, and 5 bulls, averaging \$466.

Many other public sales of pure bred Short Horns were held the past year, with generally about as good results as those just reported. The Short Horn is pre-eminently the animal for beef; he weighs more when put on the scales than his appearance indicates—from his carcass much more choice beef can be cut than from any other breed—more of that class of steak and roast

which the city gentleman buys, and for which he pays and is willing to pay a large price per pound. There is also less of the low priced meat in his carcass in proportion to weight, and in addition, less offal in proportion to weight.

These are facts well known to buyers at Milwaukee, Chicago and other large cities, consequently they can afford and do pay, a much larger price for the Short Horn in good condition for beef, than they do for other cattle in the same condition. This additional price varies from \$1 to \$3 per hundred, owing to quality, for four year old Short Horns in good condition. Suppose a farmer or feeder ships a car load of Short Horns to market, in good condition, as they should be if he expects them to pay; if they average 1,400 pounds, which is not a high average, he would receive \$42, extra price on each animal, figured at the highest price I have named—above that received for a native in the same condition—or, \$588 extra price on the car load, provided he could put 14 animals in the car. If figured at the medium price, he would receive \$28 extra on each animal, or \$392 on the car. If figured at the lowest price, he would receive \$14 extra, or \$196 on the car.

These are not all the advantages of growing Short Horns for beef. When a farmer or feeder goes to market with his car of Short Horns, such as I have described, and he arrives there on a falling market, he very soon learns that his class of cattle have not depreciated as much as the native or inferior cattle. When he finds a very much depressed market, with sales dull and buyers scarce, then even, the owner of Short Horns makes a ready sale, for the reason there are always buyers for choice property of any kind—takes his money and returns home. What becomes of the owner of the native or inferior stock under these circumstances? He must either put his cattle into the yards and feed them at city prices for hay and grain, waiting an improvement in the market, or sell at ruinous rates—his stock having depreciated much more than the choice stock. These circumstances are well known to those who ship beef cattle to the large cities for sale—especially to those who ship the inferior cattle.

## SHORT HORNS AS MILKERS.

The impression has been prevalent with many that short-horn cows are not good or desirable milkers. There are, of course many short-horn cows that are not good milkers; such is the case with the native cow and all other classes of cows, unless it may be that these which have been bred exclusively for milking purposes are an exception. Of this I am unable to speak. Short-horn cows are, generally speaking, good milkers when this quality is desired and the proper means taken to develop it. Some families, noted for these milking qualities, have been bred for that purpose in connection with the beef producing quality—that is, some breeders of short-horns who had a desire for milk producing stock, have cultivated that quality along with the broad-back size and early maturity, belonging to the short-horns. The cows of this class, when kept in milking condition for nine or ten months in the year, and fed highly on milk-producing feed, will not look as handsome as those in better flesh; will not be what are called show cows, for they will be in low condition, but will yield largely of milk, and when dried off will feed up rapidly, becoming choice beef. Their male calves also make good beef steers, having all the requisites necessary when in good condition to bring the best price in the market.

Mr. Thomas Bates, before spoken of as one of the early and most successful English breeders of short-horns, had many excellent milkers among his cows, and always strove to promote the milking qualities in his herd. Many pure bred short-horns in this country at this time, whose ancestors date back to the Bates herd, are choice milkers; other families not descended from the Bates herd are equally good milkers.

Lewis F. Allen, in his Herd Book, makes the statement, that the dairies supplying the city of London with milk use grade short-horns almost entirely. The Shakers of Union Village, Ohio, who have been long known as among our most successful butter and cheese makers use short-horn cows for dairy purposes. The milk dairies about Cincinnati are composed largely of grade short-horns. The stable of one of the Cincinnati dairies was burned several years ago, consuming along with the building and the hay 125

grade short-horns, all the cows in the stable except two or three pure bred short-horns which were saved.

I have thus given a brief account of the origin, as far as known, the breeding and prominent characteristics of short-horn cattle. If I am correct in my views as stated, and I believe I am, the Short-Horn is the animal for the general farmer and the dairy. One can, with judicious selections, obtain from them a very valuable class of cows, perhaps the most valuable, all things considered.

In commending this class of cattle to the farmers of the state, I do not wish to be understood as advising all farmers to engage in raising pure bred animals for breeding purposes; this would clearly be unprofitable and unwise for them to do. The general farmer will find it more to his interest to grow only the grades, commencing with the pure bred bull, (whose ancestors date back to the remote past, and whose profitable characteristics have been fixed for many generations,) on the native or common cow, from which crop you would have the half blood short-horn. The heifer from this crop should be bred to a pure bred bull having similar qualities with the first, producing a three-quarter blood, and so on until your cattle have become high grades. You would then have them of the greatest value for all purposes, except that of reproducing their own good qualities.

In each county or perhaps in each populous and thriving neighborhood, one or more good, careful and upright farmers, with a taste in that direction, could properly and profitably grow the pure bulls, along with other farming, and thus be near by the demand and in readiness to supply the general farmer, at reasonable prices, and without the risk and expense of transportation, with pure bred bulls to enable him to make the improvement indicated above.

In starting these pure bred herds, care should be had not to go too fast. As a general rule, the better way would be to commence with but few females, perhaps only one, and grow gradually and quietly into the business, acquiring knowledge of it as your herd increased in numbers and value, and as you became known as a breeder. While acquiring this knowledge and increasing your herd, make for yourself such a reputation for integrity that when your neighbor or others buy an animal of your

own breeding, they can feel satisfied they are getting just what you represent it to be, and that when you record a pedigree, full faith and credit can be given to the statements therein contained. Herd book pedigrees, no matter how fashionable the blood, may be valueless, not worth the paper they are printed on, unless the breeder of the animal and the writer of the pedigree are men of character, whose acts and statements can be implicitly relied on.

#### FEEDING.

Much has been said on the subject of feeding, especially on what is termed over or high feeding of breeding animals. That is a subject on which successful breeders have widely differed. Thus far my experience and observation teach that generous feeding of all kinds of stock, breeding stock included, is the best. I mean by that, such feeding during the winter season as will keep animals in good flesh, not fat, giving in quality, quantity and kind, that feed which produces this result the most readily and to the best advantage. Feeding should be commenced as soon as the grass begins to fail in the fall, continued through the winter and into the spring, until the grass is sufficiently well grown to furnish full feed. During the summer, or the season of pasture, feed only the grasses in the natural way, being sure to have a supply sufficient to furnish good feeding. Breeding animals should be kept in good flesh, especially the females, particularly so when carrying their young.

Young animals should be better fed, especially calves, than the older stock. The first year is the best in which to make growth, and it can then be made at less expense than at any other time.

In feeding for beef, I believe the best method is that followed by Mr. John Johnson, the old Scotch farmer of the state of New York. He fed short-horn steers, when he could get them either by breeding or buying. The method of feeding he considered the most successful, and the one he recommended, was to make the calf fat as soon as it could be done after it was dropped, then keep it in that condition, summer and winter, until it was sold to the butcher. By that plan, he generally sold his beef steers at three years old, and frequently at two, with satisfactory profit.

NOTE.—For the calf-breeding of short-horns, and other parts of my paper, I am indebted to Lewis F. Allen's Short-Horn History.

## JERSEY CATTLE.

Read before the State Agricultural Convention, February, 1873.

BY JUDGE GEO. E. BRYANT.

At the request of your honorable secretary, and stimulated by the owner of one of the largest herds of horned cattle in central Wisconsin, who felt, as he expressed in a letter to me, that "some one ought to talk about this breed, which among those who knew them, had so many friends, and which were only lied about by those who knew nothing about them," I have prepared this paper.

The breeders of Jersey (misnamed Alderney), have been grievously abused by your society. This may seem to you harsh language, but the truth must be spoken. It is wrong for you to give to the "Short-Horn" a higher premium than you do to either or any other breed, and it is because your officers have been influenced by, or are breeders of these *ponderous* animals, that this has been done. Again you are wrongfully negligent in your selection of *judges* for these various breeds; you give one committee to Short-Horns, and one to all other breeds, and when *judges* remark that they know nothing of the qualifications of this breed, and that the more Durham and the less Jersey there is in them the better it suited them," you cannot help seeing that they are very poor men to be placed in that *ring*. A man may be a very good judge of Short-Horns and a very poor judge of Jerseys—and particularly so, when he takes pains to manifest his disgust and contempt for the breed; and here let me urge that you ought to give all breeds a fair show in the *ring*, or no show *at all*; have a fair and competent committee, or none at all; a like premium, or none at all. I speak plain in this matter, Mr. President, not because I have any prejudice against the ponderous Short-Horn, the beautiful Devon or the fast increasing in popularity and numbers, Ayrshires, but because I think you ought to mete out equal justice to all breeders in the *ring*.

From the Island of Jersey, in the English Channel (and not from the state of the Camden and Amboy railroad company),

comes this magnificent breed of cattle. The reason for their being misnamed "Alderney" was because the officers of the British army, stationed at the fort on the isle of "Alderney," which lies near to "Jersey" first exported some of these "Deer" like cows to their friends in England. These importations into England commenced more than a century ago — indeed long before the independence of these United States. "Alderney" cows had become famous as producers of cream and butter in England. In 1781, we find "Tabitha, mistress of Brambletan Hall, severely reprimanding Mr. Lewis, foreman and overseer of the herds of that estate, for giving away "Alderney" "without her privity and concurrents, because *he* believed in fatty cattle and forgetting that "Alderney" had given four gallons of almost cream per day ever since her calf was sent to market"—an early illustration of the unfairness of short-horn breeders, when competing with other breeds. In America as in England, the Jersey has come into notice after the Devon and the Short-horn have attained a world wide reputation. Here as there, with true John Bull antipathy, they at first were declared worthless, and the officers of this society (as I was informed) laughed out of the premium list entirely, for several years this not *English* bred impostor, but now among butter makers, they are fast coming into repute, and real "gilt edged" butter is only made from the produce of Jersey cows. I have heard of the butter of no other cows bringing from 70 cents to \$1.50 per lb., in the market. Mackey and Waring, of New England, and Sharpless, of Philadelphia, make and sell that kind from their *Jersey herds*. I have experimented some, and marked the experiments of others in butter making, from pure Jerseys, and grade Jerseys, a good deal, and I believe that from a given amount of food, a pure Jersey cow will make 30 per cent. more butter than a cow of any other breed; that a grade Jersey cow, got by a pure bred Jersey bull, will make 20 per cent. more butter than other breeds. I have known grade Jersey cows got by high grade Jersey bulls that were failures, but of many grade Jersey heifers, whose sire was *pure* blood, I have never known a single one, that was not *more* than an extra cow.

Gentlemen in cities who keep but one cow, and small farmers who keep but two, and who like good rich milk for their tea and cof-



fee, and who believe that the pure article is much better than chalk and water, are beginning to appreciate this breed. A Jersey cow will not give as much milk in her flush as some other breeds, but for ten or eleven months, facts show that she excels all others in her produce of cream. The milk of one Jersey, mixed with that of three or four "pale" cows, will give the butter of all a respectable coloring. They have been called a *puny, tender* breed, but experience proves that they are as hardy as any of their rivals. To those Wisconsin farmers who make butter, I say, the sooner you get some Jersey blood in your herds, the sooner will your butter be better than it now is. To the poor man with one cow and a small barn, she is a blessing and life to his wife and children, a beauty to their eyes and a joy to their hearts. To the rich man, a toy and a luxury, and to all who want the produce of a cow, as well as the cow herself, she far out-strips all competitors. I have little experience in cheese making, but judging from what I buy, I can fancy a little more Jersey cream and a little less Ayrshire gristle, would suit the taste quite as well. The cows of this breed are always great favorites with the women-folks, their gentle natures attaching them to the mothers and the children, who save for them many a tit-bit from the table. Victoria, England's good Queen, the owner of large herds, has always kept at her country seat a Jersey cow for her own household family table; so have most of the wives of the herdsmen of famous English and Scottish herds. Daniel Webster, America's greatest statesman, who was loved and respected little less in England than in America, who caused his great oxen to be yoked and brought to his window as he lay upon his death-bed, "that he might look into their great broad honest foreheads," imported at an early day some Jerseys, and took great pride in showing to his city bred guests his Alderney milk upon the table of his Marshfield mansion. And now, Mr. President, I am done. I have spoken plainly, and I meant to do so, for I believe that your society is intended to use all alike, and to mete out justice to all; I beg no man's pardon; if I have stepped on anybody's toes, I am glad of it. I meant to do so. The grand desideratum in agriculture is to discover a breed of cattle that will be most useful to the grazier, the dairyman, the small farmer, the poor man,

and rich gentlemen of cities, and I believe a great step is accomplished towards this by crossing the Jersey bull with the other cattle of America, and on behalf of all these people, who form a great part of your society's patrons, we ask a fair show at the hands of fair men, at your great annual fairs.

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## AYRSHIRE CATTLE.

Read before the State Agricultural Convention, February, 1873.

BY JONATHAN STODDARD, SHEBOYGAN.

Under the head, "Breeds," I claim that the Ayrshire breed of cattle is the best adapted to the state of Wisconsin, for the following reasons:

**First.** There is no breed of cattle that can produce as good a milk record as the Ayrshire; therefore they are better adapted for dairy purposes than any other; as proof of this, in nearly all the dairy regions of the eastern and middle states, they are rapidly introducing the Ayrshire instead of the Short Horn.

**Second.** There is more money invested in dairying than in beef raising in this state, and Wisconsin is destined to be a dairy state, as it is better adapted for that purpose than for corn raising, especially the northern part.

In proof of their milking qualities, I challenge all "advocates of Short Horns" to compare records.

**First.** "Red Rose," 726, calved May 20th, 1861, and on the 10th day of the following June she gave 84 pounds of milk, and from August 1st to September 14th, averaged 67 pounds per day.

**Second.** "Young Lilly," 1,941, owned by Byron Webster, Iowa, has given 22 quarts at a milking, and for four consecutive days, gave 44 quarts per day. She calved July 28th, 1872, and August 19th, gave 19 quarts at each milking.

**Third.** The cow "Fannie," owned by John M. Reed, of Georgia, has earned him in milk in the last ten years, \$4,712.40.

(Live S. Journal, page 386). Her average daily yield has been eight quarts.

E. S. Mills, Fitchburg, Mass., has a herd of Ayrshire cows, old and young; some old cows that have passed their best, and some three year old heifers, that gave an average of eight quarts a day for three years, some of them averaging ten quarts a day for the same period.

E. T. Mills, of Worcester county, Mass., reports to the Country Gentleman his herd of ten Ayrshire cows, varying from 3 to 13 years of age, average weight 1,045 pounds, in 273 days, gave an average of 21 1-7 pounds of milk per day. One of said cows gave, during the three years, an average of 7,830 pounds per year, almost 22 pounds per day for three successive years.

"Ayrshire Lass," 236, "Jean Armour," 90, "Corslet," 37, "Kitty," 4 B 117, "Daisy," 5 B. 47 have also a high record for their milking qualities.

Aiton, writing about the Ayrshire cattle, in the year 1806, says: "They yield much milk, and that of an oily, butterous nature, and after they have yielded large quantities of milk for several years, they are as valuable for beef as any other breed of cows known; their fat is well mixed through the whole flesh, and they will fatten faster than any other breed."

As to size, they may, by good feeding, be made of full medium size. I owned a bull—"Cobden" (196)—which weighed when 17 months old 1,050 pounds; and "Heather Jack," bred by Thos. Irving, of Rockfield, Montreal, and purchased by me, and imported into this state, weighs over 1,700 pounds.

I also own a heifer—"Dominion Girl," (A) 67—was calved April, 1871, and had a calf June 29th, 1872, and now gives more milk than any two matured cows that I own.

They are a very hardy breed, easy keepers, and give a very even mess of milk for a long time. When I stabled my cows last fall, my Ayrshires gave double the amount of milk of my other cows.

It is a conceded fact that the Ayrshires are the best milkers. No attempts have ever been made to disprove it by disinterested persons.

## SHEEP HUSBANDRY.

Read before the State Agricultural Convention, February, 1873.

BY ELI STILSON, OSHKOSH.

This subject, in all its relations to agriculture and in the details of its management, presents so many important questions that I can only point out a few important ones. This industry and its ally or joint industry, woolen manufactures, present an array of wealth and usefulness that at once should challenge attention, and place them among the leading industries of the nation. Their combined products amount to nearly two hundred million dollars yearly; and so closely are all our industries allied, that when one suffers, all feel the effect, and all are affected by the prosperity of each. Wool growing, like all other branches of farming, has had its vicissitudes, its prosperity, and its depressions, but not in so great a degree as other branches of farming.

Where is that Illinois farmer that a few years ago said, "He could make more money to raise pork and manure his land with the carcasses of his sheep than he could in wool growing?" or where is that Wisconsin politician that a few years ago, in attempting to write editorials for an agricultural journal, said, "Wool growing in Wisconsin must be abandoned?" The tariff on wool and woollens has fully vindicated itself by its practical effects, and requires no defense from me. Wool growing to-day is on a sound and healthy basis, free from excitement which would inevitably tend to over production, and at the same time free from financial embarrassments because prices are fair. A few years ago, the price of wool was relatively low—more relative than absolute—but now the tables are turned, and while wool has gone up, most other products have gone down. The pork and corn growers have ceased to pity the wool growers, and are now declaring war on the railroads, which have got them at a terrible disadvantage, and are wresting from them their hard earnings by extortionate charges for transportation.

## WOOL GROWING IN RELATION TO FARM AND STATE.

Wool growing in Wisconsin should be pursued as a part of mixed farming; for of all domestic animals the sheep stands unrivaled in its adaptation to preserve and increase the fertility of the soil. M. Thiers, that great statesman now at the head of the French Republic, in a speech before the French Chambers, affirmed the dependence of French agriculture upon sheep husbandry. England with her small agricultural area, dense population and high priced land, keeps about as many sheep as the United States with her vast area, and it is said that if for any reason the turnip crop should fail there for a series of years, and so cut off their ability to keep a large number of sheep, famine would soon ensue. The productive power of English soil has doubled in the last half century, and much of that increase is due to her excellent sheep husbandry. Prussia, Austria, and all Germany foster this industry, both on account of the wool and mutton product, and its power to stimulate the production of other agricultural products. While we feel justly proud that the United States produce about one-tenth of the wool of the world, England with her small area, in her home country, grows one-ninth of the wool of the world. There are two entirely different modes of sheep husbandry. The pastoral mode is pursued in mild climates principally for the wool alone, and has no connection with the other industries of a country, and builds up no cities and sustains no schools, and is mostly so pursued in semi-civilized countries; but this is not the class of sheep husbandry that we advocate. It is that class of sheep husbandry that is pursued in mixed agriculture, that is truly valuable to a civilized country—that class that enables the farmer to increase the productive power of his farm, and thus increase his own revenues in the same proportion as the productive power of his land is increased, and helps to build up all other industries which pertain to civilization, and invites the manufacturer to our doors, not only to manufacture our wool, but to help consume our other agricultural products. Look at Europe in this light, and show me a country in which agriculture, arts and manufactures flourish, and I will show you a country in which this industry has been fostered and cherished,

and now has a large amount of sheep to her agricultural area. Look at distracted Spain, a country whose sheep walks were once trod by one of the noblest races of sheep on earth, and protected by the strong arm of the government as a subject of wealth and national pride, and their exportation forbidden by law. With the decay of that nation has come the ruin of this industry there; and most of those sheep walks, where once trod this noted race, are now deserted or occupied by a degenerated hybrid race. As the eye, the ear, the head, the hand, and every limb and member are necessary to form the perfect man, so are all our industries (and this one of the important ones), necessary to an agricultural and prosperous people.

#### WOOL GROWING IN RELATION TO RAILROADS.

That cloud which a little while ago was a mere speck on the horizon, its thundering may now be heard throughout the land, and agriculture and the other pursuits are marshaling their hosts for the struggle that lies before them, and in the language of the poet,

“Low murmuring sounds along their banners fly,  
Our rights, our rights, the watchword and reply.”

For years, the railroads have been consolidating and combining, until the people can no longer close their eyes to the fact that the wealth of the producers is fast finding its way to the pockets of the railroad monopolists, until to-day it takes six bushels of corn in Western Iowa to pay the freight on one bushel to the tide-water, or, in other words, one bushel of corn for the farmer to six bushels for the railroads. While corn west of the Mississippi is being burned as fuel or transported thousands of miles to feed operatives with, why not cover a portion of those corn fields with sheep, and import the manufacturer and his operatives instead of their goods, and help to build up a home market? If the corn was fed to sheep, and the wool was shipped to New York or Boston, two quarts of the corn so fed would pay the freight on the wool grown from one bushel of corn, thus taking only one-sixteenth instead of six-sevenths of the corn. Many other manufactures are equally advantageous to build up a home market.

The county of Winnebago is the second county in the state in the extent and variety of its manufactures, so that it presents a good opportunity to study the advantage of a home market. Take the article of wheat for instance, and with its large number of flouring mill monopolists some are disposed to term them, and the demand for wheat caused thereby, as the farmers will, on an average obtain five cents a bushel above Chicago and Milwaukee prices for their wheat. The manufacturer is not the enemy of the farmer; small politicians and some so-called political economists to the contrary notwithstanding. Whilst the greatest battle of the age is to be fought in favor of cheaper transportation, let us call in such auxiliaries as building up a home market and the growing of such products as pay the least for transportation.

#### RACES AND VARIETIES OF SHEEP.

Dr. Fitzinger, in a paper to the Imperial Academy of Science in Vienna, upon the races of domestic sheep, gives Africa and Asia 106 races and sub-races of sheep, and to England 23 races and sub-races. But only a few of the different races of sheep particularly interest the American wool grower.

*The Downs.*—Of this class the South Downs are the most common in this country. They are not prized very highly for the quantity or quality of the wool they produce, but it is for the quality of their mutton, unsurpassed by any breed, and the ewes make excellent nurses for the rearing of early lambs; and near large towns, where such are in good demand, no doubt a small flock of South Downs can be made to pay well.

*The Combing Wool Sheep.*—This class includes the Leicester, the Lincolns, the Cottswold and numerous crosses of these races and sub-races. They all produce a wool particularly adapted to combing, a branch of woollen manufactures which is being rapidly extended in this country. Combing wools command good prices in this country, and probably will do so for years to come. They require extra care and keep, and should not be kept in too large flocks. They are good mutton sheep, second to the Downs, but more valuable than the Downs for wool. They can never take the place of the Merinos for the production of clothing wool, but

the farmer should be governed by his surroundings which breed to keep. There is no cause for antagonism between the combing wool growers and the clothing wool growers, as each has a separate field amply extensive for all their products.

*The Merinos.*—This noble race of sheep is one of the oldest races of truly valuable thoroughbred sheep to be found. They have been much improved in the last 50 years in their form and the amount of wool they produce; this has been done by a judicious selection and breeding, until they stand unrivaled for the production of clothing wool. They produce more wool than any other race or breed of sheep from the same food, which should be taken into account in deciding what race of sheep to breed. The merinos produce more scoured wool now than their ancestors did of washed wool when they were imported from Spain.]

*The Manchamp Sheep.*—This is a new sub-race of the merinos, and originated in France, and are known as the silky merino sheep. Their wool is particularly adapted to the manufacture of ladies lustre dress goods. They were saved during the late war in France from destruction by the invading army, by the heroism of the wife of the owner of the flock. While all able bodied men including her husband, were called to take up arms in defense of their country, she by forced drives kept their noble flock of sheep from destruction, and reached a safe retreat, so that the high expectations that have been formed of this sub-race of sheep may yet be realized.

#### CARE AND BREEDING OF SHEEP.

On the subject of care, but a few short notes can be given at this time. The first is that golden rule, "that whatsoever is worth doing at all, is worth doing well." Wool growing is not the occupation for the slothful and indolent man. I don't know what agricultural pursuit is the place for such an one. Much of the labor in wool growing is lighter than that of grain growing and several other branches of agriculture. But whilst "eternal vigilance is the price of liberty," it is none the less the price of a good flock of sheep. The owner's eye should often be upon them, and though they require but little care most of the year, yet they will not bear neglect. The flock master becomes attached to his



flock, and notes with pride every improvement he makes in them. Their food should be liberal, but they should not be pampered. In this latitude they require good shelter, and pay well for a small allowance of grain. Lambs, or teggs, as they are sometimes called, do better when fed a small allowance of bran and oats, than when fed on corn. The details of sheep husbandry I must omit at this time. Whatever variety of sheep you desire to breed, use only thoroughbred males of that breed, and those selected with care, though not necessarily the highest or fancy priced, unless you are a breeder of thoroughbred stock. Remember that too close breeding reduces size and produces a finer wool than the parent stock. Too close inbreeding is unsafe, unless in the hands of the expert, and then not always a success. How we admire those master spirits of the renowned breeders who have fashioned, molded and improved all the valuable qualities of our domestic animals. They have reared to themselves monuments of honor more lasting than those of marble. While the works of the grand master are only the resemblance of nature, those of Bakewell, Hammond, Collings, Bates and Booth, are the realities of nature in their masterly hands.

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### POLAND CHINA HOG.

Read before the State Agricultural Convention, in February, 1873.

BY HON. M. ANDERSON, CROSS PLAINS.

The subject upon which I have been requested by the committee to address you is the Poland China Hog. I acknowledge the subject at first view appeared to me limited, one upon which very little could be said that would interest the farmers of Wisconsin, especially at the present time, when the low price of pork causes the farmer to look upon hogs, even the best breeds, as being of little value. But in looking at the statistical reports, I find that his swineship makes a respectable showing among the products of

our country, and when we take into consideration the fact that the breeding and feeding of hogs in this country is principally confined to the western states, it will be seen that this is one of the largest products of the great corn growing states of the valley of the Mississippi. When we consider the fact that the corn growing states of the west are the only portion of the globe where hogs are raised and fed in large numbers for market; where pork can be made cheaper than in any other part of the world; where the breeding and feeding of hogs is likely to continue to be one of the chief occupations of the farmer for many years to come, the importance of breeding and feeding the best hog will readily be seen. If we calculate the average weight of hogs as given by the Chicago packers for 1871 and 1872, at 264 1-2lbs., (I believe hogs were heavier last year than ever before,) say 270lbs., at four cents per pound, and we have the large sum of \$432,000,000. By comparing this with the other products of the farmer it will be seen that it is one of the chief products of this country. Total value of wheat, corn and oats received in Chicago for the year 1872 was \$31,786,799.50, or \$5,780,775.30 less than the value of the hogs received in Chicago for the same year. It is by comparing the hog crop with other products of the farm that we can arrive at something like a correct estimate of its value, not only to the farmer, but also to the commerce of our country.

I believe it is acknowledged by all who have attempted to give the history of the spotted hog, which is at present known by the name of Poland-China, that they originated in Warren and Butler counties, Ohio, between thirty and forty years ago, and were known for many years by the name of Warren county hogs. <sup>(Introduced by the</sup> Of late years, as this breed became popular in the western states, there has been an effort made to give it the name of some of the men who were early engaged in introducing them, such as Magie hog, or the Moore hog. Mr. Milligan wished it called the Miami Valley hog. The Live Stock Journal and some others wanted to name it the Great Western. The National Swine Breeders' Convention, which met at Indianapolis, November 20th, 1872, decided to recognize Poland-China as the name of the breed. <sup>ishabers</sup> The committee on Poland-China hogs adopted the report of the Hon. J. M. Milligan, of Hamilton, O., which is as follows:

In the early history of swine breeding in the Miami Valley, in Ohio, it is clear, from the best written authorities available, and from oral testimony, that there were two breeds, which, to a great extent, had been profitably crossed with the common bristled breed of the country. These were the Russia and the Byfield. The Bedford is also named in connection with the other two, but to what extent it was used cannot now be determined. In the year 1816, we have positive proof from an unquestioned source, that the Shakers of Union Village, situated in Warren county, Ohio, purchased in Philadelphia one boar and three sows of what was at that time believed to be pure China. They were represented to be either imported or the immediate descendants of imported stock. They were called the Big China hogs. These were the first China hogs ever brought into southwestern Ohio. Subsequently, other China hogs were introduced, and extensively grown. The Shakers and other judicious breeders in Warren and Butler counties continued to raise the breed, and produced, by repeated crosses, a hog of exceedingly fine qualities for that period, one which was generally known as the Warren and Butler county hog. These hogs continually increasing in good qualities, the very best specimens were carefully and interchangeably used, so as to produce the best crosses. Such was the progress that was made in forming the ground work of a good specimen of a hog. This condition of the breed continued until about the year 1835 or '36, when Mr. Munson or Beach, of Warren county, first introduced the Berkshire, which were obtained of C. N. Bement, of the state of New York. The Berkshire was liberally infused into the stock in southwestern Ohio, and in Kentucky, crossing with the Berkshires until about the year 1838 or 1839, when Mr. Wm. Neff, of Cincinnati, imported some Irish grazers. This breed soon grew into high favor, and, as a consequence, was liberally used in making crosses with the best specimens of the crosses previously made.

In a few years, however, the use of the pure blooded Berkshire was entirely discontinued, and there was no other importation of the Irish grazers. The breeders of swine in the Miami valley settled down to the conviction that the basis of a good breed of hogs had been established, and that in the future, judicious and discrim-

inating breeders could use, and if necessary, modify the material furnished, so as to meet the highest demand of the public. For more than thirty years, no new blood has been introduced into this breed, and no effort made to obtain a new supply of the breed of either blood previously used. While this is true, our breeders have not been indifferent to the farther improvement of the breed. Stimulated by their success, they have perseveringly aimed to improve what they have been so successful in forming. The best points or qualities have been preserved, and when practicable, have been even made more excellent; all defective points or undesirable qualities have been corrected or improved by care, skill, and judgment of experienced breeders. Thus we have a breed thoroughly established, of fine characteristics and style, and unquestioned good qualities, which can be relied upon for the production of a progeny of like qualities and character.

Mr. William Kizer, now a resident of this county, brought the first hogs of this breed into this state that I have any knowledge of. I purchased the first hogs that I had of this breed from Mr. Kizer. I have added to my stock from year to year from some of the best breeders in this country, including Magie, of Ohio, and Moore, of Illinois. I believe we have now in Wisconsin as pure bred and as good Poland-Chinas as can be found anywhere. To show how little some farmers in Wisconsin know about the different breeds of hogs, I wish to state that when Mr. Kizer first exhibited Poland-Chinas at our State Fair, he was not permitted by the officers of the society to enter them as a large breed, but had to enter them as a small breed. I purchased of Mr. Kizer one of the pigs entered as small breed. When I sold it, it weighed between 700 and 800 pounds. So great was the prejudice against the black color at that time, that Mr. Kizer was not awarded any premium, although I believe he had the best pigs on exhibition. I will give the weights of a few lots of Warren and Butler county hogs that were slaughtered in Cincinnati, and reported in the agricultural reports. They are as follows:

- No. 5, average net weight, 640 pounds.
- No. 7, average net weight, 720 pounds.
- No. 22, average net weight, 403 pounds.
- No. 11, average net weight, 612 pounds.

No. 20, average net weight, 772 pounds.

No. 30, average net weight, 506 pounds.

No. 35, average net weight, 450 pounds.

No. 346, average net weight, 402 pounds.

These averages, I believe, have never been equaled. Perhaps to this excellent breed of hogs, more than to any other cause, may be attributed the good name of Cincinnati bacon in the English and other foreign markets, and which made that city for many years the greatest pork-packing city in the world, from which it has received the name of Porkopolis.

#### A WELL ESTABLISHED BREED.

The editor of the National Live Stock Journal, in speaking of the Poland-China hog, exhibited at the National Swine Exposition, held at Chicago in 1871, says: "To observe such striking uniformity of form and character, they are unquestionably a well established breed, if 500 to 1,000 specimens, drawn from many different parts of the country, and possessing well defined family characteristics, can be relied upon to settle such a question. It is a breed, too, formed in this country in response to a popular American demand for a hog differing essentially in every important respect from any other in existence."

#### ITS PECULIARITIES AND WORTH.

Mr Morris says:

First. That it does not mange. I have never had one that had this ailment, and I consider this a value not to be overlooked by a farmer that knows the evils of mange.

Second. That for early fattening qualities, yet continued growth, it has no equal. It will readily fat into "clear pork" at nine to ten months old, weighing 325 pounds; or will continue growing until eighteen or twenty months old, and in a herd of a hundred head, when fattened, will weigh from 450 to 500 pounds. At full growth, their live weight is frequently 900 pounds, or "big enough for any body."

Third. That it is the best clover and blue grass eater ever produced, so far as I have known test experiments made. It will

make more gain and thrive better on grass alone, than any breed I know.

Fourth. It is naturally quiet at all times, unless aroused by abuse; is a good breeder, kind in litter and a good suckler; will fatten well in corn field, or "hog off" the corn, for it will eat its fill and lie down.

Fifth. I claim in conclusion, that this is the hog for the packer, because of the proportion of its weight behind the shoulders, of the amount of high priced meat it carries, and the small per cent. of offal produced, small head and feet, feeding low down on hock and knee.

A breed that will gain an extra pound on grass is better than one that gains an extra two pounds on grain alone; so is the one that will fatten readily at nine months, but not reach maturity before twenty-one months old, rather than a smaller breed that fattens well at six months, and is done growing at fifteen. Let me be understood. I claim that pigs should come when grass comes, and go to market in cold weather. Therefore, we want a breed that we can do most with between April and January, nine months, or, if policy says hold over to the second winter, twenty-one months, that we can easily keep growing during the second summer without great cost, put up to fat the second fall, and make it profitable for the second winter's market. This is the hog we want. I believe we have these qualities in the Poland-China, more than in any other breed. Of the other points of merit in this breed, I name the small bone, long bodies, short legs, broad, straight backs, deep sides, with square, heavy hams and shoulders, drooping ears, fine hair, spotted, black nearly always predominating. Sandy spots sometimes exist, which fade or change to a dirty white at nine to twelve months of age. These are marks of the "Poland" blood.

## ESSEX HOG.

Read before the State Agricultural Convention, February, 1873.

BY HON. JOHN JEPPEERS, DARIEN.

Your invitation to write a paper on the Berkshire hog was duly received, and I regret my inability to comply with your request from the lack of practical knowledge, having never been a raiser of this truly popular breed. Had you called on Hon. R. Richards or Jas. Magson, Esq., both of our state, for such a paper, I have no doubt from their experience and great success as breeders of the Berkshire hog, they could have furnished it to your entire satisfaction and much to the satisfaction of the public. As a breeder of swine, I have confined myself for several years to the Poland-China and Essex breeds, and as in many respects there exists between the Berkshires and Essex a resemblance and similarity, perhaps it may be equally as acceptable to your society and as interesting to receive this paper on the Essex hog as if I had been able to comply with your invitation, in preparing this paper. I am aware of the fact that but comparatively few will be interested that may hear it read or hereafter peruse it. In the Essex or any other breed of swine, nothing can be said of an animating character. I can not claim among them a Dexter or a Goldsmith Maid that have surprised the sporting world by their great speed. The hog, like many other public benefactors, is more admired and appreciated by the masses of the people after his death, than while living.

The Essex hog is an English breed that was procured by crossing the Neapolitan black boar of Italy, on the Essex hog of England. The Essex, before this cross, was a large, coarse black and white hog. Lord Weston was the first to import the Neapolitan hog and make this cross. The success that attended Lord Weston in crossing these two breeds, was not only highly satisfactory to himself, but surprising to those that beheld his stock; but like many other breeders, he fell into the great error of breeding in and in, fearing that a fresh infusion of blood might lose to him

all he had made by his first success. The result was, that at the death of Lord Weston, his hogs had so depreciated in size of bone and body that they were only valuable to cross on the large breeds of the country, for which they were highly prized. After the death of Lord Weston, it was left for the late Fisher Hobbs, one of his tenants to bring, by judicious breeding and selections, the present improved Essex to its now state of perfection, so that to-day, the name of Fisher Hobbs stands with that of Booth, Bates and Bakewell as public benefactors. The improved Essex are in color black, in no case spotted or with white hairs. Their hair is soft, fine and rather thin; head short, with heavy jowl; ears wide set, and standing erect when young, but as they advance in age and become matured, they incline forward; body of medium length, chest round and deep, back straight and wide, with ham large and round; legs short in all cases, and well set under them. For beauty and symmetry of form, the Essex have no superiors, but the crowning excellence of this breed is their value to cross on the coarse breeds and common hogs of the country. I think that I am warranted in making the assertion that no other breed possesses such power in transmitting their fattening qualities and form to their offspring—and here let me add, that pigs raised from common coarse sows, crossed with a thoroughbred Essex boar, are preferable to the pure breed for fattening purposes. They not only possess the fattening qualities of the sire, but the more vigorous and hardy constitution of the sow. ]

All improved breeds have been made such by careful breeding and selections, with good feed and proper care. All unimproved breeds are such from negligence and want of proper care and feed. This kind of treatment has given a heavy, coarse covering of hair, long, lank, uncomely bodies, but a vigorous, hardy constitution, with a tenacity of life that they will, with much reluctance, surrender to the knife of the butcher. No well bred pig, that has had the advantages and blessings of a Christian civilization, in care and treatment, can withstand poor feed and want of protection from storms, as well as the poor scalawags that have become inured to it for generations.

The improved Essex hog is usually classed among the small breeds, but an eminent writer on the hog says, they may properly



be called the small large breed. Their short, wide spread legs, with round, deep bodies, give them when alive the appearance of a small hog, but when on the scales, they show their real size and weight, averaging, with proper feed, from 350 to 400 pounds dead weight, at sixteen months of age. We have by far too many swine in our state that can be very properly classed as the large small breed, with large coarse heads and legs, bodies that appear long from their lankness, with backs arched like the bow in the heavens, with a sure covenant with their owners that they will be disappointed at their death. To cross on such stock is where the Essex boar shows his true value. Could I induce the purchase of a pure Essex male pig in every school district in our state, to be used upon the coarse and common sows of the country, I have no doubt it would be of incalculable benefit, and do more to stop the mouths of those that are crying out against fattening pork, than any argument of mine.

But just here I think there is a whisper among some of those who may hear this paper read, were it not for the color we would be induced to try the Essex, but anything for me but a black hog. To such, let me say, hold, my friend, and do thyself no harm; and come, let us reason together. Let me ask you the question, what is the hog kept for? Harris on the Pig, in answering this question, says: "The domestic hog is kept solely for its flesh and fat. The pig that will afford the greatest amount of meat and lard of the best quality at the least cost, other things being equal, is the most profitable breed." The same writer compares the hog to a mill for converting our surplus corn, the slops of the house, sour milk and whey of the dairy into pork. If the above is correct, and it certainly is, why this muttering and foolish prejudice about the color of the mill? Has any one of you ever known a lot of good fat hogs rejected, or that had to be sold below market value for the reason that they were black or spotted? The great point of preference is not in the color but in quality and form. I have been breeding and fattening for market the black and spotted hog for several years, and have yet to hear the first murmur or objection from any pork buyer on that account; but, on several occasions have sold my black and spotted hogs above the average paid for white, not because mine were black and

spotted, but for the better reason that mine were smooth built, compact in form, with heavy quarters, such as packers like to have and will pay the highest price for.

In conclusion, let me urge upon the farmers of our state one fact, namely, that we as a class are growing by far too much grain for our own welfare and the good of our country. John Randolph told the planters of tobacco in Virginia that they were barreling up the wealth and treasures of the state and sending them off to England. Is not this warning to-day applicable to many of us. Much corn that is grown on western lands is converted into pork and beef in the eastern states, and even across the Atlantic. It has often been said that Cincinnati owes its great wealth in making the discovery of a method of putting fifteen bushels of corn in a three bushel barrel, and sending it to distant markets. This was done by means of the hog. Many of us must adopt this discovery soon, either from choice or necessity. No one thing is more patent than that all our surplus grain should be consumed on the farm where raised, and sent to market after being transformed into the dairy or in the other form of wool, mutton, beef or pork. Farmers of Wisconsin, let me ask you if we persist in the heedless, reckless way that we have followed for the past twenty years, what will the end be? Recollect, no man should live for himself alone. The state that has extended over us her arm of protection, the public welfare that should not go unheeded, our children, the rising generation, all demand of us that we leave our homes and farms at least as good as we found them. Then can we close our labors, feeling that we have been faithful over a few things and with a peaceful hope of being called to higher trusts.

## DISEASES AND REMEDIES.

Read before the State Agricultural Convention, in February, 1873.

BY DR. WM. HORNE, VETERINARY SURGEON, JANESVILLE, WIS.

*Mr. President and Gentlemen:*—I have a few practical remarks to offer for your consideration upon our domestic animals, their diseases, how contracted, how best to prevent and cure. These propositions and recommendations will be made in accordance with practical experience as a veterinary surgeon.

I shall have little to do with theories of any kind, but will abide by the facts in accordance with my judgment so far as I know, guided solely by such practice and experience.

Gentlemen, I expect not to convert you all to my views by no means, though they may be practical. I expect many and various opinions and ideas which will seem somewhat at variance and in opposition to my own, yet, I trust and feel assured that at the termination of this meeting, we shall all of us be the wiser for our attendance here, and find that the grand law and rule of progression, which is our motto, has been vitalized and strengthened, and that good fruits and a rich harvest will ultimately be our reward. 1st. The Horse. The noble, the beautiful, the sagacious companion and ready servant of man.

*His Color.*—This is a mixed question. Most of us have some favorite color. This fancy I leave with you, and give my reasons other than fancy, for the selection of color. Two or three years ago I wrote in the "*Country Gentleman*," and other papers, my favorite color, and my reasons for the selection. Dark chestnut, true bay and dark brown are those colors. Horses of these colors I find to be freer from disease than those of other shades, and most certainly do I hold them up in the front rank for their general qualifications—speed, stamina, docility, size and beauty of conformation. Don't misunderstand me—I know color does not make the difference, but the peculiar organization which makes the color does.

No doubt many of you have heard the Arab legend of how,

when a father and son were hotly pursued by a mounted foe, the father was anxious to learn the color of the leading horses, and said unto the son, "Selim!" He answered, "Here am I, O! my father!" Said the father, "Get thee behind, and take note of the color of the horses in advance." He did so, and reported Light Grey. "Then," said the father, "may we take to the sandy desert, for thither they cannot follow us." A second time the observation was repeated, when the son reported Black horses. "Then," said the sire, "let us turn to the country, for *surely* they may not there overtake us." A third and last time was Selim sent behind, and upon reporting Chestnut as the color of the leaders, was asked by his father, "Are they dark or light?" Upon receiving for answer: "They are Dark Chestnut, O! my father!" the father cried aloud, "Then, Allah preserve us, for we are lost! as there is no country where they cannot surely and swiftly follow us."

This anecdote I relate simply to show what the tradition of a nation or people, noted for their breeding and management of horses, goes to prove as regards color.

Among the light Chestnuts, erroneously called Sorrels, are to be found nine-tenths of skittish, balky, and otherwise unpleasant qualities so much to be feared and rejected. Black horses have more faulty eyes and feet than other colors, according to my observation. The various dapple Greys are much more subject to warts than other colors. Yet, of all colors, I have seen qualities both to be rejected and admired. Among the Buckskin and the various shades of Cream, and the Spotted, we often have powers of endurance which are quite astonishing, and sometimes speed also; but these shades are objectionable, not being at any time fashionable, and therefore not so marketable.

Still, gentlemen, the old saying is yet good: A good horse is seldom a bad color. But I must leave this part of the subject, still adhering to my previous observation, that the dark Chestnut, true Bay and dark Brown are the colors to perpetuate, as in them we have all the requisites, both of endurance, speed, size, docility, and fashion; and these, I believe, fill the whole bill as to all requirements or needs.

Next, *Breeding*.—My remarks will be equally applicable to horses, cattle, sheep, swine, poultry, etc. In the first place, I wish to be

understood as not advocating any particular breed. This choice I leave to you. I shall speak only as pertaining to general health, purity, and soundness. Here I wish your close attention. "Like begets like." This physiological law should never be lost sight of for a single moment. Nothing is more certain; nothing is, or can be, of equal importance to it with the breeder of stock. Upon the observance of this law rests very materially the fact as to whether we shall have our country largely overspread with scrubby, unthrifty, unprofitable and diseased stock, or become noted for our close attention, perseverance and skill as a nation of stock growers, and no other nation upon earth has better natural facilities for carrying out to perfection this manly, health giving, pleasing and profitable business.

What so pleasant as for a man to walk around and look with pride and satisfaction upon his thrifty, healthy animals? "They hear his voice and do follow him," as all animals will, if properly and humanely treated and cared for.

*Housing, Ventilation.* All our animals, to be healthy, must have a good house for shelter, plenty of uncontaminated pure air, and above all the glorious, the revivifying, life engendering sunlight. Without God's beautiful sun, naught can possibly thrive or be healthy. Gentlemen, allow me if you please, to impress upon you this fact, for I assure you much indeed does it concern your individual interests.

The next point toward perfection is the fact that all animals, man included, to be healthy and pure, must be properly fed and watered. Bad, malarious water, or water rendered impure from whatever cause, should never be given to our domestic animals, any more than we would partake of such ourselves, or give it to our dear young children. To repeat one of my remarks at the Whitewater convention, "As you cannot obtain pure water from an impure spring, even so can you not obtain pure food from impure sources, whether of food, water, or disease, especially the latter." These last remarks, refer chiefly, of course, to our beef, mutton, cheese, butter, milk, etc., but are of equal importance to the horse, with his almost human intelligence, delicate organism and proneness to malarious influences. Then I repeat, feed wholesome food and water to all your animals, and fear not; you

will be amply repaid, for be assured, nature never leaves us our debtor, if we deal fairly and honestly by her. To improve permanently our stock, we must breed from the very best, for the accomplishment of our desires, and the adaptability of any particular breed to our own wants, or as best fitted to any particular soil, or climate. The capabilities and points, each in their place, should always be considered before we make our selections for breeding purposes.

## DISEASES.

In discussing this part of my subject, I shall only have time to give, as it were, a passing notice, and shall select only those diseases which are most common to our domestic animals, and from which they suffer the most.

*Rheumatism*—two kinds—chronic and acute. This is the most insidious and perplexing ailment which afflicts our animals. Nothing is more baffling to the skill of the professional man, or more trying and painful to the subject of it.

*How is it produced?* By sudden changes; above all things, from hot to cold. Exposure to a cold, damp atmosphere, or a cold rain; anything which suddenly cools off the temperature, especially immediately after hard, exhausting labor.

This last is a fearful source of rheumatism in the horse. Cattle, sheep, hogs and poultry are similarly affected, by similar causes, with this difference, the *poor horse* is compelled to work often beyond his powers of endurance, and is then neglected; consequently he suffers all the more often and acutely from attacks of rheumatism.

*So-called founder or stiffs* in horses and cattle is often (not always) neither more nor less than acute rheumatism.

Sheep, hogs and poultry often—much oftener than is supposed or believed—suffer severely from attacks of rheumatism, caused as above. Rheumatism is also largely hereditary, and therefore no animal, male or female, known to be the subject of rheumatism, should be bred from, whatever desirable points they may possess; for so surely as we thus sin against nature, so surely will she most unrelentingly exact the penalty, often so full a penalty as to become appalling to the beholder.

Gentlemen, remember ever, that "like begets like." We have no rule or exception to this. Then I earnestly exhort you, as you value your own interest, and the interests of your country, upon no account breed from diseased animals, whether horse, cow, sheep, hog or fowl. One little idea I wish to give here, that is, whenever you stop your horse, especially in cold windy weather, be sure to turn his tail to the wind, then the centre of the circulation will be in a measure protected from the immediate action of the cold. Besides, the buggy or sleigh helps materially to break it off. This I admit is a simple suggestion, yet, of more importance than at first might appear, and may prevent an attack of rheumatism.

#### CURE.

Gentlemen, the best cure is the prevention. Yea, it is said to be better than cure, and so in my opinion it really is. One of the best medicines for rheumatism I know of is, for outward application, oil of cedar, 2 parts, sulphuric ether, 1 part, proof spirits, 16 pints, (that is, one-half water and alcohol,) mix ether and cedar first, then add the spirits; rub the affected parts with this, and relief is almost sure.

For inward use. Give 1 fluid dram of fluid extract of colchicum root, night and morning, or if very bad, three times a day. Mix in a little warm rain water. Repeat this for three or four days. Then leave off colchicum and give 25 grains iodide of potassium in one-fourth pint of rain water, every morning until you find symptoms much improved. Then gradually leave off all medicines and feed carefully, give gentle exercise and watch closely your patient. The same for ox or cow, one-fifth for sheep or hog, one-twentieth for a fowl.

In this disease are required all the manliness and patient kindness which we ought as men to possess. Be humane and considerate to your sick animals always.

Dark, damp stables and cow houses are a great cause of rheumatism among our stock, and should not be used, for if a farmer cannot afford to house his animals with some degree of comfort, he cannot really afford to have any, and should first fill the proverb, of having a stable before purchasing a horse.

*Colic*.—Of this, there are two kinds, flatulent and spasmodic. The first is produced by the formation of gases in the stomach and bowels, caused by fermentation, consequent upon indigestion, from eating anything green, in large quantities, or such food as the stomach is unaccustomed to. Nature never will submit to be outraged by any sudden shock to her nicely appointed and prescribed laws, and who can blame her? I am sure I cannot.

*Spasmodic Colic* is caused by anything which suddenly overthrows or interferes with the aforesaid laws of nature. Cold water, in large quantities, ill usage by hard driving, or other unreasonable work, or exposure of any kind may, and often do cause it. Its chief distinction from the flatulent is, the body does not swell, whilst many other symptoms are nearly or quite the same. In either case, there is never much time to lose, what is done must be done quickly, and the remedies must be of the proper kind, or before you are aware, your patient is dead.

For flatulent colic, give ant-acids to neutralize the gases and stop their manufacture. One of the best remedies with me is, tincture opium, 1 oz.; sulphuric ether, 1 oz.; prepared chalk, 1 oz.; rain water, 4 oz. Mix and give at once. Repeat in one hour if necessary. On no account, trot the horse around, or slap his sides with a flat board, as I have often seen done. Friction by hand rubbing is good. Warm soap-suds thrown up as an injection is beneficial. If the pain and symptoms do not upon the giving of a second dose of medicine abate, bleeding to the extent of six or eight quarts will often prevent inflammation of the bowels and other dangerous terminations.

For spasmodic colic, give 1-2 oz. sulphuric ether, 1-2 oz. tincture opium, 1-2 oz. tincture lobelia, 1 1-2 oz. rain water, 20 drops fluid extract aconite root, mix all together and give as one dose, repeat if necessary every thirty minutes up to three doses. Inject warm water, 20 quarts, in which mix 1 oz. tincture opium; inject every twenty minutes or so. Here, also, if relief does not soon follow the medicine, bleed as above recommended.

Next diseases are spavin and ringbone, exostosis, or abnormal growth of bone. These are precisely the same, differing only in location, and require just the same treatment. The causes are, concussion, strain, or injuries from any cause to the parts; but



above all other causes, they are the result of hereditary transmission. This fact I have so often proved in individual cases for my own satisfaction, that many years ago I became satisfied that spavin and ringbone were chiefly the result of breeding from parents which were the subject of these common ailments.

Here, again, I repeat, on no account breed from diseased animals. It's worse than folly. Cure, there is none; the many assertions of pretending quacks to the contrary notwithstanding; yet there is an alleviation for it. The active inflammation and lameness may be permanently stopped, and further enlargement of the bone prevented by proper remedies. *My best remedy* is the actual cautery—*i. e.*, hot iron. Yet there are many appliances for spavin; cut off the hair close; rub in acetate of cantharides for 4 dressings during the day (one day), then apply strong iodine ointment for 2 or 3 dressings, or use biniodide of mercury, carefully rubbed in for 3 or 4 days, after which be particular to keep constantly covered with hog's lard until the hair grows. But I repeat, the actual cautery in the hands of an expert, is the true remedy; but none other should attempt to fire a horse. Next is *Curb*. This is caused generally by strain, but here again are we reminded in forcible language of nature's determination, or persistency, to perpetuate disease.

No one doubts the fact that there are curby-hocked horses—lots of them—liable at any time to throw out a curb. Here again is proof that "like begets like." The cure is rest, cooling applications for a few days, then iodine ointment for five or six dressings, say two a day. Here let me remark, that all animals thus treated must have rest—*absolute* rest. If you can't rest your horses, let them alone. I would much like to speak about the foot of the horse, had I time, but I have not.

*Next is the Cow*—abortion. This serious trouble has not yet made much havoc among our dairymen and stock raisers, but it is on the increase, and our business ought to be to prevent its spread by every means in our power. In many places in the east, as most of you know, abortion is the scourge and almost ruin of whole neighborhoods. So much so, that many have wholly, or partially gone out of the dairy business. How is this? Why, until lately, say two or three years, they have gone on breeding

from such cows whenever they could, regardless of the consequences. This is the one great cause of the increase in abortion. No cow, with the disposition to abort, should be bred from upon any account, for this disease is largely hereditary. Bad smells, or filth of any kind, often cause abortion. Leaving a dead pig, calf, or any other decomposing animal matter lying around the premises is a fruitful source of abortion. Ill-usage, bad food or water, anything which interferes materially with the tranquillity of the cow, especially those of a fine organism may bring about abortion. Cure—prevention.

Next is manimictus, or inflammation of the bag. Remedy: cooling applications; cold water constantly applied is very good; 1 1-4 lb. Epsom salts, 2 oz. best ground ginger, (for a large cow), as one dose, are very efficacious, as lowering the whole temperature of the body. Follow these by fever medicines.

*Stoppage of the Teats*—are of three kinds; first, caused by the membrane in some manner covering and blocking up the entrance, consequently preventing the flow of milk. Second; in the middle of the teat a small tumor often forms and stops the milk from flowing. Third; at the outer or lower end, a glary fluid or fungus excrescence forms and stops up the aperture or passage, and of course, no milk can be had. For the first two, the milk tube must be used. Dip it in equal parts tincture of iodine and sweet oil; then very carefully insert it until the milk has run out, or longer. For the third, a sharp knife or instrument made for such purposes should be used. Dissect away whatever may cause the obstruction; dress with common ointment or tincture of myrrh, or both. But before using the knife, be sure you are right as to the stoppage, or you may cause serious mischief.

*Next, Placenta or After-birth.*—To prevent serious disorganization and disease, within an hour after calving, the after-birth should be carefully taken away by some person well acquainted with such things. If such a person cannot be had, then must you yourself try, not the quack. Take hold of the end of the membrane in your left hand, lard well your right arm, insert the hand, and hold your thumb and forefinger underneath, and follow to the end of the membrane, and detach with the thumb and finger nails, pulling moderately at the same time with both hands until the sub-

stance comes away; then give two ounces dulc. nitre, 3 drams best ground ginger as a febrifuge, or two drams fluid extract of gelseminum in a little water. No medicine will avail to expel the after-birth, so far as my observation teaches, whatever any person may say to the contrary. You may give herrings, codfish, flaxseed, lard, fat pork, saltpetre, or any "petre" you please, it is worse than useless. A fever medicine is very good after removal. This has been my practice for many years, and I have never lost a cow or had any bad symptoms. Follow this operation.

*Next, Sheep.*—Common catarrh; generally, this disease is the result of neglect, and is often a disgrace to the owner. Exposure in damp, cold weather, or cold rain, and general mismanagement, are among the chief causes. Cure: house them comfortably, give one scruple sulphate iron, ditto blood root, half dram best ground ginger; mix with syrup, or give as a drench in quarter pint warm ale; keep dry and well ventilated; feed generously.

*Next is Foot Rot.*—Cause: poor habit of body and general want of condition, and, as above, it is often the result of neglect. Wet cold pastures cause it; contagion, perhaps, more than anything else causes it. Cure: wash the affected foot or feet with pyro-ligneous acid (i.e., acetic acid) and water equal parts; pare the diseased hoof, soak a piece of lint or tow in Tilden and Co.'s bromo-chloralum and dress each foot, leaving on the lint, and change as often as it becomes foul; dust constantly the parts and abode with pulverized charcoal, and give of golden seal, pulverized charcoal and best ground ginger, half dram of each, or the same amount of blood root, gentian and ginger; keep clean and dry and remove all contaminated from the others. A diluted solution of bromo-chloralum, 1 to 6 of rain water will form a very efficacious wash for sheep in any disease where a wash is indicated, and for running at the nose, from experience I can affirm, I know of nothing as good, having tried it in many cases. A little is to be injected up the nostril.

*The Pig.*—Of course he's a hog. My remedies for the hog are general cleanliness, plenty of sun, fresh air, and good food for about a year, then cut his throat, dress and send to market. Should he happen to fall sick during his short earthly probation,

my medicines are screenings from hard coal, charcoal and sulphur, according to the circumstances. Hog cholera and other diseases, such as rinderpest, cattle plague, etc., would take half a day to properly discuss them, so this must suffice.

Last and least, *Poultry*. This is the chief extent of my stock farming. I cure all diseases by preventing them. I keep very clean; feed wholesome, mixed food; coal screenings, burnt bones, coal ashes, charcoal, plenty of air, sun, water and skim milk; the last they seem much to prefer to drink, and I have eggs and poultry at all times, and no disease. For roup, I inject bromo-chloralum, diluted as above, into the nostrils daily; give tincture of ginger, myrrh and blood-root, one-half drachm of each, twice a week, or more. For vermin, paint the perches with common kerosene, annoint also the body under the wings. Place sulphur at the bottom of each nest, and change once in two weeks.

In conclusion, I would remark upon quacks and their patrons. Our poor animals suffer terribly from the arrogance and cheek of a horde of men who, for a dollar or two, would not hesitate to put to risk a hundred or more, of the man so unfortunate as to employ him, and render the animal given over to his care an object of extreme pity and commiseration.

Gentlemen, just so long as these scoundrels find men to believe in and employ them, just so long will you be subject to imposition. When the owners of stock cease to countenance them, they will soon belong to the past. You are better fitted to take charge of your sick animals than these pretenders are, as a rule, for you would, at least, do all and the best you could do for them, and nurse them with kindness and care. I would here recommend to your consideration the value of Tilden & Co.'s bromo-chloralum. It is said to be the best deodorizer and disinfectant in the market. It is quite harmless, odorless and cheap. I have used it largely in Chicago, Janesville and elsewhere with the most signal success. In Madison, during the horse disease, in the presence of quite a number of gentlemen, I demonstrated its power as a valuable agent for all purposes where a disinfectant is needed. Try it in your sick room. Try it in your stable and cow house, your cellars, etc., and I am satisfied that you will be pleased with the results and convinced of its merits.

## DAIRYING.

Read before the State Agricultural Convention in February, 1873,

BY CHESTER HAZEN, PRESIDENT WISCONSIN DAIRYMEN'S ASSOCIATION, LADOGA.

Considering the important position the dairy occupies to the agricultural pursuits of Wisconsin, it is surprising to me that so little attention is paid (by the majority of farmers) to the character of the stock devoted to this object. It is true, that some dairy-men have given the subject of breeding and rearing dairy stock close attention, and the results have been satisfactory. But I think the majority of farmers under-estimate the real value of a dairy of first class milking cows.

You seldom see a dairyman that does not notice the difference in the amount and quality of milk, from the different cows in his herd, which is often 100 per cent. on the same feed and treatment. This comparison is applicable to different dairies, as far as regards milking qualities of the cows, but their feed and treatment has much to do with their productiveness, as have the feed, care and treatment of calves until they mature into milk cows. I stated that nearly every farmer notices the difference in the products of his cows; but I think a man that receives the milk from 75 to 100 dairies, and manufactures it into cheese, has a better opportunity to compare the products of dairies.

I will state a few facts from my factory milk book for 1872 :

One dairy of 30 cows delivered 141,339 lbs of milk or 4,711 lbs. to the cow in 6½ months.

One dairy of 14 cows delivered 42,416 lbs. of milk or 3,029 lbs. to the cow in 6 months and 12 days.

One dairy of 14 cows delivered 38,108 lbs. of milk or 2,722 lbs. to the cow in 5 months.

One dairy of 29 cows delivered 117,882 lbs. of milk or 4,065 lbs. to the cow in 6½ months.

One dairy of 12 cows delivered 26,236 lbs. of milk or 2,186 lbs. to the cow in 5½ months.

One dairy of 8 cows delivered 9,304 lbs. of milk or 1,163 lbs. to the cow in 3 months 11 days.

The last mentioned was one of the poorest dairies, the first, one of the best. Those are sufficient to show that some dairies produce over 100 per cent. more than others do. This difference is in a measure to be attributed to the milking qualities of the cows as well as to the feed and care of them. Every farmer may know that there is a great difference in the constitutional propensities of animals. Some will produce from a given amount of food, a greater amount of flesh or fat than others, and some yield a greater quantity of milk, under the circumstances. /

These constitutional traits are to a certain extent hereditary, and that families or breeds are characterised by peculiar propensities, which greatly affect their value for special purposes, any one that has given this subject any attention, cannot deny.

Could the dairymen of Wisconsin breed a stock of cows that the whole dairy would average as good as 25 per cent. of our best cows, it would increase our dairy product at least 25 per cent. Wisconsin, in 1872, produced 8,000,000 pounds of cheese, which, at 12 1-2 cents per pound, would be one million dollars; the amount of milk manufactured into cheese did not exceed one fourth of the whole. The question is, how can this be accomplished? I answer, by strictly adhering to the law of breeding. That like begets like, there is little or no doubt. Therefore, breed from the best breed, and families of milking stock. Breed for a certain purpose, and let that purpose be a good constitution, and well developed milking points.

The Ayrshire breed, which takes its name from the county of Ayr in Scotland, where it originated (or existed) about ninety years ago, has become widely disseminated, and, if we may credit accounts and authorities, it is now, as a dairy breed, the most popular in Great Britain or America.

The most authentic accounts represent the modern Ayrshire to have been formed by a union of several breeds. The breed appears to have been first known under the name of the Dunlop stock, having been owned by a distinguished family in Ayrshire by that name, as early as 1780.

Rawlin, who wrote in 1794, speaking of the cattle of Ayrshire, says, "They have another breed called the Dunlop cows, which are allowed to be the best race for yielding milk in Great Britain

or Ireland, not only for large quantities, but also for richness and quality." This, though extravagant praise perhaps, shows that the stock was deemed to possess great merit at that early day.

Professor Low says in his illustration in reference to the history of the Ayrshire, that authentic records are wanting to show by what progressive steps the breed has been moulded into its present form. He adds, however, that at the time he wrote, 1841, "they had spread over a large tract of country, and by continued mixtures with one another, they had acquired such a community of character as to form a distinct and well defined breed. The most reasonable conclusion from all that has been written in regard to the modern Ayrshire, taken in connection with the points and character of the animals themselves, is, that they were produced by a union of the bloods of the Taswater Short-Horn, Dunlop and the Alderney, with the ancient stock of Ayr.

As to the leading points and characteristics of the Ayrshire, no description probably is more correct than that of Professor Low. The Professor says, "The modern Ayrshire may stand in the fifth or sixth class of British breeds as respects size. The horns are small and curving inward at the extremities, after the manner of the Alderney. The shoulders are light and the loins very broad and deep, which is a conformation almost always accompanying the property of yielding abundant milk. The skin is moderately soft to the touch, and of an orange yellow tinge about the eyes and udder. The prevailing color is reddish brown, mixed more or less with white—at this date, red and white prevail. The muzzle is usually dark, though it is often flesh color. The limbs are slender, the neck small, and the head free from coarseness. The muscles of the inner side of the thigh (technically called the twist) are thin, and the haunches frequently droop to the rump, a character which exists likewise in the Alderney breed, and which, though it impairs the symmetry of the animal, is not regarded as inconsistent with the faculty of secreting milk. The udder is moderately large, without being flaccid.

The cows are very docile, gentle and hardy, to the degree of being able to subsist on ordinary food. They give a larger quantity of milk, in proportion to their size and the food they consume, than any other breed, and the milk is of excellent quality.

Healthy cows on good pastures, give 800 to 900 gallons in the year, although taking into account the younger and less productive stock, 600 gallons may be regarded as a fair average.

Aiton, in his survey of Ayrshires, rates the yearly average of the best of this breed at 4,000 quarts, within 300 days after calving, or until they become dry; he admits, however, that this is above an average, and that probably 600 gallons or 2,400 quarts may be about the common yield of the Ayrshire stock.

The author of *British Husbandry* remarks in reference to this yield, "if equalled, we believe it will not be found exceeded by any other breed in the kingdom."

Dickson, in his treatise on the breeding of live stock, says of the Ayrshires: "The cows have obtained a world-wide celebrity as milkers, and are to be found in most of the dairies of noblemen and gentlemen in every part of the kingdom." He speaks of one which belongs to George Rennie, Esq., of Phantasie, which, on a bet, was proved to have produced ten imperial gallons, or forty quarts daily.

I. H. Morgan, of Ogdensburgh, N. Y., says: "The Ayrshires are pre-eminently the breed for milk. Some of his cows have given thirty quarts of milk per day, their live weight in milk in seventeen days, and averaged from ten to twelve quarts for every day in the year."

I think as good a cow as I have seen in Wisconsin was an Ayrshire, owned by Mr. Kingsbury, of Ripon, Fond du Lac county. Mr. Kingsbury states that he has milked 65 pounds of milk per day from her for several weeks in succession. My experience is, that my Ayrshire cows produce more milk for the season, compared with the size of the cows and amount of feed consumed, than any other cows in my dairy. It is a fact that most persons who have given the Ayrshires a trial have expressed themselves very favorably as to their merits, compared with other breeds. My reasons for believing the Ayrshire stock to be the best adapted to meet the wants of the majority of the common farmers of Wisconsin are as follows: 1st. They are a very active, hardy race of cattle, well adapted to our climate; will thrive on as poor feed; and endure our cold winters as well as any native stock.

2d. I believe the cows will give more milk in proportion to their



size and the amount of food consumed, than any other pure breed.

3d. That they are not held at such exorbitant prices that the dairymen cannot afford to secure a pure blooded bull to breed from.

4th. That a union with good sized native or grade cows of good milking qualities produces a very desirable animal in size, constitution and milking points, and admirably adapted to the wants of Wisconsin dairymen.

5th. Greater uniformity in the general character of the stock, from its inherent or hereditary qualities, and greater tendency to gain flesh when not giving milk.

The reason why the dairy cow should rank highest in the list of live stock is because the product of the dairy exceeds in value that of any other agricultural pursuit in the state, and more of the common farmers are interested in and benefited by its manufacture.

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## DAIRYING.

Read before the State Agricultural Convention in February, 1873.

BY MRS. P. PUTNAM, DODGE'S CORNERS.

Dairying should be promoted to a greater extent, and while I would in no wise deprecate these extensive factory enterprises, I believe they cannot supercede the necessity, nor should their existence furnish an excuse to avoid the trouble of farm dairying. If, from any pretext, our farmers should abandon the custom of producing a sufficient amount of butter and cheese for the consumption of their families, a short period of time must prove the fallacy of the scheme. Farmers' daughters generally take too little interest in household matters.

A young man, his only wealth consisting of health and willing hands, in company with a poor farmer's daughter (whom he hoped soon to make his wife), while at an agricultural exhibition, and passing by the stands loaded with household products, heard some one remark: "There is some good bread;" when this dainty-lipped

lady, in a tone of affectation and disdain replied: "I know nothing of such matters; I should be no judge of the article." But they should feel there *is* a motive, a *high* incentive, nor neglect any opportunity to acquire knowledge so useful; or be content with any achievement less than that which ranks *par excellence*, for in this age of constant changes, how soon many who now are seemingly elevated beyond the possible occasion to utilize the information, by fire or other disaster, may have their condition changed, when wealth, the accumulation of successive generations, is swept away in an hour, when those who could not recall an ungratified wish, are left far more helpless and dependent than the wash-woman they had employed, or the milkman who had supplied them; more helpless, because they had not been educated in such a manner as to be able to supply their own wants, or be of profit in serving others. Many persons are compelled by circumstances to seek new homes, which small means will procure, and these are found in remote sections, isolated from many conveniences of populous districts.

In situations like these, if educated in the care of general house work and the dairy, they might still enjoy the luxury of excellent food, and the surety of an income from the proceeds of their toil.

Many who are entirely ignorant of things pertaining to this subject are amply qualified to entertain their friends, and discourse delightful music upon melodious instruments of elaborate style. To these I would say, the hours spent in this grateful enjoyment do not tend to impair the relish for more substantial aliment. Then, ladies, why not add to your other attainments skill in the culinary arts and in the products of the dairy? that your pleasure may not be marred nor the smiles of your guests displaced by looks of disgust while at your repast, as you proffer to them your fragrant "gilt edged" butter, and delicious creamy cheese.

But this skill, in its greatest perfection, is not acquired by a few faint-hearted trials; but long, patient persevering care and faithful practice are necessary to accomplish the best results.

A lady remarked to the successful competitor on farm dairy products, at the last state fair, "I envy you the ease with which you gained your premiums." A little time and attention only were all that was necessary, and then all was over. While she—

quite as successful as a florist—had continual care and anxiety, with weeding and watching from early spring till autumn, to secure her prize. She did not consider that many years had been passed in almost daily practice of the dairy lesson.

Good, wholesome nutriment is necessary to insure good health to the animals which supply the basis of our dairy labors; ample forage, of nutritious quality, and a liberal quantity of pure water, should be provided. Annoyance of cows, by dogs, in driving them to or from the pasture, should be prevented, as such excitement doubtless induces a feverish condition, which impairs the quality, and diminishes the quantity of milk.

Shade is a needful requisite; and during the summer, cows will, if permitted to do so, return to their cool stables, and repose quietly for hours, free alike from the troublesome attacks of flies and the exhausting effects of the mid-day sun.

Good milking is no insignificant operation. Sullen, dilatory movements yield but disappointment and dissatisfaction; but when performed with cheerful alacrity, the proceeds bring remunerative results. All possible precaution should be observed during the process, to prevent the falling of dust from the cow into the pail; and to remove any such, the milk should be strained as soon as practicable, so that the rising of the cream may not be retarded.

If cheese of the best quality is to be made, the rennet may be immediately added to the milk; the quantity depending upon the strength previously ascertained. When it shall become firm enough to cut, it should be carefully done; and when the whey rises, some may be dipped off by laying a strainer thereon, and after warming, return it again, cutting and stirring very carefully at first, but continuing to warm, cut and agitate the mass, until after a little time, there is less danger of injury from hurry, and the process of warming may be expedited somewhat, until it becomes sufficiently firm to squeak between the teeth by chewing. Then salt with eight ounces to twenty pounds of curd, thoroughly mixing, and it is ready for the hoop and press, from which it should be removed in a few hours and turned, using another strainer, thoroughly wet in cold water.

At the next milking, the same process may be repeated, if the

first was not as large a cheese as desired, placing the last curd in the bottom of the hoop, and after warming the previous one in quite warm whey, press it upon the new, and thus continue until of size to suit, when it may be enclosed by a bandage nicely buttered; and with care in turning, an excellent article of cheese is the result, and of good size, though from a small dairy.

From experiments, I have satisfied myself that after cream has once risen, it can never again become so thoroughly mixed with the milk but some loss will be sustained. A good article of cheese can be made by setting milk in pans over night, removing the cream in the morning and warming the milk before adding the morning's mess, when it may be managed the same as the former method, except the reservation of the cream, which is very convenient for many purposes, perhaps even supplying butter for the family.

When the milk is used for making butter, it may, in cold weather, remain forty-eight hours unskimmed without taking harm; but if a much longer period transpire, it will acquire a bitter taste, though the cream may be kept two or three days more, by putting it in a cool room and stirring each time when more is added. In cold weather, it is well to heat the milk a little before setting it in the milk room, as the cream will thus become firmer and not require as much time in churning.

If making butter in the summer, the dairy woman must exercise more especial care that the cream be churned very frequently. I prefer an airy place, cool as possible, for setting the milk, and skim at the first indication of acidity; then place the cream in a refrigerator, or hang it in a well or other cool place, until a sufficient quantity is obtained for a churning. After the butter is taken from the churn, if too warm or soft to remove all the buttermilk, return again to a cool place until morning or evening, when it can probably all be removed. Then add one ounce of salt and one-fourth ounce of loaf sugar to each pound of butter, thoroughly mixing, unless the butter is growing too soft from exposure to the atmosphere, in which case it must be cooled before thorough working is completed. After cooling again, it should be re-worked and packed, covering nicely with a white cloth wet with brine.

When the jar is filled, put half an inch of salt and strong brine upon the top, and keep closely covered.

My experience has been that a better article of butter can be insured by extracting the buttermilk without the use of water, as I am satisfied that the presence of either remaining in the butter impairs the flavor, and when the buttermilk alone is there it is easily discovered.

Another valuable auxiliary for the good butter maker is a convenient butter worker. I will here recommend one for its excellence, having used it for some years. I believe any person who will give it a fair trial will not return to the butter bowl.

An oak plank (a board will answer if cleated to prevent warping), of size to suit yourself, two and a half by three feet for common sized farm dairies; place it aslant on a table or stand, then with an oak stick twenty inches or so in length, three inches in width, of triangular parallel shape, square at one end (to use in packing), with a handle at the other, the butter is easily and thoroughly worked and salted; with no occasion to put the hands into it, and while thus spread before you, every unwelcome mote is discovered quite readily, and can be easily removed.

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## GENERAL FARM HUSBANDRY AND ITS ASSOCIATIONS.

Read before the State Agricultural Convention, in February, 1873.

BY DR. C. L. MARTIN, JANESVILLE.

*Gentlemen of the Agricultural and Horticultural Societies:*—I have been invited by my friend, Secretary Field, to make you a little practical speech. You neither expect or desire me to speak upon the science of geology or astronomy, and I was perfectly aware that all the ground of general farming would be taken up by eight or ten able men who were to precede me, I have concluded therefore to take a by-path and make my speech a short one. Gentle-

men, I will speak upon two or three things connected with farming, which I have learned by experience and which may be useful to some of you. These agricultural and horticultural meetings have become institutions of the country; they are exceedingly useful in many ways; they bring us together and thereby make us better acquainted than we otherwise would be; cause mutual exchange of information and knowledge, so that all are benefited. They excite to activity and emulation in contending for premiums, not for their value in money only, but the pride and honor of success. It is certainly a circumstance worthy of no little congratulation that your exhibitions each year exceed the preceding one. This affords the best evidence of the increasing usefulness of the Society, and gives promise of a bright future; then see to it, gentlemen, that they do not fail for want of your support. Very few of you know the care, trouble and anxiety of the officers of these agricultural societies. Come forward then, promptly, and aid them with your presence at least; we have beauty of scenery in Wisconsin, unsurpassed; productiveness of soil, inferior to none, and from what I know of Wisconsin people, they rank high in industry, temperance, enterprise and all those things which go to improve and bless the community. My friends, in the country I came from, the farmers have not the chance you have; the land is there perpetuated by the laws of descent and primogeniture, while the laboring tenant ekes out a scanty subsistence by cultivating and improving the land to which he can acquire no title, and from which he derives no reward except a bare support. With you it is different; here all do or can hold land. Yes, every one of you who is temperate and industrious, can own a farm. This easy acquirement of land however, has its evils, which you will do well to avoid. The first evil in this western country is a disposition to own large farms, causing heavy expenditures for fencing, taxes, etc., and much of it is unproductive for want of proper tillage.

Acre to acre, and field to field of new grounds are added each year, when the land already broken is but half cultivated, and much of it overrun with weeds. What a lamentable sight to see a farm producing a crop of fire-weeds, thereby impoverishing the land more than a crop of corn. The next evil is in rushing wheat

growing; sowing the same field to this cereal every year; investing every dollar in this crop, and making everything subservient to one object—*wheat*. Then in spring and early summer, day after day, you exult over your glorious fields. Buoyant with expectation, you purchase things not needed, a new reaper, *on time, of course*, when the old one, just as good with a little repairs, is lying rotting in the field just where you left it last harvest. This new reaper gets you into debt, which you expect to meet by your bountiful wheat crop, but just before harvest, comes a blight, chinch bug or some other bug, or even *ten* days of hot weather, just when the grain is in the milk, causing rust and ruin to the crop, and away goes your glorious wheat, and you are ruined. Gentlemen, there is a way to avoid this ruin; shall I tell you why some of you fail in farming? You use unsuitable means to achieve a successful result. I affirm, and I know whereof I speak, that if agriculture is prosecuted with judgment, intelligence and industry, there need be no failure.

I wish to draw your attention from those large wheat fields of which we have been speaking, to a plan of farming which you will find both safe and profitable. A variety and diversity of crops, breeding and rearing a variety of domesticated animals, and to make it more pleasing as well as more profitable, let your horses be well bred. They will cost you no more than low bred ones. If you wish to keep them, they will do more work in the field and on the road in less time and much more pleasantly, and when sold, will bring twice the money. The same rule holds good in cattle.]

*Durhams.*—This breed makes an early or quick return of the food consumed. Early maturity is the grand and peculiar characteristic of this breed. That beautiful ripeness of condition at so early an age has excited the wonder of every judge of cattle.

Now, gentlemen, we have some well bred colts and cattle in Wisconsin, and I have no fear for the colts, as the man who has spirit to breed good ones will take care of them; but I want you to take good care of your cattle. House them well, and keep them warm, ever remembering that it requires a certain amount of animal heat to live—much more to thrive; and also, that it requires three times the food to keep up this animal heat in any

animal that has to buffet the storms of a Wisconsin winter, than the one which is kept warm.

But it is as impossible for any man to make farming profitable without knowing how, as it is to talk Latin or Greek without having been taught. A farmer should have a knowledge of the nature of the different soils, their adaptability to the various crops, and one who does not know this, as well as times and seasons for doing his work, and other mysteries of agriculture, is unfit to be a farmer.

Who, let me ask, has more interest to know how to develop the hidden mysteries of the earth, and make them subservient to his wants and will than the farmer, and who meets with greater obstacles and difficulties in the pursuit of his calling than the farmer? None. Certainly, then, he should be prepared and educated for his mission. I am old enough to remember when that foolish heresy was in full blast, that farming was so simple that it needed only ignoramuses to carry it on. No one ever expected to earn fame by farming. That time has passed. Gentlemen, farming is a science as well as an art. We do not now depend upon moonshine for our crops, but upon intelligent culture, careful and deep plowing and carefully husbanded resources of all farming operations. I repeat, it is no longer a mean, plodding employment. The cultivator of the soil brings his inquiring mind into the company of the most wonderful workings of nature in her own almighty workshop, where he has better opportunities of acquiring knowledge of the great principles which govern animal and vegetable life, than the student has in the musty atmosphere of his study. The great volume of nature lies open before him, and all its pages invite study and contemplation. It shows him that he is a co-worker with that Being who said, "let there be light, and there was light." It teaches him to depend upon that providence, coupled with his own industry, for success in bringing to maturity the animal and the plant. It elevates the mind, and teaches man to look from nature up to nature's God.

I said that a farmer should be educated. I feel deeply upon this subject, because I feel the want of it. Where I was brought up, schools were few and far between. Very few poor people



could obtain schooling. What I have is self-acquired. With you, it is different. You have a school house within reach of every farm. It is your own fault if your children are not educated for all the common duties of life. Cultivate the minds of the rising generation; let your schools be schools of thought; institutions not to cultivate the memory alone, but to fit the student practically to take his equal chance of influence in the government of your state and nation. Encourage monthly meetings in every town in the county, in every county of the state, and in every state in the *Union*, for reading essays and holding discussions upon subjects of interest both to the farmer and mechanic, teaching and explaining in the simplest manner possible, everything that would be useful in the shop or in the field. Meetings of this description could not fail to be useful. A free people should not only have free thought, but should have good opportunities to give them utterance. The object of these meetings and discussions should be to call into action individual talent and individual experience for the benefit of all. You have plenty of talent among you, and I hold that the talent and experience of your neighbour as far as improvement of the moral and intellectual standing of his own neighborhood is concerned is public property, and should be worked up and brought forward, fostered and sustained by every means in your power for the good of the whole community. Gentlemen, the love of your country should awaken you to be ready by intelligence to take position in the councils of the state and nation. It is said these are times of vice and corruption, times when *Credit Mobilier* and other corrupt schemes are favored by our officials. I firmly believe that the safety of this great and glorious Republic must rely upon the honesty and intelligence of the rural districts.

The road leading into the future is an ascending one, and progress over it is to be secured much more by the aid of mind than by the aid of matter. One class of men will take the lead, and it most likely will be that class distinguished for good common sense, refined by education and cultivation. Now, if farmers will see to it and give their children a good common school education, instead of allowing them to grow up in ignorance and vice, it will give them a chance in the struggle for the lead in the future. Then,

within twenty-five years you will find farmers in congress helping to make your laws, and preventing land grants and other schemes of robbers; then, farming will be a favored and a fortunate occupation, and your successors will be the lords of the land. But, gentlemen, mind what I say; if you are careless and neglect this great opportunity, another class will take the lead, and will keep it, because of their brains, rather than of their bodies, and will take control over you, and you must fall to the rear, take back seats and become a mere peasantry, cultivators of the land, just as it is in Europe, to-day. Farmers, come together for self-protection, and bring well trained brains to the performance of your work. Shed the light of cultivation and refinement upon your profession, and it must and will be a success. When this success is achieved, and it will be your own fault if it is not, then, my friends, whether you are in the councils of the state or nation, in the workshop, or whether you make the plow or guide the same, let your constant aim be the moral and intellectual improvement of your people. **By this education, we shall be better farmers, better mechanics, better citizens, better neighbors, better husbands and better men.** But I have digressed from what I intended to say.

*Two* things more, and I have done. I wish you to plant fruit trees; begin, and you will have no trouble. Nothing pays better than fruit; not only plant apples, but raspberries, blackberries and other small fruit. They thrive in this latitude, and when fully ripe, give your children plenty of this fruit and plain bread, in lieu of fried meats and larded short-cakes, and you will have very little of the multitudinous bowel complaints and *fevers* which in the summer season sweep your children to their graves as though they were only born to die. **Lastly, I desire you to remember that you have one other important duty besides raising blooded stock. Look to the minds of your boys and girls who are to spend their youthful days beneath your roof; they demand your attention; the child instinctively loves the beautiful, and reaches its tiny hands out and attempts to seize a beautiful flower which it had never seen before, and could not have learned to desire. All children love flowers, and if you will pay attention to a child, you will find that things habitually presented to the eye direct the taste, and even create it, and have their influence upon the minds**

of mature men and woman ; then why pervert the child's nature, and put out that spark of light which comes with it into the world? Put out I say, and with what? By the barren blackness of an unadorned home. Do not let the hogs run round the house, nor big weeds grow near it. Help your wife to make a flower garden, and teach your children how to grow and tend flowers ; that will teach them to be truthful, patient, gentle and kind. It will create a pleasure and a love for home. Pleasure is as necessary for the young as food and air, and they must and will have it in some way. Never forget this, and seek to make the pleasure of your child a part of his education, both physical and intellectual. Do this, and his home will ever be remembered as the most beautiful spot on earth, and its influence will never be effaced from his memory. It will be an active conductor to virtue, a preserver from temptation in after life ; yes, even in old age. Back to the mother and flower garden of childhood—the genial influence of that home is never forgotten. Never let your children leave their home without the lesson—truthfulness, gentleness, patience and kindness—thus you will teach them, while young, “The way in which they should walk, and when they are old they will not depart from it.”

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## THE RELATIONS BETWEEN THE VEGETABLE AND MINERAL KINGDOMS.

Read before the State Agricultural Convention, in February, 1873.

BY PROF. JOHN MURRISH, MAZOMANIE.

We do not, I presume, recognize, as distinctly as we might, the fact that everything in the mineral and vegetable kingdoms is made out of the same or very similar material, and that the endless variety of form and feature is due only to a slight variation in the composition or structure of the object. Indeed, the physical world is nothing more than *matter* molded into its various

forms by forces working under the direction of well defined and fixed natural laws.

Immanuel Kant, the distinguished philosopher of the last century, said, "Give me *matter* and I will build the world." That is, his mind had been so thoroughly trained in the observance of natural phenomena, that he was enabled to recognize clearly the fact, that the forces of nature were so accurately adjusted, and the laws governing them so universal and unerring, that it required only the material (*matter*) to bring about results such as we find in the world as it is.

Kent might have gone farther than this, and said, give me matter, and I will make those varied forms that beautify the earth's crust and her surface; for they, too, are the result of *forces, conditions*, and laws found within the field of observation, and within the reach of the human mind.

And if he had been a farmer, and understood the relation and adaptation of those natural forces and the laws governing them, to the vegetable kingdom, he might have said, give me *matter* and I will fill your barns with the fruits of the earth, for agriculture is nothing more than a process by which provisions for man and beast are manufactured out of elementary particles of matter by physical forces.

In this department of nature, that is, the agricultural, man is especially interested. The world was built long before man made his appearance on it. The inorganic forms of matter stood then as now, the ornaments of nature's museum, to represent her works in the past. And it is his privilege now to learn only how nature accomplished these things, and to admire the methods of her working. But in this new, this organic department, where the forces of nature are arranged with reference to manufacturing matter into organized substances, man is allowed, indeed he is called upon, to become a co-worker with nature; not to produce new worlds, but to produce organized forms of matter to meet the demands of animated materialisms, and to ornament and beautify this world as his home.

In this cooperative system of nature, it may be important, it is true, that man should understand the principles of nature's machinery, or the forces of the vegetable kingdom. But over these,

man has no control. Nature has established their relative adaptations, and placed them under laws that will keep them undisturbed in their work through all the coming future. It is with *matter* that man is most concerned. It is *matter* that nature expects man to furnish. Give me *matter*, says nature to man, and I will fill your barns with plenty. The interests, then, of agriculture, and of agriculturists, must depend to a very great extent on a knowledge of *matter*, and the necessary conditions in which it must be furnished. A mere glance at *matter* in this direction is about all that I shall attempt to do in this paper.

Those of you who have examined the specimens from the vegetable kingdom on the one hand, and the specimens from the mineral kingdom on the other as they are arranged side by side in this room, can hardly fail to notice a faint resemblance, if nothing more, between the products of the two kingdoms, and are ready to ask, perhaps, if they are not in some way related. In our investigations in the mineral kingdom, we often wander along the line where these two kingdoms meet, and where specimens from each are beautifully arranged, as physical forces only can arrange them, in the museum of nature. Presented in this light, it is impossible not to recognize kindred ties; but what they are, does not appear to the casual observer, and are brought to light only by scientific investigation.

We notice, however, that between the forms of matter we call minerals and the forms of matter we call vegetables, there is a line sharply drawn, so that the products of the mineral kingdom can never pass, by gradation, into the products of the vegetable kingdom. The line that separates between these kingdoms, is the line that separates between inorganic and organized matter; and between these, nature has fixed a great gulf, so that the one can never pass over to the other. But as we wander away from this line, and from the individual mineral, and vegetable, to the material of which they are composed, this line becomes less distinct, and the two kingdoms begin to look like graded departments of nature's workshop; departments that are separate and distinct from each other, while the material from the one may pass into the other to be used for higher purposes.

In the lower department (the mineral kingdom), we find one of

nature's primeval laboratories, where matter is prepared for subsequent use. Here the material of the two kingdoms is the same, and exists only under physical and chemical laws. The object of this department is, first, to work up this mass of elementary material into forms of matter we call minerals, preparatory to being worked up into forms we call vegetables and animals. In fact, the great work of the mineral kingdom is, to take this raw material and work it up into forms and conditions adapted to the wants of the vegetable kingdom.

If we pause a moment here, and look down into the furnace of this laboratory, where the heat is most intense, we shall find that, as the temperature is gradually lowered, the free elements of silica are uniting to form quartz. In the same igneous mass, we notice the elements of feldspar, mica and hornblende, arranging themselves also, under crystalline influence into distinct minerals, which at a subsequent stage of cooling are aggregated into a rocky mass, and laid aside as a portion of the crust of the earth. In this way, and by this process, the minerals of our plutonic rocks have been formed, and aggregated into masses of solid material, and spread out as unfinished forms of matter to be used again in a higher department in nature's factory, namely, the department of agriculture.

It is very interesting to notice, that, in the great variety of minerals thus formed, and aggregated into rocky masses forming the crust of the earth, there are after all comparatively few elementary substances, and those such as are adapted to the wants of the vegetable kingdom.

Among the elementary substances that enter to any great extent into these plutonic or granitic rocks, are the following: Potassium, aluminium, sodium, calcium, magnesium, iron, manganese, silicon and oxygen. Other elementary substances may occasionally enter into their composition, but on a minor scale, and to a very limited extent.

It is true, the varying proportions in which these elementary substances enter into the composition of these minerals produce a variety in their forms, and we are in the habit of calling by different names the rocks in which certain of these minerals prevail, or otherwise. But such is the family likeness, that we are safe in putting them into one class; and calling them granitic rocks.

It is only over a portion of the state, however, that this class is exposed as the surface rock, consequently accessible only here, for agricultural purposes. Over a larger portion of the state, we find a sedimentary strata, from which the soil is formed, such as sandstone and limestone. These strata also furnish a large amount of *matter* adapted to the wants of the vegetable kingdom. But while these strata differ very much from granitic rocks in their origin and composition, we find, nevertheless, but very few *new* elementary substances.

Sandstone, that is the surface rock over a large portion of the central part of our state, is almost chemically pure silica. It is a mass of small crystals of quartz, consequently composed of the same elementary substances as the quartz that enters into the formation of granite.

The limestones that form a large portion of the surface rock in the southern part of the state, are of two kinds, common limestone, or carbonate of lime, and dolomite, or magnesian limestone. The elementary substances composing common limestone are the following: calcium, oxygen and carbon. Those composing dolomite or magnesian limestone, are, magnesium calcium, oxygen and carbon. The elementary substances, those composing these sedimentary strata, are silicon, oxygen, calcium, carbon and magnesium, five in all. Of this number, four enter into the composition of our granitic rocks. In the whole mass of rocks from which the soil of our state is derived, we find but these ten elementary substances that enter into the composition to any great extent.

What can we contemplate that is more wonderful or marvelous than the endless variety of minerals and mineral bodies which nature has formed out of these few simple or elementary substances? How beautifully she has varied the forms with the slightest variation in the material, or the laws under which this material has been brought together. Indeed, this endless diversity and variety in the forms and qualities of matter is one of the most striking features of the mineral kingdom.

But beautiful and diversified as the forms of matter may be in the mineral kingdom, it is matter, nevertheless, in its first stages of preparation for other, higher and more beautiful forms; and as it rises from the bosom of the deep in all the freshness of

a new creation, it is that it may be transferred to the agricultural department of nature's workshop, there to be taken to pieces and exposed to new physical conditions, and under the manipulation of new forces, to be molded into organized forms.

In this new department, the soil is the laboratory in which matter from the mineral kingdom is first prepared, then worked up into vegetable forms. To bring about these results, matter is now placed under the influence of vital forces, governed by biological laws, which like the physical and chemical forces in the mineral kingdom, give endless variety of form and feature to their products. But in the vegetable, as well as in the mineral kingdom this great variety of form and feature is developed from a very few plant forming substances. Among the most important are the following: Oxygen, nitrogen, hydrogen, carbon, phosphorus, sulphur, chlorine, silicon, calcium, magnesium, potassium, sodium, aluminum, thirteen in all. These are the material substances from which vegetable forms of matter are made; or to speak more correctly, I may say, on which vegetable forms *feed*, for they starve, or fatten, as these substances are withheld or furnished in a proper condition. Indeed, man in this co-operative system of nature is a plant feeder, and a knowledge of plant food, and how it can be prepared, is the highest attainment in agricultural science, and the secret of success in agricultural practice. Some of these substances nature provides without the assistance of man; such for instance as carbon, hydrogen and oxygen. Plants take all the carbon they need from the carbonic acid of the atmosphere, and hydrogen and oxygen from the water. But the mineral substances are unevenly scattered through the soil, as the rocks from which the soil was formed contained them, or otherwise. Hence it is the business of man to know, whether these mineral substances necessary for plant food are already in the soil before his seeds are placed there; if they are not, there is no alternative but that he must supply them, or his crops will come forth in a stunted, half starved condition.

This plant food is found only in the mineral kingdom, wrapped up—as before stated—in mineral compounds, and aggregated into rock formations. Here only, these minerals can be studied in their separate characters and multitudinous forms, where nature



has put them up with especial reference to the vegetable kingdom, and labeled them as she has put them away in the strata, that the farmer may make no mistake when he looks for them for agricultural purposes.

Is it silica he wants? he will find it nearly pure, put up in separate forms and labeled, quartz, hornstone, flint. Wherever these minerals form any considerable portion of the rocks, the soil formed from them will have a sufficient amount of this element of plant food. And this element is essential, for few if any plants can live and grow without it. It enters largely into the formation of the stalks of most vegetables, and is essential to the formation of their seeds. Inasmuch as this substance enters largely into most plants, nature has furnished it in abundance and scattered it over a large portion of the earth's surface. It is supposed that one-half of the solid substance of the earth is made up of silica.

If it is lime the farmer needs, he will find it here labeled, carbonate of lime. It is combined mostly with carbonic acid, and forms a large portion of our strata known as common limestone, or dolomite, as already referred to. It is found also forming a large portion of some of the minerals composing our granitic rocks, consequently is an important ingredient in the soils formed from these strata. Indeed there is not a single element of plant food that man has to supply, that is not found in the mineral kingdom, put up in proper forms and labeled, that the farmer may know what it is, and where it may be found.

It is true, all the elements of plant food do not form a part of our common rocks. Nature sometimes puts up what is not found in our ordinary bill of fare, and what may be called *extras*, such as our mineral phosphates and sulphates, which, as every intelligent farmer knows, add very much to the health and development of plants. These *extras* nature fixes up by mixing a little phosphorus or sulphur with oxygen, forming acids, then by adding a little of these acids to lime, form these compounds so valuable to the agriculturists. They are found only here and there in the mineral kingdom, and a knowledge of their whereabouts would be very acceptable to the farmers of our state.

It is in the mineral kingdom, nevertheless, among those mineral compounds, that the farmer must look for the material to be

furnished as plant food, to be worked up subsequently into plant forms. Here we find those kindred ties that unite these two kingdoms or departments of nature. Here, too, we find that most *neglected* but most interesting and important department of agricultural science. The knowledge is more important to the farmer than that furnished by geological investigations; and when farming is brought more under the application of scientific principles in this direction, it will become not only one of the most productive and profitable branches of industry, but a branch of industry that will be chosen by our young men as the most conducive to health, wealth, independence and intellectual culture, and worthy the best talent of the age.

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## SOILS—THEIR PRESERVATION AND RENOVATION.

Read before the State Agricultural Convention, in February, 1873.

BY SECRETARY W. W. FIELD, BOSCOBEL.

In presenting a brief paper upon the above important subject, I shall not expect, or even attempt, to furnish anything new in the science or practice of agriculture, but simply urge upon the farmers of this state the importance of maintaining the original fertility of their new lands, and of renovating their old or partially exhausted fields, and give some of the practical ways and means by which this can be accomplished. If I can stimulate thought and discussion by this convention, and among a few even of the producers of the state, by the presentation of a few ideas and suggestions which have come within the range of my observation in an experience of twenty years of farming in Wisconsin, and am able to present such facts as many of the farmers of the state full well know, but which most of them have totally disregarded, and can impress upon them the vital importance of heeding them in the future, and of practising a more economical and better system of culture, I shall feel that the time spent in the preparation of

this paper, and your time in listening have not been lost. It can but be apparent, to at least every discerning, thoughtful farmer in the state, that in many of the older counties, the fertility of the soil is becoming exhausted of those elements which science and experience have shown to be essential in the maturity of the cereals and other products in large quantities and in perfection; that the continual crops of grain, hogs and cattle raised and shipped to distant markets to be consumed, have gradually been sapping it of plant food, until some of those lands will not produce one half the crop of cereals, they did twenty years ago. It must be equally apparent that some system ought at once to be adopted to restore this waste that is thus gradually but surely going on by this exhaustive cropping and returning little or nothing as an equivalent; that this robbing the soil of its fertility until the occupants become amazed that their products are not larger, and their labor more remunerative ought at once and for ever to cease.

What would be thought of the farmer who should keep his horse or his ox upon just food enough to sustain life, but not sufficient to impart that physical strength requisite in tilling the soil or other important farm work, or who should deprive himself of an abundant supply of that nutritious food which now gives him a firm, elastic step and the bloom and vigor of manhood, and thus reduce his physical ability to perform his daily toil? We should at once exclaim, he is an inhuman wretch, perhaps a madman, or a fool. But is not he who knowingly robs the land of its producing power, without using reasonable means within his reach to restore it, equally culpable, short-sighted and unwise, and will not the judgment of the Creator, in the shape of poverty at least, sooner or later overtake him? Nature teaches wise and valuable lessons. Let us glance for a moment at her natural farming operations, and see if some practical hints cannot be obtained worthy of our imitation. In the economy of nature, nothing is lost, and a careful observation has taught me that the nearer she can be followed in her system of economy in the natural products of the earth, the less waste there will be, and hence the more successful and remunerative will be the labors of the husbandman.

The soil of our state in its natural condition is rich in all the elements of fertility, and its natural products of trees and grasses

have constantly increased its strength and producing power. The strong and vigorous roots of the trees penetrate the soil to a great depth, drawing sustenance from beneath adapted to their growth and full development; their leaves annually put forth, acting as lungs during their period of growth, receiving food from the earth by the circulation then constantly going on, and in the autumn, fall to the earth, furnishing organic matter to still further increase the richness and fertility of the soil. So with the grasses. They grow luxuriantly through each successive season, fed by the fertilizing properties of the soil adapted to their wants, and in due season return to the soil, producing a vegetable mould which enriches and strengthens it, so that a more vigorous plant follows the ensuing year. Thus nature produces natural products, returning each year all she produces, except the increased growth of the trees and the increased weight of the animals which feed upon her products; and they, too, after having fulfilled the mission for which they were created, return to the earth those elements of which they are composed, to be again converted into plant food. But, says one, the tree has long, strong and vigorous roots capable of penetrating the soil to great depths in search of food, and that little of the strength of the surface soil is taken, while the fine rootlets of the cereals, and most other cultivated products cannot penetrate beyond that depth which is made mellow and friable by cultivation, and hence must derive most of their food from near the surface.

This, to a great extent, is true, and before I close this paper, I shall have occasion to speak of the importance of clover, which, in my judgment, does for the farmer what the tree of the forest does in nature, brings up from depths below, fertilizing properties which otherwise could not be reached. Some scientific writers inform us that plant food is much of it derived directly from the atmosphere, but from observation, I am of the opinion that this theory is not well supported by either experience or the natural laws which govern the growth of plants, animals or men. While it is possible for the foliage of plants to absorb certain fertilizing gases from the atmosphere, it is equally true that animals, and even human beings may receive nutriment by the same process, and yet it does not naturally follow that such is the channel

through which the Creator intended either should receive its daily supply of food. Prof. Peter Collier, Secretary of the Vermont State Board of Agriculture, in a paper read before that society, says: "Numerous experiments have been made with soils artificially prepared, in which there existed no food available to the plant, other than it might derive from pure water and the atmosphere, and in every case, it has been found that so soon as the growing plant had exhausted the scanty supply of nutriment stored up in the seed, it has withered and died. Similar experiments have been tried where the plant has been supplied with such food as analysis has shown them to need, and such plants have grown and perfected their seed."

Nature has wisely provided nourishment in the seed of all plants, so that when germination commences, it shall be supplied with food until the roots penetrate the soil and obtain proper aliment there. Hence, if one flatters himself with the erroneous idea that the atmosphere furnishes food direct to the plant in any perceptible quantity, let him disabuse his mind of that notion at once, and use every available and profitable means to place his food for plants in the soil within reach of the natural mouths—roots—of plants, where nature evidently intended it should be placed, and where, if properly assimilated and made available for food, it will be sought out by the finest rootlets, and appropriated to the use of the plant. I would as soon think of binding food upon the back of an animal, and expect it to be absorbed so as to restore his exhausted vital forces, or apply food to the surface of my own body, expecting to be invigorated and strengthened thereby, as to expect plant food in the atmosphere to be appropriated directly to the plant in such quantities as to produce perceptible beneficial results. Valuable gases are constantly escaping into the atmosphere which ought to be saved by proper absorbents, but they are no doubt all returned to the earth by the aid of rain, snow, and other natural agencies, and there furnish food for the growing crops. It is, however, possible, and even very probable, that these enriching properties never reach the soil of the farm from which they escaped.

Mr. President, I doubt not you have observed, as I have, when cultivating the soil where the roots of the cereals and other plants

were penetrating, that decaying roots of trees, partially rotted corn stalks and cobs, old bones and other refuse matter were in a state of decomposition, the fine rootlets had completely enveloped them, reaching their delicate fibres over and through them in search of the food needed for their growth and full maturity. It is as natural for the mouths of these plants to seek proper food, as for the animals which roam our forests to seek theirs, and he is not worthy of the name of farmer who does not so cultivate the soil as to make the abundant supply of food which nature furnishes available for his use, and return to it again, a portion, at least, of those elements which he has extracted by continual cropping. If nature, by her system of farming, continually increases the fertility of the soil, cannot we keep up the condition as we find it? I say we can, and that it is our duty and true economy to do so.

First, then, I would impress upon every farmer the importance of saving all the manure he can make upon the farm. Put it on the land in a suitable condition, if possible, so that it can be at once made to furnish food for the crop, but see that it goes upon the land even if in a crude and unprepared condition for plant food; nature will in time break it down and reduce it, so that it will be compelled to give up its enriching properties. That manure belongs to the farmer, that is a part of his bank account which, if allowed to escape, is just so much capital withdrawn, upon which no interest will ever accrue. It is the debris of vegetation, and contains all the essential constituents of vegetable growth. If you have raised a crop of wheat or other product, return at once to the soil, or to the compost heap, that part unfit for use; and right here let me say, that every farmer should have a compost bed where all the refuse matter continually accumulating about stables, yards and out-buildings should be placed, and reduced to proper food for plants. It should be so constructed as to retain the liquids as well as solids, and may be very cheaply made by puddling with clay, or other proper material, making it impossible for those valuable properties to be washed away during heavy rains, to increase the fertility of the land below, or carried to the bottom of lakes and streams. That portion of the crop fed to stock after being assimilated and digested, should find its

proper place again in the soil. By this course you have lost nothing, except the increased weight of the animals to which it was fed, as I believe it to be well settled that animals excrete daily in about the same proportion as they ingest, the weight averaging the same. These animals thus fed are soon in condition to support a higher type of animal life, to wit: man, where the same care should be observed to save every particle of the concentrated constituents of this animal food, so that after having served its full nutritive function, it may become again the food of plants. With an economical system of farming in Wisconsin, none of the constituent elements of the soil ought to be lost, except those contained in grains and stock shipped to eastern markets for consumption. In return for this exhaustion which must gradually go on, not only in our own state, but in all others where the products produced are largely in excess of the amount consumed, our large cities ought to be manufacturing an honest concentrated fertilizer, at a price so cheap, and of a quality so rich, that every farmer could afford to supply this waste. I may have occasion to speak of fertilizers again ere I close this paper.

I look upon thorough culture as next in importance to the saving and use of manures. A fine pulverization and mixing of the soil, while it adds no nutritive qualities or strength, will make available elements of plant food which otherwise might remain in an insoluble condition, and hence practically useless for years. I doubt not that the profitable productiveness of the soil could be much longer retained without the aid of manure, did farmers fully understand the vital importance of thoroughly preparing the land for their crops, until it is in that pulverized state that the fine, delicate fibres of plants can seek and find sufficient food. An incident in my own farming operations, is perhaps worthy of mention here. Having prepared with much care an acre of prairie land for onions, in the spring of 1867, by plowing, harrowing and rolling until the soil was finely pulverized, and really looked like a well prepared garden, I sowed what seed I had, applying it somewhat more liberally than I at first intended, and when the seed was exhausted, I found that I still had left about 1-8 of an acre of this garden prepared soil, upon the side adjoining the land I was in a few days to put in wheat. I sowed this strip with

the other to wheat, giving it still further working with the harrow the same as the other land, so as to properly cover the seed. The contrast from the time the plants were visible until the harvest was very marked. The plants upon this strip of onion ground were much more vigorous, darker colored, stronger and larger; and I doubt not that one-fourth to one-third more wheat was raised upon the spot so prepared, than upon the same quantity adjoining, although the land had been treated alike in all respects from the time of breaking in 1861, with the exception as above mentioned, neither having had any barn yard manure or other fertilizer applied. Now, the extra cultivation I gave that piece of land did not add fertilizing properties to the soil; it simply disintegrated, reduced and made fine the food in the soil in such abundance, that the plants could feed and fatten to their utmost desire. It matters not how rich our lands may be in all the elements of fertility, if the proper means are not applied to make those elements effective, or in other words, if the food in the soil, however abundant, is not properly prepared so that the plants can feed upon it, and have at all times a full supply, we need not look for abundant crops and large returns for our labor. In conversing with an intelligent farmer recently, a member of the present legislature, he said, "The cause of the hard times among the farmers of the state is not so much to be attributed to the low prices, as to the small crops raised per acre. The labor incident to the raising of a crop of wheat, now yielding me ten to twelve bushels to the acre, is just as much as when I raised twenty-two to twenty-five bushels per acre, twenty-five years ago, and the straw in the case of the large crop being of equal if not greater value than the extra expense of harvesting and threshing." Hence, here is a clear loss of at least ten bushels to the acre, partly caused, perhaps, by the want of proper tillage, and partly by the want of manure. One hundred acres thus cultivated would make a clear loss to the farmer of \$1,000 at wheat at \$1.00 per bushel. One-half of this large sum might possibly, if judiciously expended in extra cultivation, and in saving, manufacturing and applying manures, have produced this extra ten bushels, and the balance, or \$500 placed to the credit of the thriving farmer in his bank account.



Farmers, think upon this subject, study and investigate it, experiment, bring all the brain force to bear upon it possible, and you will find it to pay. I never knew any branch of business, however prosperous, but what was made more lucrative by applying common sense and thought to it, as one writer remarks, "mixing brains with it," and let me say right here, that I think no class of business requires more *brains* than intelligent and well directed operations upon the farm.

I look upon clover as a cheap and excellent fertilizer. It penetrates the soil to a great depth, often five to eight feet, and hence brings to the surface mineral elements which even deep cultivation cannot reach, and makes available for plant food the very properties of which the soil near the surface, has, from long and exhaustive cropping, become deficient in. Its roots are large and numerous, and furnish, when decomposed, a large amount of organic matter, which, though much of it is at considerable depth, is sought out by the young plants and fed upon with avidity. I have a field in my mind which was in cultivation twenty years ago when I came to this state, and which I was informed had then been in cultivation five years, upon which were raised successive crops of corn, wheat and oats, without a spoonful of fertilizing material ever having been given it, and, as you may suppose, this land after having been thus treated for eighteen years, showed signs of sickness and exhaustion. The owner at this time, seeing his crop much reduced, wisely concluded to seed it to clover. It produced this crop in abundance, showing conclusively that it sought its food below where the former crops had been able to penetrate, or that it required different constituent elements upon which to feed. After partially, if not wholly renovating and restoring this land to its original richness and value by this clovering process for some three years, the owner commenced his system of robbing again as usual. I was past that piece of land the last summer, and observed an excellent crop of corn there growing, better, I think, than grew upon it twenty years before. Clover was the only fertilizer ever used during the time it was seeded.

When our lands show signs of exhaustion, after the three modes of preserving them mentioned have been carefully carried out, commercial fertilizers must be resorted to. First among those now

used, I would recommend gypsum and lime. The latter can be made in any part of the state, and at a price so low that every farmer can afford to use it to the fullest extent his lands may require. The former is found in almost inexhaustible quantities in the adjoining state of Michigan; hence transportation is cheap, and the price of gypsum being little above the labor of reducing it to a proper condition to be applied to the soil, is within the reach of all. Both contain many of the elements which we find in abundance in the soil in its native condition. Gypsum I consider very valuable as a stimulus to the soil, causing it to retain moisture better, thereby assisting to prepare a full supply of food for the growing crop, particularly in dry seasons, when the amount otherwise would be insufficient. It is also highly prized as an absorbent of the ammonia in the atmosphere, retaining it until carried to the soil by rains. Considerable sums of money are annually expended in Wisconsin for fertilizers, aside from the purchase of the kinds mentioned, and I wish I might say with beneficial results. But, so far as my experience and observation extend, remuneration has not followed these investments. The increased crop has not been equal in value to the additional cost and trouble; hence it was found to be worthless, even worse than worthless, as it destroyed the confidence of the experimenter in any commercial manures, which if honestly made, and sold at fair remunerative prices, would be of incalculable benefit.

A valuable fertilizer ought to, and in my judgment can, be made from the human excreta and other waste of our large cities and towns, and at a price so cheap as to be profitable for the farmer. By carefully prepared statistics in Germany, it is estimated that the annual waste in cities and large towns is equal to \$2.50 per head of the inhabitants. I doubt not this is true, and is equally true of this state, not only in cities and towns, but in my judgment for our entire population. Assuming this to be true, this vast wealth, amounting to two and one half millions of dollars, instead of being utilized by being taken up by proper absorbents and applied directly to the soil, or manufactured into a rich and convenient manure to be fed to hungry plants, is carried to the bottom of lakes and rivers, or swept into the ocean and lost. When the tillers of the soil of this state awake to the necessity of this

preserving and renovating process, as they some day will, notwithstanding the great natural strength and fertility of our soil, then, and not till then, can we reasonably expect this valuable waste to be saved and manufactured into suitable plant food; and then perhaps we may also expect the legislature to enact laws making it a criminal offense and punishable by fine and imprisonment, to manufacture and offer for sale an article of food for plants unless it contains those elements and enriching properties which it is advertised to possess. To-day, if one uses a fertilizer and finds it valuable, he has no guarantee that the same brand purchased to-morrow, will not be worthless.

But the great question which in this matter of fact age will be asked, is this, will all these things pay? Can I not rely upon the natural strength of my soil, and really obtain equal, if not greater returns for my labor? Will this manuring and renovating process pay? I have already made this paper much longer than I had intended, and shall therefore not enter into any argument upon this question, but will simply relate the incident of the boy who was observed by a stranger, eagerly digging in the ground, and when questioned as to what he was doing, remarked that he was "digging for a woodchuck." "And do you expect to get him," said the stranger. "Git him," said the boy, with a look of astonishment at such a question. "Git him, I've got to git him; we're out of meat." The fact is, Mr. President, this system of preserving and renovating the soils of our country by judicious cultivation and manuring has got to pay, for it has got to be done, or the nation will some day be out of *meat* and *bread* too.

I will sum up in conclusion, as follows:

1st. Make all the manure you can, and apply all you make in a condition best suited for food for plants and where most needed.

2d. Cultivate thoroughly, stirring the earth to a great depth; plow, harrow, roll, cultivate, subject the soil to repeated changes, so that aided by the action of frosts and rains, it may be so reduced and refined as to be compelled to yield its supply of food in such abundance that the annual crops may feed and fatten upon it like the stall fed ox.

3d. Renovate with clover. From observation and experience I am convinced that by an occasional seeding to clover, say once

in five to eight years, as circumstances seem to require, with a rotation of crops, using all the manure made, with thorough culture; the most of the lands of Wisconsin would be in a healthy and highly productive condition generations hence.

4th. If your lands are still being reduced in fertility, apply the best commercial manures you can obtain. Buy in limited quantities and experiment fully, and, if found successful, purchase again the same brand, and of the same party, if he stands high in commercial circles as a man of honesty and fair dealing.

Farmers of Wisconsin, the wealth and prosperity of the state largely depend upon you. Ponder well this subject of improving your lands. View it in all its bearings, from a thoughtful and intelligent standpoint, and I think you will conclude that the system of preservation and renovation which I have here but imperfectly and feebly sketched, if carried out, will result in rich lands, rich farmers, a general thrift and enterprise in every department of human activity, and the highest happiness and prosperity throughout our beautiful state.

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## ELEMENTS OF SUCCESS IN FARMING.

Read before the State Agricultural Convention, in Feb., 1873.

BY G. E. MORROW, EDITOR WESTERN FARMER.

That farmer is most successful who secures the largest returns for the capital invested; not in any one year or any half dozen years, but for a long series of years; not counting the money invested alone, but the time and thought as well; not returns in money alone, but in comfort, in health, in all that makes civilized life pleasant and to be desired.

A farmer may secure large returns in money for a few years at the expense of his farm, thus using up his capital to make the present income large; but this is not good farming. A farmer may not only secure large returns each year, but also increase the

fertility of his soil, improve the buildings and increase his live stock, but if he do this at the cost of his own health or that of his family, at the cost of his own or their happiness, at the cost of his own true manhood, he is not a successful farmer in any true sense.

I recall an instance of a farmer who, some twenty-five years since, began farming in Wisconsin with one, or two, or three thousand dollars, and who, through persistent good farming, has now 1,200 acres of good land near a thriving city, and who is worth more than \$100,000. This is pecuniary success. I am glad to believe this is a case of good success in other things than money making. I know a man who a few years since began market gardening in northern Wisconsin, and who has steadily increased his yearly sales, until last year they reached more than \$6,000 from thirteen acres, giving a very fair profit for himself and family, and who has around him his family of seven boys, all interested in this work, I believe all in good health, and forming a happy, contented, intelligent family. I count this success.

All over this or any other state may be found farmers owning 100 or 200 or 300 acres of land, more or less, who can look back at the end of each five or ten years and see they are worth more in money than at the commencement; that they have a more attractive home and more of the comforts of life; who are intelligent, Christian men, and who rear intelligent, Christian families, who are honored and respected, and who have a fair share of the good things of this life. These men are successful, as I understand success. There are many such; would there were more.

Let us remember that farming is a business; a regular, legitimate business, occupation, profession if you will; subject to the same laws and to the same contingencies and fluctuations as other callings; requiring the exercise of the same faculties, in the main, as other pursuits, and that the elements of success in it are, most of them, identical with those which command success in other vocations. Remember too that the chief object of the farmer is to produce and to sell. He is not a merchant nor a speculator. To produce his crops most economically and to sell them so as to secure the largest net returns, should be his main object. Once again bear in mind that the farmer is not a slave, not a servant, not a hired laborer. He is a business man, working for himself,

and as such, he must place over against the hope of profits the possibility of loss.

The laborer on the farm may know much more than his employer, but in the sense in which we are now using the word, he is no more a farmer than is the clerk, however competent, a merchant. The clerk and the laborer, for the certainty of being secured against loss, give up the hope of uncertain profits, and accept a fixed sum in payment for their labor, only increased by a possible gift from the employer, to which they can lay no claim as a right. There can never be, so long as the world remains as it is, in farming or in any other business, any fixed, never varying rate of profits. There will always be fluctuations; sometimes losses, and sometimes unusual profits.

These definitions and illustrations may help us to better understand each other, while I speak of some of the things which seem to me important elements of success in farming.

The farm is the main capital of the farmer, and a proper selection of it is a main element of success. We are apt to speak of fertility as constituting the great value of land, but this is not altogether true. Land as rich as the sun shines on can be bought for a few cents an acre, and is worth no more; poor land, rocky, hilly, or wet or sandy, cannot, in other places, be bought for less than hundreds of dollars per acre, and is worth it. Location often affects value much more than fertility. The farm and the mode of farming must be adapted to each other; and thus we come to one great element of success: a well settled plan adapted to the circumstances.

Cranberries are a profitable crop, but he who owns a clayey, upland soil will be foolish to try to cultivate them. Grain growing is a good business in many places, but it will not be wise to try to convert a cranberry marsh into a corn field. All the conditions should be carefully considered. The capabilities and fitness of the farm, the nearness and character of markets, and, scarcely less important, the tastes and habits of the farmer should be taken into the account. Some men have a liking for animals, and will succeed best where they can give them a large share of their attention. Some men have that class of mind and training which fits them for nice, careful work, for the little details of a small

farm; others will chafe under such work, and will find their field in managing a large farm where, perhaps, less nicety is required.

Low priced land makes comparatively poor farming a necessity. We cannot farm in Wisconsin as the English farmer must to succeed at all. We cannot afford to expend \$100 in underdraining an acre of land which will be worth but \$30 when the work is done. We cannot afford to employ so large an amount of capital on cheap lands as is essential on high priced land. As our lands grow in value, necessarily we must more and more nearly approach high farming. We cannot afford to grow even twenty bushels of wheat on land worth \$200 per acre.

As a rule, with many exceptions, but still so few comparatively as to make it almost universal, the Wisconsin farmer should not give exclusive attention to any one crop. General farming or mixed husbandry, in more than nine cases out of ten, will be found to be better than exclusive attention to any one specialty. The owners of cranberry marshes cannot be general farmers; those who have no land fit for tillage cannot grow grain, but the general rule holds good. The reasons are many; too many to discuss in full. The general system enables the farmer to more economically make use of his own or hired labor; work can better be distributed throughout the year. It is, as a rule, better adapted to retaining or increasing the fertility of the soil, and it secures the farmer from the evils following the fluctuations in price in all specialties. With a good crop of tobacco or hops selling at 50 cents a pound, the specialty farmer can look with undisguised pity on his plodding neighbor; but if one of these crops be his sole dependence and sell at three cents a pound, the plodding neighbor may be asked for the loan of enough money to buy the necessaries of life for a year. It seems paradoxical, but we cannot always afford to cultivate those crops alone which seem to pay the best.

Nine farmers of each ten in Wisconsin should make it a part of their system to own and rear live stock of some kind, and many will do best to rear cattle, sheep, swine and poultry. We have learned that exclusive grain farming will not longer pay here. To restore the fertility of the soil; to enable us to market our products in a more compact shape, and for many other rea-

sons, live stock of one or more kinds is a practical necessity on farms in the northwest.

The exact plan to be selected will be greatly influenced by the amount of capital at command. Sufficient capital is a most important element of success in any business. Look around you and you will find that the men who have succeeded best as farmers, are those who have had capital enough to enable them to drive circumstances rather than be driven by them. One farm and one system may require \$50,000; while another may not need more than \$5,000. But sometimes we find the man with the \$5,000 in the place where the \$50,000 are needed.

With the plan well considered and decided on, let it be steadily followed. A curse to our farming is the lack of plan of many farmers. Almost as great a curse is the constant change of plan by so many others. I have said before what I expect to say many times, for it needs repeating: That farmer is most successful who steadily follows a well chosen plan through a long series of years, comparatively unmoved by fluctuations in prices. Large flocks of sheep, and then none; a herd of dairy cows, and then only one for the family; a high priced stock of well bred hogs, and then, because of pork at \$3.50 a hundred, none for breeding; a costly hop house, poles and roots, and then the house used for a chicken roost, poles grimly standing in the deserted fields; these things we have all seen and know they do not pay.

Frequent changes of plan are no more disastrous than frequent changes of location. Let us learn once for all that this world has no longer a Paradise, and that in the sweat of our faces we must eat bread. There is no perfect farming region. Great advantages are always attended with some disadvantages. Fertile soil, in a healthy climate, can be bought for \$1.25 an acre, only when markets are distant and neighbors like angels' visits. The almost unprecedented cold of this winter may have made you think you would vastly prefer to live in southern Illinois, but a summer there would doubtless shake that idea out of you, to use a stale but applicable pun. There is no state in the union, where a farmer cannot work out a fair success. I have no right to decide for you, but your case is an exception if you will not do as well to stay where you are. If you will go west or east, your case is an exception.



if you had not best stay there after you have gone. Those farmers who have to send the boys out into their only pasture—the roadside—whenever a white covered wagon passes, to keep the cows from following it from sheer force of habit, rarely are successful.

A cheerful acceptance of the fact that honest, steady, persistent work, year after year, some of it hard work, some of it disagreeable, is necessary for the farmer, is another element of success. Farming is not so laborious a calling as formerly. Less exhausting physical toil is required now than 20 years ago, and still less will be needed 20 years hence; but farming will never be easy work; it will never be a business in which everything will move along pleasantly and smoothly. It will always require some hard physical toil, and in the future more than in the past, it will require work with the mind, and he who is not willing to work cannot hope to succeed as a farmer. But I do not know where he can go. Work either with body or mind, and the last is as exhaustive as the first, is necessary in every business.

Intelligence, useful knowledge, general and special, I name among the great elements of success in farming. I have unbounded faith in the value, the money value, of useful knowledge, and I would have every farmer an intelligent man, intelligent as to general matters. I would have him as well educated as possible. Many men have succeeded without the aid of knowledge gained from books. All honor to the man who, amid all the disadvantages of a childhood of poverty and ignorance, has won for himself a competence and an honorable position, and the man who would sneer at him because he cannot read or write is far below him; but shame and dishonor to him if, because of his success, he is willing to allow his sons to labor under the same disadvantages! Can you tell the money value of the ability to read and write and compute numbers? We boast of our universal common school education; and yet all over our land we find thousands of young men who seem in practice scarcely a whit the better for the education they received at these schools. They would flush with anger at the charge that they cannot read, yet they do not read, and it is a task rather than a pleasure for them to study out a page of a book

or a column of a paper. Somewhere a responsibility rests, if the son of a farmer is of this class.

But aside from this general knowledge and intelligence, it is absolutely necessary to success that the farmer should have knowledge of his business. And this knowledge should not be a mere narrow, mechanical sort of intelligence which will tell him how to perform the mechanical part of his work. I have not time here to discuss the question of special agricultural education. I believe in it, and believe there is a bright future before our agricultural colleges. With imperfections, with faults and mistakes in the colleges, the greatest lack in Wisconsin to-day in this matter, is a lack of demand for a thorough agricultural education. The agricultural department of our State University lacks a number of things, but its greatest lack is of students willing to avail themselves of the advantages it offers. I wish there were more stock in the barns on the experimental farm, but vastly more important than this is it that there be found 100, 50, 25 farmers and farmers' sons in Wisconsin who will believe it will pay them to come and take a regular full course in this agricultural department.

But I am talking mainly to those whose school days are over. The need for more knowledge about your business, all ought to feel. I can think of no calling which for its highest possible development requires a wider range of knowledge than does farming. What sources of information are open to you? First of all, use your own eyes to observe, and your mind to study your own experience. But the tongue and ear ought not to be idle. Life is short, too short for any one man to learn all there is to be known about farming. If one could live 1,000 years, he might, perhaps, commence at the bottom and, refusing all advice, all experience not his own, learn to be a good farmer, but life is too short for this.

No man knows as much as all his neighbors. It is worse than folly to refuse to avail yourself of the knowledge of your neighbor. And so I have talked and written and in every way urged that by ordinary conversation, in the farmers' club, at the fairs, in the county and state agricultural conventions we learn each from the other. This convention we call a success. It has set us thinking. We have learned something. You are all glad you came.

I hope you will not let its influence die with its closing session, but that you will in your own neighborhoods, towns and counties, organize clubs, associations, conventions, and thus spread through all the state these means of giving information. There is need enough. While you have sat here, dozens of farmers living within half a dozen miles of this city have stood on the streets or in the stores around the square, not knowing of this meeting, or not caring to attend it; other farmers have walked through the halls of this capitol, have stopped for a moment perhaps, at the open door of this room, and have felt that this was not a meeting that would interest them.

But not by the spoken words alone, but by the printed words of others as well can we learn, and I know not why I should hesitate to speak of the agricultural press. It does not profess to lay down exact rules for the guidance of farmers in every possible circumstance; its editors do not profess to be infallible, but giving, week by week, the best thoughts of editors and correspondents, the latest and most important agricultural knowledge, it is to-day the most wide-spread, the most effective and the cheapest means of diffusing information about agriculture, and with all its faults in the past and the present, it has done and is doing incalculable service in the work of making farming successful.

Let each farmer remember that it is not enough for him to be intelligent and skillful. It is essential to his best success that his neighbors shall also be so. We are too apt to take a selfish but mistaken view of this matter. No farmer can afford, for his own pecuniary interest, to be surrounded by poor farmers, if he can prevent it, and a little missionary work in the farmers' club and in introducing agricultural papers is dictated by pure selfishness, if by no higher motive. Farmers act as if they did not believe this. In one sense, you buy or sell a part of each neighbor's farm, of each road, school house, church in your neighborhood, and just as these are good or bad is your farm affected. The finest of houses and barns and fences, the best tilled fields, will not shut the eyes of the intelligent man who wishes to buy your farm, to the fact that all around you are poor houses and barns and fences and ill-tilled fields. When you pay your taxes, you may find

that the assessor did not believe these surroundings affected the value of your farm, but the buyer believes it.

I believe most earnestly in co-operation in this work of gaining intelligence, and have only pity for the egotism and self conceit of the farmer who by word or act shows us that he believes he knows all he needs to know; who thinks he needs no counsel from his neighbors, near and far. I believe also in the practical value in many circumstances of co-operation among farmers in buying and selling. The system is greatly over-estimated. Many of the recommendations made are utterly impracticable; there are difficulties generally even in the simpler applications, but there are ways in which farmers can profitably unite in business matters.

But union with others, whether in buying or selling, or for the purpose of gaining knowledge, must never take away the right and the duty of final decision by the individual. No man, no society, no paper, no book, must be taken as an infallible guide in your own business affairs. **You are a man, and cannot shake off your responsibility. Your neighbors are not to provide for your family; they do not own your farm; they are not to spend your earnings; you, and not they, should finally decide your own business course.** Get all the information you can, from any and every source, and then act as your own best judgment dictates, and not as any man, any body of men, any book, any paper dictates.

Faith in your business, confidence in its future is the last, but far from the least of the elements of success I name. To-day, perhaps, no one thing is more needed by the mass of farmers. All over the land, but especially in the west, vast numbers of farmers are complaining and despondent. Far be it from me to under-estimate or speak lightly of the difficulties and the unpleasant facts which farmers must now face. Born and reared on the farm on which my father was born in the first year of the century, and which he has tilled for more than fifty years; engaged in a business where my prosperity can only come by your prosperity, where my every selfish interest would be to see farmers succeed, even at the expense of others, I can have no motive to refuse to recognize your difficulties. Meeting with you, traveling among you, hearing from you, I think I do know your troubles. Prices for

farm products *are* low, and many of you have had only poor crops; charges for transportation *are* high; you do have to pay too much for agricultural implements; taxes *are* high; money *is* scarce; it *is* hard to know that while your hard toil has brought you but little recompense, there are men rioting in ill-gotten wealth.

But worse than low prices is that feeling which makes a farmer blindly shut his eyes to all other causes, and attribute them only to excessive freight rates; worse than poor returns for his work is the feeling that makes a farmer hate men of other callings, and makes him willing to repay real or imaginary wrongs by attempted wrongs and defraudings; worse than high taxes for the farmer is the attempt to gain prosperity by legislation for his special benefit, however unjust to others; worse than all material evils of the farmer's position is the feeling that prompts him, in the face of his children, in the face of the world, to give up in sullen despair; to settle down into a gloomy misanthropy; to look on his class as especially oppressed by all the world; to distrust his brother man—his brother often by ties of blood—because he happens to be engaged in other business.

Think of an intelligent farmer deliberately saying, "we have wasted our lives in learning to farm, but our children need not follow our example." Think of an Iowa farmer deliberately writing that he wished there were no improved agricultural implements! Think of farmers wishing they could banish the comforts, the conveniences gained, the wonderful advancement of the past half century, and go back to the old times! And all this has been said and written within the past few weeks.

So long as the world stands, farming must pay. In the nature of things, as God has made us, it is inevitable that, as a broad, general rule, fair returns will follow intelligent labor on the farm. Great profits, a life of ease, exemption from physical labor, many of the luxuries of life are not to be expected; but taking all things into consideration, farmers will ever continue to have as much real prosperity, as men of equal intelligence, equal education, equal energy, equal capital in other callings.

Farmers to-day are not the only men who feel the "hard times." It is a mistake of fact, and a terrible mistake in its effects to believe that they, of all men, are the only ones who meet with troubles and

and losses and wrongs. The position and influence of farmers will depend, finally, on the amount of intelligence they possess. Mind rules the world, not numbers and not brute strength. Farmers have it in their own hands whether, as a class, they will stand at the head or the foot of the column. But true, permanent success will come neither to the individual nor the class by tricks nor unworthy means. Stand firmly for every right; work earnestly for the repeal of every unjust law, and for the enactment of just laws. Oppose by voice and vote all wrong, and equally earnestly work for all that is right; but ever remember that legislation alone cannot make farming successful; that class legislation will finally work disaster. Far above any benefit from special legislation or from any attempt to arbitrarily affect prices, let farmers as individuals and as a class, keep before them the good that will come in all their efforts to win success from making use of the three words Industry, Intelligence and Integrity.

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## FISH CULTURE.

Read before the State Agricultural Convention in February, 1873.

BY ALFRED PALMER, BOSCOBEL.

Fish, although producing a large proportion of the food of the human family from the earliest period to the present time, are more neglected than any of our food producing animals.

In fact, so little attention has been paid to them, that many, even intelligent people, do not know how they propagate their species, and, but comparatively few know that many of our best fish can be transplanted, acclimated and domesticated, with more ease than any of the domestic animals; that their eggs can be sent a long distance, and hatched with more certainty, than those of the barn yard fowl.

The brook trout, though the wildest of fish, when domesticated,

become perfectly tame. I have a number of thousand in my ponds that will flock around me and take food from my hands.

The brook trout, (I have no practical knowledge in the raising of other fish) are more attached to their homes than any fowl or animal within my knowledge. I would as soon undertake to drive a flock of turkeys off the farm at nightfall, as a school of even wild trout from their pond or pool, and the farmer who owns the head of a brook can stock it without fear of his neighbor below him ever getting them.

They will only leave a home that suits them at the spawning season, and then stop at the first suitable gravel bed that is unoccupied, deposit their spawn, and after lingering around a few days, apparently to guard it, return to their homes.

Nature has been very prodigal in providing the fish with the means of procreation, so much so, that the ordinary observer on seeing the amount of spawn they contain, wonders that they do not become so plenty as to obstruct the free use of water for mechanics and navigation; but if he investigates the matter, he discovers that this spawn is not yet fertilized, and the probability is that not one in ten of the spawn of wild fish ever are impregnated, and the unfertilized not only spoil themselves, but cause all that are near to them to decay, and the spawn as well as the young fish, during their helpless stage, are a prey to other fish, rats and various water fowl.

But civilization is the greatest enemy to our wild fish; the building of dams hinders the ascension of the fish to their spawning beds, and the making of roads, and ploughing of the land causes the soil to wash down and cover up the spawning beds, often destroying the whole crop of the season; the emptying of filth, the running of vessels and the use of nets on the lakes have a like effect. To avoid this waste, the fish culturist takes his spawn and places it on clean gravel under a gentle current of water, guarding it against all harm. The young, he places in a pond by themselves, where they cannot be disturbed by their natural enemies, until large enough to care for themselves. As our fish have natural pastures the year round, they are produced very much cheaper than pork or beef, (amount of course governed by amount of water.) This being the case, political economy would dictate their protection and encouragement.

France, appreciating its importance, constructed a breeding establishment, and appointed a commissioner of fisheries, ranking with the commissioner of agriculture, as early as 1852, and by this means re-stocked her barren streams, and by the fortunes of war, this establishment fell into the hands of the Prussians, who are now using it to replenish their waters.

Nearly all of the eastern states have commissioners of fisheries, and are giving every encouragement to their protection and production. New York has built a hatching establishment under the care of three commissioners; this and the hatching of shad, which has to be done on the banks of the streams, with a general supervision of the fisheries, cost the state about twelve thousand dollars a year.

Now I doubt not many will think me wild, but I make the assertion, with the full belief that the future will demonstrate its truthfulness, that these commissioners, at this nominal expense, will produce more food than all the beef and pork raisers in the state.

As an illustration of how fast fish food can be produced, the artificial hatching of shad was commenced in the Connecticut river in 1867, and in 1870, the catch was the largest they have had for seventy years, and sixty million were artificially hatched that year at Hadley Falls, alone. In 1871, they were so abundant as to reduce the wholesale prices from eighteen to three dollars a hundred.

Salmon and shad have recently been transplanted into rivers where they before were strangers, and seem to be as much attached to their new homes as their parents were to theirs.

These are fish that leave home when mere striplings, and return with certainty to their place of birth, the former laden with twenty to thirty pounds, the latter with five to eight pounds of the choicest meat.

Although these fish are anadromous in their habits, and Wisconsin is a long way from the ocean, yet as they are very active, hardy, and intent upon depositing their spawn where they themselves were born, it is believed by those who are better acquainted with them than myself, that if once planted in our waters, they would make their annual return. Or it is possible that our lakes



might satisfy their propensity to go to the ocean, by furnishing them deep water and food that would be a substitute for that which they get in the ocean. This change, I think, would be no more violent than some that have been made with success. These experiments would cost but a trifle, and if successful would prove of inestimable value. Individuals are engaged in trout culture in different parts of the state with success, certainly equal to the amount of knowledge and capital they bring to bear upon it, but owing to the high esteem in which the trout are held by good lovers, they will probably not be within the reach of the masses of the people for many years; but our public waters can be so stocked as to furnish in a few years all our citizens with good fish and at a trifling expense.

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## WHEAT CULTURE.

Read before the State Agricultural Convention in February, 1873.

BY N. E. ALLEN, FOX LAKE.

Wheat is the great staple in our state, and must continue to be, from our location, climatically considered, and also because properly cultivated, there is more profit than any other general crop we can raise.

The course commonly pursued is an outrage upon agricultural economy. Lands that when first broken raised from twenty to thirty bushels per acre, now do not raise more than ten to fifteen. If a proper estimate was made of the entire state for the past year, or indeed for the past five years, it would be found that the average crop would not exceed eleven bushels per acre, if, indeed, it would equal that amount, and that, too, of an inferior quality. The cause must be apparent to any observing mind. Constant cropping without change—wheat, wheat, wheat, in many instances, for twenty or twenty-five years in succession, until the wheat-producing elements in the soil are all exhausted, and still the

farmers seem determined to continue in the same old way. The trouble is, they have got into those old ruts; they do so and so, because *father* did. Or they are in debt; they *must* raise another crop of wheat and try to clear up the incumbrance; then they are going to improve their farms, unconscious that the next crop must be poorer than the one preceding it, that it is not going to pay the expenses of raising; that it is of necessity going to make them poorer instead of relieving them of embarrassment.] Well, what can we do differently, say they? Anything is better than the course you are pursuing. Practical experience is what they want; demonstrated fact, figures and data from which to judge. How can they obtain the evidence? Let farmers tell their experience; I am going to tell mine.

I have more than doubled the production of my farm in the past five or six years, without extra expense, more than the resultant profits, year by year (pardon the egotism).

I made a statement last year at the convention, that my crop was nearly 20 bushels per acre average that year, and that I hoped to raise 25 bushels average the coming year. Well, I have not quite done it, but should have done so, only for a calamity that befel a part of my crop of about 15 acres, which the army worm destroyed, or very materially injured. (By the way can any one tell where they come from and how long they are going to stay.) Still, from 94 acres, my crop was almost 2,200 bushels, thrashers measure; by weight it would have exceeded that, as the wheat had no weeds or foul seed in it, and was plump, good grain.

If the 15 acres injured by the worms that did not yield more than 12 bushels per acre, were deducted, it would show an average fully equal to my estimate last year. My poorest crop, aside from that portion injured by the worms, was, on corn ground, 18 bushels per acre; the straw was large enough but the wheat was missing. My best results of spring wheat were on clover sod broken in October and November, after cutting my clover seed, 27 bushels per acre on 28 acres.

My best crop was winter wheat, from 14 acres, thrashers measure; 462 bushels of the very finest wheat; by weight it would exceed that, making a little over 33 bushels per acre.

I made a statement last year that I hoped to raise 25 bushels

the coming year, average. I now state that I hope to raise 27 next year, if no calamity befalls it; and I intend to increase the average some 20 acres.

The question, perhaps, is, how do you do it? There is no secret about it. Any man can do as well; *only sow plaster and clover.*

My plan of rotation is somewhat different from others. I alternate each year with wheat and clover, excepting corn ground, which I sow to wheat or barley after, thus not keeping any piece more than two years without clover. Seeding at the time of sowing wheat, sowing plaster at the time of seeding, or before, 100 pounds per acre. The year following, cut the first crop of clover for hay, and the second crop for seed, if it fills well, or if not, for hay. Then break the ground, and in the following spring sow to wheat, and seed to clover again. I sow clover seed on all the land I sow to grain, even if I plow it up in the fall. Frequently, the growth of clover from spring till fall will be as much as can be turned under with a good team and the best plow. It is better to raise clover than weeds; wheat will fill better with young clover in the bottom, particularly if, as is sometimes the case, several days of very hot dry weather continue just as the wheat is filling or ripening. The clover shades the ground and keeps it moist and cool. If the chinch bugs should be troublesome, they will have a poor chance to do much damage with a thick *mat* of clover on the ground. But, says some one, I cannot make clover grow in that way. No, indeed you cannot, unless you sow plaster at the time of sowing the seed. *It is not the quantity of seed we sow on the ground that makes a good seeding, but the quantity we make live.* Plaster sown at the time of seeding will surely do it, and continue strong in the land to produce a crop of clover as thick and big as the very best mower will cut the succeeding year.

I sometimes hear the remark, "my clover is just splendid, not lodged, it stands up all over the piece so it can be cut nicely." That man has not learned more than half the benefits of clover raising. I want my clover so big as to fall down all over the ground; even if it falls *before* it heads out, all the better. Why? It serves as a mulch to the land, enabling it to retain the moisture and ammonia brought down from the atmosphere, to be incorpor-

ated with the soil. Whereas, if the clover was thin, or if it stands up and is thick, the sun will dry the soil, and the ammonia (it being an exceedingly volatile substance) evaporates and is lost to the land. If the clover lodges, it will retain the moisture, enabling the land to take up the ammonia and retain it in the soil, thus drawing from the great store-house of nature genuine wheat food, for the next year. A good mower will cut all the clover that is of any value for hay, and leave the bottom to still mulch the ground in connection with the new second growth of clover. There is no way this strong growth of clover can be produced so cheaply as by the use of plaster, and there is nothing that will manure the land so cheaply.

My best results in wheat raising for the past four or five years have been on clover sod, turned in the fall after cutting the second crop of clover for seed, with plaster sown in the fall or early in the spring at the time of sowing the wheat, about 100 lbs. to the acre. As stated above, my crop put in this year in that manner was 27 bushels per acre.

In June after, I sowed the remainder of the field to plaster. The wheat had become stunted, and looked yellow and sickly on this part not plastered; on the other, it was rank and vigorous, and continued so. Now for the results. They opened my eyes and understanding, and I relate the experiment, thinking it may be of benefit to others. The part plastered in the fall yielded 25 bushels to the acre, of first rate wheat, 57 pounds to the bushel. The other, 15 bushels to the acre, weighing 54 pounds to the bushel. What was the cause of this difference? simply, the plaster started a strong growth of wheat from the commencement, and continued it until it came to maturity. In the other case, the wheat had become enfeebled, but the plaster started a vigorous, active growth from the time it was sown, causing new rootlets to start, and making the wheat later, thereby causing it to shrink and rust. I am aware the common opinion is, that it is poor economy to sow wheat or any grain on new sod land; so indeed it would be only for the plaster to aid in assimilating the decaying vegetable substances in the soil, to the growth of the wheat, which it will surely do. But is it possible to take two crops of clover from the land

and still improve it? So it has proven with me, and I believe the land derives more benefit from the roots alone, when they are mature and ripe, than to turn the whole crop of clover in a green state, full of water and undeveloped nitrogenous matter, which will not be the case after the plant has matured its growth. In that way, the roots alone will furnish more vegetable food than the crop turned in a green state, particularly of a character to make a kernel of wheat, which is the thing we are working for.

In reference to manuring land, the most benefit I have derived from manure was from being spread on the land after the first crop of clover was cut, letting the second crop of clover grow and shade the manure, which it will surely do, and lodge, keeping it moist, enabling the land to absorb the ammonia of the manure. When the land is plowed, it will be found loose and friable as a heap of ashes. In short, the great central idea in this whole thing is to mulch the land with green clover, if possible, and bring to its aid any other manurial agency that can be used.

I have not much sympathy with those who entertain the summer-fallowing idea of improving the land, or to eradicate weeds, when a clover crop will do it so much cheaper, or a crop of corn, if properly tilled. Neither do I believe in the theory of keeping the surface thoroughly cultivated through the summer, leaving the ground exposed to the drouth and the heat of summer, drying out and evaporating a large part of the ammonia in the soil. Much more thoroughly will a crop of clover clean the land of weeds, particularly if there are two cuttings. I would not disparage the turning in of the clover, only allow it as much maturity as possible, not dead ripe, so as to have the straw completely dry; that would be an error in the other direction.

My aim is to show that two crops may be taken off and still improve the land. From the two crops of clover, as much profit can be made as from the very best crop of wheat. Frequently, the crop of seed will pay more profit than a good crop of wheat. So the farmer's balance sheet of profits will be very much more than from half a crop of wheat, as is now practised in the country, with a prospect of a material increase of wheat after the clover.

I frequently hear the remark, "my clover kills in the winter." To prevent this with young clover, do not turn on in the fall, but

let the stubble stand as perfectly as when the reaper was taken from the field; that will keep the snow on the ground and also leave the young clover to mulch the land and protect the roots.

Do not, because you have succeeded in making a good growth of young clover, turn stock on and eat it off close to the ground, and tramp the ground hard, for in that way you will be fortunate if you have it winter. If the above suggestions are pursued, a crop of clover may be raised without fail. To utilize the straw, stack in a yard around or near the barn, and each day cut down and scatter over the yard a portion for the cattle to pick over and lie on. Sheep, with a very little grain, in this way will winter well. In this way, too, the straw will be made or placed in a condition to make good manure the fall following. My barn-yard is so constructed as to enable me to run my straw from the outside into the yard, by stacking the grain at convenient distances for doing so. To facilitate the rotting of the straw, I have scraped out a basin so as to hold water in such a way, that in the spring where the straw is scattered, it will be wet and kept so through the summer.

If too much wet accumulates, draw it off, but be sure it is thoroughly wet. In June, I take a team of horses and drive them for half a day over this manure pile, poaching up, and repeat it once in two weeks through the summer; in that way, it will become rotten and easily handled, ready for use on the land. Wheat straw, soaked in water simply, is not manure, or at best of poor quality. A ton of clover hay, or clover straw after the seed has been thrashed, is worth three times as much as wheat straw of the same weight to make into manure, particularly for wheat manure. Land may be rich in vegetable mould and be able to produce a large growth of straw, and still not produce a good kernel of wheat; clover manure in any form will supply this deficiency in a large degree, and straw manure rotted as above, so as to act quickly in the soil, to be easily assimilated, will supply this defect. It is important that it should act quickly, to mature the grain in the shortest time, and to keep up a vigorous growth from the start to maturity. I sow 1 1-4 bush. seed wheat per acre, with all the light wheat blown out. My clover seed, I sow mixed with my seed wheat.

The best seeder is the one that will cover up the seed best, and

at the most uniform depth, leaving the grain to grow all over the ground.

I believe if the course indicated above was pursued by the farmers of Wisconsin, it would add millions of dollars each year to the productive value of the state. There is scarcely a piece of dry land in the state but might be made to produce very much more in quantity in five years than at present, and still get greater profit from the land each year while being improved. I have been experimenting with a compound of salt and plaster. So far, the results have been quite satisfactory. Will report fully next year.

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## CRANBERRY CULTURE.

Read before the State Agricultural Convention, in February, 1873.

BY H. FLOYD, BERLIN.

Cranberry culture of the west is quite unlike that of the east, as I understand it. I shall confine myself in this paper to the system as practiced in the vicinity of Berlin, Wis. In this locality and north of Fox river, there are quite extensive marshes, most of which, fifteen years ago, were considered worthless. The one now known as the Sacket marsh being the only one which had produced fruit to any extent. The natural conditions of this marsh were so perfect, that it had covered itself with vines, and bore at least one enormous crop of fruit while in its natural state. This was in the year 1849. What the marsh had done before, I know not. Two or three years after this, a summer freshet, followed by excessive heat, continued for several days, killing all the vines on the marsh excepting those above the water, most of which were on the margin of two islands. Since the freshet, the vines have again spread nearly over the marsh, which covers an area of about four hundred acres.

The improvements on this marsh consist of a large storehouse,

a large outlet ditch, an earth dam, two waste gates, a main ditch leading to them, and each forty acres surrounded with a three foot ditch; also a one foot ditch through the center of each forty, both ways, cutting it into four squares. I am not posted as to the products of this marsh.

The next marsh of great value and importance, which almost magically sprang into existence, is the Cary marsh. This marsh is now taking the lead of all others in quantity of fruit; the vines being young and vigorous. It has not, however, reached its maximum product, since a portion of the vines are too young. The product of the best forty (on which are the oldest vines in the marsh), in 1872, was thirty-two hundred barrels, which netted, I understand, about twenty-four thousand dollars. This forty has undoubtedly reached its maximum, or nearly so, of product, until the vines are cut off and renewed, which will enlarge the fruit and increase the quantity to four thousand barrels. The Cary brothers have three hundred acres, covered with vines; on this marsh, they have twelve miles of ditch, large and small. Their first crop worthy of note was in 1868, and was between two and three hundred barrels. From that time to this, the product has been as follows: 1869, one thousand barrels; 1870, two thousand, eight hundred barrels; 1871, four thousand barrels; 1872, eight thousand, three hundred barrels. Eighteen years ago, they discovered the first vines on this marsh, and from that small patch of vines, without any setting, have spread out and covered an area of five hundred acres, there being two hundred acres owned by other parties in the same marsh, now covered with vines.

The results following the improvements on the Sacket marsh, stimulated all parties owning cranberry lands to active measures in making improvements, and of investing largely in this comparatively new and productive branch of industry.

*Necessary Preparations for Cultivation.*—First, after the tract is surveyed, and your outlet determined upon, make some trial levels from which to locate the main ditches, the width and depth of which will depend upon the character of the marsh, varying from four to ten feet in width, and from one to two feet in depth. After these are cut, then cut side ditches, from one to three feet in width, and from ten to forty rods apart, and clear the surface of all



plants detrimental to the growth of the cranberry vine. Tamerack swamp is quite difficult to convert into a good cranberry marsh, but the open swamp can be cleared and converted with great profit, if it is the right kind of bog. Sage brush is the most formidable plant enemy the cranberry vine has to contend with. Its condition is as much benefited by the improvement of the marsh as the cranberry vine itself, and will fully occupy the ground, in defiance of the vine, if let alone, hence this plant is to be constantly guarded against.

If the marsh is to be planted with vines or sown with seed, the sage brush should be exterminated from the marsh, so far as is practicable, since it propagates itself by sucker and seed. A plant known as featherfew grows to some extent on the margins of marshes, and should be eradicated, since it will spread as the marsh becomes dry. A dwarf willow is found on nearly all the marshes, growing about one foot in height, and, by some, is regarded as a benefit rather than an injury, as it is a slight shade to the cranberry blossom, which appears the last of June or first of July, preventing blight from excessive sun heat. I know of places where it occupies the ground to a considerable extent, and do not regard it much of an enemy to the cranberry plant. I also believe that if the marsh is kept wet enough when the vines are in bloom, there will be no danger of blight, since the vapor arising will tone down the heat enough to prevent it. On the highest and driest portions of nearly all cranberry marshes, we find the different varieties of willow, alder, grass, brakes and other rubbish growing. There, the vine cannot flourish. The best way to improve such places is to scalp the entire surface and burn off, or save to compost. I have invented a machine for this purpose, which is capable of scalping five acres per day. In New Jersey, they scalp by first cutting in squares, with a knife drawn by a horse, and then shave off with a knife by hand, at a cost of sixty dollars per acre. Four men and four horses will scalp and turn over five acres per day with my machine, and do the work as well, if not better, than by hand.

Cranberry vines are readily grown from cuttings, or from seed. Hence when the marsh is clean and ready to be stocked with vines, it is easily done by planting in any way, and at any dis-

tance you choose, or by sowing seed in early spring. Vines planted three or four feet apart will, under favorable conditions, cover the surface in four years. I know of one instance where a small sod of cranberry vines taken from the Sacket marsh and planted in another, spread so rapidly that in seven years, eighteen bushels of berries were harvested from it. After a marsh is stocked, a substantial dam and waste gates should be built at the best point at the outlet, to flow and regulate the water on the marsh. The water should be put on about the first of November and drawn down to surface of marsh by the first of June, and as soon as the fruit is set, it should be lowered four or five inches in the ditches. As the crop approaches maturity, continue to lower the water, and have the ditches dry if possible at picking time, which commences about the twentieth of September. Picking is done by men, women and children, at six shillings per bushel. Women are the best pickers, getting from three to five bushels per day. On large marshes, the fruit is taken on a car by rail to the storehouse, where it is elevated to the upper story, and run off into bins.

I now come to the most important part of cranberry culture, and which is the least understood. The curing of cranberries. This fruit should not be stored in bulk to a depth that will cause it to heat; as heating and sweating destroy the enamel on the surface of the berry, and the fruit soon decays. Hence they should be stored in shallow bins not to exceed one foot in depth, and these bins should be so arranged as to drop the fruit from one above to the next below. This will air the fruit from time to time, and by the time it reaches the lower tier of bins, it will be fit to barrel, if obliged to be done on account of want of storage. In barreling, the fruit is first run through a fanning mill; then poured on to an inclined board and run from thence into barrels, being looked over carefully as it is passed along to the barrels, and the damaged berries removed. The berries are now in good condition and ready for market.

## "FIRE BLIGHT."

BY J. C. PLUMB, MILTON.

This living phantom, and dreaded scourge of the pear and apple, has long been under the veil of mystery, and it may seem to some, rude to lay hands upon it; this veil and the prevailing theory of its origin and progress.

But the interest of the western fruit grower is so deeply involved, that a careful search for causes and remedy is imperatively demanded, and if we may but throw some light upon the nature of a disease so obscure as this, we may go further and dig deeper for full light and knowledge of cause and effect. I know I speak the feeling of many of my brother fruit growers, when I say the progress of this disease presents a seemingly malicious and apparently needless destruction of our most cherished specimen trees, robbing us of them when we are anticipating the development of luscious fruit, and rejoicing in their increasing strength and quiet shade; not going like ripe sheaves in the glory of fruition, but like Jonas' gourd, in the hour of his greatest need, and by an unseen enemy.

In reviewing the reports of investigating committees, and the deductions of men of science (more or less) that have come to my notice in the last twenty years, I find so little agreement in their conclusions, that were I to take their testimony, I should be left in a mist of uncertainty. But a careful comparison of theories and observations leads to the belief that the origin and nature of the disease is not so obscure as we have been taught by most of the writers upon this subject.

*Fire Blight* may be recognized by a sudden discoloration of some portion of foliage or bark of the young wood, generally of the present year's growth, but often extending to two or three years' old wood, and in extreme cases, to the whole tree, or to large portions of it. These affected parts suddenly change color, turn brown and wither in a day, as if some scorching blast had passed through the tree. To the casual observer, the first indication is a withering branch or twig; but more careful observation shows the

first approach of the disease by a change of color of some one or more leaf stems, or of sections of young wood, which rapidly extends until the cause is removed, or the branch partially or wholly dies. Sometimes only patches of blight appear, of small dimensions, which do not seriously affect the health of the tree more than the removal of so much of the bark. Of the first appearance of this malady, I have no certain information, but find in the oldest farm and garden journals extant, much the same description and complaint of its appearance at irregular intervals, as now, but more generally charged to some supernatural or lunar agencies. The oldest account we have of this disease is that of Duhamel in 1768.

The locality of this affection is a point of especial interest. It is known and recognized in the old world, but they experience so little of its ravages, that they have passed it almost unnoticed.

The even and general low temperature of western Europe evidently is not favorable to its development, and it is reserved as a "thorn in the flesh" for our extremely changeful climate and rich soils, and, more than all, to the dark alluvials and humid heats of the Mississippi valley.

The testimony of numerous correspondents in the west confirms my own observation, that in *close, sheltered* locations and *excessively rich soils*, this disease is much more prevalent than upon the more bleak and barren highlands, and is especially prevalent during and succeeding a period of sultry, moist atmosphere. It prevails most frequently when the conditions are favorable to excessive growth.

I will now refer to some of the many theories advanced upon the cause of this affection, with observations and remarks of some of our most careful and scientific horticulturists. The theory of a purely electrical cause has prevailed largely among those who witness results, "as if a stroke of lightning had touched the tree," but is shown very diverse from the known laws of electrical phenomena. The same may be said of the "hot air" theory. More plausible is the "insect theory;" and some, after finding occasionally minute grub in the part affected, rest upon this "insect theory" as the cause of a disease a thousand fold more widespread than the presence of a comparatively harmless insect.

Dr. Walsh, of Illinois, is said to have thought this disease was caused by the puncture of an insect in depositing its eggs, introducing at the same time some poisonous element, which pervaded the branch. But for the memory of that ardent and indefatigable entomologist, I trust he was not fully understood in his position; as was frequently true of him.

J. C. Cover, our late and well remembered friend of horticultural progress, advocated the poison sap theory, but as proceeding from "malformed crotches."

After an animated discussion of this disease, some twenty as observing and practical men as can be found in the west, at a meeting of the Illinois State Horticultural Society in 1862, an effort was made to convert the society in favor of the insect theory, but the society finally confessed its ignorance of the true cause, and dropped the matter, only one man hinting at defective circulation as the true cause.

That veteran, energetic and radical horticultural writer, Thomas Meehan, in a paper read at the meeting of the American Pomological Society at St. Louis in 1867, presents "fungus theory" as a foregone conclusion, to which he is committed sure, but finally says: "The fungus which, I think, I may say, causes the *fire blight*, germinates either in or on the bark, pushing its way through the tissue, causing fermentation and death as it goes, and the minute fungus plants propagate themselves by small seeds, just as larger plants do, and require some time before they perfect their reproductive organs." He therefore recommends cutting away and burning the first crop of affected parts, as a prevention of its further progress.

Dr. J. P. Kirkland says, of the various theories of "insect, frozen sap, electricity, excessive evaporation and exhaustion of the soil, they should all be abandoned, and a cause be sought in some other direction," and gives the following propositions. "That pear tree blight is produced by the poisonous impression of the seeds of microscopic fungus." "That several combinations of iron will to some extent counteract that impression." But Dr. K. wishes it to be understood that these propositions are "merely hypothetical."

Dr. Hull in his report as State Entomologist (Ill. 1869) treats of

this disease by assuming that it originated in the presence of fungoid germs, which break up the recently formed cells of wood growth, feed on their juices, and extend the disease with the circulation of the sap.

He bases his theory upon being able to propagate the disease by inoculation of the spores of the fungus into sound wood. His remedy is to check the flow of sap and thereby retard the progress of the disease by presenting no new material to feed upon. Other well known horticulturists have adopted this theory, and more or less fully committed themselves to the cryptogamic or fungoid origin of fire blight, and have rested there, apparently resigned to this inscrutable visitation, or content to direct their energies to the discovery of some panacea for the obscure vegetable crypt. J. J. Thomas quaintly says, there are two remedies, one of which will never fail, "Cut away all affected parts as they appear; plant two trees for every one that dies."

A. J. Downing, in his original treatise upon the diseases of the pear, after describing the appearance and progress of this affection, attributes it to a diseased or poisoned circulation, which comes in the following manner: A superabundant flow of sap in autumn is suddenly checked in its downward passage by frost, cells are ruptured, sap stagnates, decays in spring, becomes intermingled with ordinary sap in the alburnum and liber, which in the summer heat suddenly develop this disease. His preventive is to secure an early matured growth before the autumn frosts. (See Downing, 10th ed., page 324.)

Dr. Warder devotes much space to this subject, (Am. Pomologist p. 174); after discussing the "parasitic fungi" theory, he says, "a very important question has arisen, however, as to whether the inroads of fungi were the *cause* or the *consequence* only of disease. There is considerable testimony to favor the belief that in the potato, at least, we find with the appearance of the fungi, other causes of unhealthiness." Dr. W. further says, "this trouble is connected in many instances with an exceedingly vigorous growth of shoots, hence the inference of some, that if we can check this excessive vigor, we shall be able to prevent the occurrence of this blight." Dr. Warder and Dr. Hall have both given their testimony in favor of the value of "root pruning," as a pre-

ventive of blight, the latter especially advocating it as practicable and available to secure health and fruitfulness.

Dr. J. H. Earnest, a veteran pomologist of Cincinnati, after fifty years of observation, says he is confirmed in the belief that fire-blight is a *vegetable mortification*, which commences in the sap vessels and under the bark, and if allowed to spread, will contaminate adjacent parts; remedy—pare and cut away affected portions.

Mr. H. W. Mills, of Canada West, in *Gardener's Monthly*, 1867, p. 138, admitting the presence of fungi as a secondary cause of blight, yet attributes its power for evil to a *weakened organism*, which opens the structure of the tree to the attacks of miasmatic spores or seeds, and their presence proves "only that the tree is a suitable locality for the perpetuation of the fungus, which wants only a slight advantage to perpetuate itself to the destruction of the tissues of the tree, and no more dangerous to the life of the tree than is the '*ascaris vermicularis*' to the human body, unless some *weakening cause* arise to make their work easy."

Dr. Wm. M. Housley, of Kansas, in discussing "root pruning" as a remedy for blight (*Pomologist*, Dec., 1871), says: "If fungi are the cause of blight, it is hard to account for the following facts. They almost universally attack wood of the most vigorous growth, made the preceding season; they are said not to attack trees during a very dry summer; are not known in California or Italy; they are very destructive upon one piece of ground, and harmless upon another contiguous, and both under the same conditions of climate and variety." Now, if fungi be the cause, "it is difficult to understand how they attack strong and healthy trees rather than feeble and unhealthy ones; and why they do not attack in a very dry summer." As it cannot be presumed that fungi are not present in California and Italy, why is the pear not attacked there? It is hard to reconcile the universal presence of fungi with this seeming and unaccountable preference.

Dr. H. further says: "We are therefore forced to the conclusion that the causes of this disease, if ever discovered, will be found in something other than the attack of fungi upon trees which are sound and healthy. That fungi are found in the disorganized, dead tissues, is not evidence that they are the cause of this disorganization, but as they are found only in disorganized tis-

sues, the presumption is that they are the *consequence* and *not the cause* of this disorganization."

P. J. Berkman, of Augusta, Ga., in 1860, reasons very clearly upon the cause of blight. Starting from the fact that a tree is an organized body, with its cellular tissue as the basis of its organization; performing its functions of absorption and circulation upon the same principle as the animal life, any sudden interference with these functions, from overfeeding, starvation or other causes, disease or death is produced.

The writer then shows blight, as accompanying periods of excessive growth, to be the result of a sudden distension of these cells, or sap vessels, causing inward rupture, or a hemorrhage of the vegetable blood, and destruction of the tissues of certain portions of the tree. His remedy is to provide artificial outlets for the superabundant sap, by longitudinal incisions upon the trunk and limbs of the tree. Seven years subsequently, the same writer says his theory proves substantially correct, and his remedy successful, and concludes an article on this subject, as follows: "Fungus *may* be the cause of blight, but my observations are that it is always brought *after* the blight, as nature will always bring forth destroying parasites as soon as life is extinct in a plant. Although my observations have been close, I have never observed any fungi *before* the appearance of blight, but often afterwards."

These condensed notes of the writings of some of our most earnest students of vegetable physiology, show the drift of their opinions, and their theories upon this disease. I do not consider it necessary to criticise these several theories, nor do I condemn any of them as unworthy of careful attention, which an earnest student cannot give without exploring a wide field of thought in the science of vegetable physiology. So long ago as 1860, I took the ground on some propositions made for the consideration of the Northern Ill. State Horticultural Society, that the presence of fungi in diseased trees was not a cause, but a consequent, and that they do not seek healthy, organized matter as their food, but that they are the universal scavengers, which seek out effete matter, to transform which into a lower order of existence is their work. With the same views now, I cannot but regard all efforts to their



suppression by specifics, either chemical or mechanical, as sure to fail of a permanent cure for the blight.

Analogous theories have prevailed in the medical world concerning the origin of almost every disease human flesh is heir to, and exhaustive measures were resorted to to find in this fungoid theory a cause for the "Texas fever" in cattle, but all these efforts were vain. More reasonable and tangible causes are sufficiently known and seen, upon which to base a theory for disease in all departments of organized life.

Reproduction by artificial means has solved many of the problems of life, both in the animal and vegetable kingdom, and will doubtless do much for this question of the nature of blight. Successful artificial propagation of fungoid spores in healthy wood, and under adverse local conditions, would go far to show their aggressive power, and the possibility of their becoming a first cause of blight. But I have yet to know one such example, and have no faith in the theory that cryptogams are endowed with any such vital force as to become real antagonists of higher forms of organization. Could this theory be sustained, it would subvert the best systems of therapeutics in their relation to the animal and vegetable kingdoms, and it would install in their place the old dogma of specifics. When all the art and science of the medical world failed to find a satisfactory cause for the "cattle plague," the cryptogamists triumphantly referred them to a "fungoid origin." But the commission of eminent government surgeons, after the most careful and searching tests, "failed to find any evidence of fungus germs present in the blood and secretions, and found the theory of cryptogamic origin untenable."

Again, they report having found in some cases the germs of fungus, "but that these germs can develop and multiply without dead organic matter as a pabulum is very doubtful." (Pages 181-190 of Government Report.) Admitting that cryptogamic life is more nearly omnipresent than any other order of creation, yet I believe its sphere is mainly limited to the one work of reconstructing dead matter.

A strong point against the fungoid theory, is the fact that the weakened specimens and half hardy varieties are not the first to be affected, but the hard wooded, hardy varieties, such as most of

the Siberians, the Golden Russett and Tallman Sweet. These varieties are able to fortify against the shock of winter, but their smaller cells, and firmer fiber, are not so yielding to the sudden pressure of sap, as the less hardy, but almost blight exempt varieties. Take the tree as an organized body, with its cellular tissue, its powers of circulation, absorption, respiration and assimilation, and with these functions carried on harmoniously there is health. When these operations are partially or wholly suspended, there is rest, disease or death. Any sudden interference with these functions is more disastrous than gradual change, hence the effect of extreme and sudden changes of temperature, a "nipping frost," or an unusual and unlooked for pressure of sap into the delicate cellular structure, causing extravasation, or letting out of this sap into improper channels, and *vegetable apoplexy* the result. I believe it a disease of the circulation, arising from rupture of the cellular tissue and decay of sap. It may begin in a leaf-stem, and involve a whole branch, or it may appear in patches or in sections. The sources of this disease may be various, but there is first, a mechanical, and second, a chemical change, and the presence of fungi an entirely subsequent phenomenon.

Viewed in this light, fire blight is resolved into as simple a disease as any other; its sudden appearance readily accounted for, and the remedy may be inferred to a certainty. The fact that it appears at special seasons, and in marked locations, where the soil and temperature favor a very rapid growth after a period of rest, causing a *sudden* push of sap, points directly to *abnormal circulation*, induced by these natural conditions, as the starting point of the disease.

If these premises and conclusions are right, the remedy is to be found in securing the proper conditions of soil and climate. As our control of climate is very limited, we may only adapt our practice to it. The lake shore, the sea coast, and all countries where the temperature is made even from the influence of large bodies of water, are comparatively exempt from this disease. By choosing high lands, of medium fertility, avoiding stimulating manures, and with moderate culture, we may largely avoid the blight. Why the hills of the Granite State and the bluffs of central Wisconsin compete with the lake and sea coast in

beauty and health of tree and fruit, is attributable to their unstimulating soil and equal, cool climate. If, in the valleys of the Ohio and Mississippi, blight runs riot, it must be chargeable to the excess of humus in the soil and other causes which produce an excessive push of sap. The summer of 1871 was remarkable for its many showers, followed by hot suns and humid atmosphere; and the unprecedented blight of that season is yet fresh in the memory of the fruit growers of the west. But even then, a marked difference was seen in favor of lean soils and airy locations. With the advocates of the fungoid theory, I say *check* the circulation, as a remedy, but as a preventive; *regulate* the circulation by proper soil and culture. We must be satisfied to secure a moderate annual growth. We should be more patient, and willing to wait for a slow development, in soils less stimulating, but which, by early and faithful tillage, will grow trees as fast as consistent with health, or even retard the summer growth by other crops, when any danger of blight is apprehended.

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## MARKET GARDENING.

From advanced sheets of the Horticultural Report for 1873.

BY J. M. SMITH, GREEN BAY.

Our first and oldest record regarding the labors of our race is in these words: "And the Lord, God, took the man and put him into the Garden of Eden, to dress and to keep it." This command is a very short as well as a very general one; yet it certainly implies that the garden should be kept in order. It was to be their home, and it certainly should not be allowed to become a disagreeable or unsightly place. Our race was then in its infancy, and the reasonable expectation would be, that we should improve, and that succeeding ages would *perfect* what was then instituted as the first labors of our race. But has this been the case? I fear not. Whatever may be said with regard to the improvements

in some of the sciences and arts, the science of gardening, especially in the great west and northwest, can only and truly be said to be in its infancy. Probably not a single person in this convention who has reached twenty-five years, has failed to notice, time and again, the place on the farm that is denominated a garden, instead of being as it should be, a place of both beauty and profit, one of the most, if not the most unsightly and disagreeable spots upon the farm. Here it may be asked, would you have every man a gardener? Certainly, I would have every cultivator of the soil devote a portion of it to a garden. But would you have every cultivator become a market gardener? The answer to this question brings me to the main subject upon which you have invited me to address you to-day; and the true answer to it is one that cannot be found in any books upon gardening that I have ever seen. They are mostly, if not all of them, written by eastern men, whose situation and circumstances are so different from ours that he who follows them indiscriminately, will almost certainly be ruined. We must remember that at the east, there is a tendency to a deficiency in the supply of food, and that it is particularly so in all of the large cities, near which most of the market gardening is done, while at the west and northwest the tendency, with but very few exceptions, is in precisely the opposite direction; hence the very first question to be settled in considering this subject is, have you a market for your crops when they are raised? If yes, then, have you a soil and location suitable for the purpose? A light sandy loam is perhaps the best of all soils for this purpose. You can raise as large crops upon a rich, heavy loam, with a clay subsoil, as you can upon a light, sandy loam, and perhaps with less manure, but if you are upon a heavy loam and your competitor upon a light soil, though you may be equally good as cultivators, his soil will give him from one to two weeks the advantage in time. This, of course, not only gives him the high prices for the early crops, but it gives him the control of the market. Hence your success is impossible, though you may have equal advantages with him in every other respect.

Let me give you a single practical illustration of this. A number of years since, I planted my early cucumbers in a very favor-

able spot, and cultivated them to the best of my ability. The result was a very early, as well as a fine crop of them. I put the price at  $37\frac{1}{2}$  cents per dozen, which was low enough to drive the southern ones out of the market, and as no other gardener about town had any, I had the market entirely to myself. This lasted about ten or twelve days, when some three or four other growers brought in their first picking upon the same morning. The price fell from  $37\frac{1}{2}$  cents to 9 cents that morning, and in two or three days they were not worth 25 cents per bushel. The result was, I made a nice profit upon my crop, while I think none of the other growers realized sufficient for theirs to pay for marketing them.

I might produce many such illustrations, but this one is sufficient for our present purpose.

Another very important consideration is the location. It is far better to pay a good round price for land within one mile of the market, than to have the same kind of land given to you two miles away. For instance, some years since, a young friend of mine commenced business as a gardener and a fruit grower. He was situated upon the same road that I am, but about twice the distance, or  $2\frac{1}{2}$  miles from the business portion of our city. He laid out a considerable sum of money in his preparations. He was a good grower, and an honorable young man, and I hoped to see him do well. He followed the business for two or three years, but he never seemed to find a good market for his crops, and they were almost constantly a drug upon his hands, while my crops were always sold at a fair price. At length he came to me one day and said, "I am going out of vegetable growing entirely." "Why so?" I asked. "Well," said he, "your location gives you such an advantage, that I cannot compete with you. You can be in market a little earlier than I can, and what is still worse, a merchant or his clerk will never drive by your garden and come to mine, unless you happen to be out of the things he needs. The result is, that you control the market, and I can only get such orders as you cannot, or do not choose to fill." And this was true, though I had never by any word or act of mine, made the least effort to crowd him out of the market. Nor is this all. The difference of only one mile in distance will make a vast difference

in the team work during the year. If you have a good sized garden, say of seven or eight acres, you will probably need to average two trips per day for nearly or quite 300 days in the year. This, of course, includes the hauling of manure into your garden as well as marketing your crops. Here, then, is a difference of 1,200 miles in one year's driving. Hence, my advice is, pay a large price for land near your market, rather than take land as a gift three or four miles away.

Now we come to the business of planting and cultivation. I will take it for granted that you are provided with at least ten cords of good manure for each acre that you propose to cultivate; and if you have fifteen cords per acre, all the better. I know that some farmers will persist in farming without manure, but I am going to try and believe that no one will be so silly as to attempt gardening without a good supply of it on hand.

Before going farther, let me give one general rule for manuring, which my own experience has shown me to be the best of any that I have ever tried. It is as follows: Spread about one-half of what you design for a given portion of land upon the top of the ground, and for this take the coarsest part of the manure and plow it under. Spread the other half upon the top of the ground after plowing, and drag it in with a fine tooth harrow. After this it will be necessary to rake the whole ground over with hand rakes. I lay this down not as an invariable rule, but as a general one, which of course has its exceptions.

Now comes the selection of seeds, and if there is any thing more utterly bewildering to a beginner than this, I am sure that I do not know what it is. For instance, I have one volume in my library, in which there are twenty-five varieties of onions enumerated, thirty-four of potatoes, thirty-four of squashes, forty of beets, forty-two of tomatoes, fifty of cucumbers, fifty-four of cabbages, fifty-six of turnips, fifty-eight of corn, eighty-four of lettuce, 108 of beans, 115 of peas, and so on through the whole list. There is a list of twelve of our standard garden vegetables, and 700 varieties of seed to select from. Nor is this all. Not a year passes by but new varieties of each of these and many other kinds are introduced with an almost innumerable host of circulars, that would

lead us to believe that we are upon the eve of some great revolution in vegetable and fruit growing.

If you attempt to introduce *all* the new kinds and varieties that are recommended to you, ruin is inevitable. Upon the other hand, if you ignore all of them, you will soon find yourself lagging behind the age in improvements. Hence you perceive, that to make a good selection will require all of your good sense as well as your experience, and if you succeed then without making any mistakes, I have only to say that you will be more fortunate than I have ever been in this feature of the business.

I am tempted here to give you a list of a few of our most prominent vegetables that have done the best with me, though it is very possible that some of them may not be the best for all parts of the state. For early onions, the common top or bunch onions; for late or main crop, the Wethersfield, Early Red Globe and the Yellow Danvers, the first named being the most hardy and the best keepers. Tomatoes: Early crop, the Early York; for late or main crop, the Tilden and the Trophy. Early cabbage, the Jersey Wakefield; for late crop, the Bergen Drumhead, if you have a heavy soil. If a light one, the Winningstadt. Early potatoes, Early Rose; late crop, the Peerless. Corn: Crosby's Early, and Stowell's Evergreen for late crop. Bush beans, the Early Valentine. Peas: First crop, the Early Kent; late, the Champion of England. For fall squash, the Turban or the Boston Marrow; for winter, the Hubbard. Cucumbers: Early Frame and White Spine. Beets: The Bassano and the Egyptian for early crop, and the Blood Turnip for late crop. Strawberries: Wilson's Albany Seedling.

The above is of course a very limited assortment of seeds, and while they are standard varieties, I by no means confine myself to them, but am constantly experimenting with new varieties; still I would guard you against putting too much confidence in the representations of those who have new varieties to sell.

Well, we will suppose that we have our beds nicely prepared, with the alleys so made that they will not only carry all the surplus water off the beds, but so arranged that they will carry it entirely from the garden. No matter how early in the spring it is, if your ground is in good condition to work, you may begin

planting, but plant only those kinds that will not be injured by the late spring frosts. The ground may be frozen an inch deep after peas and onions are up, without their being injured. Beets, parsnips, carrots, radishes, turnips, as well as some other plants, will endure an ordinary spring frost without injury, while beans, tomatoes, egg plant, melons, cucumbers, sweet potatoes and some others, are very sensitive to cold, and will sometimes become so chilled by the cold air, even without any frost, that they will never entirely recover from it.

Putting the seeds in the ground is a small job, compared with what it was years ago. A good boy, 15 or 16 years old, with a good Harrington or Comstock seed sower, will sow an acre of ground in a day with the small seeds, and will do the work better than twenty men will do the same work by hand. Upon my light soil I sow the small seeds about an inch in depth, and of onion seed from  $3\frac{1}{2}$  to 4 pounds per acre; the rows 14 inches apart; early carrots and radishes, 12 inches; beets, 16 inches; parsnips, 18 inches between the rows, and with all of them we regulate the machine so that it will drop from one to two seeds per inch in the rows, as you will find it much easier to destroy some of the young plants, than to fill the vacancies if there are not enough. Peas should be among the first of seeds in the ground. The same may be said of onions, not only for the early ones, but for the late or main crop. With regard to this crop, there are three things that are absolute necessities; and I have never yet seen what I call a good crop of onions where either of the three had been neglected. The first of these is very rich ground, the second is to get them in very early, so that they may have the cool, damp weather of spring to get started; the last requisite is thorough cultivation, and this, too, at the right time. I consider the onion crop about as sure as any crop I raise, if the conditions necessary for a good crop are complied with, but, if they are not, complete failure is an almost absolute certainty. By the time these hardy, and half hardy crops are in the ground, it will be late enough to plant early potatoes and put out your early cabbage, for I am taking it for granted that you have a good set of hot-beds, or else, what is still better, a hot-house, where you have been getting a fine lot of cabbage, cauliflower and tomato plants, as well as other things, ready



for the open ground as soon as the season will permit. And here let me say, that when your cabbage does not head well, four-fifths of the time it is simply because the soil is not strong enough to bring forward a full crop. It is possible to make a piece of land too rich for potatoes, but I have never seen a crop of cabbages injured in that way, and never expect to. Hence, don't spare the manure upon your cabbage bed. Tomatoes, egg-plant, peppers and sweet potatoes should not be put out until the ground has become warm and the spring frosts are over.

But amid the hurry and bustle of planting, you must not forget nor neglect to take care of your strawberries. If you have not a bed of them, put in a piece of ground at once with the Wilson. If you wish to experiment, do so, but make these your standard, until you are sure of something better. If you have a piece already in, the winter covering must be taken off, and the beds thoroughly cleaned out. Don't leave a thing except the plants. After this is done, put on a coat of well rotted manure, or what is still better, if you can get it, ashes. If they are unleached, at the rate of about 150 bushels per acre. If leached, twice the amount.

Your tomatoes for late crop, peppers and melons, will be about the last things put in for the first crop; for you must remember that you are not a successful gardener until you can double crop nearly your whole ground every season. And you must be bearing this in mind, and be preparing for it all the spring. But by the time and probably before your first crops are all in the ground, the seeds first put in will require your care and cultivation. In the mean time, if you have a good asparagus bed, your market wagon has had to be put upon its daily trips. And now comes a season of unceasing care and labor. Not a day nor an hour should be lost. In the highly manured condition of your soil, the weeds come up literally by the million. They must not only be destroyed, but the young plants must be cultivated, to improve and hurry them on for the early market. If it rains, there are sure to be plants to transplant. If it pours down, you will still find it necessary to be on hand and watch your beds and see that the surplus waters of the falling flood are immediately carried off, and that your beds are made ready for work again at the earliest moment. To be sparing of care or labor now is ruinous, even if

your work up to this time has been ever so well done. And many times, after a long day of twelve or thirteen hours' labor, your market man comes home with an order, or a letter comes with an order for so much of this or that, to go upon the first train or the first boat in the morning. Tired and weary as you are, you must go back to the garden and fill the orders, or soon find your business sadly injured. Do not think me drawing a fancy sketch, for I remember well one week, two years since, when from four o'clock in the morning till eleven at night, some if not all of my sons were in motion. This was, of course, only for a few days. But from the first of May to the middle of August, you will find long days the rule, not the exception.

From the middle of June to the 10th or 15th of August, comes the additional work of getting in the second crops. The varieties of the second are not so great as those of the first one. The last of June or first of July, the Early Horn carrots should be sown between the rows of your black seed onions. If your ground is in the right condition, and the weather favorable, they will come on, and by the time they need the ground, the onions will be ripe and they may be gathered, and the whole ground given to the carrots. But sometimes at this season of the year, the dry weather and a burning sun together will kill the young plants after they are up. Such was my case last season, but after I found that the carrots would be nearly or quite a failure, I sowed the beds with turnip seed, and the result was, a fair crop of as pretty turnips for table use as I ever saw. In June, the radishes, lettuce, etc., are getting out of the way and making room for celery and late beets, as well as rutabagas, though I think a better way to raise these two last named crops, is to sow the seeds in a bed and then transplant them. Let me illustrate this. Last season, I intended to raise cabbages after my early potatoes, but before I had the ground all set out, my cabbage plants gave out, and I concluded to fill up the ground with rutabagas and beets. It was nearly or quite the first of August, and the weather was very dry, as well as very hot. But there was no time to spare, and the plants were set out. They were set twelve inches apart each way, and although they were well watered, for a time they looked like almost anything, more than what they were intended for, crops of beets

and rutabagas. But they were well cared for and they soon started.

The first of November showed as nice a crop of fair sized table roots, as I ever saw. A neighbor, who had seen them when they were put out, and a few days afterward, came to see the crop while we were gathering them. He looked at them; "well," said he, "that beats all; and did you expect a crop when you had the plants set out?" Of course I did, or I should not have had it done. Said he—"when I saw your boys putting in those plants, I told my wife that John M. Smith is good at making things grow, but if he gets a crop there, he is a smarter man than I take him for." But there was no secret about it; you can do the same thing almost anywhere in the state. Put the ground in good condition in the spring, and plant Early Rose potatoes; cultivate well and thoroughly, and in July you have a good crop of potatoes. Take them off, plow under the tops and some manure along with them, have good thrifty plants to put in, and then care for them, and the first of November, harvest a crop of beets, rutabagas or cabbage. Simply a case of good cultivation during the season, nothing more and nothing less. As a general rule, in the latitude of Green Bay, it is safe to set the large drumhead varieties of cabbage the first, but not later than the tenth of July. Celery not later than the 15th, and have a good crop. It is safe to set the Winningstadt cabbage till August first. The blood turnip, beet and rutabaga may also be set at this time and realize good crops. Flat turnips may be sown safely till the 10th of August, and get a good crop for table use. It may be said with regard to beets, turnips, rutabagas and cabbage for winter use, the later they are grown, provided they get a good fair growth, the better the quality, and the better they keep through the winter. A word about setting out cabbage plants. The Jersey Wakefield will do nicely and head well, at 18 inches apart each way; the Winningstadt at 20. Most of the drumhead varieties should be 24 inches apart, while the Mammoth, Marblehead and Drumhead should be at least three feet apart each way. It is utterly useless to attempt to raise the last named except upon very rich ground; but when the conditions necessary for a good crop of it are complied with, it

will produce an almost marvelous crop, and the heads will be of a very good quality, still, I think it can hardly be said to be a profitable crop for general cultivation.

A few words with regard to an asparagus bed. Your garden will never be a complete one without a good bed of asparagus. The objections to it are, that it is a very expensive crop to get started, and that it takes four or five years from the first sowing of the seed, before you can realize a full crop. But if you have a large element of eastern people among your customers, you will find it among your most profitable crops, and after it once gets to bearing, it is not an expensive one to care for, but yields its annual crop with an almost absolute certainty, and that too, at a time in the spring when your expenses are very heavy, and you have little coming in to meet them.

The new variety named Conover's Colossal, seems really to be an improvement upon the old kinds. The seed should be sown in a bed prepared the same as for onions, and sown early in the spring. Let it grow here the first season. When the plants are one year old, prepare your permanent bed, and be sure that you make it very rich. I would not put out a bed of an acre with less than 75 loads of good manure, and if 100 are put on all the better. Make the rows three feet apart. I take a shovel plow and make the furrows about five inches deep, then put the plants in the furrows one to every 16 or 18 inches, spread out their roots in as near their natural position as possible; fill the furrow and pack down the earth somewhat over the plants, if your soil is a light one, level off your bed nicely, and your bed is made. This should be done early in the spring, and in about a month, the plants will begin to show themselves above the ground, which should be kept perfectly clean during the season. Early the next spring cut off all the old tops close to the ground, and put another coat of manure over it and dig it under, though you must be very careful not to dig deep enough to injure the roots of the plants, which by this time have filled nearly the whole ground after you get, say four inches deep. After your manure is dug under, rake off your bed nicely, or if you will improve it still more, before raking, sow on it the best quality of superphosphate that you can get, at the rate of say 500 pounds per acre, before you rake it.

About the first of May, nice purple shoots will begin to show themselves above the ground, and you may begin to cut, though you must do it very sparingly this season, or you will injure your beautiful bed for many years to come. You are now at the beginning of the third year, and you will get your first returns. The bed must be kept clear of weeds, and each succeeding spring, give it a good coat of manure, and work it in as I have directed. The fourth season, you may realize some profit from it, and the fifth, a full crop. From this time on, you may expect an annual crop, as well as a good profit from it the balance of your life, if you will continue to care for it. There is a bed in my father's garden, which father has told me was there when he was a little boy 7 or 8 years old, and he is now in his 83d year.

The friends of Conover's Colossal have claimed that this variety would produce a crop one year earlier, than the common kinds. My own experience has not proved the assertion to be true, although I think it an improved variety and very cheerfully recommend it for general cultivation.

Let us now turn for a few moments to another branch of the business, viz. : making sales. At this point we are so differently situated from our eastern gardeners, that their books are about worthless to us. The markets of Boston, New York and Philadelphia are so large, that the produce of any one gardener may be thrown upon it at any time, and in almost any quantity that he can produce, and it will produce no perceptible result. If the market is very much depressed, his withholding it will not raise it. If, on the contrary, prices are high, the produce of one garden will not perceptibly depress them. Here, upon the contrary, you will find that it will require all of your care and skill to keep the market from utterly breaking down, and thus making your crops nearly worthless after you have raised them. I am often told that I have a good market, the best one in the state, and so on. Well I think I have a good market, and yet, for a number of years past, there has been no time during the rush of any particular crops, that I could not have broken down the price so completely that it would have been ruinous, both to myself and others, and very often it has, and I presume will again, require the utmost care to keep from doing it. For instance, one year ago last fall, I had a

very large crop of onions, 2,400 bushels. Suppose I had thrown them upon the Green Bay market, what would have been the result? Before the last of them got there, they would hardly have paid for hauling to market. In short, some of the dealers anticipated this result, and at least one of the large dealers told me that I would be glad to sell them to him for less than fifty cents per bushel; and another told me that I would receive more for 1,000 bushels than I could for the whole of them.

Now, what should I do? In New York, I could simply have hauled them into the market and received the market price, and the amount would not, probably, have changed the price to the amount of one cent per bushel, but that will not do here. Hence, I must know, and keep posted, as to the price of onions in Chicago and Milwaukee, also in Detroit, Cleveland and Buffalo, and the price of freights. These last named cities compete with me in the lake Superior country. With this reliable knowledge, I am not in a position to be frightened or deceived by any false information. Then I put the price just low enough to keep out the southern crop, and kept it so. The result was, that I sold my entire crop at an average of seventy-seven cents per bushel; and the firm that had told me I would be glad to sell those onions for less than fifty cents, paid me eighty cents for some hundreds of bushels before the close of navigation. If I had thrown this large crop upon the market, and sold exclusively for cash on delivery, I have no idea that it would have brought me one-half of what it actually did bring; and I mention it, not to boast of, but simply to show how much care is necessary in working off a large crop, and that it may be worked off at a profit, when, at the same time, a little neglect or want of proper information would have turned a nice profit into a heavy loss.

This is only one of many instances that yearly occur with me, and the same things will meet you in nearly or quite every portion of our state. Last season, I put out about 35,000 cabbages. If I had thrown one-fourth of such a crop upon the Green Bay market, a heavy loss would have been inevitable. But the crop was sold at a fair price, by simply keeping myself posted with regard to prices outside, and using care and common sense. Another point of difference with our eastern gardens is this: You will

find it necessary to raise a general assortment of vegetables, while at the east but few of them do that, but confine themselves to a few crops, sometimes to a single one, and often to not more than five or six. Hence you will perceive that you will require a more general knowledge of your business than would be necessary at the east. You have already seen how much care you will need in making sales. To sum up this portion of your business, in a few words, your eastern friend needs a larger amount of capital to commence, and carry on the business successfully, than you do. On the other hand, you need a more general knowledge of vegetable growing than he does, also more skill in marketing your crops. My rule for selling is this: Always sell when you can get what you know to be a fair price, and a paying one, and not to hold on for very high prices. The result is that I rarely get extravagant prices for any of my crops, and on the other hand, I seldom sell any of them for less than a paying price.

Let us now turn for a few moments to the expenses of running a good sized garden. Here you have the advantage over your eastern friend. While a few, say \$3,000 to \$5,000 would be a great help to you, still it is possible, as I know by experience, to commence with very little ready money; while at the east, several thousand dollars is an absolute necessity. And the first thing I wish to say upon this point is this. If you have any idea of cheap tillage, and half culture, discard them at once and forever. If your garden contains six acres, better by far to let one-half of it grow up with weeds, and thoroughly cultivate the other half, than to attempt to cultivate the whole, and one-half do it. I shall not deny that a wretched half-system, or no system of cultivation, will sometimes result in showing a large crop. A kind Providence has arranged the natural laws of growth as well as the seasons, in such a manner that such will sometimes be the case; but such cases are the exceptions, not the rule; whereas you may, and you ought so to cultivate your whole field, that large crops will be the rule, not the exception; but to produce this result, you must spend more labor and more money upon an acre of land than is generally given to it. I know very well that insisting upon this plan, I am talking against the tide, and against the almost universal custom of our whole west, and I fear that I shall

talk to little purpose upon this point; but, gentlemen, I am in earnest, and I know that I am right. Here I must refer to my own system again. I do not do so for the sake of boasting, but because it has proved a success; not as successful by far as I expect, and intend to make it hereafter, but still a grand success as compared with the system, or rather the entire want of system of the most of those about me.

I have found, and with me the rule has been invariable, not a single exception to it, that the more I have spent per acre in cultivation (and in cultivation I include manuring), the greater have been, not only my gross receipts, but the greater has been the net profit per acre. With each succeeding year, I have spent more in cultivating than in any previous one. The invariable result has been not only a return of the investment, but a larger net profit from the garden than ever before. Last season, I cultivated about fourteen acres. In the spring, I commenced a more thorough and expensive cultivation than ever before. Soon, a most terrible drought came on, and lasted till I began to get frightened, and even went so far as to consider the propriety of discharging some of the hands, but concluded to keep on and keep the garden in the best condition possible, so that it should get the full benefit of rain when it did come. I followed out this plan, and when light showers began to come, there was no crust on the ground to be dissolved before the rain could penetrate into the ground; there were but very few weeds to divide the benefits of the rain with the crops.

In a few days, the change seemed almost miraculous. The result of it all was, that although it was one of the dryest seasons ever known in our part of the state, and that in cultivating and marketing 14 acres I spent \$3,986, or \$284 per acre, yet not only is the balance upon the right side of the ledger, but it is a nicer one than I have ever had before, and I now see that my cultivation during the drought was what saved me; and if I had carried it still farther in the right direction, I should have been hundreds of dollars better off than I was at the close of the season. The cost of manure must vary the cost of your cultivation materially. With our present imperfect knowledge of manures, stable manures will be your standard, with the use of superphosphates,



plaster, lime, ashes, and other manures, as your experience and good sense will dictate.

If you can lay down manure in your garden for \$4 per cord, you will need at least \$50 per acre for manure, and \$150 for other expenses, making \$200 per acre; and after you have learned how to spend money to the best advantage, I believe that a larger profit may be made by laying out \$300 per acre than with less. But I presume by this time, you are asking if the expenses are so heavy, what are the profits? For the first year or two, they will be nothing. And if you make it pay expenses, you will do better than I have done with any land that I own. After the second year, if your land does not pay all of its expenses, and taxes, and ten per cent. on \$1,000 per acre, there is something wrong somewhere. I have some acres of land that did not pay expenses for two years, but for a number of years past have not failed to pay ten per cent. on at least \$2,000 per acre. I expect my whole garden to do more than that in a short time.

At present, I am aiming to make my land yield 1,000 bushels of onions per acre, and then a crop of carrots or turnips, or 500 bushels of early potatoes, and then some other late crop; or in strawberries, 12,800 quarts or 400 bushels per acre, and other crops in about the same proportion. I know that these figures seem large, but I am steadily gaining and nearing my mark; and, gentlemen, if I live, I shall reach it. Do you ask, what then? Well, I do not know where the next mark will be, but certainly a still further advance. Our best cultivators have as yet but a very slight idea of the capabilities of an acre of land. Do not think me either wild or enthusiastic upon this point. Such is not the case. For many years I have been satisfied of the truth of the above statement, and every year's experience, and experiments, bring with them the arguments that convince me beyond all doubt, of the truth of the statement.

But let us turn for a few moments to the question, what are the inducement for you to become a gardener? Do you wish to become a millionaire? If so, none at all. Do you wish to become suddenly rich? If so, this is no business for you. Are you anxious for a life of indolence and inactivity? Then there is no place for you in the garden. But if you have the conditions

about you that will warrant you in going into it, or even if you are in a young and growing place, and can make a beginning, and build up your business as the place grows, and grow up with it; if you are willing to endure its cares and perplexities, and there will be many of them that I have not and cannot enumerate here, you may make a beginning; and if you are a lover of the true, and the pure, and the beautiful; if you love to watch the sprouting seed, the opening bud, the growing plant, as day by day, it develops into a thing of beauty, each one true to its kind, and, as the season advances, displaying more and more of that mechanical skill of which you may see so much, but of whose sweet working we know so little; if you can love and admire that chemical process, and who can help admiring it? for, oh, how I have wished and longed to read the secret workings of that wonderful chemical combination in nature's laboratory, that, though as silent as the falling dew, begins with the sprouting seed, and never ceases, day nor night, but works on, and on, with ceaseless, noiseless steps, until it has reproduced a harvest true to its own kind. **And, as the season draws to a close, you will see and count up your own mistakes, and they will be many, even though you have worked ever so wisely and ever so well.** But here, in this as yet impenetrable secret of nature, there will be no mistakes. The pea has not produced a potatoe, nor the potato an ear of corn, neither has the corn produced a beet nor a carrot. The tomato seed has not turned to a cabbage, nor the cabbage to a radish. The beautiful, modest, little strawberry plant has not produced a raspberry nor a currant, but each and every one has been true to itself and to the Great Architect, who made the laws that govern one and all of them. Will you love to tend and watch and care for these things of beauty, and help them to do their best? If so, you may become a gardener; and I know of no business in which you can be more happy and contented. In a few years, you will be almost sure to be beyond the necessity of hard labor with your own hands, but will do better to superintend and direct the management of the garden and conduct the experiments which year by year you will find it necessary to make. And as old age draws on, you will find yourself with a modest competence, that will insure you against the many wants that make money a neces-

sity with us. This will probably be the financial result of your life, but in my view of the business, this is far from being the most important view of the matter.

You should be a moral as well as an agricultural educator. By moral, I do not mean a teacher of any theological system—not even the extreme liberality of liberal Unitarianism upon one hand, nor the doctrine of apostolic succession upon the other. But I can hardly conceive a real, true cultivator and lover of his garden being a licentious profligate, or a drunkard abroad, and both a brute and a drunkard at home. The purity and the beauty of your occupation should teach you that it is easier to become a true and noble man than it is in most other occupations. And your ever bounteous crops should teach you ever to lend a listening ear to the wants of the needy and the suffering.

On the other hand, if you do not do something towards raising and improving the system of cultivation about you, then you have failed in one branch of your business.

You are so situated that you must of necessity raise large crops, or your whole business fails; hence, you ought every season to make a series of experiments, all aiming at some definite point, which, if it succeeds, will result in a practical improvement in agriculture. You can do this more easily than most farmers could, and can follow it up for a series of years better than they can; for you must ever bear in mind that a single experiment, however successful it may be, is, as a general thing, worth but little. Let me illustrate this by an experiment of my own. Last season, I wished to try a number of different kinds of potatoes, with a view of testing their earliness, yield, quality, etc., with certain kinds of manure. Well, what did I prove? Why, simply this: That a certain kind of potato, planted at a certain time in the season, upon a certain kind of soil, manured thus and so, cultivated in such a manner with just such a season as the last one was, produced potatoes of splendid quality, and at the rate of nearly 500 bushels per acre. Now, what is this experiment worth? Practically, very little, because very few, and possibly not a single person present, could comply with all the conditions which resulted in that yield. But suppose that I follow up these experiments with that same variety for five years, try them upon different soils

with different manures, at different times of planting, etc., and at the end of five years, I find that they have been of uniform good quality, and that the yield has averaged say 400 bushels per acre, I have shown that upon good soil, and with good cultivation, they are a profitable potato; but suppose the yield only averages 100 bushels per acre, I have shown that either they are not a reliable potato, or that, if they are, I don't know how to raise them. Many of your experiments will prove failures to a greater or less extent, and some of them very annoying ones; but you must bear in mind, that when you have made one that is a success, you have not only benefited yourself, but the whole community in which you live; and it surely will be a pleasure to you to know that you have been the means of adding to the wealth as well as the comfort of those about you. If it is not, I hope that you will never enter my profession.

As I have stated in another place, you will ever find nature true to its kind, and your business is simply to assist her, and enable her to do her best. Hence the command to dress the garden and to keep it. And whether upon the garden or the farm, when you have so done your work that your soil is capable of doing no more or no better than it is doing, then you have become a perfect cultivator. Do you ask me, when will that time come? Not in your day, nor in mine. Possibly in the far distant future; for, gentlemen, I have a vast amount of faith in the world's future; not only in that, but in the future of our Northwest, and its reading, thinking, wide-awake, energetic people.

With these brief hints, I must leave the subject. I have endeavored to be plain and practical. I have not intended to hold out any visionary inducements to any one to commence the business. On the other hand, where there is a reasonable prospect of success, I should be sorry to keep any one who had a taste for it from going into it, for it is a pleasant life and a pleasant business to follow. You may not, and probably will not, make any great show or mark in the world, and when your life's work is finished, no rattling of drums or booming of cannon will proclaim to the world that you are being laid in your final resting place, but perhaps there will be some poor widow in the company who will say, he taught me how to raise good crops in my little garden, and

when they failed, he supplied my wants from his own." Perhaps some strong man will say, "I was an orphan, poor, ignorant and friendless; he took me and taught me how to labor and how to cultivate, and made me a man, when but for him I should have been only a worthless, useless thing, both to myself and to others." Perhaps kind neighbors will say, as they speak of you, "we cultivate our lands better now, and we raise better crops now than we did, or ever should have done, if he had not lived among us." If these things are so, you will not have lived in vain, and you will not fail of your reward.

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## HOW CAN FARMING BE MADE ATTRACTIVE TO THE YOUNG?

BY MRS. HELEN BRETTEL HUNTLEY, APPLETON.

The attractions which any calling presents, are usually the chief inducements for selecting it; either the pleasure it will afford, the position it will give, or the amount of money it will secure in the end. But among farmers, there are only a few, comparatively, who intelligently choose farming as their business, and pursue it in such a manner as to make it attractive. A much larger number have accepted it for only the poorest possible reasons; one will say his father before him was a farmer, another has no capital to engage in other business, another has no education, another no trade, others have made up their minds that farmers are about as independent as anybody, their living does not cost them anything, so they conclude to get a piece of land and go to farming; they work hard early and late, they have few pleasures, their home has few attractions for themselves or any one else, they will often say they are trying to get an honest living, that they must not expect to have many luxuries, that plain fare and strong, durable apparel are good enough for farmers, and so they plod on to the end of life. There are others who do a better work, and who have higher and

better aims, but they have not the patience to work and wait; they are tolerably successful, but are never quite contented. They have some misgivings about the calling, it does not give much influence, or they are constantly thinking they might get a living easier some other way, or in some other place, and yet they persevere, sometimes for years, contending with countless difficulties, and just as the dawn of a better day was approaching, have sold out and moved to a milder clime, or where the soil was more fertile, or less obstructions to the plow or some other fancied advantage, only to find in middle life, perhaps in old age, that they had made the mistake of a lifetime.

In no calling is a change of location so injurious as that of farming. Many of the improvements on a farm will last a lifetime, some of them much longer, and when these are lost, there is a voluntary surrender of all these advantages with a certain knowledge that there must be labor and privation to secure them again, besides the spirit of discontent which has preceded a change of place, and the dissatisfaction which is most sure to come after, has infused itself through the whole household. The children feel this, if possible, more than the parents, just at the time when they should be receiving the benefits that should come from farming; they must share in a second edition of hardships, and before these can be removed, they have gone out from their home without the example of successful parents, and with the fixed determination to seek in some other pursuit the pleasures they failed to find in their farm life.

There is much to be learned from the example of the veteran farmers of an eastern state, some of whom are now occupying farms on which their ancestors lived nearly two hundred years ago.

Among most farmers, particularly here in the west, there is a time which has been very significantly called "getting started," a time when the profits of the farm must be small; the improvements needed are many; the growing family has many wants and as one has said, the farmer needs the faith and hope of the Christian to aid him in his work. It is just at this period that farming has fewest attractions, that the most and the very best, must be made of the situation or there will be no success. If life is what we make it—surely farm life is all in the making, if there is any

pleasure about it, it must be found in the farmer's home; if any profit, it must come through skillful labor, if any honor the farmer must win it by the successful manner in which he conducts his farming, and the constant interest he manifests in all that pertains to the advancement of agriculture. He must remember that "men are not honored by business or calling, but business and calling are honored by men." He may make it delightful if he will—he may make it bring pleasure, profit and wealth too; but there must be work about it, intelligent, earnest work. It is as true to-day as the moment it was first uttered, "there is no excellence without labor." The bane of success in farming is the shirking of work, the busy idleness in which one may pass the time brings no benefits, but intelligent, skillful work of hand and brain brings a two fold reward. It may wear upon him or her who performs it, but it polishes and brightens, and makes one better and happier; it is the *wear and tear* of unsuccessful work, that frets and discourages and brings wrinkles to the brow and sadness to the spirit. He who thinks most, and works most, will always see most to be done. The man who simply plants his corn and potatoes, and cares for his one cow, may find in these enough to keep him in good working condition. So the woman who can only cook the simplest mess, and make the plainest clothing, will see much less work to be done, and will require much less than her more intelligent neighbor. The same is true of children; the more intelligence they have, the more wants they will have, and the more of these, the more work it will be to make them happy and their home attractive. Here again comes this wonderful thing called work, and he who meets it, bravest and best, and does most of it shall stand first, for 'tis ever and always "the worker alone that has claim to respect."

There is much said of the hard work to be done upon a farm, and the poor pay it brings. It is in no way consistent, that an occupation so useful, so necessary as that of farming, and upon which all other occupations must subsist, should not be remunerative; the productions of the farm are ever in demand. Mechanical skill has done wonders in the way of machinery to lighten labor and accomplish much work; the press too comes with its aid, suggesting and giving new light on every branch of agricul-

ture; there certainly must be some element of success wanting in farmers, if, with all these helps, there cannot be more than two or three per cent. made on the capital invested. "The fault is not in our store, but in ourselves." Neither does it seem necessary that there should be so much of hardship and privation as we know there is in farm life. There should be some way that the comfort and independence which all agree in saying will come to the farmer in the end, should bring with it as it comes more of the pleasures and luxuries of life. That it does not, is an acknowledged fact; writers, speakers and editors, all deplore the want of intelligence, refinement and sociability among farmers, and the constant tendency among our young men to leave the farm and engage in other pursuits. When sons and daughters are approaching man and womanhood, and from their infancy have listened to repinings and complaints, and have shared in the hard work of the farm, and have had few of the pleasures and privileges of society, it is too late for parents to imagine how they can make farming attractive to their children. It is the most natural result that they should shun an occupation which has not secured to them a pleasant home, with means for their education and a competency for industrious parents in their declining years.

For the farmer and his family, there are other pleasures than the expenditure of money—there is the consciousness that the income is at the caprice of no employers, there is the pleasure of producing something for the comfort of mankind, and of adding beauty and excellence to a portion of the earth. Many do not see that it is much to be a stockholder in this beautiful earth, to own a part of it; lovely as it is, carpeted with the soft green grass, curtained with golden sunlight, furnished with splendid trees and fruitful vines and fragrant flowers, it is for the skillful hand of men to make it more lovely still, to bring from its rich depths all that is excellent for food or beautiful to behold. It is the one great fault of American farmers that they so ignore the presence of beauty in the arrangement and surrounding of their homes. They fail to learn that beauty and utility may be everywhere combined with pleasing and profitable results. A beautiful house is the admiration of all who behold it; a delight to its possessors.

The farmer who commences the building of home and farm



that is not improved, with very little money, very little time, and still less help, has the means at hand of beautifying that home if he will only think so. As soon as the farm is purchased, the work of adorning it should begin, and should ever keep pace with the other improvements; but he must be contented with a small beginning, and not wait until one hundred trees can be set, or costly shrubbery purchased, but plant ten trees, or five, or one, and set the simplest flowers that may be had almost anywhere for the asking; soon he will see a way to purchase other trees, and raise flowers, and he will work easier and better, and accomplish more, and be all the happier for doing it. Whatever is done for one's home is ever present to be enjoyed by the whole household, and that which brings most true enjoyment pays best. How to invest labor so that it will bring the greatest possible benefits, is quite as much of a problem as how to invest money so that it will bring the greatest per cent., and one on which the farmer, more than any other man, may study upon long and with profit. There must be no waiting for the new house. The Spanish proverb may be fulfilled: "The new house is builded, and the hearse is at the door." It is around the simplest cottage that nature's jewels should be set. If there is one where flowers are most charming, it is when they are brought to adorn some humble abode; the lowliest home may have vines to cover it, bright flowers bloom near it, lovely trees shade it, poets sing about it, and artists picture it upon canvass; but there is a living reality, an ever increasing beauty about it, that no pencil can ever portray. Children will catch the spirit of the loved spot; they will feel better and act better when surrounded with beautiful things. "Fine feelings make fine manners," says Dr. Holland. From these come the refinement; from the culture of the flowers comes the want for knowledge of the mysteries of their life and growth; books and paper must be read to learn this; from these come increased intelligence; next comes a desire for the society of those engaged in the same work; this will cause sociability, and from these come pleasures and improvements in countless ways.

Sons and daughters will become enthusiastic in this delightful work, and one, as he turns the dark soil beneath his feet, will long to know more of its wonderful properties, and of what it is com-

posed. Another will see beauty in the rocks and stones, and wish to know of their formation, or the fragrant flowers and useful plants will so fascinate another that he must learn of their properties and use. As the sweet notes of singing birds have inspired in another, a love for the harmony of sweet sounds and music is ever their theme, with what delight should parents behold in their children their longing for knowledge of the beautiful things with which God has filled the earth; and not till then the worn out story that there is no time on the farm for reading or studying; that farmers need no education, but teach them that all these privileges and pleasures are for them; that they must be physically, morally and intellectually fitted to do a successful life work; to contend with difficulties, make opportunities, control circumstances and create, as it were, homes and fortunes by the labor of their own hands; ever conservative in all that pertains to duty, affection and the right; radical and progressive in all that will make happiness or more beautiful homes, or add excellence or wealth to our country. Children will be interested in farming if parents are. They learn much sooner than we think, what value to attach to their homes and its benefits; they prize the information that comes in books and papers, such as their parents do; they look upon all the sources of improvement in agriculture much as do the older ones of the household. Boys will talk of farmers' clubs and conventions. Girls will be interested in fairs and festivals, and both should share in the several pleasures they create. Just as parents estimate all these things and profit by them, just as they honor their calling, so will their children soon learn to do. We never come so near "seeing ourselves as others see us" as when we see our children reproducing in their lives the thoughts, the principles we have either directly or indirectly taught them. If we have made evident, in the surroundings of our homes, the desire we have for the development of all that is good and lovely in their character, they will grow up to love the beautiful and pure, and they will seek for it in the works of nature, among her secrets and her treasures; they will see attractions in farming that can be found in no other pursuit; they will choose it with delight, and with busy hands will do a better work than we have ever done, or with thinking brain will assist others to work out grander

results than we have ever seen. Slowly, but surely, the useful and the beautiful adornments of nature may be brought to the home of the farmer, and the reward which years of industry will surely give, may add the embellishments of art, till his home will become one of culture, of refinement, of taste, and of elegance; surrounded with verdant fields, where countless flocks will turn his land to gold, with gentle herds resting in coolest shade, with broad acres of waving grain, where reapers ride "like ships at sea," with splendid trees yielding their delicious fruits, with clustering vines loaded with their rich treasures, with busy bees gathering sweets from fragrant flowers, with Pomona's pearls and Flora's gems to deck his table, the farmer's home may be more beautiful to behold, more delightful to possess, than any other costly home can be.

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### HELP ON THE FARM.

BY MRS. H. P. TUCKER, APPLETON.

Man was told that by the sweat of his brow he should eat bread. It might have been added -- for it is no less a fact -- that by the sweat of somebody's brow the bread should be made which man is to eat, and that that brow is woman's. Intellectually and physically, mankind must either wear out or rust out. Labor is not a curse, but a blessing, and it is not my object to entertain you with a list of grievances, or a sum of complaints, but to consider with you how best upon the farm, woman can live so as to be prepared to fill the stations which she always has and always will occupy, the mother of our great men, and their wives.

It may be considered something strange, when we all admit readily that labor is a blessing, and without it civilization would degenerate into barbarism, that we spend the best powers of our life trying to avoid it. We look with envy upon those who are exonerated from its necessity, and have among us those who de-

spise the laborer for the labor's sake, and from a pedestal of shame and inconsistencies, look down upon honest employment, intellectually unfitted as they always are to appreciate either capabilities or necessities. Woman's life upon a farm is not always a pleasant one. It is too often surrounded with grievous cares, and burdens heavy to be borne. We find her at work early and late, verifying the old rhyme—that "Man must work from sun to sun, but woman's work is never done." Reviewing her duties, you are led to conclude that there is no rest for her this side of a life somewhere else, and that her life is as devoid of flowers and as full of weeds as a farmer's garden. I shall not be accused of painting an ideal picture of sunshine and song. You will admit that I have met you with plain truths plainly told, and to the oft repeated assertion "well it can't be helped," I reply, "yes it can be helped." Help, help on the farm, indoors as well as out. It is no pleasant task to meet the objections which I must here encounter. Money settles most of life's questions. Deny it as often as we may, resent it as often as we will, we sooner or later succumb to the almighty dollar. The farmer must have help. The crops must be put in at the proper time. The corn must be hoed. The grain cut and harvested. You would not consider that man wise who did not attend to his crops in their season. Improved farming implements must be purchased. The present outlay will be abundantly returned by the better facilities with which the work can be done. Discretion justifies the investment and it is made. Stock must be improved, yes, and our model farmer pays \$150 for an Ayrshire cow. He may hesitate and consider, but at last meets the urgent demand for improvement. In the end, there is money to be saved, money to be gained. And *we* patiently toil and wait.

It's strange that bread should be so dear, and flesh and blood so cheap. Does the mind need food? We find in every well regulated farmer's home, little ones dependent upon the mother for more than their daily bread. There is that which cannot be estimated in "gain and loss;" that must gain its all from the mother's heart, or lose its all from her neglect. And how can she, wearied with the labor which is only a necessity, gather her children around her, and give them the intellectual care, which it is more necessary she should give them on a farm than in the town. In every way,

the farmer's wife must be more independent than the lady of the city. She is more often and more completely thrown upon her own resources. Her practical hands must do the work of the dressmaker, the milliner and the tailor, in turn, if need be. Shall she be asked to do more? Many farm houses expect to keep help through haying and harvesting, if the girls are not grown up. And they would keep it through the fall work if they "could only afford it, but it does cost so much, and there is neighbor Brighteye, she always does her own work the year round; and husband thinks we must economize, for the taxes are so high this year." Perhaps when the bright millennial years shall come, the taxes will not be so high, but till that time, we may expect to meet them every year with our last dollar.

Help in a farmer's kitchen is not a luxury that may be dispensed with at pleasure. It is a necessity of the life and happiness of every member of the household. But, says one, we can't get the help. Why? Girls do not like to live on farms, there is so much to do. Oh, no, I guess not; there need be no more done there than in the city. Look over the labor of keeping house in the city; its restraints and meaningless formalities, and compare it with the farmhouse as it may be, not as it often is, and the most fastidious will admit its claim to comfort. Do not for a moment suppose that the farmer is always to blame; quite often the wife will tell you the same old, old story of hard times, poor crops, taxes, etc. Orators have declaimed, and poets sung the beauties of pastoral life, and the delicious scents of ripening clover and new mown hay, the variegated shades of tasseled, waving corn, the patient cow, and the golden balls of yellow butter; but truth, which is stranger than fiction, and much more practical, shows the other side of this bright picture, and paints weary limbs and aching heads. You will hear the farmer's daughter decidedly saying she will never marry a farmer, no, not she, and with a careworn, overworked mother ever before her, she is not likely to change her mind. And the farmer boy, strong, able and willing to work his way through life, only waits for his twenty-first birthday, if indeed he waits that long, to emancipate him from distasteful toil, and we find him besieging shop doors for a clerkship, mechanic shops for a situation, or if nothing better

presents itself, driving team in the village streets. There are home adornments, and even luxuries within the reach of the most humble. With a considerate division and apportionment of labor, and last, though by no means least, a way provided by which rest and recreation can be afforded to the whole family, the farm *may* be what it certainly ought to be, the place on earth nearest like that Paradise God placed our first parents in. We have thorns and briers, cold and heat to contend with, but we are compensated by this life among the beauties of nature seen no where else so grandly and so often; living where we read the hidden mysteries of life and death. Let us grow with the growth of our trees, and enlarge our minds as we broaden our acres. We have thrown upon us by God, the responsibility of bringing up our children in such a manner that they may help in the great vineyard, help the wandering and the erring, in the pathway that leads to the beautiful gate; help tender little feet over rough places; help the strong in their strength and the noble in their greatness.

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## SUNLIGHT IN THE HOUSE.

BY S. L. BOARDMAN, AGRICULTURAL EDITOR MAINE FARMER.

This subject is one deserving thought, as it relates directly to the health, and therefore to the happiness of the people.

It would be interesting to show the changes that take place in the constitution of the blood in consequence of the cutaneous vessels on the surface of the body not being freely exposed to the oxygenating and life-forming influence of the sun; how, resulting from this, the fibrine, albumen and red blood-cells become diminished in quantity, and the watery portion increased in volume, thus prostrating the vital strength, enfeebling the nervous energy, and ultimately inducing organic changes in the structure of the heart, brain and muscular tissue, bringing on a long train of dis-

eases and physical suffering—had we the space at command in our columns. We can only refer in a brief way, to a few instances showing the necessity of sunlight to bodily vigor, health and longevity, and that an exclusion of it produces certain sickness and death. Our medical treatises and journals are full of cases showing the results of both these conditions as stated. Humboldt, in the narrative of his voyage to the equinoctial regions, says that both men and women of the Chaymas, whose bodies are constantly inured to the effect of light, are very muscular, possessing physical development remarkably perfect, and that in an observation of five years among many thousands of Caribs, Maysias, Mexican and Peruvian Indians, he did not find a single case of natural deformity. Sir James Wylie, in a report to the Russian Government, stated that in one of the barracks at St. Petersburg, three cases of disease occurred on the dark or shaded side of the building for one on the other, though the apartments in both communicated freely with each other, and the discipline, diet and treatment were in every respect the same.

Many cases are on record where patients have in vain been treated for diseases baffling medical skill, until they have been removed from apartments into which the direct sunlight never came, to those where the person could be exposed as much as possible to the full light of the sun; and the results following such instances—some of which have fallen under our own observation, and many of which enter into the experience of every physician—are so marked as to be almost miraculous. Dr. Hammond, in his treatise on Hygiene, says; “The delirium and weakness which are by no means seldom met with in convalescents kept in darkness, disappear like magic when the rays of the sun are allowed to enter the chamber.” Dr. Forbes Winslow, in writing of the sanitary and physiological influence of light, says: “It is a well ascertained fact that many maladies are more susceptible of amelioration, if not of cure, provided the light of the sun is freely admitted into the rooms or wards where invalids are domiciled.” We may here mention an instance within our own knowledge. We were visiting not long ago in a neighboring city, a family who live in the north tenement of a double house, into which during the longest days of early summer the direct rays of the sun come

for half an hour in the morning and for the same length of time near sunset. This is the only direct sunlight that enters the house. Is it a wonder that in this home the mother has been an invalid for years, the father had a fever seven years in succession, some of the young children have died, and others yet live pale and feeble? And yet all over the land are north tenements just as unfitted to live in, as the one we have mentioned. And aside from the cheerfulness and mental quiet — themselves highly conducive to recovery from sickness — light, (the bright and direct rays of the sun,) has a thermic influence upon the mind and body when prostrated by serious ailments, and acts beneficially by chemically purifying the blood of the patient, as well as the atmosphere of the room he occupies. It is only in certain ophthalmic diseases and a small number of other cases, where it is necessary for the direct rays of the sun to be excluded from the sick room.

The same results that follow from living in dwellings and apartments so situated that the free admission of the sunlight during the forenoon is impossible, also follow from living in one differently located, but too densely shaded by trees. Trees about our houses and in our villages and cities are beautiful objects, affording grateful shade in summer; and acting as conservators of the public health; but when they are so numerous as to exclude the rays of the sun from our living and sleeping rooms, they become a positive source of injury and ill health, and should no longer be tolerated. Hundreds of our country dwellings and our houses in towns are unsuitable for human beings to live in from the presence of too many shade trees, and physicians, in many cases, have ordered them to be cut away, with the same result: that would follow the changing of patients from a shaded to a well lighted room. Even the removal of a few small trees produces wonderful results. In one instance, the windows of a school-room attached to a hospital for orphans were shaded by a few mulberry trees, which after a time were cut away; and the change for the better, in the physical condition of the patients after their exposure to the unimpeded light of the sun, was most marked. Numerous cases of a similar character are on record in our medical annals, from which we could draw largely for purposes of illustra-



tion did we deem it necessary. We are satisfied that in this city and in all our cities and towns, are hundreds of houses, either so situated or so shaded by trees as to be completely unfitted for human habitations, because the sunlight is excluded from living and sleeping apartments. Is not the matter one which should receive attention from municipal authorities and boards of health?

Now, what shall be done about it? Happily there are few places in our state—though in the large cities of this country the same cannot be said—where legislative interference is needed to remedy this evil. Not many years ago, it was computed that in Liverpool between thirty and forty thousand people lived in cellars. As a consequence, the health of the working classes became seriously affected. Legislative measures were adopted for the purpose of declaring such habitations illegal, and those living in them were ejected by the strong arm of the law. In one year nearly five thousand cellars were cleared of twenty thousand inhabitants. In the cities of our country, there are multitudes of such cases that need as stringent measures for relief, but what shall we say of dwellings rated as first class, which are little better fitted for habitation? We say, abandon the north side tenements into which the sun never shines; open the south blinds and put back the curtains; let the direct sunlight enter, for at least four hours every day, all the living and sleeping rooms in the house. If it fades the carpets, take them up; better faded carpets than faded cheeks. Cut down the trees immediately surrounding the house, and as you prize good health and the blessings of existence, remove everything that interferes with the complete action of the energizing influences of the light and sun. Or in the eloquent language of Sir David Brewster: "If the light of day contributes to the development of the human form, and lends its aid to art and nature in the cure of disease, it becomes a personal and national duty to construct our dwelling houses, schools, workshops, factories, churches, villages, towns and cities upon such principles and in such styles of architecture as will allow the life-giving element to have the fullest and the freest entrance, and to chase from every crypt, cell and corner, the elements of uncleanness and corruption which have a vested interest in darkness."

## CO-OPERATION AMONG FARMERS—THEIR GRIEVANCES AND THE REMEDY.

Read before the State Agricultural Convention, February, 1873.

BY HON. M. ANDERSON, CROSS PLAINS.

There is no class of men in this wide world who would be benefited more, or who have such good reasons for being organized and united as the American farmers; particularly those residing at a great distance from the Atlantic markets. They have been robbed of their hard earnings for many years by combinations of almost every kind. The much talked of railroad companies are not the only combinations that are robbing them; railroads are very useful institutions. We want more of them. They are good servants but bad masters. I will name a few of the combinations that farmers have a right to complain of. First, the railroad companies are so organized that they do not compete with each other; but hold secret meetings and agree to parcel out among themselves the whole of the country traversed by railways, so that there will be no competition among them in regard to which company shall fleece the people. Of course there is some rivalry among them in regard to which of them shall have the privilege of performing to them (not to the farmer) that very agreeable duty. I will give an instance of unfair discrimination in which I am somewhat interested. The railroad charges, on live stock from Cross Plains to Milwaukee is, \$38 per car. The same company carries live stock from Monroe to Milwaukee for \$20 per car which is about the same distance. This is only one among hundreds of instances that might be given to illustrate the unfairness of permitting railroads to regulate freights and to discriminate against one town or station and in favor of another.

The freight on a car of cattle from Chicago to New York is at present \$140. That is the minimum, and for all excess of over 30,000 pounds is charged at the rate of 70 cents per 100 pounds. The charges on a double deck car of hogs is \$154. I believe that hogs could be taken by rail from Chicago to New York for \$54

per car instead of 154, as now charged. This would give the company, from \$1,000 to \$1,200 per train, or nearly \$400 per day, but at the present charges, if the train consists of thirty cars of cattle, it would be \$4,200 per train from Chicago to New York. If the train is run at the rate of fifteen miles per hour, it would take two and one half days to make the trip. But count three days, and six men to each train, and count for change of men nine days for each man, of eight hours per day each, which is certainly liberal, and their wages would amount to \$162. Count coal at \$138, which would pay for twenty-five tons; allow for wear of cars and road, salary of officers and interest on capital, and you have \$3,000 left to the company for running a single train from Chicago to New York. Can any honest man believe that such charges are just, or that the people should submit to, or allow themselves to be robbed in this way? Secondly. Another wrong that I think ought not to be submitted to by the farmers, is the present price and manner of selling agricultural implements. We pay double the actual cost of manufacturing, (allowing lawful interest on the capital invested), for farm machinery. I was informed by a reliable man who knows whereof he speaks, that the actual cost of manufacturing a threshing machine with power, is less than \$250. I believe that the agents are willing at present to accommodate the farmers with one at from \$600 to \$700. I venture to say that the best reaper made in the United States, where made in large numbers, costs less than \$75 each. One of those very enterprising reaper gentlemen who holds a special privilege to sell machines, will accommodate you with one of them at \$225. The same ratio of extortion, I believe, extends through nearly all of the machinery and farm implements that we have to buy. A sewing machine that your wife has to pay \$75 for, I am told are put up by the manufacturer, in boxes ready to ship, for less than \$20 each.

The attempt to reduce our currency to a specie basis has already made bankrupts of thousands, and, if the present policy is continued, it will ruin and bring to poverty tens of thousands of farmers in the west, who contracted debts when money was plenty and prices were high, by reason of the difference in value between greenbacks and gold. If gold was now at a premium of from 60

to 80 cents on the dollar, wheat would be worth 50 cents per bushel more than at present; pork would sell for two dollars per 100 pounds higher, and every product of the farm would be increased in price in the same ratio. That is not all. The benefit would be very great to the debtor, enabling him to sell his lands more readily, and for a much higher price than at present.

What is the remedy for all these wrongs? That is the question that the farmers of Illinois have been trying to solve in the large convention that has been held lately in that state. Various remedies were proposed, and discussed with much ability by some of the leading men and farmers of that state. and, as might be expected, with much diversity of opinion. I have mentioned the railroads, the price of and manner of selling agricultural implements, and the attempt to force our currency down to a specie basis. I will now give what I conceive to be the best remedy for these evils.

1st. I would have Uncle Sam take the money that is proposed to be used in buying the telegraph lines, and, if necessary, the money that is proposed to be given agricultural colleges, and if need be, a portion of the land proposed to be given to soldiers, and build a double-track railroad from New York to Chicago, for freight alone. I would have such road built and operated by the government, and have freights reduced to what would be necessary to pay expenses of operating the road and keeping it in repair. I would also favor improvement of the water communications to the seaboard, either by the St. Lawrence river or the Erie Canal. But we should unite all our strength in favor of one improvement first. I believe that such a railroad would be of far more benefit to the west than any improvement of the St. Lawrence river, or Erie Canal, as they are frozen up from five to six months each year, and at the time of year when the farmer in the northwest desires to market his produce. A double-track railroad, with steel rails, could be built by the government cheaper than by a company. They would be able to pay cash for labor and iron, and other materials. It has plenty of engineers, that at present have but little to do, that could be employed in surveying and locating such a road. There would be no watered stock to the amount of \$79,000 per mile, for the shipper to pay interest on, as

at present, besides interest on bonds that were sold at a heavy discount. This is one of the reasons that railroad freights are so high. If railroads were built for cash and no bonds sold for less than par, they could carry freight on the main lines between the west and east, and pay good interest on the capital invested, and charge one-half less freight than they now do.

The legislature of 1872 ought to be censured by the farmers, for not enacting appropriate laws for the organization of a board of railroad commissioners, with power to inquire into all complaints and abuses, as recommended by Governor Washburn. The farmers of Wisconsin, I think, will find that we have a Governor who will do us justice, by executing all just and constitutional laws that our legislature may enact, to protect the people against combinations and monopolies. We must elect men to our legislature who will represent their own, by representing our interests. For many years nearly all of our state and national legislation has been in favor of monopolies and capitalists, and so long as the farmers received good prices for their products, they paid but little attention to what laws were made. But when times changed, so that their crops would not pay for the cost of production, without paying interest on their farms and machinery, and when their farms could not be sold for much more than half their former value, then they began to inquire what was the cause. They are now organizing all over the west, and by the tone of their speeches, and resolutions passed in the conventions lately held in Illinois, we can see that the farmers are at last aroused to a sense of their danger. We should organize in Wisconsin, as they are doing in Illinois, and call upon the farmers in every county in our state, to hold conventions and appoint delegates to state conventions, to be held for the purpose of devising some way to remedy the existing wrongs that the farmers are suffering. I am well aware that there are many men who will say that the farmers cannot unite and organize as other classes of men do. This is the great hope of those who are opposed to farmers co-operating for self defense. I will acknowledge that farmers are very slow to see how they can be benefited by co-operation; and being scattered over a vast extent of country, it is difficult to bring them together and unite them for a common purpose. But this

can and must be done by organizing and establishing granges and clubs in every town in the state. 2d. We should buy our farm implements and machinery as far as possible, direct from the manufacturers, either through farmers' clubs, granges or county agricultural societies. For instance, if the Dane County Society would amend their constitution, so as to make it the duty of the secretary and treasurer to order all machinery and farm implements that the members of the society require, direct from the manufacturers, or other parties that would agree to sell at the same price they do to special agents, a great saving might be made. The fee to the officers of the society for such work, would be trifling. The larger the organization, the more influence will its officers have with manufacturers in making purchases at reduced prices.

I am willing to pay fair prices for all farm implements; but am not willing to pay special agents from 50 to 100 per cent. more than the article costs at the factory. A special agent bargains with the manufacturer to have exclusive control of the sale of any article in certain localities. He operates by charging such prices as he chooses, and you are compelled not only to buy of him, but to pay nearly double what the article cost. Those special agents get hold of the most popular machines, and you cannot buy them of the manufacturer at any price. He will refer you to his special agent. Special agencies are monopolies that give one man the power to extort from others who desire to buy of them. How would the citizens of Dane county feel if one man had the special agency for the sale of all the clothing in the county, or of all the boots and shoes, or the tea and coffee, or the hardware, and they were compelled to purchase, if at all, at prices they chose to exact.

Local agents are not objectionable; they are useful and convenient where their charges are moderate. There should be no special agents. Local agents frequently accommodate farmers with time contracts, upon which the farmer expects to pay higher prices and interest. If farmers would pay cash for what they buy, I think there would be no difficulty in making arrangements with manufacturers, at reduced prices, for all the farm implements desired. There was a convention held in Cleveland, Ohio, a short time ago, of manufacturers of reapers and mowers, and one of the

resolutions they passed was, to punish severely the cutting under in prices. A thorough organization of farmers should exist in every town and county in the state for self defense. Those organizations ought to have not only town and county, but state and national existence. The national society could give the local societies such information as the farmers most need; such as informing them of the crop prospects, not only in this, but also in foreign countries; and what crops would be most likely to pay best the ensuing year. For instance, a failure of the winter wheat crop, by reason of being winter killed, could be made known to all the local societies in the northwest, where spring wheat is most grown. Again, we could have the experience of others in growing new varieties of grain, or other crops, newly introduced machinery and implements. Humbugs could be exposed in time to prevent the members of the society from being swindled. In a word, we could protect ourselves against all combinations.

So far as I know, I believe the Patrons of Husbandry the best organization ever gotten up for this purpose. I understand that it is a social organization, where farmers, their wives and daughters, can meet together, and by the use of the secret ballot exclude evil disposed and unworthy persons. Any organization that will accomplish the reforms which the farmers need, must have not only social, but state and national organizations.

These questions must be discussed until the people are ready to demand of their law-makers to respect the farmer's interests. The questions that should be asked of candidates who wish to represent us in the state or national legislatures should not be as heretofore, about reconstruction or civil service reform, but, what are your views upon cheap transportation to the seaboard? What will you do to relieve the stringency in the money market? What measures will you advocate to relieve the people from the monopolies that are robbing them of their hard earnings? The farmers should unite and propound such questions to every candidate who wishes to represent the *dear people* in the halls of legislation, and should have their unequivocal answers to these questions, or withhold their votes from them. Just so soon as the politicians find that the farmers are united, irrespective of parties, and that, through their organization, they are strong enough to

defeat those who will not pledge themselves to such reforms, they will all declare, as with one voice, gentlemen, we are with you, and at your service.

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## EDUCATION FOR THE FARMER.

Read before the State Agricultural Convention in February, 1873.

BY T. H. EATON, MONROE.

It should be the laudable ambition of every one to elevate the standard of the calling in which he is engaged. There are certain callings, or professions if you please, that always have been considered more honorable than others. I propose in this paper to notice a few of those occupations that have been considered in and of themselves honorable, and to ascertain, if I may be so fortunate, the foundation upon which the honor has been constructed, and if I shall succeed in doing so, I will attempt to draw a practical lesson for those who are engaged in cultivating the soil. In the first place, we learn that the care of the sick, was in the early stages of man's existence, entrusted to the most menial of God's creatures; that to be assigned to the healing art, was as much of a reproach as it was to compel an ancient Isrealite to feed swine. But by association and education, the healing art was soon made, (although attended with more toil, danger and hardship than any other calling that mankind had engaged in,) one of the most honorable occupations known to mankind. By the institution of colleges and the conferring of honorary titles; by the marks of respect shown by the graduates of one institution, for those of another; by the utter contempt of all for ignorant pretenders, the M.D. is justly entitled to be called a member of one of the learned professions. The member of the legal profession too, I believe, has earned his title to honorable, by his perseverance in learning and literature. At the time that the law became a special calling for man, it was customary for a young man to enter



the office of a barrister, serve an apprenticeship of seven years, assist in the work of the office and learn his trade similar in manner as the carpenter and blacksmith learned theirs: there were few books, if any, on the subject of the law, and precedents had to be established and held in the memory for use as occasion demanded them. The law writers that lived before the days of Littleton and Lord Coke must have been of little account. But by acquiring a good education, the foundation upon which to build their legal lore was laid, and by making themselves masters of all the sciences, they became a power in the land to which all others were compelled to pay tribute. But as I see some legal gentlemen present, perhaps I had better take care how I talk about the legal profession.

We might say the same by the clergy; they started in the first place, a few poor, illiterate fishermen, and notwithstanding the hue and cry that has been raised by an ignorant rabble against an educated ministry, see the exalted position they occupy to-day, and all because of the high order of their intellectual attainments. Now, these things being true, what shall we say of the farmer? In the first place we would advocate the necessity for higher intelligence, in order to secure a proper cultivation of the soil. In the next place, we would advise a higher standard of education for the teachers of our common schools. It would, in my judgment, be well to have two commissioners of education appointed in each county, whose duty it should be to assist the county superintendent in the examination and licensing of teachers. Let them be appointed by the judge of the circuit court, so as to remove them as far as possible, from all political influence. I would enforce compulsory attendance on the public schools, by proper legislative enactment, unless it was shown to the proper authorities that the pupil had attended a private school of a standing equal with the public school, for the time specified by law. I would have established in each township containing a given number of inhabitants, a union school district, centrally located, with a high school department, and would cause to be erected at the expense of the town, and within convenient distance of the school building, stabling, sufficient so that all who desired could come with teams and be properly accommodated; for in these days of railroads,

farmers have little or no use for their horses during the winter months, and it would be as well to use them in conveying their children to and from school, as to keep them idle at home.

I would have the school building at the center of the town, and furnished with the necessary apparatus for analyzing the soil, or for making any chemical analysis that would be of use in farm husbandry. In all towns having a maximum taxable valuation, I would have a small portion of land owned by the town in convenient proximity to the center or high school building, which should be used for an experimental farm and garden. I believe, with Thomas Paine, that "every thought that was ever uttered by the ancients, that is worthy of our consideration, has been long since translated into the English language;" I would therefore have no time spent in the study of the dead languages, neither would I have so much time devoted to the higher branches of mathematics as is usually spent in the high schools, but instead, I would have a thorough course in geology, mineralogy, botany, chemistry and political economy. I would also have each student understand at least so much of the civil law as to be acquainted with the rights of *persons* and *things*; I would, if possible, drive the legal profession into higher fields of attainment for a livelihood. It is a sad fact that many a good farmer, for the want of a knowledge of the rights of *persons* and *things*, has spent the earnings of a lifetime getting some one else to define them for him. I would also have every one so well instructed in physiology and the laws of health, that the doctor would be compelled to confine himself to a purely mechanical branch of his profession. As to the clergy, I would give them larger pay and a wider field of labor. I would make theirs and the schoolmasters, the most lucrative callings in the land, thus drawing the best talent we have into the channels of teaching.

I would consider it of as great importance for a farmer to have a good library of well selected books as it is for him to have the necessary tools and implements to cultivate the farm. If there is a newspaper published in the county, the farmer should subscribe for it, read and pay for it in advance. He should also take the best conducted religious journal that he can find published by the society in which he is a believer. Every farmer living in the

States of Wisconsin, Iowa and Minnesota should take the "Western Farmer," not because it is published at our State Capital, but because it is filled with valuable information that comes within the needs and wants of every farmer living in the northwest, and because it is conducted with great energy and ability.

It may be asked, where is the money to come from to do all these things? In answer, let me say there is time enough spent in waiting for the signs of the moon to get right, and loss enough sustained by doing things out of their proper season, to pay for all these things; and further, money in the pocket is of small account compared with knowledge in the head.

If farmers would become intelligent after the manner above indicated, they would become a power in the land. We should hear no more complaint of the middle men affixing the value to the farmers' products, and at the same time making the price of the articles the farmer has to purchase. The Hon. Levi Woodbury, in the year 1844, while discussing the tariff question in the U. S. Senate, estimated that the cultivators of the soil were, at that time, nine out of every eleven of the population of the United States. The estimate was doubtless far too large, but they are largely in the majority in the United States, and they are so distributed that they could, if they had the intelligence to back up their numbers, control the legislation, the commerce and manufactures of the country; and yet with all their numerical strength, they were found to be utterly powerless to retain the *pitiiful* duty of *ten* per cent. on wool when twenty intelligent manufacturers asked for its reduction.

In the remarks that I am now about to make, I take the precaution to except the twenty or thirty honorable members that represent the farming interest in this capital at this time, as well as the gentlemen that have added brilliancy to the history of the past from my own county. The general rule of electing farmers to office, especially legislative offices, is after this manner. The politicians of a given locality, having a large number of axes to grind, put their heads together and select one of the most *obscure* individuals they can find living on a farm, and put him in nomination; then the editor and the men of *brains* in the county go to work and make him believe that he is the *greatest* statesman in

all the land, and at the same time make the farmers *believe* that they are running the concern. Of course, these politicians ask the passage of a few laws in their special interest, which the *farmer* statesman is in duty bound to vote for. The balance of the business is transacted by those owning the brains of the concern, in the interest of the dear people.

If the farmer possessed a greater degree of intelligence, he would be able to produce a larger amount of produce from a less quantity of land than he now does; he would be able also to know what kinds of products would be in the greatest demand and would reward him best for his labor; he would know what season of the year was best to dispose of his surplus products, and in what shape to dispose of them. The habits that he would acquire in his higher order of education would enable him to do everything in the right time and in the best manner, thus giving him a greater reward for the time engaged, and at the same time affording him a greater amount of leisure to enjoy the fruits of his doings.

I would advocate this system of thorough home education, because having spent my entire life on the frontier, where it was a necessity for parents who wished to give their children a good education to send them out from under the paternal roof, at that period in life when they were in the most need of parental guidance, and when the mind was the easiest allured from the paths of rectitude. I have observed the evils which attend an education abroad. From my own observation of those who have been liberally educated, nine out of every ten have proved a total wreck, in consequence of habits formed while at college, separated from the moral and social influences of home. If we cannot accomplish all these things, let us labor in the right direction, doing what we can, so that the farming interest and the world at large may be better for our having lived in it.

# UNIVERSITY FARM.

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REPORT OF PROF. W. W. DANIELLS,

TO THE BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN.

Experiments upon the University Experimental Farm for the year ending October 31, 1872, together with the Meteorological Observations taken at the University.

## CHARACTERISTICS OF THE SEASON.

The success of operations in the various departments of agriculture, and especially the success attending the completion of a system of farm experiments, are so directly dependent upon the climatic conditions of the season, that I have thought best to preface this report with some of the characteristics of the past year. The fall of 1871 was unusually dry, there being but twelve days from September 1st to November 30th, upon which either rain or snow fell. This want of rain rendered the usual amount of fall plowing impossible. On this account, farmers were not as well prepared as usual for early sowing their spring crops. The winter months were steadily cold and dry, the average temperature for the three months being  $16^{\circ} 6'$ , and the entire amount of rain (with melted snow,) was but 2.75 inches. Sleighing continued without intermission, from November 28th to March 1st. In the open field, March 1st, the ground was frozen to a depth of only eighteen inches. The protection furnished to winter wheat by the snow, was very favorable to that crop, and doubtless accounted largely for the excellent yield throughout the state, the past harvest. The spring was late and cold. Upon a naturally dry soil on the University Farm, it was impossible to sow grain before April 30th. Throughout the state, spring wheat, barley and oats were sown

unusually late. Corn was generally planted in good season ; but the small amount of rain-fall during the fall and winter following the dry summer of 1871, left the soil in poor condition to withstand the drought which began nearly as soon as crops were planted, and continued until September 22d. This drought, although quite general throughout the state, seemed to be more severe upon a territory having its centre near Madison, with a radius of about fifteen miles.

My journal during the summer is composed mostly of such entries as the following: "July 1st, very dry." "July 13th, crops suffering badly from drouth. Oats, barley and spring wheat much worse on account of late sowing. Potato-oats will be an entire failure." "July 17th, still drier. Corn badly rolled. Beet-tops lie flat upon the ground," etc. The light grain and small yield of our crops are a sufficient comment upon the serious effect of this long, dry period.

Dr. I. A. Lapham has kindly furnished me with the rain-fall at Milwaukee, as recorded by the U. S. Signal Service. The following table gives the amounts of each month from May to August inclusive, for Milwaukee and Madison :

	May.	June.	July.	August.	Total.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
Milwaukee .....	3.11	3.67	2.05	1.89	10.72
Madison.....	2.83	2.44	1.26	2.24	8.77

Milwaukee received nearly one-fourth more rain during these months than fell at Madison.

More than six-tenths of all the winds observed at this point for the past four years, come from the southwest, west, northwest and north. From all these directions, the wind must pass for a great distance over regions comparatively dry, and as has been shown by the U. S. Signal Service, winds even reach us that have passed over the vast mountain ranges west of the plains. All such winds must necessarily come to us as dry winds. In my opinion, we must expect the climate of our state to be dry. From its location,

and the nature of the surface of the country from which we receive our winds, droughts will prevail frequently. It is then a question of importance how to till our lands that the evil effects of these dry periods may be averted. That this may be done, I am confident. The remedy lies in a better system of farming. Deep and rich soils are less seriously affected by long dry periods. In deeper and more thorough tillage, in keeping the soil more fertile by a judicious rotation of crops, and by a more frequent application of manures, will be found a general remedy for the dry summers so frequent in this state.

#### EXPERIMENTS.

##### *Winter Wheat.*

*Fultz Winter Wheat.*—A new variety of winter wheat originated by Abram Fultz, of Pennsylvania, and distributed by the Department of Agriculture at Washington in 1871. One and three-fourths bushels, weighing 60 lbs. per bushel (sample 15), were sown September 18th, upon 1 acre and 25 square rods of land. Soil was light clay loam, upon which wheat had been grown the previous year, and was plowed to a depth of 7 inches. The soil at the time of sowing was very dry, so that a portion of the seed did not germinate until after the rain of October 10th. December 5th, one-half of the plat was mulched with stable manure, upon six inches of snow. May 1st, the wheat generally looked well. A few places having each an area of 10 to 20 square feet were entirely dead. As these places were confined to the heaviest mulched portion, the killing was attributed to too heavy mulching. Harvested July 10th to 12th. Weight of straw and grain (taken when drawn from the field), 7,105 lbs. Weight of grain, 2,346 $\frac{3}{4}$  lbs. Per centage of grain to weight of straw and grain, 33. One bushel weighs 61 lbs. Yield per acre, 33.5 bushels. One pound seed yields 22 $\frac{1}{2}$  lbs. This is a bald variety of wheat, having a stiff, strong straw, that this year was clean and bright with a slightly brownish red color, extending below the head a few inches. The grain is light red in color, the berry short and plump. The color of the grain raised is slightly darker than that of the seed sown. Scattering heads of what appeared as two distinct bearded

varieties were taken out while the grain was standing. The grain from these bearded heads was kept separate from the bald, although the yield of both varieties is included in the above results. A portion of the ground upon which this grain was grown was protected by a belt of timber upon the west side, but at no time in its growth, could difference be detected between the protected and unprotected portions. The unmulched portion, although not weighed separately, was fully as good as that which was mulched.

So far as one year's experience can assure the success of a new variety of grain in this climate, is the success of the Fultz winter wheat assured for Wisconsin. By its side, and with equally favorable conditions, were sown the White Winter Touzelle, Red Winter Saissette and Treadwell varieties, which all winter killed so entirely that the land was sown to other crops. The killing was doubtless done by the thawing and freezing of early spring, as the ground was well covered with snow during the winter. But the Fultz was subjected to the influences that destroyed the other varieties, and yet succeeded well. On this account, I have great faith that it will prove valuable as a hardy variety of winter wheat in this state.

*White Winter Touzelle Wheat.*—The seed of this variety was first furnished us by the Government Department of Agriculture in 1869. It has a large berry, and is a very white wheat as grown in France, from which country the seed was brought. In 1869, the crop was winter killed entirely. It was again sown in 1870, and mulched at the rate of twenty loads of coarse litter to the acre, and yielded 23.38 bushels per acre, the grain weighing 59 3/4 lbs. to the bushel. It was again sown in the fall of 1871, and again winter killed entirely. We are again trying it upon a small plat, but I have little hesitation in saying that it is not sufficiently hardy to prove worthy of general cultivation in this state.

*Red Winter Saissette Wheat.*—The seed of this wheat was also furnished by the Department of Agriculture. It was first sown upon the University farm in 1870. The crop was that year protected by a heavy mulching, and as stated in my report of last year, yielded 22 bushels per acre. It was again sown last year,



and killed entirely. It is a French variety, and not sufficiently hardy for our climate.

*Treadwell Winter Wheat.* — This variety, so well known as a valuable and hardy variety in Michigan, was first sown upon the University Farm in 1869, upon land partially protected by a belt of timber from the west winds. One-half the ground was mulched, the remaining half unmulched. The mulched portion yielded eleven bushels per acre, the unmulched six and one-half bushels, being badly winter killed where not thoroughly protected. In our trial of this variety the past year, it again winter killed so entirely as to show that it is not sufficiently hardy for cultivation here. In the Baraboo valley, and in some other timbered portions of the state, these varieties might possibly prove sufficiently hardy. But for all localities where the conditions of soil and climate are similar to those of Dane county, our experience with White Winter Touzelle, Red Winter Saissette and Treadwell varieties for three years will warrant the statement that they are too tender to withstand the severity of our winters.

There are now in cultivation upon the University Farm, the following varieties of winter wheat: "Fultz." A bearded variety selected from "Fultz." "Tappahannock." "Arnold's Hybrid, No. 9." "White Winter Touzelle," and "Diehl."

#### *Spring Wheat.*

To test the value of different amounts of seeds to the acre, eight adjacent plats of  $\frac{1}{4}$  acre each, were sown April 30th, to Mammoth Red Spring Wheat, raised upon the University Farm in 1871, as follows:

Plat 1. One bushel seed to the acre, 8 qts., 15 lbs. Harvested July 26th. Weight of straw and grain, 938 lbs. Weight of grain 200 1-2 lbs. Weight of one bushel, 54 lbs. Yield per acre, 13 1-3 bushels. Percentage of grain to weight of straw and grain, 21.37. One pound seed yields 13 1-3 lbs.

Plat 2. One and one-fourth bushels seed to the acre. Harvested July 25th. Weight of straw and grain, 1,084 lbs. Weight of grain, 234 lbs. Weight of one bushel, 56 lbs. Yield per acre, 16 1-5 bushels. Percentage of grain to weight of straw and grain, 22.41. One pound seed yields 12.96 lbs.

Plat 3. One and one-half bushels of seed to the acre. Harvested July 25th. Weight of straw and grain, 822 lbs. Weight of grain, 201 3-4 lbs. One bushel weighs 56 1-2 lbs. Yield per acre, 13.45 bushels. Percentage of grain to weight of straw and grain 24.54. One pound of seed yields 8.96 lbs.

Plat 4. One and three-fourths bushels of seed to the acre. Harvested July 25th. Weight of straw and grain, 704 lbs. Weight of grain, 190 1-2 lbs. One bushel weighs 56 1-2 lbs. Yield per acre 12.7 bushels. Percentage of grain to weight of straw and grain, 27. One pound of seed yields 7 1-4 lbs.

Plat 5. Two bushels of seed to the acre. Harvested July 25th. Weight of straw and grain, 790 pounds. Weight of grain, 218 1-4 pounds. One bushel weighs 57 1-2 pounds. Yield per acre, 14.55 bushels. Percentage of grain to weight of straw and grain, 27.6. One pound of seed yields 7 1-4 pounds.

Plat 6. Two and one-fourth bushels of seed to the acre. Harvested July 25th. Weight of straw and grain, 670 pounds. Weight of grain 174 pounds. One bushel weighs 58 pounds. Percentage of grain to weight of straw and grain, 25.97. One pound of seed yields 5 1-6 pounds. Yield per acre, 11.6 bushels.

Plat 7. Two and one-half bushels seed to the acre. Harvested July 25. Weight of straw and grain, 728 pounds. Weight of grain, 216 1-4 pounds. One bushel weighs 59 1-2 pounds. Yield per acre, 14.4 bushels. Percentage of grain to weight of straw and grain, 29.7. One pound seed yields 5 3-4 pounds.

Plat 8. Two and three-fourths bushels of seed to the acre. Harvested July 25th. Weight of straw and grain, 750 pounds. Weight of grain, 238 pounds. One bushel weighs 59 1-2 pounds. Yield per acre, 15 7-8 bushels. Percentage of grain to weight of straw and grain, 31.73. One pound seed yields 5 3-4 pounds.

The following table shows the results of this experiment for the years 1871 and 1872:

Bush. of seed to the acre.	Weight of Straw and Grain.		Weight of Grain.		Weight per Bushel.		Yield per Acre.		Per cent. of Grain to weight of Straw and Grain.	
	1871	1872	1871	1872	1871	1872	1871	1872	1871	1872
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	bush.	bush.		
1 $\frac{3}{4}$ .....	820	.....	263	.....	60 $\frac{1}{2}$	.....	17.53	.....	32	.....
1 1 $\frac{1}{4}$ .....	899	938	297 $\frac{1}{2}$	200 $\frac{1}{2}$	60 $\frac{3}{8}$	54	19.83	13.33	33	21.37
1 1 $\frac{3}{4}$ .....	1,146	1,084	332	243	60	56	22.18	16.20	29	22.41
1 2 $\frac{1}{4}$ .....	1,340	822	396	201 $\frac{3}{4}$	60 $\frac{1}{2}$	56 $\frac{1}{2}$	26.16	13.45	29	24.54
1 2 $\frac{3}{4}$ .....	1,330	704	375	190 $\frac{3}{4}$	60	56 $\frac{3}{4}$	24.75	12.7	28	27
2 $\frac{1}{4}$ .....	1,412	790	455 $\frac{1}{2}$	218 $\frac{1}{2}$	60 $\frac{1}{2}$	57 $\frac{3}{4}$	30.33	14.5	32	27.6
2 $\frac{3}{4}$ .....	.....	670	.....	174	.....	58	.....	11.6	.....	26
2 $\frac{3}{4}$ .....	.....	728	.....	216 $\frac{1}{4}$	.....	59 $\frac{3}{4}$	.....	14.4	.....	29.7
3 $\frac{3}{4}$ .....	.....	750	.....	238	.....	59 $\frac{1}{2}$	.....	16.87	.....	31.5

By reference to this table it will be seen that in 1871, the yield per acre increased (except plat 5, which was more badly laid than the other plats), as the seed was increased from three-fourths to two bushels per acre, while the yield in 1872 seems to bear no relation to the amount of seed sown. The maximum yield is given by one and one-fourth bushels of seed; next the maximum by two and three-fourths bushels, and the minimum by two and one-fourth bushels to the acre. No reason can be given for this want of uniformity in the results, unless it may be attributed to the severe drought of the past summer. Nor is it plain why each plat should not have been affected alike, as they lay adjacent and nearly upon the same level.

The Department of Agriculture at Washington sent to the University one bushel of Mammoth Red spring wheat, grown in Illinois. This wheat was sown by the side of plats 5 and 6, in the above experiment, to test the value of seed brought from another locality. One bushel of seed weighed 56 lbs. Sample 16. Sown May 1st; harvested July 26th. Weight of straw and grain, 1,276 lbs. Weight of grain, 230 1-2 lbs. One bushel weighs 56 1-2 lbs. Yield per acre, 10.68 bushels. Percentage of grain to weight of straw and grain, 25.12. One pound of seed yields 5.7 lbs.

Plat 5, in the experiment with the different amount of seed to the acre, has all its conditions the same as this experiment, except that it was sown one day earlier, and the seed was from wheat that had been raised for several years in succession in this vicinity, and for three years upon this farm. The results upon equal areas are as follows:

Seed raised.	Weight of Straw and Grain.	Weight of Grain.	Weight per bushel.	Yield per acre.	Per cent. of Grain to weight of Straw and Grain.
	Lbs.	Lbs.	Lbs.	Bush.	
In Illinois.....	1,276	320½	56½	10.68	25.12
Upon University Farm	1,532	436½	57½	14.5	27.6

The grain grown from the Illinois seed appears slightly darker than that from seed raised at home.

*White Australian Spring Wheat.* — A sample of this variety was received from the Commissioner of Agriculture in 1871, from which a few quarts were raised. Four quarts of seed were also received from the same source in 1872. The seed distributed by the Commissioner was grown in Oregon from seed imported from Australia. It is a very white wheat with a short, plump berry. The wheat raised here in 1871 was darker and not as plump as the seed sown. One-eighth of an acre was sown each to seed raised upon the University Farm in 1871, and to that directly from Oregon, May 2, 1872. The severe drouth ruined both plats, the former yielding 41lbs. and the latter 11lbs. of badly shrunken grain. Judging from our limited experience with this variety, it will hardly prove valuable in a climate subject to as great extremes as that of Wisconsin.

*April Spring Wheat.* — Seed imported from Scotland by Alex. Findlay, Esq., of Madison. A dark red wheat, weighing sixty pounds to the bushel. Sample 19. One eighth of an acre was sown May 8th, with 1 peck of seed. Harvested July 26th. Weight of straw and grain, 298 pounds. Weight of grain, 65 1-2 pounds. One bushel weighs 52 1-2 pounds. Yield per acre, 8 3-4 bushels.

Grain badly shrunken. The seed was received late, which accounts for the late sowing.

### *Barley.*

*Probsteier Barley.*—Two plats of this variety were sown, one with seed raised upon the University Farm in 1871, from seed imported from Hamburg by the Department of Agriculture at Washington, the other with seed directly from Hamburg, furnished by the Agricultural Department. Both plats were one-eighth of an acre in area, and were sown May 2d.

Plat 1. Seed raised upon University Farm. 8 1-2 pounds seed. Harvested July 18th. Weight of straw and grain, 480 pounds. Weight of grain, 119 1-4 pounds. One bushel weighs 43 1-2 pounds. Yield per acre, 19 8-9 bushels. Percentage of grain, to weight of straw and grain, 24.83. One pound seed yields 14 pounds.

Plat 2. Seed from Hamburg, 9 pounds. Harvested July 20th. Weight of straw and grain, 434 pounds. Weight of grain, 139 1-2 pounds. One bushel weighs 44 1-4 pounds. Yield per acre, 23 1-4 bushels. Percentage of grain to weight of straw and grain, 32.16. One pound seed yields 15 1-2 pounds.

*Manshury Barley.*—Seed from H. Grunow, Esq., Mifflin, Iowa county, Wis. A six rowed variety, sample 21. One-eighth acre sown to 14 pounds seed, May 2d. Harvested July 15th. Weight of straw and grain, 464 lbs. Weight of grain, 196 1-4 lbs. One bushel weighs 42 lbs. Yield per acre, 32.7 bushels. Percentage of grain to weight of straw and grain, 42.27. One pound seed yields 14 pounds.

Mr. Grunow claims that this is the best of all varieties of barley for general culture, he having tried it since 1862. It is earlier than other varieties grown by us, and promises well.

*Saxonian Barley.*—Seed raised upon University Farm in 1871, from seed imported from Saxony by the Department of Agriculture. Forty-two pounds (24 3-4 quarts) were sown upon a plat containing 65 1-2 square rods, May 2d. Harvested July 18th. Weight of straw and grain, 1,682 lbs. Weight of grain, 582 1-4 lbs. One bushel weighs 45 lbs. Yield per acre, 22 1-5 bushels.

Percentage of grain to weight of straw and grain, 34.62. One pound seed yields 13.8 pounds.

*Chevalier Barley*.—This variety was first obtained in 1870, of the Commissioner of Agriculture, by whom it was imported from Scotland. Two bushels and six quarts, weighing 46.4 lbs. per bushel, were sown May 9th, upon a plat containing 175 square rods. Harvested July 22d. Weight of straw and grain, 3,460 lbs. Weight of grain, 854 1-2 lbs. One bushel weighs 41 1-2 lbs. Yield per acre, 16.27 bushels. Percentage of grain to weight of straw and grain, 24.7.

Another plat of one-eighth acre was sown at the same time, with 15 lbs. seed of the same variety, imported from Scotland by Alexander Findlay, Esq. Harvested July 26th. Weight of straw and grain, 420 lbs. Weight of grain, 115 1-2 lbs. One bushel weighs 39 lbs. Yield per acre, 19 1-4 bushels. Percentage of grain to weight of straw and grain, 27.5.

This experiment, as well as those with Mammoth Red Spring Wheat and White Australian Spring Wheat, that were sown both with seed raised here and in other localities, lead to the conclusion that grain that has become partly or completely acclimated here, can withstand severe drought better than seed of the same variety recently introduced from other sections.

"Common" Barley.—A Scotch variety, imported by Alexander Findlay, Esq., of whom the seed was obtained. The sample sown was composed of large, well-filled kernels, and had the appearance of a superior variety. Twelve pounds were sown May 8th, upon a plat containing one-eighth acre. Harvested, July 15th. Weight of straw and grain, 420 pounds. Weight of grain, 112 1-4 pounds. One bushel weighs 38 1-2 pounds. Yield per acre, 20.6 bushels. Percentage of grain to weight of straw and grain, 26.7. One pound of seed yields 9 1-3 pounds.

#### Oats.

Comparison of different varieties:

*Black Norway Oats*.—One-fourth acre; sown May 3d, with 20 quarts, 19 1-2 pounds. Harvested July 27th. Weight of straw and grain, 506 pounds. Weight of grain, 149 pounds. One bushel weighs 28.4 pounds. Yield per acre, 18.6 bushels. Per-

centage of grain to weight of straw and grain, 29.44. One pound of seed yields 7 5-8 pounds.

*White Norway Oats.*—One-fourth acre sown in May with 20 quarts, 21 1-2 pounds. Harvested July 18th. Weight of straw and grain, 566 pounds. Weight of grain, 157 1-2 pounds. One bushel weighs 30 pounds. Yield per acre, 19.7 bushels. Percentage of grain to weight of straw and grain, 27.82. One pound seed yields 7.7 pounds.

*Surprise Oats.*—One-fourth acre sown May 3d, with 20 qts., 23 1-2 lbs. Harvested July 16th. Weight of straw and grain, 604 lbs. Weight of grain, 190 1-2 lbs. One bushel weighs 32 1-2 lbs. Yield per acre, 23.8 bushels. Percentage of grain to weight of straw and grain, 31.37. One pound seed yields 8.1 lbs.

*Common Oats.*—One-fourth acre sown May 3d, with 20 qts., 20 3-4 lbs. Harvested July 23d. Weight of straw and grain, 680 lbs. Weight of grain, 259 lbs. One bushel weighs 28 lbs. Yield per acre, 32.4 bushels. Percentage of grain to weight of straw and grain, 38.09. One pound seed yields 12.5 lbs.

*Probsteier Oats.*—One-fourth acre sown May 3d, with 20 qts., 20 lbs. Harvested July 23d. Weight of straw and grain, 764 lbs. Weight of grain, 270 lbs. One bushel weighs 30 lbs. Yield per acre, 33 1-4 bushels. Percentage of grain to weight of straw and grain, 35.34. One pound seed yields 13 1-2 lbs.

*Potato Oats.*—One-fourth acre sown May 3d, with 20 qts., 21 3-4 lbs. Harvested August 7th. Weight, 360 lbs. This variety scarcely headed out, and matured no grain.

*White Schonen Oats.*—One-fourth acre sown May 3d, with 20 qts., 18 3-4 lbs. Harvested July 27th. Weight of straw and grain, 616 lbs. Weight of grain, 217 1-4 lbs. One bushel weighs 28 1-2 lbs. Yield per acre, 27 1-6 bushels. Percentage of grain to weight of straw and grain, 35.26. One pound seed yields 11.6 lbs. In 1871, a mixture of equal parts of Black Norway, White Norway, Surprise and common oats were sown. One-fourth of an acre was sown to the product of this mixture, May 4, 1872, 20 qts., 21 lbs. Weight of straw and grain, 794 lbs. Weight of grain, 202 1-2 lbs. One bushel weighs 30 lbs. Yield per acre,

25.3 bushels. Per centage of grain to weight of straw and grain, 25.5. One pound seed yields 9 5-8 lbs.

*Birlie Oats.*—A new variety imported from Scotland by the Commissioner of Agriculture, of whom the seed was obtained. Fourteen quarts, weighing 16 3-8 lbs., were sown May 4th, upon a plat containing 28 square rods. Harvested August 2d. Weight of straw and grain, 386, lbs; weight of grain, 68 1-2 lbs. One bushel weighs 28 1-2 lbs. Yield per acre, 13.1 bushels. Per centage of grain to weight of straw and grain, 17.75. One pound of seed yields 4.2 lbs.

*Bohemian Oats.*—A variety without hulls. Twelve quarts, weighing 13 1-2 lbs., were sown May 4th, upon a plat containing 21 1-5 square rods. Harvested July 16th. Weight of straw and grain, 398 lbs. Weight of grain, 84 lbs. One bushel weighs 28 lbs. Yield per acre, 19.8 bushels. Per centage of grain to weight of straw and grain, 21.1. One pound seed yields 6 1-5 lbs.

The following table contains the results of this experiment :

VARIETY.	Time of harvesting.	Weight of straw and Grain.	Weight of Grain.	Yield per acre.	Weight per bu.
		Lbs.	Lbs.	Bush.	Lbs.
Black Norway .....	July 27	506	149.0	18.6	28.4
White Norway .....	July 18	566	157.5	19.7	30.0
Surprise .....	July 22	604	190.5	23.8	32.5
Common .....	July 23	680	259.0	32.4	28.0
Probsteier .....	July 23	764	270.0	33.2	30.0
Potato .....	Aug. 7	360	.....	.....	.....
White Schonen .....	July 27	616	217.2	27.16	28.5
Mixed .....	July 20	794	202.5	25.3	30.0
Birlie .....	Aug. 2	386	68.5	13.1	28.5
Bohemian .....	July 16	398	84.0	19.8	28.0

The Potato Oats have never done well with us, and this year were wholly ruined by the dry weather. In my opinion they have been fairly tried, and are not worthy of further cultivation. Two adjacent plats, containing 112 square rods each, were sown to Surprise Oats May 24th. The seed upon one of these plats was well cleaned from chaff and light grain, that upon the other was sown as taken from the bin.



*Plat 1.* Seed uncleaned, 54 quarts weighed  $62\frac{1}{2}$  lbs. Harvested August 2d. Weight of straw and grain, 1,556 lbs. Weight of grain,  $342\frac{1}{2}$  lbs. One bushel weighs 25 lbs. Yield per acre, 15.3 bushels. Per centage of grain to weight of straw and grain, 22. One pound seed yields 5.48 lbs.

*Plat 2.* Seed cleaned, 54 quarts weighed  $66\frac{3}{4}$  lbs. Harvested August 3d. Weight of straw and grain, 1,764 lbs. Weight of grain,  $391\frac{1}{2}$  lbs. One bushel weighs 25 lbs. Yield per acre, 17.5 bushels. Per centage of grain to weight of straw and grain, 25.19. One pound seed yields 5.9 lbs.

This is the second year's trial of this experiment. The results of the two years compared are as follows:

SEED.	Weight of seed per bushel.		Weight of product per bushel.		Yield per acre.	
	1871.	1872.	1871.	1872.	1871.	1872.
Uncleaned....	$27\frac{1}{4}$ lbs.	37 lbs.	$33\frac{1}{2}$ lbs.	25 lbs.	$43\frac{3}{4}$ bu.	15.3 bu.
Cleaned.....	30 lbs.	39.5 lbs.	$35\frac{1}{2}$ lbs.	25 lbs.	$48\frac{1}{4}$ bu.	17.5 bu.

### Corn.

*Comparison of varieties.*—Five adjacent plats, each containing one-fourth acre were planted with different varieties as given below. The land was uniformly cultivated, but the plat upon which the Dutton variety was planted, was not in as good condition as the remaining plats. Corn planted in rows 4x4 feet, 4 kernels to the hill, May 23.

VARIETY.	Yield of plat.	Yield per acre in bushels of ears of 75 lbs. each.
Cherokee.....	974 pounds ears.	51.9
Early Yellow Dent.....	978 pounds ears.	52.1
White Australian.....	1,138 pounds ears.	60.7
Sanford*.....	.....	.....
Dutton.....	602 pounds ears.	32.2

\* Seed did not germinate.

The Sanford corn has never been a prolific variety as cultivated upon the University Farm, and has universally been the latest variety to ripen. In 1871, it was planted May 12th, and harvested

September 5th, to prevent its being killed by frost, although not sufficiently ripe for seed, saved with the same care as that of the other varieties, to germinate.

The White Australian yields considerably more than the other varieties, as it did in 1871, and is earlier than Cherokee or Dutton.

In the experiment on improvement of soils by mechanical means, the Cherokee and Early Yellow Dent varieties are again compared. In that experiment two acres of each variety were grown under similar conditions, yielding per acre as follows:

Early Yellow Dent, 49.1 bushels of ears of 75 lbs. each.

Cherokee, 51.4 bushels of corn, of 75 lbs. each.

*Cooley's Early White Field Corn.*—A new variety of corn, "originated, and introduced by Mr. C. C. Cooley, of Manchester, Adams county, Ohio, to the public in 1870." The seed was distributed by the Commissioner of Agriculture in 1872. The Commissioner's circular says, "It is believed that this corn will supply a great want, both in the northern and southern states, by furnishing a variety which will ripen in the former, before the season for early frosts, and in the latter, before the summer drought sets in."

One quart of seed was planted May 16th, upon a plat containing 23 square rods. Soil, light clay loam, in good condition. Rows, 4 feet apart, hills 3 feet in row, 4 kernels to the hill. August 30th, fifteen weeks after planting, a few of the earliest ears were sufficiently ripe for picking. Ripened September 5th, one week later than "Blue Australian," cultivated adjacent. Weight of ears, 172 pounds. Yield per acre, 16 bushels ears of 75 pounds each. The ears of this corn are short, and not well filled out at the tips. Kernels short, with slight indentation. An average sized ear had in the middle, a diameter of 1.7 inches. The diameter of the cob at the same place, was 1.2 inches. This corn might yield better when the drought was less severe, but it had with us this year none of the characteristics of an early variety.

*Blue Australian Corn.*—(Blue kernels selected from White Australian). Planted May 16th, upon a plat of the same size, and adjacent to "Cooley Corn." Ripe Aug. 31st. Weight of ears, 356 lbs. Yield per acre, 33 1-5 bushels of 75 lbs. each. The ears upon this plat contained a large proportion of blue kernels, show-

ing how rapidly so unimportant a characteristic as color in corn, may be changed.

*Mexican Dent Corn.*—A sample of this variety was planted May 20th, and ripened August 28th. 52 lbs. of ears were harvested. The plat was too small to make reliable estimates of the yield per acre. It is an early variety, but has no other qualities that especially recommend it for cultivation. In the experiments with the same amount of seed planted on a given area, but at different distances apart, that with seed sown early and late, and that with seed from tips, middle and butts of ears, were so badly injured by blackbirds, as to render the giving of quantitative results impossible. It was estimated that at least one-fourth of the crop was destroyed. There was no perceptible difference in the time of ripening, of that planted with the earliest ripening seed, from that planted with seed selected at the time of harvesting.

*White Silesian Sugar Beet.*

Seed obtained of the United States Commissioner of Agriculture. A piece of ground containing 3,800 square feet, was sown May 9th, by Holbrook's Patent Regulator Seed Drill, in rows 2 1-2 feet apart. The land was a light, clay loam, and was trench plowed to a depth of 18 inches. Thirty bushels of wood ashes were sown upon the land before harrowing. No other fertilizers were used. A portion of the seed, washed out by rain, was re-sown May 16th. May 31st, the earth was loosened about the plants with hoes. June 8th, the plants were thinned to six inches apart. June 20th, hoed again, drawing the earth slightly about the crown of the plants.

The severe drought checked the growth of the plants during the summer. After sufficient rain fell, the roots grew rapidly until October 10th, when the severe frost checked further growth. At this time the roots were not fully mature, as was shown by their freshly cut surface turning red when exposed to the air. Harvested October 14th. Weight of roots, 2,470 lbs. Yield per acre, 14 tons, 300 lbs. The roots were nearly all of medium size. The yield can be greatly increased by preparing the land the year before, as deep culture is necessary to a large yield.

On account of the late date of receiving the apparatus, and the

demands upon my time in teaching, I have not yet been able to analyze these beets, or estimate the amount of sugar they contain. I shall do so at the earliest possible moment, and report upon them.

*Silver Hull Buckwheat.*

Hon. Frederick Watts, Commissioner of Agriculture, who furnished us with seed, says of this variety: "This is said to be a great improvement on the old kinds of Buckwheat in general cultivation, being earlier and more productive. The flour is of superior quality, and it is said the grain will yield from three to five pounds more to the bushel than other varieties."

Eight quarts of seed, weighing 13 lbs., were sown June 28th, upon 72 square rods of ground. The growth was very slow on account of dry weather. Harvested September 30th, not fully ripe. Weight of grain, 526 1-2 lbs. Yield per acre, 27 7-8 bushels. One bushel weighs 46 1-2 lbs. The yield would have been larger had it been fully ripe. It was necessary to harvest the grain when we did, to prevent killing by frost. The quality of the flour, or the amount that a bushel of the grain yields has not been tested.

*Potatoes.*

The following varieties have been in cultivation:

VARIETY.	Yield per acre.	Remarks.
	<i>Bushels.</i>	
Early Goodrich. ....	60.3	A fair variety.
Santo Domingo. ....	36.4	Worthless.
Excelsior. ....	90.0	Early. Fair.
Vandervere. ....	57.9	Not worthy of cultivation.
Early Shaw. ....	73.0	Good.
Buckeye. ....	114.0	Yields well. Quality poor.
Philbric's Early White. ....	25.2	Worthless.
Harrison. ....	101.7	Good.
White Rose. ....	100.9	Yields well. Quality poor.
Early Rose. ....	99.9	Excellent.
Calico. ....	39.2	Poor.
Shaker's Fancy. ....	42.3	Worthless.
Wisconsin Seedling. ....	23.3	Worthless.
Peerless. ....	92.0	Excellent as a late variety.
Andes. ....	16.8	Worthless.
Titicaca. ....	31.6	Worthless.
Early White Peachblow. ....	68.5	Not good.
Kackelhoffer. ....	46.6	Medium.
Forfarshire Red. ....	55.6	Medium.
Peachblow. ....	57.2	Good.

The dry weather seriously affected the yield of these potatoes, as they were well cared for, and on ground that was in a good state of cultivation. They were planted May 14th, in rows 4 feet apart, hills, 1 1-2 feet in row. To compare the results of different amounts of seed in the hill, and hills at different distances apart, three plats were planted to Peachblow variety, May 15th, as follows :

Plat 1. Rows 4 feet apart, hills 18 inches in row. A fair sized potato was cut into three pieces, and one piece planted in a hill. Yield per acre, 57.2 bushels.

Plat 2. Two pieces of seed to the hill ; in all other respects as plat 1. Yield per acre, 80 bushels.

Plat 3. Hills 3 feet apart in row. Two pieces of seed to the hill, making the same amount of seed per acre as plat 1, with half the number of hills ; and half the seed and number of hills of plat 2. Yield per acre, 69.4 bushels.

#### *Improvement of Soils by Mechanical Means.*

This experiment, begun in 1871, to ascertain the value of tilling land at different depths, has been continued. Four adjacent plats of an acre each are to be cultivated as follows :

Plat 1, to be plowed to the depth of five inches only.

Plat 2, to be plowed to the depth of twelve inches.

Plat 3, to be plowed twenty inches deep by trench plowing.

Plat 4, to be plowed twenty inches deep by subsoiling.

In all other respects, than those named, the plats are to be cultivated alike.

In 1871, plats 1 and 2 were cultivated in the prescribed manner :

Plat 3 was plowed to the depth of twelve inches only.

Plat 4 was plowed twelve inches deep, and subsoiled four inches deeper. The past year, plats 1 and 2 were cultivated as before. Plat 3 was plowed seventeen inches deep, and plat 4, trench plowed to the same depth. One-half of each plat was planted to Early Yellow Dent Corn, May 22d, and the remaining half to Cherokee. The yield of each plat in bushels of ears weighing 75 lbs. each, is as follows :

Plat 1.....	43.52 bushels.
Plat 2.....	50.32 bushels.
Plat 3.....	54.74 bushels.
Plat 4....	56.77 bushels.

The increased yield of the more deeply plowed plats will doubtless be much greater after two or three years, as it is difficult to mix the soil uniformly to so great a depth, only by thoroughly tilling it for a series of years.

In 1871, the yield was greatly in favor of shallow plowing, the following being the yield of Early Yellow Dent corn:

Plat 1.....	55.4 bushels.
Plat 2.....	50.65 bushels.
Plat 3.....	44.95 bushels.
Plat 4.....	42.21 bushels.

The effect of the severe dry weather of July and August was much less marked upon plats 3 and 4 than upon plat 1, as could be readily seen by walking through the field.

In the experiment with comparison of different varieties of corn, the soil was cultivated seven inches in depth. The average yield of Yellow Dent and Cherokee varieties in that experiment was 52 bushels to the acre. The average yield of the same varieties upon the deeply plowed plats, in the above experiment, was 55 3-4 bushels. The increased yield of these deeply plowed plats is only great when the rapidity with which the deep plowing has been accomplished is taken into account.

The Department of Agriculture has received during the year the following donations:

From the Commissioner of Agriculture—

- 8 quarts White Australian Spring Wheat, grown in Oregon.
- $\frac{1}{2}$  bushel Tappanock Winter Wheat.
- 15 quarts Arnold's Hybrid, No. 9, Winter Wheat, grown in Canada.
- 4 quarts White Winter Touzelle Wheat.
- 6 quarts Probsteier Barley, from Germany.
- 6 quarts Birlie Oats, from Scotland.
- 6 quarts Silesian Sugar Beet seed.
- 1 peck Silver Hull Buckwheat.
- Several packages of garden vegetable seeds.

Through Hon. W. W. Field, Secretary of Wisconsin State Agricultural Society, from Commissioner of Agriculture—

- 1 bushel Mammoth Red Spring Wheat, grown in Illinois.
- 1 peck Birlie Oats.

From H. Grunow, Mifflin, Wisconsin—

- 1 peck Manshury Barley.

From Alexander Findlay, Esq., Madison—

- 12 pounds Chevalier Barley.
- 12 pounds common Barley.
- 15 pounds April Wheat, all imported from Scotland by Mr. Findlay.

I would acknowledge my indebtedness to John Ferrey, Esq., Superintendent of the University Experimental Farm, for the personal care, and the earnest attention he has given to the carrying on of these experiments.

METEOROLOGY.

The following are some of the most noted observations of casual phenomena:

November 30th, Lake Monona froze over.

December 19th, Lake Mendota froze over.

March 25th, first appearance of robins and wild geese.

March 20th, bluebirds appear.

April 20th, Lake Mendota clear of ice.

May 7th, cherry trees in bloom.

May 8th, plum and apple trees in bloom.

September 27th, first frost, slight.

## SUMMARY OF OBSERVATIONS FOR THE YEAR ENDING OCTOBER 31, 1872.

MONTHS.	THERMOMETER IN OPEN AIR.				BAROMETER HEIGHT REDUCED TO 32 DEGREES.				RAIN AND SNOW.		Inches of evaporation from an open vessel.	Amount of cloudiness.
	Max.	Min.	Mean.	Variation	Max.	Min.	Mean.	Fluctuation.	Amount of rain or melted snow in inches.	Inches of snow.		
									.....	.....		
November.....	58	3	30.9	55	29.338	28.586	28.965	.802	2.31	6	.....	6.0
December.....	39	-15	13.4	54	29.325	28.141	29.926	1.184	1.15	12	.....	5.3
January.....	40	-15	17.5	55	29.398	28.424	28.916	.974	1.20	12	.....	4.8
February.....	48	-10	19.2	58	29.356	28.195	28.899	1.161	.40	3	.....	4.1
March.....	40	3	23.8	37	29.474	28.431	28.758	1.041	2.18	22	.....	4.3
April.....	77	23	45.8	54	29.345	28.242	28.870	1.102	1.82	8	.....	4.5
May.....	79	39	57.5	49	29.225	28.412	28.855	.813	2.83	.....	4.58	5.3
June.....	90	55	67.0	35	29.248	28.409	28.858	.839	2.44	.....	.....	4.4
July.....	92	60	73.4	32	29.075	28.622	28.892	.453	1.26	.....	4.50	4.2
August.....	90	53	70.4	37	29.124	28.691	28.949	.433	2.24	.....	4.99	4.2
September.....	89	39	62.1	50	29.240	28.469	28.854	.771	5.11	.....	2.86	4.3
October.....	76	30	49.0	46	29.344	28.511	28.971	.833	.60	.....	2.60	2.6
Sums.....									23.54	63	.....	
Means.....			44.2				28.909				.....	4.5



Summary of Observations for the year ending October 31, 1872 — continued.

MONTHS.	FORCE OR PRESSURE OF VAPOR IN INCHES.			PER CENTAGE OF SATURATION.			PER CENTAGE OF WINDS.							
	Max.	Min.	Mean.	Max.	Min.	Mean.	S.	S. W.	W.	N. W.	N.	N. E.	E.	S. E.
November.....	.275	.034	.134	100	80	74	7	11	6	19	8	30	8	11
December.....	.168	.015	.076	100	87	87	10	14	80	28	7	0	0	12
January.....	.168	.023	.096	100	44	90	15	31	25	15	9	1	0	4
February.....	.186	.028	.101	100	40	88	23	9	27	17	5	11	0	8
March.....	.170	.019	.105	100	37	82	21	3	4	22	24	13	5	8
April.....	.476	.061	.183	100	19	56	13	23	18	2	16	7	9	12
May.....	.543	.091	.245	94	23	61	5	19	19	24	3	10	9	11
June.....	.772	.210	.469	100	25	64	29	24	21	11	1	1	4	9
July.....	.813	.287	.537	94	33	65	13	28	13	20	13	1	6	6
August.....	.758	.285	.524	94	26	67	23	23	7	16	19	7	2	3
September.....	.785	.162	.411	94	29	71	14	25	15	23	2	2	3	16
October.....	.509	.105	.224	94	24	61	10	21	3	42	8	3	3	10
Sums.....														
Means.....							15	19	16	21	9	7	4	9

## APPENDIX.

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### REPORT OF THE GEOLOGICAL SURVEY OF THE MINERAL REGIONS.

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To His Excellency, C. C. WASHBURN,

*Governor of Wisconsin :*

SIR — The object of the law, as amended last winter, if I understand it correctly, is *not* to make a geological survey, but to obtain as correct information as possible of all minerals of economic importance to the state, having especial reference to their practical, rather than their scientific value. That is to say, my work is not to deal with laws and principles, but with objects and facts. It is important, nevertheless, in order to furnish an intelligible report, to present these objects and facts, as far as possible in their geological order, and with reference to their geological relations.

The history of mining has now pretty well established the fact, that there are geological order in the strata and geological relations between the ores of the metals, and the rocks in which they are found. For instance, we find that the ores of one class of metals are found in one class of rocks; while the ores of another class of metals are found in another, the ores often varying in kind or form, as the age, character or composition of the rock differs. This rule, we know, is not invariable; it has exceptions, but these relations are so far distributed in the mineral kingdom, that a man by long practice, can almost, when a specimen of ore is handed him, infer the class of rock from which it was taken; or from a specimen rock, the kind of ore, if any, that would be found in it.

And again, no rock is metalliferous of itself. These different strata are metalliferous only along lines of physical disturbance, where they have been exposed to mechanical and chemical influences or agencies, not in operation everywhere. Hence, there are geological relations that we do well to regard, not only between our ore deposits and the rocks in which they are found, but between our ore deposits and those lines in the earth's crust that bear the marks of mechanical and chemical activity.

These lines of physical disturbance belong to a class of natural phenomena

very extensive in their range, and embrace those fainter lines marked only, it may be, by the metallic impregnations of the rock, as well as those different systems of elevation, some of which raise their heads above the clouds, and stretch themselves across the continents of the earth. So much of geology, then, as is necessary to explain this order and their relations, I shall need for the explanation of my work, and the objects and facts contained in my report.

In the description of the phenomena of the lead district in my last report, I called attention to the fact that there was a tendency in the ore deposits there, to arrange themselves in belts, having an east and west bearing along a north and south line, which appeared to be a north and south axis of elevation, extending through the State; or what, perhaps, would express it better, an anticlinal line marked with evidences of the action of mechanical and chemical forces; and that this anticlinal line was, in all probability, a belt of mineral land. When I say a belt of mineral land, I would not convey the idea that there is to be a continuous, unbroken range of ore deposits, but a belt of country within which we find evidences of the physical conditions necessary to produce such deposits, and indications of their existence. Observations made during the present season, confirm these views, and the facts when put together in this report, will leave, I think, no doubt of the truthfulness of the teachings of my last report on this question; at all events, so far north as my observations have been made.

For the purpose of being fully understood on this question, I will state again here, that while the sedimentary rocks, that is, our limestone and sandstone formations extend on the east side of the state away into Oconto county, and on the west side, beyond St. Paul; in fact both east and west to the base of the Laurentian elevation, in the centre of the state, or along the line of this anticlinal, they extend no farther north than town 21, except in detached patches filling the depressions in the azoic formations. A line drawn from Black River Falls, east to the Wisconsin river, gives us the first appearance of the azoic formations, that is, the old crystalline rocks that underlie the sedimentary strata of the southern part of the state. Here in these strata, we have the outlines of this anticlinal more fully brought out. Where it rises from beneath the sedimentary rocks of the south, it extends north in a belt, bounded for many miles on the east by the Wisconsin, and on the west by Black river. These are some of the tangible evidences of the existence of this anticlinal line running north and south through the state, and I call especial attention to it here, because it seems to bear important relations to the ore deposits thus far discovered in our state, and indicate the line along which other deposits may be looked for.

Now, inasmuch as the chemical composition and physical characters of the ores will depend to a great extent upon the character, composition, and the age of the rocks in which they are found, it is very important for us, in order to form an opinion of what kinds of ore we may look for along this belt, and also for the probable extent of those deposits already discovered, to become as familiar as possible with the geological formations exposed (along this belt) as the surface rock. Their general features can be described in a few words.

The different formations from the Wisconsin river south to the state line, in what is known as the "lead district," were described in my report of last year. North from this, to town 21, the surface rock may be divided into two beds; one of limestone, from 200 to 250 feet thick, where there has been no denudation; the other of sandstone, from 400 to 500 feet thick. The limestone is known as the "Lower Magnesian," the sandstone as the "Potsdam." The sandstone, which underlies the limestone, is the lowest member of what is known as the Silurian system, and is resting on what is known as the "Azoic formation," that is, the old crystalline rocks which come to the surface, as before stated, north of town 21.

With this brief geological description of my field of labor, I will proceed to describe what I have found in it of practical value, and what, by further explanation, may lead to important practical results. To the north of the Wisconsin river, and consequently beyond the northern boundary of what is known as the "lead district," I find this limestone as the surface rock, giving us at first its whole thickness, with occasionally a thin layer of the upper sandstone on the highest points, but gradually thinning out as we follow it to the north. Although beyond the limits of the mineral district of the southern part of the state, and in a geological formation altogether below that in which the ore deposits are found there, I find the same geological arrangement, so far as the grouping of north and south, and east and west belts are concerned. That is, although the geological formations are entirely lost here, yet the same system of grouping or arrangement of mineralized belts, is distinctly preserved. In town nine there is a belt of country very much stained with the oxide of iron, and presenting on the surface other indications of being good mineral ground. At Orion, in Richland county, some attempts at mining have been made, and some pretty good prospects for lead have been discovered. West of Orion, iron seems to predominate, although mixed too much with foreign material to be good ore. Still farther west on the same belt in Crawford county, copper ore in different places has been found, and several thousand pounds taken out and sold. But outside of a strong coloring of the rocks, clays and soil with the oxide of iron, and here and there a little lead, iron or copper, there is nothing to warrant the expectation of very heavy deposits of ore of any kind; although in places, especially near Orion considerable may be found. The country is very much broken, and otherwise unfavorable for extensive ore deposits, notwithstanding the abundant evidences it affords of being in a mineral region.

Extending north from this belt we find the streams, all of which are coming from the north, heading up into a well defined belt, or elevation of land, strongly marked with the evidences of physical disturbance, or changes in the character and composition of the rock, and as we approach it through Richland county, along the centre of this anticlinal, the evidences of a mineralized belt continue to increase as we reach the point of intersection. To the east, and for several miles beyond where it intersects this north and south anticlinal, it presents physical characters peculiar to such belts of rock.

Between the city of Baraboo and Sauk Prairie on the south, this belt forms

a range of hills over 400 feet high. To the east of Baraboo, where this range of hills is brought to a point by the passage of the Wisconsin river around it, the center of this belt is exposed. An intensely hard quartzite, with a softer silicious rock with a slaty structure, sometimes passing into a talcose slate or what resembles it very much, forms here the center or backbone of this belt, which is covered mostly with the Potsdam sandstone. At Devil's lake, and at the narrows where the Baraboo river passes through the gap, there are beautiful exposures of this quartzite. Also on the south side of the hills a little to the west of the Sauk road, and seven or eight miles still farther to the west on the north side, are fine exposures of the same rock. But where this belt intersects this north and south anticlinal, there is, I believe, no more quartzite; at least, I have not seen any.

Whether this quartzite, forming in places, if not continuously, the center of this range of hills, is a metamorphic sandstone of the Potsdam age, or of some older formation, our geologists are not all agreed. But upon this point, I think there can be no difference of opinion. To change sandstone of any age into a quartzite like this, there must have been intense metamorphic action along this line at some period in the past. It is, however, from this point of intersection west, that this belt becomes of great interest in a practical point of view, and I propose to notice it carefully.

Along this range of hills in the region of Baraboo, the lower bed of sandstone (Potsdam) is the surface rock. But extending west from this, the lower magnesian limestone forms a considerable portion of the higher land, the sandstone always exposed along the valleys, giving us often good exposures of the junction of those formations. Where they are found in their normal or unaltered condition, they gradually pass into each other by alternate layers of sandstone and limestone, each layer becoming thinner as it passes away from the bed to which it belongs. But from this general rule there is a marked departure along this belt. The silica, which in these alternate layers is usually found in the form of sand, is here found in the form of flint, hornstone and chert, and these in some places passing into a hard, whitish, clayed rock, all no doubt different forms of the same material. This clayed form has been taken by some for gypsum, and although it resembles it in some of its earthy forms, it is, I think, destitute of the elements of that composite. It may nevertheless be of economic value, and I may refer to it again in another place.

These forms of silica, such as flint and hornstone, are not always found, like the sandstone, in layers or beds between the layers of limestone, but very often mixed up with it. Nor is this peculiar feature of the strata uniform throughout the region; in some places we find the sandstone and limestone in their normal state. Nor does it extend up very far into the thick beds of limestone, nor down very far into the sandstone, but is confined to the subordinate layers of the two formations. It extends, nevertheless, over a large portion of this belt, and where it has been exposed as the surface rock to denudation, large pieces of flint and hornstone lie scattered over the surface.

One of the most interesting, and certainly the most important, feature of this belt, is where it intersects this north and south axis, or anticlinal. It affords strong indications of iron ore, and that, too, in extensive deposits. These indications commence a little to the west of Baraboo, continue through the western part of Sauk county, the upper portion of Richland, and into the eastern part of Vernon, and are as follows: In some places, the clay resting on the rock is highly colored with the oxide of iron, and in many places contains good specimens of the ore. A miner from the lead district would call it a very good prospect for a range of mineral (as they call it there), inasmuch as it resembles closely the deposits of clay found there over or in connection with the mineral deposits. In other places the sandstone is highly impregnated with iron, sometimes in the form of a red powder, at others in that of a lean, sandy ore. While in other places, in fact more or less over the whole district, specimens of good iron ore may be found on the surface, or washed out by the rains along the sides of the hills. There are a great many places where a man can gather up a ton of good ore in a day, and if he goes to work and digs out what is exposed in the soil and surface accumulations, he may get twice that amount.

On one occasion, I visited one of those places near Reedstown, with Senator Wilson of Viroqua. We took spade and pick with us for the purpose of somewhat testing the outcropping of the ore. We dug three small pits, a few feet from each other, up the side of a hill, and found good specimens of the ore mixed with the soil and underlying clay and spreading every way from where we dug. In a little over two hours, the time we were working there, we dug out of these three pits not much short of a thousand pounds of very good ore. It is no more than right to say here, that Mr. Claywater, a very enterprising man who accompanied us, did his full share of the digging. I refer to this place as a sample of those innumerable places, or outcroppings of iron ore along this belt. I visited several similar places in Richland county, some of them not far from Richland Centre; the latter I visited in company with Mr. A. C. Eastland, Mr. Chandler and Dr. Burnham. A few days ago I received the following from Dr. Burnham: "Since you were here, I have discovered a place where the ore crops out much lower on the bluff, and where it appears to be in *place*, which I think to be of importance." The specimens of ore that I have sent to our cabinet, will confirm these statements.

The region over which these indications are found is in all probability a new mineral district. It resembles very much, in its external character and surface indications, the lead district before mining commenced there; with this difference; the "float" iron ore in this district is vastly more abundant than the "float" lead ore was there. The large deposits of lead ore there, were not at first exposed to the gaze of the explorer, but were hid beneath a covering of rock or surface accumulations. Their "float," however, was often scattered away down the valley or hill-sides, for hundreds of feet, and it was by carefully following the float, that the original deposit was found; and I have no doubt, before one-half of the amount of money and time

is spent here in tracing up this float iron ore, and other indications, that was spent there in tracing up the float lead ore, that many extensive deposits of iron ore will be found. Our views in reference to the possibility of iron ore being found here, and of the nature of the deposits, need not be based alone upon indications and analogy. We have at Ironton, in the western part of Sauk county, and on what we should call the eastern part of this iron district, a type of the deposits of this district and an evidence of their existence.

This deposit, a few years ago, was represented only by the "float" ore that lay scattered on the surface along the side of a large sandstone bluff that was covered with timber and underbrush. This "float ore" scattered over the surface was noticed by an experienced iron maker, and regarded by him as strong indications of an extensive deposit. The land being secured, these indications were followed up, which resulted in the discovery of the deposit in a protuberance or a gentle swelling out of the bluff, about midway from the valley to the top. The face of this deposit, before it was opened up, was covered with a stratum of brownish clay and earth mixed with fragments of iron ore, varying in size from a man's head to that of a hazelnut. This stratum is several feet thick, and can be seen to-day on the sides and on the top of this deposit.

When first discovered, it was said to be by many a mere surface deposit that would yield only a few tons of ore, consequently little or no importance should be attached to it. This estimate of the deposit was not founded upon any peculiar phenomena that would lead to any such conclusion, nor upon a want of evidence to sustain the contrary, but grew out of, and consequently founded upon, a *theory* of the ore deposits of our state, published in an early day; a theory that regarded them as mere surface deposits of very limited extent. Nothing has done more to destroy confidence in our mineral resources, or to prevent their development, than this *theory*. This is true, not only of men outside of our state who are ignorant of the facts, but of men living in the state, in the midst of the facts. These are not men who think for themselves, and thus form an independent judgment in such matters, but they are men who surrender their judgment to *authority*, without reference to facts. And to-day, facts even are looked upon by such men with suspicion when they come in conflict with this theory.

It was fortunate, however, that this deposit fell into the hands of practical men, who paid but little attention to theories, but went to work with confidence in their own judgment; opened up the deposit, and made iron from it on the spot. And, although they had to *cart* the products of their furnace over the worst kind of roads, for twenty-five or thirty-miles, to a railroad, they made money at it. So little importance has been attached to this deposit that it is hardly known outside of the township, and yet we have here a bed of ore, in width 300 feet, and still extending south, in depth, or thickness in the center, 35 feet, averaging, for the whole width, twenty or twenty-five feet, with ore still extending down below their deepest works. There was taken from this deposit last year, and smelted in a small furnace near the place, thirty-five hundred tons of ore. And there has been dug out

of this deposit since it was first discovered, according to figures furnished me by the very gentlemanly proprietor, John F. Smith, Esq., twenty-seven thousand tons. The extent of this deposit we have no means of knowing at present. The prospects, however, for continuance are as good, if not better, to-day, than at any other period since it has been opened.

This deposit of ore in a new country, undeveloped and comparatively unexplored, commends itself to every thinking man as one of great importance, especially so since there are indications of similar deposits scattered over such a large tract of country; and the fact that we are to look to this deposit as a type of the deposits of this region, is sufficient reason why we should scrutinize every feature of its phenomena.

In this deposit, we have the *fact* of an extensive deposit of ore, not by inference, but presented as an object of vision, a tangible object, one that the most ignorant can understand. But to form any idea of its nature, and extent, it is absolutely necessary to get some idea of the physical conditions with which it stood connected in its origin. And without turning aside to deal with the abstract laws, and principles that underlie this deposit as its cause, I would ask the privilege of departing slightly from a strictly practical view, in order to notice in detail the features it presents.

I have stated that this deposit was discovered in a protuberance, or a swelling out in the side of a large sandstone bluff, the prolongation of which is in a north and south direction. The direction of the ore bed appears to be east and west, and in its eastern extension just entering the west side of the bluff. The bluff above the deposit rises gently, is covered with soil, and vegetation, and is on the top fifty feet, more or less, above the present surface of the deposit. The top of the bluff spreads out into a plateau, with pieces of magnesian lime stone protruding through the soil in places.

I have stated, also, that this deposit is overlaid with a stratum of clay and earth, and mingled fragments of ore, which is an indisputable evidence that the upper portion of the deposit has been removed by denudation and mixed with this surface accumulation, and consequently the original surface of the deposit must have been several feet higher than the present, and some distance farther back into the bluff. Whether the overlaying stratum will continue to cover this deposit much farther back into the bluff, or whether the bed of ore will be capped with rock before it reaches the top of the bluff, or whether, like some of the extensive deposits of ore in the lead district, it will pitch at an acute angle into the bluff, remains yet to be proved.

From what we can see of this deposit, we may infer safely that it is not a vein, in the sense in which we use that word in connection with ore deposits generally; nor can it be called a bed of ore running between two dissimilar beds of rock, as is sometimes the case. But it seems to occupy an extensive cavity in the strata, or rather what would look like the breaking up and partial removal of prior formed rocks, and the ore subsequently deposited in their place. For, in the midst of this extensive deposit of ore, we find large detached pieces of sand rock of the same character of the rocks on the sides, and in fact, below the deposit, along the sides of the bluff, are found large



masses of the same rock imbedded in the soil, as though they had ploughed their way down from the deposit above them.

These things would indicate that this deposit of ore and the place in which it is found were connected in their origin with physical conditions of an eruptive character, and we are in the habit of referring such phenomena to eruptions produced by volcanic or earthquake agency. No doubt there are similar places in the earth's crust, produced by such agencies, and the deposits of iron ore in connection with them may be referred to such conditions.

Notwithstanding there are indications here of eruption, there are many things, nevertheless, that would lead us to doubt very much a plutonic origin, or one connected with volcanic or earthquake agency. The heat necessary to bring about such mechanical disturbance, and that must necessarily accompany the introduction of matter in a state of fusion, could not fail to produce very different effects on the surrounding strata than what we observe. Especially would this be the case with those large pieces of sand rock found in the midst of the ore. In fact, the character of the ore, the manner in which it is distributed, the fine, beautiful clay with which it is connected, and which is often found filling its cavities, are all opposed to this view.

There are places found in mineral strata, and in connection with extensive ore deposits, that our best geologists are in the habit of explaining by processes of chemical and mechanical disintegration, acting locally, but along lines of physical disturbance, where portions of the rock are dissolved and removed, or changed into clays and other forms of matter, and where the ores of the metals are subsequently deposited, and perhaps from the same solutions, by chemical reaction. Water, traversing rocks that are considerably fissured, or rocks that are porous and friable like sandstone, holding these solvents in solution, is the recognized agent in such processes.

Many of the deposits of lead and zinc in limestone formations, especially magnesian limestone, are referred (and no doubt correctly) to such processes in nature. And is it not physically possible — that is, possible according to these laws of nature — that this deposit of ore at Iron-ton may be the result of a similar process? Indeed, is it not likely, since it is an established fact in chemistry that thermal waters, especially when impregnated with alkaline carbonates, will, at a temperature not above 212° F., acquire the power of dissolving silica even in the form of quartz or sand? The geological age, relative position, and porous nature of this sandstone, places it in the most favorable condition to be acted upon in this way by thermal waters. Without adopting this view fully, I submit these facts and views for the consideration of those who are now interested in tracing out the phenomena of this interesting district. The ore of this deposit, as well as the "float" ore of the district, is as might be expected if formed under conditions similar to those referred to above — the brown hematite, or what would be called in strictly scientific language, the hydrated sesqui-oxide of iron, and yields in the furnace from 50 to 55 per cent. iron. This is a superior ore of the kind; for ores of this class, when called pure, yield, I think, not over 60 per cent.

Where they are extensively worked in Europe, they are, as a general thing, very much inferior to this; and, if I recollect right, in the Belgian districts the yield is not much over 30 per cent.

Since attention has been called to this apparently new mineral region, the question has often been asked, what other evidence, or evidences, have we besides these surface indications, that other deposits, similar to the one at Ironton, may not exist in that district? In reply to this I would say, a principle, common to all mining regions, consists in the aggregation of ore deposits, separated from each other by varying distances, but related to each other by geological ties that constitute a mineral district. Such districts may be larger or smaller, as the geological formations in which they are found, and the physical conditions with which they are connected are extensive or otherwise. Our own lead district is a very striking example of this.

As stated in my last report, the ore deposits of this district, notwithstanding the same geological formations continue to the east and to the west, are not known to extend beyond the belt of country influenced by this north and south anticlinal; while on the north, notwithstanding the same anticlinal continues, the lead and zinc deposits are not found to extend beyond the limestone formations. Within those geological boundaries, we seem to have the limits of the lead and zinc district, a district including an area of about 2,300 square miles. The history of mining throughout the world, as well as the teachings of science, demonstrate the correctness of this principle, and almost warrant the existence (where important ore deposits are found) of others of a similar character within the bounds of the same geological relations. Fifty years ago, a man walking over the lead district, would find no stronger evidence of the rich, numerous and extensive deposits of lead and zinc ore, that are known now to exist, and to have existed there, than he will find to-day in walking over the district of which I am writing, of rich, numerous and extensive deposits of iron. It was by following up those surface indications, that the first deposit of lead was found. This deposit inspired confidence to look for others under similar conditions, or indications, and thus, one by one these lead deposits were discovered, until over this entire region, they may now be counted by hundreds; and although we may have reached the outer limits of this lead district, yet, within those limits there are doubtless hundreds more of similar deposits that remain to be brought to light. A little over one year ago, one of the richest and apparently the most extensive mines in the lead district, was discovered and is now being worked, and that, too, in a place familiar to our most experienced miners from the earliest dawn of our mining history.

It was by following up those surface indications, that this deposit of iron at Ironton was found, and it is to be expected certainly, that its increasing richness and importance will inspire confidence in the district, that will lead at an early day to its proper development. The suitability and adaptability of this geological formation of iron, and that, too in extensive deposits, no geologist of experience will for a moment doubt. That portion of the strata in which the ore is found, namely, the Potsdam sandstone, is the lowest

member of the silurian formation, and resting immediately upon the ancient azoic and plutonic rocks, which are known to be the repositories of the most extensive iron deposits in the world. The abundance of hornstone also, especially in this partially decomposed condition, is a very favorable feature. It is known to accompany iron ore of this character, and is always regarded as a very favorable associate. Should this district be favored with railroads, it will certainly offer great inducements to capital and labor. It is traversed with streams, such as the Kickapoo, Pine and Baraboo rivers, on which convenient and abundant water powers can be obtained. Over the whole district is spread a forest of hardwood timber, in places very dense. Charcoal is now furnished at Ironton for about six cents per bushel, and can be obtained, I presume, any where in the district from for six to ten cents. Another advantage is, the soil, owing no doubt to the peculiar geological features referred to, is very rich and durable, and to remove this timber for fuel will be to open up some of the best farming land in the state. If the indications of iron ore here should lead to such deposits as the most reasonable calculations on them would lead us to expect, the natural resources of this region, must when developed, be capable of supporting vast industries.

Owing no doubt to the general dip of the strata on the west side of this north and south anticlinal, that portion of the strata in which the iron ore is found, sinks beneath the surface to the west of the Kickapoo, and is there covered with the magnesian limestone, which along a north and south line through Crawford and Vernon counties obtains its full thickness, and on some of the highest points furnishes the lower portions of the lower sandstone. This belt, however, can be traced distinctly into this limestone to the west of the Kickapoo in Vernon county, but the iron is mixed with copper, and found only in pockets in this rock. We find here, between the Kickapoo and the Mississippi, a narrow strip of country running north and south, that shows in Crawford county, and also in Vernon, strong indications of copper. Indeed, small deposits of copper have been found in several places along this line, in both of these counties. Whether this change in the metals is brought about by some change in the physical conditions, or by the change in the chemical composition of the rock, I am not prepared to say. I have not had time to make the examinations necessary to furnish an intelligible report, but call attention to it here, as a fact worthy of further consideration.

In leaving this belt of country running through Sauk, Richland and into Vernon, along which these prospects for iron ore are found, and continuing my explorations north along this "anticlinal," I find the lower sandstone altogether the surface rock, and gradually thinning out, as we go north. It is so friable here, and yields so steadily to disintegration, that the surface of the country is covered with sand, save here and there harder rock that has resisted longer the denuding influences, and stands out like an island in the sea. These detached mounds of sand rock, however, grow less in size and number as we continue north, and their disintegrated material renders the face of the country a sandy desert, that hides whatever mineral formation the country may possess; and it is not until we reach town 21 that we find anything

of interest. Here, in town 21, we find rising gently from beneath the sand and sandstone, the ancient azoic and plutonic rocks, which unquestionably extend back under the sandstones and limestones of the southern part of the state, but here, for the first time, make their appearance as the surface rock. They rise very gently towards\*the north, and seem to have an east and west bearing, for I find them rising simultaneously on the Black river, Yellow river and the Wisconsin river, in towns 21 and 22. To the west of Black river and to the east of the Wisconsin river, these rocks dip again beneath the sandstone, as though they were, like the belt I have been describing, conforming to this north and south "anticlinal."

At first I was disposed to believe that, where this class of rocks came to the surface would be the outcrop of the sandstone, and its farthest extension north along this line; but after exploring it for eight or ten miles I found a general dip again to the north, and a little further on the sandstone resting again on the northern as well as on the southern side. I explored along this (north) side on the Black, Yellow and Wisconsin rivers, and found this to be uniformly the case. Although in geological formations, whose origin and history must be dated back to a period vastly remote from those we have been considering, I am inclined, nevertheless, to think that we have here another of those east and west belts, or what I have called (for the want of a better name) lines of physical disturbance. It evidently belongs to some of the older systems of elevation, since the sandstone is found resting horizontally and undisturbed on its flanks. That it stood much higher once than it stands now is evident from the fact, that all over the surface are scattered large detached pieces of rock similar to what we find in place. Some of these lie scattered away to the north of the elevation, and are resting on the horizontal layers of sandstone. These things are among the evidences left us of the original altitude of this belt, and of the disintegrating influences which, through vast periods of the past, have been leveling down this ancient range of rocks, until scarcely a trace of its original contour remains.

For scientific purposes, this belt of country is full of interest, but I shall notice only such features as are necessary to illustrate the natural products found here, and their practical value.

Near what we would call the center of this belt, we find arranged mostly the granitic rocks, with their varying proportions of mica, quartz, feldspar and hornblende. Their granular condition is sometimes very coarse, at others very fine. Sometimes they are in the form of porphyry, at others in the form of gneiss, but generally very feldspathic; the feldspar almost everywhere showing a tendency to decompose into kaolin. Even in some of those larger pieces of granite, that have resisted longest those disintegrating influences, the feldspar has often a coating of kaolin. Unfortunately for my work, the face of this rock is almost everywhere covered, except along the streams. In some places with a dense forest and thick underbrush, with several feet of soil and clay; in others, with extensive marshes filled with peat and overlaid with moss or grass, so much so that very little can be seen with-

out excavation. Along the river banks, however, we have good exposures, and it is here only that we can study the structural character of this formation.

Along these exposures, especially along the Yellow river, which is nearest the centre of this north and south "anticlinal," we find this granite belt traversed with large dikes of partially decomposed, or what is sometimes called 'rotten rock.' In these dikes the feldspar shows strongly this tendency to decompose into kaolin. In places, it is only partially changed, that is, it has a whitish appearance, but retains the crystalline structure of the mineral; while in other places it is a soft white powder where dry, but where it is damp it has a clayed appearance, although still retaining its place in the rock. One of those dikes is found on property owned by a Mr. Pitts, is several rods wide, and well exposed. Since I was there, and called attention to these things, another place, I am told, is discovered to the west of the river, towards Black River Falls, that is very similar.

On the Wisconsin river, and in the city and neighborhood of Grand Rapids, where wells and cellars have been dug, and other excavations made, beds of genuine kaolin, or porcelain clay have been found, varying in thickness from one to five feet. Indeed it is very difficult to sink a pit anywhere in that neighborhood without finding more or less of this material. And when we take into consideration the fact that the same character of rock, and the same physical conditions continue from Grand Rapids on the Wisconsin river, to the Black river on the west, a distance of fifty miles or more, we can hardly see how it can be otherwise, than that there should exist somewhere along this line extensive deposits of kaolin. The value of extensive deposits of this material, in this part of the state, at this time, can hardly be estimated, and it is to be hoped that parties in those regions will soon wake up to its importance, and develop those already important prospects into a shape that will attract the attention of parties who are anxiously looking for such material for manufacturing purposes. To aid this, I will here refer briefly to the nature of kaolin, its mode of deposit and uses. Kaolin is the native silicate of alumina, and one of the most refractory clays found in nature. It will stand the highest temperature, without fusing or getting out of shape. It is usually, though not always formed from decomposed feldspar, and in this respect is one of those alterations in rock and mineral formations that often take place along those lines of physical disturbance, or chemical activity in the earth's crust. Kaolin, however, is not simply decomposed feldspar. In the process of decomposition, a chemical change takes place, and kaolin is the result. "Three atoms of feldspar together," says Dana, "consist of three parts of potash, three of alumina, and twelve of silica. If three parts of potash, and eight of silica, be removed, it leaves three of alumina and four of silica, which is the composition of kaolin, except that six of water are added."

Kaolin is also a mineral, and is often found forming a part of mineral veins, consequently may have some other origin than the one referred to.

Those beds of kaolin that we find resting on the surface of the rock, along the line of this granite belt, although beneath the soil, are no doubt formed from the decomposition of the feldspar of the granite by the action of the water. The water may be in its ordinary condition, but held in depressions on the surface; or it may contain some peculiar solvents obtained from the decomposition of some other portion of the rock; or it may be water with more than ordinary dissolving powers reaching the rock through springs. But this change takes place no doubt always in the presence of water, and through its agency. This belt of rocks, extending for fifty miles east and west, *peculiarly* feldspathic, and covered in many places with extensive marshes, that are fed with living springs, affords the condition for the formation of kaolin that is but very seldom found in this or any other country. The properties of kaolin, especially its refractory properties, have been known from a very early age. The Orientals, away back in the dim past, recognized these properties, and used this material in the manufacture of their best porcelain, or as it is generally called, "china ware." Nor has the increasing light of science and art, from that period, down to the present, discovered or prepared material superior to kaolin for this purpose. It is peculiarly adapted for pottery, and can be manufactured into such articles with every degree of skill. Wherever extensive deposits of kaolin are found, with the usual facilities for manufacturing and transportation, potteries will sooner or later be established. These refractory properties render it very valuable also for various other purposes, such as *fire bricks, fire clay, retorts*, and other vessels used for metallurgical purposes. In this connection I may refer to it again in another part of this report.

On the sides of this granitic belt, and especially on the south side, so far as there is a chance to examine them, these rocks appear to be changing into a slaty character, although no doubt they are *related* rocks, for I notice in places that the granite passed gradually into gneiss, and the gneiss into rocks of a slaty structure. From this they pass into the well known slate rocks that form a considerable portion of azoic strata, such as mica, talcose, and chlorite slates. These strata are traversed with veins of quartz from one to twenty-five feet wide. In some places, the quartz is very hard and vitreous, in others of a softer kind, more porous, and mixed with an iron clay. This class of rocks is well exposed on the Wisconsin river, and also on the Black river, but away from the streams on this east and west line, they are mostly covered with sand and sandstone, beneath which the azoic formations are well covered to the south.

The metalliferous character of this belt is well exposed along the Black river, near the Falls. The prevailing ore, so far as we can judge from surface exposures, is iron. Of this ore, two varieties are prominent, namely, a dark, fine-grained magnetite, and the red hematite. They differ from each other, it is true, in their physical characters, but resemble each other very much in that they are mixed considerably with silica in the form of quartz, so as to make the ore, as a general thing, rather lean.

The mode of occurrence here, conforms strongly to the prevailing type of

the azoic formations. That is, the ore, especially the magnetic ore, rises above the surrounding country in elongated knobs, or mounds, sometimes assuming a conical form. Of this class of deposits, Pilot Knob, in Missouri, is a very good example. Two of these mounds or knobs are very near to Black River Falls. One on the west side of the river, along the foot of which the railroad track has been cut, where thus exposed, there is a mixture of magnetite and hermatite, and both considerably mixed with quartz. On each side of the ore, as thus exposed, there is a soft and somewhat irony slate rock, which appears to be thrown around the ore like a mantle, the slate becoming softer as it passes away from the ore. Nothing has been done to determine the nature or extent of this deposit, save the excavations at its base for the railroad track.

On the east of this mound, or a little to the south of east on the east bank of the river, is another of similar character and size, perhaps a little larger, where exposed along the river, it appears to be mantled around also with slate, mostly a micaceous slate, which in places is very much colored with the red oxide of iron. This mound remains in its natural state, no excavations made, covered mostly with small trees, brush and other vegetation, that forbid a close examination. Large and small pieces of the ore, however, lie scattered over the surface and in places protruding through the soil, from which we may infer that the mound is made up of similar material. A little further to the north, and perhaps an off-shoot from this mound, is a small knoll, or what looks like the upper part of a ledge of iron ore. This deposit was partially opened by a party who attempted to make iron here several years ago; several tons of the ore have been removed, leaving the ledge exposed for 100 feet wide and several feet high. The ore here is a fine grained, dark colored magnetite. A few rods still farther to the north is another exposure of ore, opened up also by the same party and exposed for several feet wide. The ore here is mostly the red hematite, but like the magnetite as exposed in the mounds, it is mixed more or less with silica in the shape of quartz.

These are among the prominent deposits of iron ore in the immediate neighborhood of Black River Falls that I have examined. That there are others that I have not noticed in this one hasty visit to this place, or that may not yet be discovered by any one, I have no doubt. But these of themselves are sufficient, doubtless, to furnish ore for very extensive works for a period that will extend away into the future, to generations that are yet unborn. The question or questions, however, of their economic importance, and of the profitableness of making iron from these ores, must turn upon their purity and the cost of fuel, flux and building material for furnaces.

These ores in their native state are not what we should call good merchantable ores. The amount of silica mixed with the oxide of iron in the form of quartz, varying in different parts of the deposit from 15 to 35 per cent., must very materially injure their market value in this respect. It is true this ore can be "dressed up"—to use a mining phrase—to a 70 per cent. ore. That is, by separating the quartz from the oxide of iron, we can make it almost

chemically pure. And the process, or processes, by which this can be done, are not, after all, so difficult or expensive as some people imagine. These ores are almost free from impurities, other than quartz, and owing to the granular structure of this magnetic ore, it will yield easily to a "crusher," and when pulverized in this way, the quartz, which is only mechanically mixed with the oxide of iron, can be separated readily by any of the old processes of cleaning ores from their impurities by water. Or what, no doubt, would be cheaper and better, would be one of those magnetic separators, such as are now used in different parts of the world for cleaning ores of this kind.

The readiness with which ore of this character can be separated by such a process, can be seen by any one who will take the trouble to pulverize a small portion of the ore, and then with a common magnet take up the oxide of iron and remove it to another place, continuing the process until nothing more will adhere to the magnet. By this simple process, he will soon find the oxide of iron, which is easily attracted by the magnet, in one place, while the quartz which will not adhere to the magnet is in another. In this way, I have examined quite a number of specimens, for the purpose of finding out the relative purity of the different deposits, and of different places in the same deposit. And although I would not attempt to give the per cent. of iron in those specimens, not even approximately, yet any one can form a pretty correct idea of the proportion of quartz in a given amount of ore.

But although these ores, that is, these two varieties, the magnetite and hematite, in their native condition may not be good, merchantable ores, that will pay to ship to any great distance, while purer ores can be obtained readily, they can no doubt be profitably manufactured at home, where charcoal can be obtained for a reasonable price. Here these leaner ores can be dealt with by the processes above referred to, before they are put in the furnace, or after they are put into the furnace by fluxes, which probably will be the cheaper way. When I say lean ores, I would not convey the idea that the ores at Black River Falls are inferior ores. On the contrary, I think, when separated from the quartz, they will be superior ores, from which iron of a superior character can be made.

From a specimen of these ores analyzed several years ago by Dr. C. I. Jackson, we have the following result: perox. iron, 67.50 (47.25) metal; silica, 26.75; oxide mang., 365; water, 1.50. This was a specimen of the red hematite. Magnetic ore, when freed from its impurities, contains 72.41 per cent. iron. The trouble with these ores, especially the magnetic, is, the oxide of iron, (that is the ore), has mechanically mixed with it in its granular structure, more or less silica in the form of quartz. The ore is good, but it is in bad company, from which it must be separated, either by mechanical means outside of the furnace, or by chemical means inside. And when we take into consideration the fact that, the object of supplying fluxes to the ores in the furnace is, to furnish substances for which the impurities of the ore have a greater affinity than for the ore itself with which they are combined, and that will in the heat of the process coax them away from the ore to enter into new relations, forming compounds that are fusible at a temperature below that at which they



would melt in their separate condition, we can see that, by a simple process, this separation can take place without being a serious obstacle in the way of manufacturing the ore.

Silica, whether combined with iron, or mechanically mixed in the form of quartz, as is the case with the ores under consideration, has a strong affinity for the alkaline bases, such as lime, potash and soda, and when they are found in the furnace, will leave the metal, or ore, to unite with them to form slag. Indeed, where other ores are mixed in the furnace containing impurities, such as clay, lime or the like, silica acts as a flux to coax away such impurities from the ores, and to form this readily fusible slag aimed at by artificial flux.

These iron ores at Black River Falls, although comparatively lean from this mixture of quartz, are nevertheless related in their geological formation and physical characters, to the iron ores of Lake Superior, Missouri, a large portion of the ores of Scandinavia, and other important iron districts in the world; and I can see no physical reason why the iron made from these ores (other things being equal) may not be equal to the iron made from those above referred to; or that among the best iron made, there may not be found some capable of yielding a steel equal to that of the Swedish iron. The iron and steel producing qualities of our ores, however, are yet unknown, because yet untried.

There is, I understand, a company formed to manufacture these ores on the spot, and that work has already commenced on the furnace. Properly managed, and with proper care and proper treatment of these ores in the furnace, I have no doubt of their success. And more than this, I think it is only the beginning of an enterprise that will grow into an extensive and an important branch of industry. But these deposits of iron ore in the immediate neighborhood of Black River Falls are only a part of a more extensive district. About four miles to the north of these deposits, and a short distance to the east of Black river, and near where Morrison's creek enters it, there is another mound of iron ore, very similar in form, size, and the quality of the ore to those already described. The country surrounding this mound is very flat, and apparently an extensive sand bed. In places, the sand is drifted into ridges like snow-drifts, and too poor where even covered with what we may call soil to support anything in the shape of vegetation, save a few scrub oaks, or that class of vegetation that is capable of dragging out a stunted existence on half dissolved silica. This bed of sand, however, is evidently the disintegrated portion of a bed of sandrock, on which this sand rests, for on the river bank, a little to the west of it, we have a section of sand and sandrock resting on the azoic, that will be at least 100 feet thick. If this mound of ore, like those at the "Falls," is resting on the azoic, or extending down into this formation, its depth from the surface must almost equal its height, which is at least 100 feet. There is no chance to examine the ore of this mound, except the pieces lying on the surface. Among these, although generally magnetic, I find specimens that have the metallic brightness and appearance of specular ore. My impression is, that when these mounds of ore are opened up, purer ores will be found.

North from this last mound, "I find no more iron ore above, or in the sandstone, but along the Black river, and on the streams running into it, I find in the azoic rocks, which are here rising gently from beneath the sandstone, iron-stained belts traversing the slate rocks. In places, these iron-stained rocks, (or, what would express it better), rocks impregnated with the oxide of iron, are decomposing into a red clay that may be burned into good ochre for paint, or that can be used to great advantage as flux for silicious ores. In fact, there are places where it is so highly impregnated as to become almost an iron ore. A good example of these impregnated slates may be seen at the mouth of Hall's creek, on the west side of Black river, or specimens of this material can be seen in the cabinet of specimens at Madison. A little further north, at a mill owned by Mr. Arthur Campbell, and about six miles to the north or northeast of Black River Falls,—for the river is bending around to the east of north here,—we come on to what appears to be the north side of these slate rocks. Near their junction with the granitic rocks, they are traversed with large quartz veins, some of them very much stained with the oxide of iron, and affording, in places, strong indications of ore. About a mile north of the mill, and near the half of a mile west from the river, on a little stream that runs into it, is what appears to be a ledge of hematite ore. I say what *appears* to be, because the surface and sides of the bluffs here are so covered with surface accumulation and vegetation, that it is impossible without actual mining to find out what there is. But by digging away the surface material I found in several places good specimens of ore, (red hematite) mixed, however, with considerable quartz. This quartz, with the ore, and other vein like material, has but very little pitch, indeed it is standing almost on its edge; what it will amount to, is impossible to tell without opening it up. The indications are good, and there are good specimens of ore here, which is all that can be said of it for the present. In a new country like this, it is almost impossible to find out what it does possess, or to give anything like a correct idea of what little we do see.

North from this place, we enter on the centre, or granite portion of this belt. This portion I have already referred to in connection with kaolin beds. Here the indications of iron ore cease.

It would seem from the indication here, that from this place to Black River Falls, a distance of six or seven miles, we have what may be called a metalliferous belt, that is, a belt of country impregnated more or less with iron ore, and in which good deposits will occasionally be found; and possibly it may extend eastwardly along the south side of this granite belt, in connection with those slates, and gneiss, and gneissoid rocks peculiar to this side of it. Impressed with this idea, I extended my observations east from the deposits at Black River Falls. About six miles to the east, there is another mound of iron ore similar to those already described, only perhaps a little larger. This mound is, I should judge, about a mile in length east and west, or nearly so, and about a half or three-quarters of a mile wide at its base, and over 100 feet high. I may not be very correct in my estimate, from the fact that it was one of those very warm sultry days when every mosquito was on

duty, and each bent on its prey, and the air so full of them that it was with some degree of difficulty that a man could see through them, even if he could keep his head steady long enough to make an estimate; but I think I am not very far out of the way. Like the other mounds, it is covered with small trees and brush, with pieces of the ore, large and small, scattered all over the surface, and partly buried in the soil. The ore in its normal condition, that is, where it has not been disturbed by surface agencies, is everywhere concealed beneath the soil and fragments of ore, and, without making considerable excavations, it is impossible to tell what portion of the mound is ore, or whether it is made up entirely of this material. Like the last mound referred to, it rises from a level, sandy plain, without any exposure of the rock that I could find with which it is connected. In fact, the whole country here, away from the rivers, is covered with sand, hiding entirely the azoic rocks with which the ore is, in all probability, connected. Owing to this fact, I made no systematic survey of this belt to the east of this place, except along the valleys of the Yellow and Wisconsin rivers, consequently, there may be other deposits similar to this, rising through the sand and sandstone between those streams.

It will be seen, from the descriptions given, that there is in the region of Black River Falls an extensive district within which we find not only strong indications of iron ore, but quite a number of actual deposits of greater or less value. And now, with railroads converging to this point, in the midst of a timbered country, with unlimited water power and other natural advantages, it requires but an ordinary amount of common sense to see that this is one of those places in our state where, sooner or later, important mining and manufacturing interests must spring up.

The region of country on Yellow river, east from Black river, near the Falls, is exceedingly flat and marshy, and this schistose or slaty rock with which the iron ore on Black river is connected, is but poorly exposed; and, where exposed at all, is only along the river bank, and often only in the river bed. Thus, while it is sufficient to prove that this class of rock rises along an east and west line, it gives but a small chance to study its metalliferous or structural character. Nevertheless, it is not difficult, even here, by close observation, to recognize the fact that you are in a mineral region, or what perhaps would express it better, *on* a mineral region, for the mineral stratum is mostly beneath this marshy, sandy surface.

In many places, this loose sand is very much impregnated with iron, forming a very lean, sandy iron ore, the iron acting only as cement to hold the quartz sand together. In other places, the iron ore is formed in fine grains, like shot, and from that up to the size of peas, or even hazelnuts, but mixed with the sand. The marshes also present belts of a brown, sometimes a yellowish grass turf or peat, very much stained with the oxide of iron. Where the Necedah road crosses Cranberry creek, these features are well developed.

Near the center of this granitic belt, and not far from where the kaolin beds are noticed, there are small seams of a very pure hematite, and also of

specular iron ore traversing these hard rocks on Yellow river. The patches of slate rock found in connection with them are also impregnated with iron. In places, these slates are depositing into a reddish clay, the richest of which will no doubt burn into a fair ochre that can be used for paint or for fluxing silicious in iron ore. With the exception of these things, which must be regarded only as indications of something better, I find nothing of importance so far as the ores of the metals are concerned. It is possible, however, indeed I think it is likely that knolls, or even mounds of iron ore similar to what we find on Black river, will be found protruding through this superficial bed of sand, in places between those streams. East from this place, on the Wisconsin river, and about eight or ten miles to the south of the city of Grand Rapids, these underlying azoic rocks appear as surface rocks in the bed and along the banks of the river. These strata are very similar to what we find on Black river, with strong evidences of being the extension eastward, of that metalliferous, or iron belt so well developed there, indications of which we find also on the same line, east on Yellow river. Here on the Wisconsin river, we have, in addition to those indications of iron ore on Yellow river, beds of bog-iron ore in a number of places, scattered over a large tract of country, and there appear to be very extensive places where this ore is exposed to the surface; may be found at Point Boss, about eight or nine miles to the south of the city of Grand Rapids, on the east side of the river, also on the west side, near the city, and on the east side about three miles above. In the town of Grant, in Portage county, on what is called Four Mile Creek, and about six or seven miles to the east of the beds at Point Boss, there are fine specimens of very good ore, and indications of extensive deposits.

These beds of ore, like bog iron ore everywhere else, are strictly surface deposits of comparatively modern times, consequently are near the surface and covered as a general thing with only a few inches of surface accumulations, and often resting on material of a similar character. In places where the surface of the country is low and marshy, these beds are covered with a brown, sandy soil, which in places passes into a sandy peat, while in others not so low and marshy, the covering is composed more of clay and gravel. From the fact that we find those beds in their natural state, that is, where nothing has been done to develop them, it is impossible for any one to give anything like a correct estimate of their extent, or the amount of ore any one of those beds may contain. Where I have examined them, however, by cutting into the beds, I find them to be from one to three feet thick, and apparently extending horizontally over a large surface of country. The ore in those beds is not of that earthy, ochreous kind that we sometimes call bog ore, that yields only 10 or 15 per cent. of iron, but it is a hard, compact ore, with a metallic or sub-metallic luster, and resembles very much some varieties of brown hematite.

There is great uniformity in the appearance, and I should think in the quality also, of the ore in all the places that I have examined; a specimen from one will represent the whole. Without analysis, it is impossible for any one to state correctly the per cent. of iron this ore contains; but from a

careful judgment of the matter, a judgment formed from a recollection of similar ore in other parts of the world, I would say, that the yield will probably be from 45 to 55 per cent. of iron.

This bog iron ore, although its mode of occurrence may be different, and differ slightly, perhaps, in its physical characters, is no doubt in its chemical composition the same as the brown hematite found in Sauk and Richland counties, and principally represented at Ironton; and I can see no reason why this bog ore here, may not be as valuable for all practical purposes as the hematite there, unless it should contain more phosphorus among its impurities as bog ore in some places is apt to do. This, however, can be determined only by analysis, or actual work in the furnace. These ores, both the hematite and bog, are among the important ores of iron, and deposits of any considerable extent will remain but a short time undeveloped, after proper notice of their existence has been given.

Bog iron ore is supposed to be formed by deposits from water, the water obtaining the material, either from disintegrated deposits of iron ore on the surface, or from iron contained in the strata through which it flows in the form of springs. This water, with the iron dissolved in it, finding its way into depressions on the surface, and coming in contact with decomposing organic bodies, is deprived of its iron by chemical re-action, produced wholly, or in part, by this decomposing organic vegetable matter. To form such deposits, it is not necessary that the water should be saturated with iron; small quantities dissolved in it are sufficient, in a long continuation of the process, to build up vast beds of ore in this way. This is one of the beautiful processes of nature, set in operation on the surface before our eyes, and is not altogether a process of the past, but is even now, in many places, in active operation.

The first intimation of bog iron ore in this region, I obtained in the following manner: I was exploring on the east side of the Wisconsin river for the purpose of satisfying myself that the azoic rocks there, pitched beneath the sandstone. In my wanderings, I came to a small stream running into what is called Five Mile creek.

It had rained heavily the day before, and the little stream had overflowed its banks, leaving vegetation all stained with iron. The little stream itself looked more like water pumped out of an old mine, than water flowing from springs. After securing my horse, I made my way up this little stream to its source, which I found to be in a marsh at no great distance. On the borders of the marsh, the water had cut a deep furrow, or rut, into a very brown, iron soil, very deep, and containing a large amount of decomposed vegetable matter. Here for the first time in Wisconsin, I found good specimens of bog iron ore. The soil here on the borders of the marsh contains a large amount of iron in an earthy, ochreous condition, which is readily taken up and removed by the water, leaving the purer ores exposed. Mr. Aber, a son of the gentleman on whose land the ore is found, told me that a little farther up in the marsh, there is an extensive bed of some kind of ore. It was at that time

covered with water so that I could not see it, or by any means find out its thickness or horizontal extent.

We have here, in the eastern part of Wood county, and extending into Portage, a large district, in which we find, not only indications of bog ore, but a number of actual deposits scattered over a large tract of country that will, when developed, yield, no doubt, a large amount of superior iron ore. And there is a good foundation for the belief that the deposits which are seen, and that by a mere accident were discovered, are but a small portion of what remains unseen beneath those peat marshes that extend over miles of surface. I know of no place on the earth where there are more favorable conditions combined to produce extensive deposits of rich bog ore than here. In the first place, the surface of the country is low and marshy, and everywhere forms depressions in which surface and spring water would naturally accumulate. In these depressions a large amount of decomposing vegetation combines with living species to form peat and peaty matter. In the second place, this water passes over, or rises through, the azoic formation, which is known to be almost everywhere impregnated with iron in some form, even where no extensive deposits are known to exist. In the third place, it is east, as can be seen by a map, from the iron district of Black river, and in all probability the eastern extension of the same belt along which existed once mounds and ledges of iron ore similar to what we find there; but like the rocks in which they were found, have yielded to disintegration, and the iron has been taken up and carried away by water and deposited in this new form.

In the fourth place, this district is on the same line of physical disturbance with the kaolin deposits, where we have unmistakable evidences of intense, and long continued disintegrating forces, that have leveled down, and leveled up, the surface inequalities of this region, until almost every trace of its original configuration is obliterated. I can think of this tract of country only as one of nature's laboratories, in which her forces have been at work taking down, and into pieces, original forms of matter, and moulding the material into forms better adapted to modern civilization. Hence the kaolin from feldspar, the bog iron ore from original deposits, and other natural products are newly made from old material. On the north side of this granite range, where it is again dipping to the north, I find in the town of Rudolph, about seven miles to the north of Grand Rapids, on what is called Shirky Hill, a fine prospect for iron ore. It is very difficult to tell what it really is from the fact that, the rock in place, is not exposed any where in the immediate neighborhood where the ore is found, consequently the exact geological position of the ore, or its relation to the rocks, cannot be determined. This is one of those places, where a knowledge of geological relations is all important in determining the value of such phenomena, as may be seen by the following considerations: About a mile to the south of this place, as we approach it from Grand Rapids, there is an extensive ridge with a good exposure of sandstone on the surface. A quarry is opened here, and the sandstone used for building. There is no place, however, where

we can see the junction of this sandstone with the azoic rocks below, but we know from the character of the rock, that it cannot be far above it. Shirky Hill, the ridge on which the ore is found, is not quite so high as this, but it is nevertheless a well defined bluff, running about east and west. About half way up this bluff, and from there to the ridge, the surface is covered for near one-half mile east and west with a jaspery brown ferruginous quartz, very porous. From a well sunk here we find, that beneath the surface there is a great depth of what would be called surface material, produced by extensive disintegration along this portion of the bluff, and forming a heterogeneous mass of fragments of rock, vein stones, and iron ore, mixed up with a hard reddish clay, this jaspery porous quartz rock forming a considerable portion of the mass. This well, although sunk over twenty feet, does not give us the thickness of this material, or the characters of the rock beneath it.

A short distance to the north of this, at Scott's mill, and on a little lower ground, there is another well. It is sunk into strata very similar to what we find at Black River Falls, that is, the azoic slates. In this slate rock, good specimens of iron ore were found in sinking the well,—ore that is very similar to what we find at Shirky Hill. Here we know we are below the sandstone. Now, inasmuch, as to the south of where this ore is found, a short distance, and on a little higher ground, we find the sandstone in place, and a little to the north of it, on a little lower ground, the azoic rocks are at the surface, it is very evident that this ore at Shirky Hill is at, or very near, the junction of the two formations.

That this iron ore and vein material is the disintegrated portion of a deposit of iron ore at this place, and not washed here from elsewhere, is evident beyond all doubt, for the outlines of the deposit can be traced by this vein material on the surface; but whether the deposit was formed at the junction of the two formations, and conforming to the horizontal bearing of the sandstone, or whether it is a deposit occurring as a vein in the azoic formations, the upper portion of which has been disintegrated, is very difficult to tell, but very important to know. If it is the former, then no doubt the deposit, or a very large portion of it, with the rock in which it was found, has been destroyed by disintegration, and this heterogeneous mass may be all that is left of it. If the latter, the upper portion of the vein only has been exposed to these disintegrating influences, furnishing material for this mass, beneath which the vein in place will be found.

I would not only urge upon those who may undertake to develop this prospect for iron, the consideration of these things, but would add the following suggestions: If this material is the disintegrated portion of an *horizontal deposit* running between the two formations, it is *possible* that a part of the deposit may yet remain. If so, it will be found only on the western end, where the surface, gradually rising, may give a few feet of sandstone over the deposit. To prove this, it would be of but little use to sink a shaft anywhere but to the west end, or at least on the western end of these surface indications. But if it is the upper portion of a *vertical vein*, "or the

back of a lode," as a Cornish miner would call it, that is extended down into the lower formations, the plan to sink a shaft will be in the centre of this deposit, as indicated on the surface. The shaft should be sunk to the undisturbed rock, and, if the vein is not found there, a drift should be extended each way, that is, north and south, from the shaft, on the undisturbed rock. In this way, it is certain to find the vein if it is there; and that too, with the expense of sinking one shaft, and running two drifts. The cost of sinking a shaft and extending drifts in this material, with good miners, ought not to be much, if anything, over \$1.00 per foot. The more I think of those large masses of porous, cellular, drusy, jaspery quartz, that lie scattered over the surface, and mingled in this heterogeneous mass with other vein like material, and good specimens of hematite ore, the more importance I am disposed to attach to this place. It reminds one very much of the upper decomposed portion of an extensive mineral vein, or lode, to use a mining term. Such material is very often found over, or very near the most important veins, and sometimes extending down to the depth of a great many feet. It is not the result of decomposition only, but the transformation of partially decomposed material into what is called by the Cornish miners, "gossan," and by the German miners, "iron hat." It is regarded by the miners of experience everywhere, as an important indication, and in many cases is a sure guide, to productive veins. The chorus of the German miners' song is,

**"There is no lode like that  
Which has an iron hat."**

Cotta, in describing this, the upper portion of mineral veins in Germany in his admirable work on "Ore Deposits," says: "This formation of the iron hat in lodes, by the decomposition of the sulphides and spathic iron (frequently extending to a depth of many fathoms), naturally presupposes that the sulphides and spathic iron were originally present, and, as these are frequently combined with silver and lead ores or gold, it may be an indication of rich deposits of ore."

It does not follow, necessarily, because we find mixed with this porous, cellular quartz these oxides of iron, that iron ore only will be found in the vein below. They evidently form an essential part of this material we call gossan, or iron hat, even where iron ore is not found to prevail in the vein below. In this change that has taken place in the upper portion of the vein, the original ores are often entirely dissolved and removed, except the iron which may remain or be newly formed from the decomposition of other ores or minerals. Hence, if a vein is found beneath this gossany out-crop, in the town of Rudolph, it is not impossible that other ores beside iron may be found in it. Representative specimens of ore and vein material from this place are deposited in our museum of practical geology.

I think there must be other places similar to this, and perhaps much better in this neighborhood and to the west of it, but I have not taken time to trace them out. My attention was called by Mr. A. Eaton of Stevens Point, to a place directly east of this, on the Wisconsin river, just where the Plover river



enters it. Here I find on the east side of the river and beneath a heavy bed of sand, what may be called a micaceous-irony-clay, resulting no doubt from the decomposition of the mica slate. It contains a sufficient amount of iron to make a common paint, even in this clayed condition, and has been used for this purpose by Mr. S. A. Sherman, of that place. The clay is of a light brown color, with a very fine texture, and but very little grit. When rubbed between the fingers, it has the greasy appearance and soft feeling of flax seed iron ore, (as this kind of ore is often called). I find that the color of this clay can be improved very much by exposure to heat, and I think, that by washing and then heating it, a good ochre can be obtained.

Before I close my report on this very interesting belt of country, extending from Black river, near the Falls, to the Wisconsin river near Grand Rapids, on which so many actual deposits as well as fine prospects of kaolin and iron ore are found, I will refer briefly to another deposit of iron ore, which, although not immediately connected with it, is nevertheless in some way related to it. Since my examinations were made along this belt in the summer, my attention has been called to a place on Yellow river, a little to the west of Necedah, in Juneau county, where indications of bog-iron-ore, similar to what we find at Grand Rapids, had been noticed. My attention was first called to this place by T. Weston Esq., of Necedah, and in company with the Hon. J. T. Kingston, of that place, I examined the spot.

It is on the west side of the Necedah Bluff, on a low, marshy place that extends west and north for a number of miles. As we entered the margin of the marsh, we noticed the sandy surface stained with iron, and a little further on, in a cattle path, considerably small specimens of iron ore, like shot, similar to what I have described already on this river farther north. A little farther on in the marsh, in a ditch dug to drain it, we found, just below the sand in the bottom of the ditch, a bed of compact bog iron ore, very similar to what we find in the region of Grand Rapids in its mode of occurrence, and I should think also in its quality. We dug down to this bed of ore in quite a number of places along this ditch, and found that it extended over a great many acres of surface. In places, the iron is mixed with sand, forming a very lean, sandy ore, but mostly formed into a bed of compact ore from one to three feet thick. Since my return, Mr. Kingston has written me, saying that he has traced the ore down the creek,  $\frac{3}{4}$  of a mile below where we examined it. The ore for about half that distance is of excellent quality, the other half not so rich. The marsh in which this ore is found, is connected with a very extensive, low, marshy region, formed by the branches of Yellow river, which, extending in a northwest direction, take their rise in the south side of this metalliferous belt above referred.

It is a question of no small importance, whether the ore forming this extensive bed has been derived from this belt in town 21, about 12 or 15 miles above it, or from some special cause in the immediate neighborhood of the ore. If from the former, then in those marshes which are spreading out several miles in width, and extending up to the base of this belt, we have a right to look for extensive beds of the same kind of ore spreading over a large por-

tion of them. But if from the latter, the ore will be limited no doubt to the region round about the mound.

This mound itself is a very interesting and perhaps a very important geological specimen. It is composed of very hard quartzite, in places passing into a pure white quartz rock. It is about the size of one of those mounds of iron ore at Black River Falls, and occupies a very similar geological position.

Whether this bog iron ore, in its origin, is any way related to this mound of quartzite, is a question yet to be determined. Having made this discovery so late in the season, I have not attempted to develop it. I would recommend it, however, as one of those important places worthy of farther consideration. The specimens of ore in our museum of practical geology will confirm all that I have said in reference to its importance.

North from the belt of country just described, my observations have been limited. A hasty trip to Wausau, in Marathon county, along a route confined mostly to the river valley, furnished the only chance for exploration. Occasionally, while on the way, my attention was called to objects of importance, such as the beautiful building stone at Stevens Point, quarried from the lowest members of the Potsdam sandstone, and the fine beds of clay for brick, a little to the northwest of it, on the Wisconsin Central Railroad. But I gave to these things only a passing notice.

At Wausau the river crosses a well defined ledge of granite rocks, forming what is called the Big Bull Falls. There is nothing of especial interest along the river banks here, but in following this range of rocks both to the east and west of the river, the evidences of its metalliferous character are met with, illustrated specimens of which are placed in the museum.

It is not my intention to report on this region of country now, only to say, that here the granite and azoic formations are no longer confined to a narrow strip of country running north and south, but are spreading both to the east and to the west. Indeed, I think there is no doubt but that here we enter upon the threshold of that metalliferous belt of granitic and azoic rocks, which, running through Canada, enters our state through the upper peninsula of Michigan, and that will no doubt continue into northern Minnesota; and, inasmuch as this belt of rocks is known to be exceedingly rich in iron and copper in Michigan, close to our state line, there is good reason to suppose, at least, that where this belt crosses our state, will be our mineral region.

But from this place (Wausau) to the south shore of Lake Superior, a distance of over one hundred miles, there is almost an unbroken forest, unexplored, and comparatively unknown. In entering upon the exploration of this region, a man can no longer hope to find a lodging place among the thinly-scattered inhabitants, as I have had the privilege of doing often, but he must take his pack on his back, and make up his mind to live in the woods, away from the borders, even of civilization. This, you are aware, is not the work of one man alone, and, before it can be accomplished, some provision must be made for assistance.

Before I close this report, I will state that, as the result of my observations

this season, we have the fact that our iron ores are not confined, as we supposed they were, to the northern portion of the state, but are distributed over a large portion of the southern and central part, affording a greater variety of valuable ores than is usually found within such limits. In their undeveloped condition, no man can form a correct estimate of the extent or value of these ore districts. Like undeveloped ore districts everywhere else, they are subject to uncertainties that no practical or scientific knowledge can wholly guard against. Nature, as a general thing, gives only on the surface the indications, with a few illustrative specimens, of her richer deposits that lie buried beneath the surface. These indications I have furnished in this report, the specimens I have placed in the museum; and from these things I hope every one interested will form his own opinion. There are but two places in the southern or central part of the state where any attempt has been made by actual work to develop the deposits thus indicated by surface appearances; one at Ironton, in Sauk county, already referred to, the other at Iron Ridge, in Dodge county. This latter place was examined and reported on, several years ago, by competent men, consequently it is well known and well understood; I refer to it here only, to say that it is still in a very prosperous condition. In a letter just received from J. C. Ricketson, Esq., the general agent, I learn that there have been taken from this deposit the past year, 1872, 90,000 tons of ore.

In view of the comparatively unlimited supplies of iron ore of good quality and various in kind, it must be a matter of great interest to the state to know what her chances are for fuel, flux, fire clay, refractory building stone and other material necessary for manufacturing purposes. In my investigations I have had an eye to all of these things, but am not prepared to give a full report of them here. They will form a part of some future report, if the work is continued, or what would be very much better, if a provision is made for a general geological survey of the State. I will state here, however, that from facts already collected, it is likely that all these things in the state will be eventually self sustaining.

Your obedient servant,

JOHN MURRISH,

*Commissioner of the Survey of the Mineral Regions.*

MAZOMANIE, Jan. 8th, 1873.

# PATRONS OF HUSBANDRY.

## OFFICERS OF THE STATE GRANGE, 1873.

<i>Master</i>	J. COCHRANE,	WAUPUN.
<i>Overseer</i>	J. H. HUBBARD,	OXFORD.
<i>Lecturer</i>	S. W. KING,	MARSHALL.
<i>Steward</i>	C. W. FOSTER,	METOMEN.
<i>Asst'd St'd</i>	A. J. SEXTON,	KILBOURN CITY.
<i>Chaplain</i>	E. F. DUNHAM,	CLEMANSVILLE.
<i>Treasurer</i>	J. CORY,	FOOTVILLE.
<i>Secretary</i>	JAMES BRAINARD,	OSHKOSH.
<i>Gate Keeper</i>	E. ABBOTT,	ALMOND.
<i>Ceres,</i>	Sister F. F. FOSTER.	
<i>Pomona,</i>	Sister M. BRAINARD.	
<i>Flora,</i>	Sister FLORA CRANE.	
<i>Lady Steward,</i>	Sister L. M. HUNGERFORD.	

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J. COCHRANE, Waupun.	O. D. HINCKLEY, Ripon.
J. H. OSBORN, Oshkosh.	H. C. SHERWIN, Ladoga.
A. W. McLAUGHLIN, Plainfield.	

### PURCHASING AGENT:

J. H. OSBORN, Oshkosh.

### ORGANIZING DEPUTIES.

H. C. SHERWIN, Ladoga.	JAMES BRAINARD, Oshkosh.
JAMES ALLEN, Byron.	W. N. KELLEY, Plainfield.
P. MERRILL, Omfo.	L. W. WRIGHT, Monticello.
J. W. LEFFINGWELL, Columbus.	DAVID WILLIAMS, Darien.
W. O. FEDDERLY, Columbus.	A. H. EDWARDS, Beaver Dam,
S. W. KING, Marshall.	J. M. KELLOGG, Woodworth.
J. CORY, Footville.	G. G. GREEN, Alto.
S. HUNGERFORD, Kilbourn City.	G. W. SHATTUCK, West Lima.
J. H. HUBBARD, Oxford.	T. S. JORDAN, West Lima.
CHARLES WATSON, Washburn.	G. S. PUTNAM, Greenbush.
D. L. CORNELL, Waupun.	C. M. BRAINARD, Black Creek.
C. M. TREAT, Clinton Junction.	C. W. FOSTER, Metomen.
E. FARNHAM, Apple River, Ill.	J. G. S. HAYWARD, Eagle Corners.
F. RITCHIE, Sun Prairie.	E. B. BOLENS, Juneau.

## LIST OF GRANGES.

No.	NAME OF GRANGE.	NAME OF SECRETARY.	POST OFFICE ADDRESS.	COUNTY.
1	Plainville .....			
2	Dell .....	S. E. Hungerford.	Kilbourn City ...	Columbia.
3	Delton .....			
4	Harmony .....	J. B. Wright .....	Oxford .....	Marquette.
5	Forward .....	J. H. Osborn .....	Oshkosh .....	Winnebago
6	Pleasant .....	Simeon S. Phelps.	Spring Bluff .....	Adams.
7	Union .....			
8	Faith .....			
9	Hope .....			
10	Charity .....	S. C. Waterman .....	Plainfield .....	Waushara.
11	Fidelity .....			
12	Experiment .....	J. D. Beggs .....	Almond .....	Portage.
13	Morning Star .....			
14	Evening Star .....			
15	Oasis .....	G. W. Pierce .....	Plainfield .....	Waushara.
16	Lone Pine .....			
17	Unity .....			
18	Coloma .....			
19	Rising Sun .....			
20	Friendship .....			
21	Buena Vista .....			
22	Empire .....			
23	Windsor .....			
24	Marshall .....	E. J. Brooks .....	Marshall .....	Dane.
25	Union .....	C. G. Cross .....	Sun Prairie .....	Dane.
26	Utica .....	R. W. Frees .....	Elo .....	Winnebago
27	Metomen .....	F. J. Stickles .....	Metomen .....	Fond du Lac
28	Winnebago .....	M. Whitmarsh .....	Oshkosh .....	Winnebago
29	Clemansville .....	Stephen Bowron .....	Vinland .....	Winnebago
30	Floral .....	Chas. H. Betts .....	Oshkosh .....	Winnebago
31	Welcome .....	S. C. McDowell .....	Fox Lake .....	Dodge.
32	Alto .....	J. H. Downey .....	Waupun .....	Fond du Lac
33	Byron .....	Alfred Bliss .....	Byron .....	Fond du Lac
34	Rosendale .....	W. J. Barnes .....	Rosendale .....	Fond du Lac
35	Center .....	A. L. Fisher .....	Center .....	Rock.
36	Rock River .....	P. Palmer .....	Afton .....	Rock.
37	Evansville .....	G. F. Spencer .....	Evansville .....	Rock.
38	Clinton .....	E. F. Vanderlin .....	Clinton Junction .....	Rock.
39	Badger .....	U. S. Hollister .....	Delavan .....	Walworth.
40	Heart Prairie .....	A. B. Morris .....	La Grange .....	Walworth.
41	Columbus .....	E. L. Rupnow .....	Columbus .....	Columbia.
42	Liberty .....	J. W. Sanders .....	Ripon .....	Fond du Lac
43	Ladoga .....	A. C. Whiting .....	Ladoga .....	Fond du Lac
44	York .....	Geo. Weeks .....	Columbus .....	Columbia.
45	Okeeg .....	J. G. Bean .....	Danville .....	Dodge.
46	Excelsior .....	J. K. P. Porter .....	Cooksville .....	Rock.
47	Waupun .....	D. L. Bancroft .....	Waupun .....	Fond du Lac
48	Fountain .....	F. R. Vinton .....	Fond du Lac .....	Fond du Lac
49	Forest .....	A. C. Gregory .....	Omro .....	Winnebago
50	Hampden .....	Samuel Smith, Jr. .....	Columbus .....	Columbia.
51	Leroy .....	Robert Wahler .....	Leroy .....	Dodge.
52	Brandon .....	R. C. Kelly .....	Brandon .....	Fond du Lac
53	Bristol .....	Wm. Baseter .....	Sun Prairie .....	Dane.
54	Brooklyn .....	P. Baldwin .....	Brooklyn .....	Green.
55	Oakfield .....	Delos Hatch .....	Oakfield .....	Fond du Lac
56	Koro .....	Wm. Fridd .....	Koro .....	Winnebago

## List of Granges—continued.

No.	NAME OF GRANGE.	NAME OF SECRETARY.	POST OFFICE ADDRESS.	COUNTY.
57	Ripon .....	W. O. Hargrave.	Ripon .....	F. du Lac.
58	La Fayette .....	W. W. Tuttle.	Gratiot .....	La Fayette.
59	Calamus .....	T. V. Dunn.	Fall River .....	Dodge.
60	Lamartine .....	C. F. Johnson.	Lamartine .....	F. du Lac.
61	Nekimi .....	H. L. Lawson.	Oshkosh .....	Winnebago
62	Banner .....	A. P. Jenks.	Darlington .....	La Fayette.
63	Minerva .....	C. H. Marshal.	Omro .....	Winnebago
64	Eureka .....	Wm. M. Martin.	Eureka .....	Winnebago
65	Union Corner .....	A. T. Cronkhite.	Neenah .....	Winnebago
66	Thompson's Corner	Geo. S. Church.	Neenah .....	Winnebago
67	Fairwater .....	W. C. Marsh.	Braudon .....	F. du Lac.
68	Rolling Prairie .....	F. L. Soyer.	Rolling Prairie .....	Dodge.
69	Winneconne .....	Henry Champion.	Winneconne .....	Winnebago
70	Jordan .....	Ches'er Stevens.	Argyle .....	Green.
71	Bradford .....	Robert Clark.	Tiffany .....	Rock.
72	Du Lac .....	L. T. Rogers.	Milton Junction .....	Rock.
73	Green Bush .....	L. Mayhew .....	Green Bush .....	Sheboygan.
74	Waukau .....	A. Sutherland.	Waukau .....	Winnebago
75	Washburn .....	R. Woodward.	Washburn .....	Grant.
76	Harmony .....	Geo. H. Osgood.	Janesville .....	Rock.
77	Union .....	D. C. Burdick.	Goole .....	Vernon.
78	Stark .....	G. W. Shattuck.	West Lima .....	Richland.
79	La Prairie .....	Henry Tarrant.	Janesville .....	Rock.
80	Gratiot .....	N. E. Tulley.	Gratiot .....	La Fayette.
81	Wayne .....	B. F. Watson.	Wayne .....	Washingt'n
82	Union .....	A. R. M. Pomroy.	Danville .....	Dodge.
83	Oak Grove .....	John Hawkins.	Juneau .....	Dodge.
84	Sugar Valley .....	Elias Morse.	Dayton .....	Green.
85	Middletown .....	W. E. Williams.	Middleton .....	Dane.
86	Algoma .....	A. B. Wade.	Oshkosh .....	Winnebago
87	West Lamartine .....	D. H. Hendry.	Eldorado Mills .....	F. du Lac.
88	Sun Prairie .....	Geo. C. Pierce.	Sun Prairie .....	Dane.
89	Richland Grove .....	E. J. Blackford.	Monroe .....	Green.
90	Franklin .....	Erastus Bowen.	Columbus .....	Columbia.
91	Turtle .....	G. W. Noble.	Beloit .....	Rock.
92	Waterloo .....	Frank Streeter.	Waterloo .....	Jefferson.
93	Pleasant Grove .....	Ammi Dodge.	Etna .....	La Fayette.
94	Hazel Green .....	M. A. Harper.	Hazel Green .....	Grant.
95	Beaver Dam .....	A. H. Edwards.	Beaver Dam .....	Dodge.
96	Evergreen .....	Geo. R. Davis.	Randolph .....	Dodge.
97	Cottage Grove .....	L. J. Walbridge.	Cottage Grove .....	Dane.
98	North Johnstown .....	H. S. Howard.	Milton .....	Rock.
99	Oregon .....	W. C. Bennett.	Oregon .....	Dane.
100	Plymouth .....	R. J. Owen.	Hanover .....	Rock.
101	Janesville .....	Silas Ward.	Janesville .....	Rock.
102	Bristol .....	S. E. Upson.	Pleasant Prairie .....	Kenosha.
103	Hope .....	A. Loomer.	Millard .....	Walworth.
104	Salem .....	W. Curtis.	Salem .....	Kenosha.
105	Monticello .....	F. K. Studley.	Monticello .....	Green.
106	Lowell .....	Daniel Pettibone.	Lowell .....	Dodge.
107	Empire .....	J. H. Shoemaker.	Fond du Lac .....	F. du Lac.
108	Magnolia .....	J. W. Clifford.	Magnolia .....	Rock.
109	Neenah .....	Samuel Miller.	Neenah .....	Winnebago
110	Liberty Prairie .....	W. E. Emerson.	Door Creek .....	Dane.
111	Whig .....	O. S. Jones.	Platteville .....	Grant.
112	Neosho .....	A. W. Lehmann.	Neosho .....	Dodge.
113	Winchester .....	Gunder Larson.	Winchester .....	Winnebago
114	Fox Lake .....	F. J. Terry.	Fox Lake .....	Dodge.

## List of Granges—continued.

No.	NAME OF GRANGE.	NAME OF SECRETARY.	POST OFFICE ADDRESS.	COUNTY.
115	Seymour .....	Wm. Bottomly ..	Darlington .....	La Fayette.
116	Hope .....	W. Alexander ..	Mount Hope.....	Grant.
117	Brass Ball.....	N. M. Burgess...	Salem Station...	Kenosha.
118	Black Earth.....	J. E. Stanford...	Black Earth.....	Dane.
119	.....	.....	.....	.....
120	.....	.....	.....	.....
121	Aurora .....	J. N. Davies.....	Berlin.....	Waushara.
122	Pleasant Prairie...	R. Newell.....	Kenosha .....	Kenosha.
123	Cadiz .....	J. H. Land .....	Monroe .....	Green.
124	Juda .....	M. H. Pengra...	Juda .....	Green.
125	Sugar River.....	Chas. D. Wooster.	Brodhead .....	Green.
126	Somers .....	James E. Spencer	Somers.....	Kenosha.
127	Rock River.....	Geo. Newton.....	Hustisford.....	Dodge.
128	Fountain Prairie..	W. H. Proctor...	Fall River .....	Columbia.
129	Badger State.....	John Brandon...	Georgetown .....	Grant.
130	Plymouth.....	Wm. Swart.....	Plymouth .....	Sheboygan
131	Hope.....	Silas Cushman...	Mifflin .....	Iowa.
132	Wheeler Prairie...	B. F. Compton...	Stoughton .....	Dane.
133	Blake's.....	W. H. Prideaux ..	Bloomington .....	Grant.
134	Bear Creek .....	S. H. Howard ..	Durand .....	Pepin.
135	Montrose .....	W. M. Morehead.	Belleville.....	Dane.
136	Cedar Creek .....	Benj. Turk.....	Cedar Creek.....	Washing'n.
137	Farmington .....	W. H. Gordon...	Boltonville.....	Washing'n.
138	Eden .....	Sidney Stanton..	Fond du Lac .....	FondduLac
139	Albany.....	Albert Broughton	Brodhead .....	Green.
140	Ward .....	J. C. Reeve.....	Eagle Corners ..	Richland.
141	Horicon.....	J. M. Blair.....	Minnesota Junc'n	Dodge.
142	Outagamie .....	Scott Daniels....	Black Creek.....	Outagamie.
143	Producers .....	S. S. Woodward ..	Watertown.....	Jefferson.
144	Augusta .....	J. Curtis Fear...	Augusta .....	Eau Claire.
145	Plover .....	A. C. Wilmot....	Plover .....	Portage.
146	Crawford .....	Wm. D. Merrill..	Prairie du Chien.	Crawford.
147	Dartford.....	B. F. Doble .....	Dartford.....	Green Lake
	Somers Union.....	Price Bailey.....	Kenosha .....	Kenosha.
	Chippewa .....	J. C. Chase .....	Durand .....	Pepin.
	Fennimore Centre..	Richard Bower..	Fennimore Centre	Grant.
	Woodstock .....	Samuel Ferguson	Woodstock .....	Richland.
	Clifton .....	W. S. Watson.....	Martinsville.....	Grant.
	East Delavan .....	M. S. Hollister ..	East Delavan...	Walworth.
	Warren .....	J. C. Searle.....	Warren .....	St. Croix.
	Hammond.....	H. F. McCabe .....	Hammond.....	St. Croix.
	Rush River.....	A. H. Setson.....	New Centreville..	St. Croix.
	Pleasant Valley...	John McMillan..	Pleasant Valley..	St. Croix.
	River Falls.....	D. M. Lusk.....	River Falls.....	Pierce.
	Baraboo.....	A. C. Tuttle .....	Baraboo.....	Sauk.
	Mackford .....	A. A. Austin.....	Markesan .....	Green Lake
	Racine .....	Chas. J. Jackson..	Racine .....	Racine.
	Maple Grove .....	F. M. Dodge.....	Red Wing, Minn.	.....
	Trenton .....	E. H. Bonstead ..	Trenton .....	Pierce.
	Ellsworth .....	Wilson Kinney...	Ellsworth .....	Pierce.
	Clifton .....	C. W. Wright.....	Prescott .....	Pierce.
	Maiden Rock.....	R. M. Sands.....	Maiden Rock.....	Pierce.
	Dodgeville.....	Richard Rowe...	Dodgeville.....	Iowa.
	Viroqua.....	John W. Allen ..	Viroqua .....	Vernon.
	Attica .....	Gideon Gillett..	Albany .....	Green.
	Grand River.....	Chester Walker..	Markesan .....	Green Lake
	Stanton, Star Prai'e.	Robert Densmore	Star Prairie .....	St. Croix.

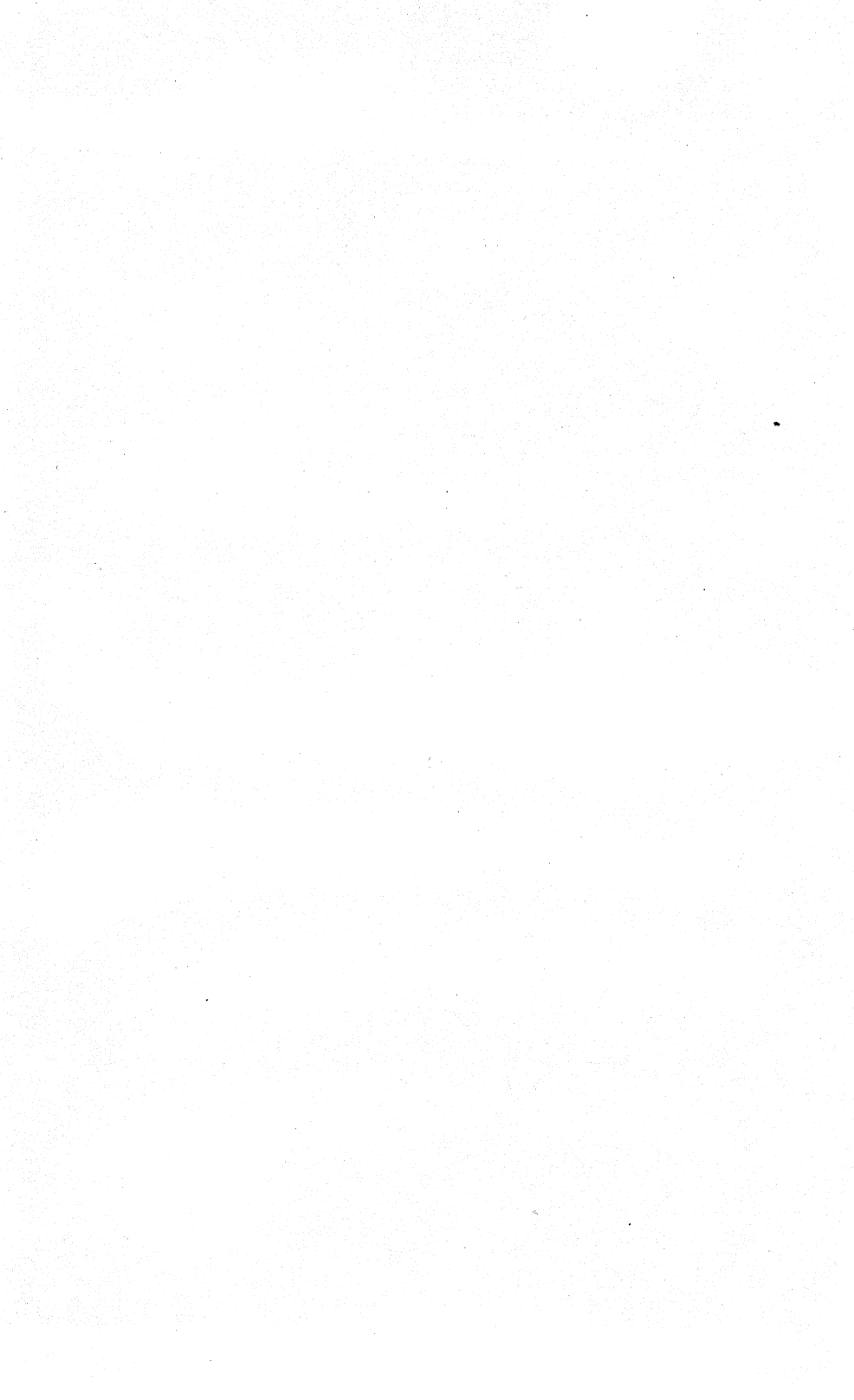
*List of Granges—continued.*

No.	NAME OF GRANGE.	NAME OF SECRETARY.	POST OFFICE ADDRESS.	COUNTY.
	Stockbridge .....	Geo. W. Fenno..	Stockbridge .....	Calumet.
	Willow.....	J. H. Sigglekow.	McFarland .....	Dane.
	Rubicon.....	P. O. Harrington	Rubicon .....	Dodge.
	Mayville ..	E. Raymond....	Mayville .....	Dodge.
	Union. ....	J. A. Hendriks ..	Newcassel.....	FondduLac
	Argus .....	W. W. Hodges...	Monroe .....	Green.
	Clarno .....	Chas. A. Wetzler.	Monroe .....	Green.
	Grand River.....	Chester Walker..	Markesan .....	Green Lake
	Pleasant Ridge ....	Geo. W. Putnam.	Ash Ridge.....	Richland.
	Prairie du Sac.....	A. M. Seymore...	Sauk City .....	Sauk.
	Hartford .....	Andrew Snyder..	Hartford .....	Washing'n.













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