



# LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

## **Twenty-second annual report of the Wisconsin Dairymen's Association : held at Neenah, Wisconsin, February 14, 15 and 16, 1894. Report of the proceedings, annual address of the president, and interesti...**

Wisconsin Dairymen's Association

Madison, Wisconsin: Democrat Printing Company, State Printer, 1894

<https://digital.library.wisc.edu/1711.dl/3LKBEHFMM2PCB9A>

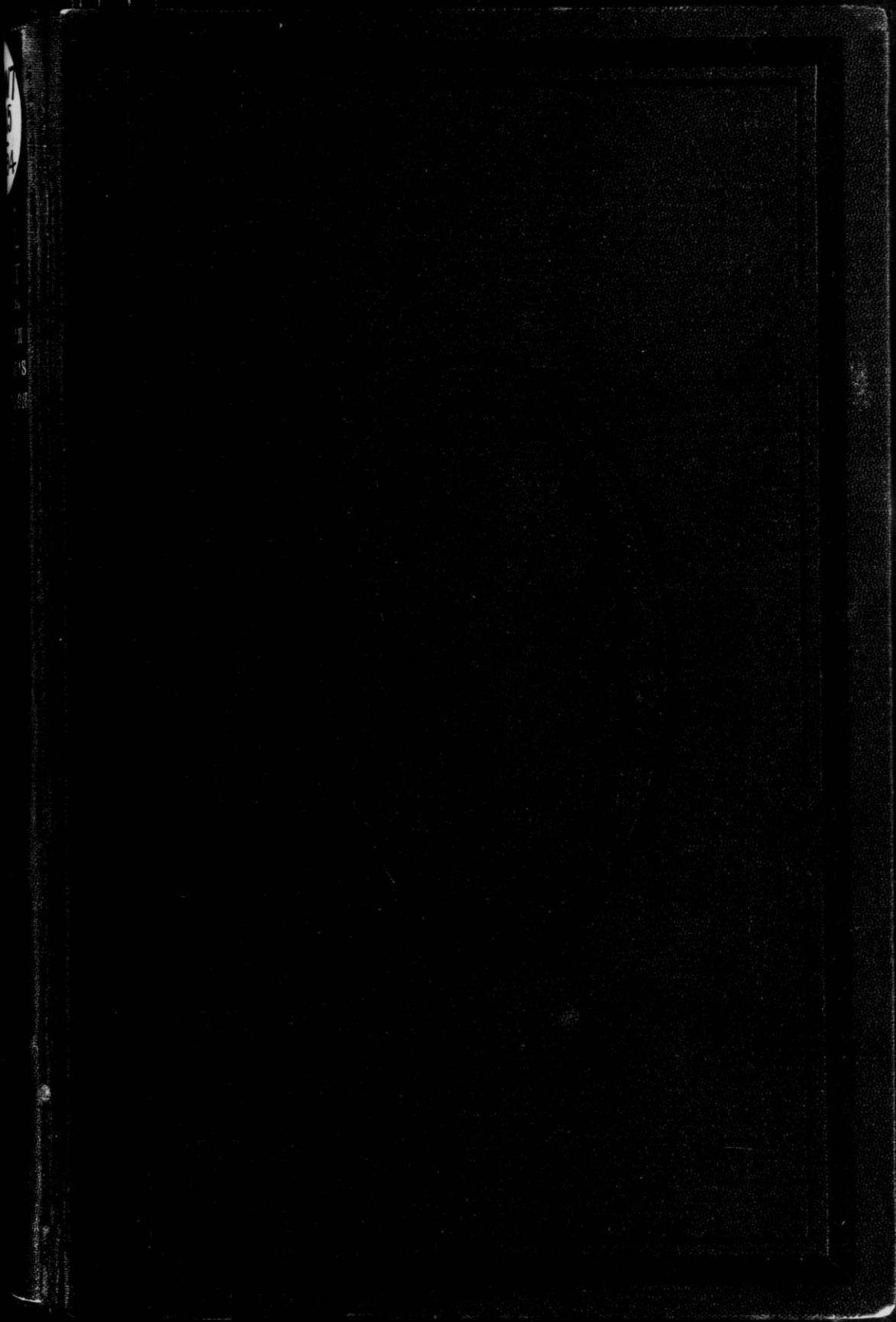
Based on date of publication, this material is presumed to be in the public domain.

For information on re-use, see

<http://digital.library.wisc.edu/1711.dl/Copyright>

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

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

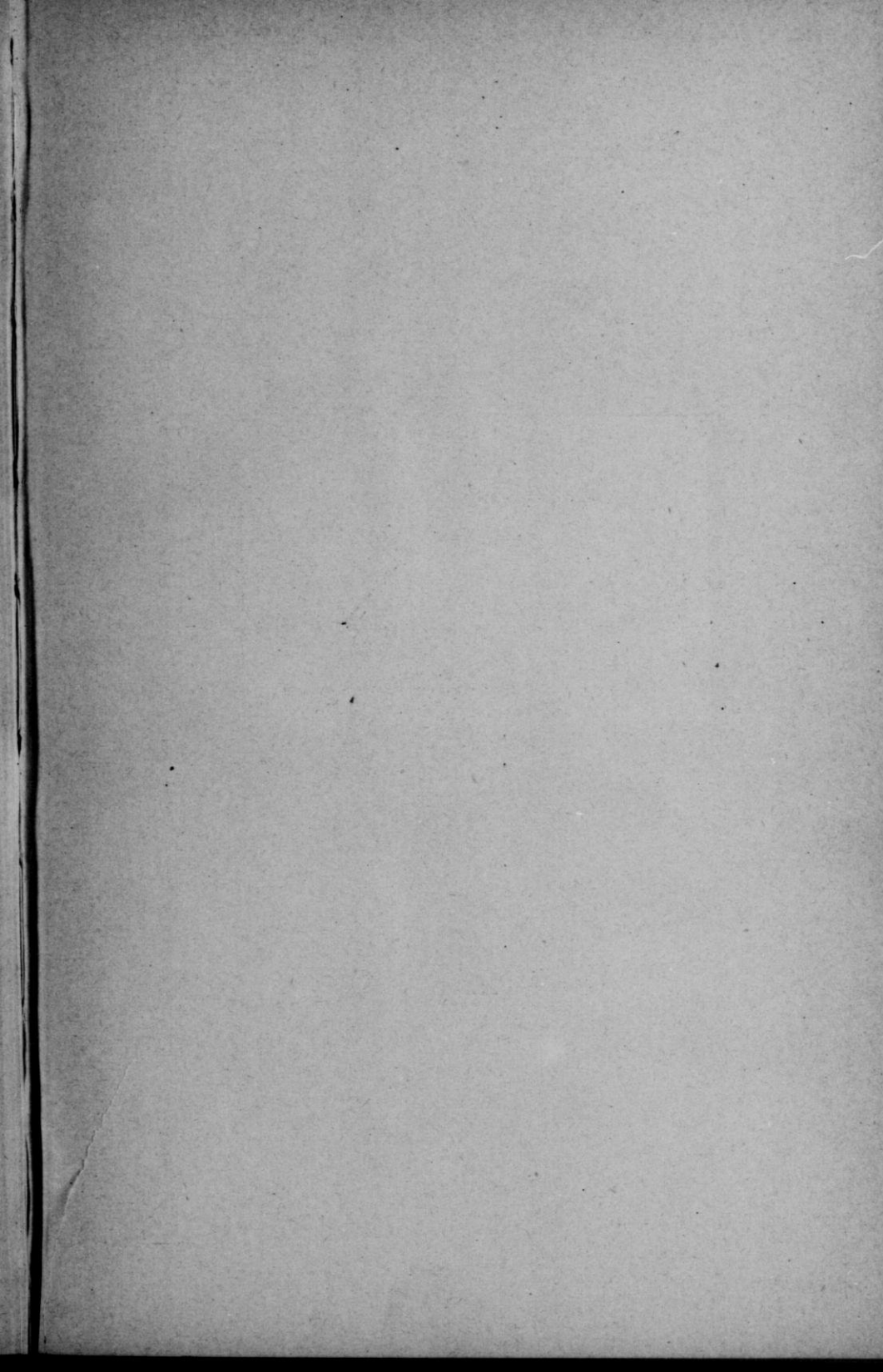


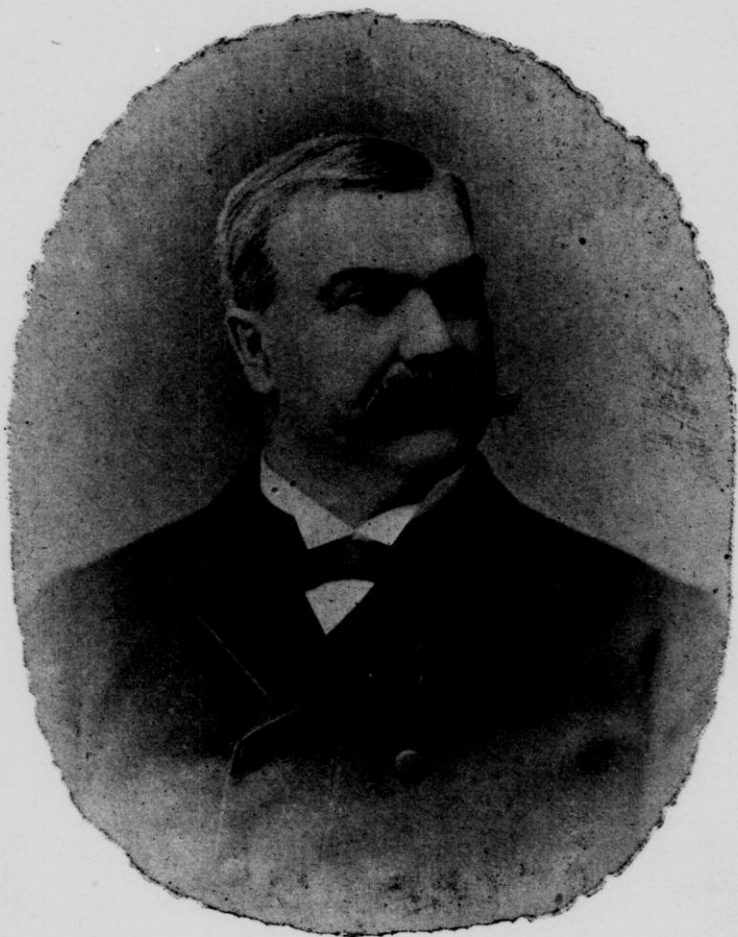
**University of Wisconsin  
LIBRARY**

**Class**

**Book**

39101





U. N. Morrison

TWENTY-SECOND ANNUAL REPORT

OF THE

WISCONSIN

# Dairymen's Association

HELD AT

Neeah, Wisconsin, February 14, 15 and 16, 1894.

---

REPORT OF THE PROCEEDINGS, ANNUAL ADDRESS OF THE  
PRESIDENT, AND INTERESTING ESSAYS AND DISCUS-  
SIONS RELATING TO THE DAIRY INTERESTS.

---

COMPILED BY

D. W. CURTIS, Secretary.



MADISON, WISCONSIN:  
DEMOCRAT PRINTING COMPANY, STATE PRINTER.  
1894.

## LETTER OF TRANSMITTAL.

---

OFFICE OF THE SECRETARY,  
*Wisconsin Dairymen's Association,*  
FORT ATKINSON, May 1, 1894.

*To His Excellency,* GEO. W. PECK,

*Governor of the State of Wisconsin:*

I have the honor to submit the twenty-second Annual Report of the Wisconsin Dairymen's Association, showing the receipts and disbursements the past year, also papers relating to the dairy interests, read at the Annual Convention held at Neenah, Winnebago county.

Respectfully submitted,

D. W. CURTIS,

*Secretary.*

39101  
4 S '96

## TABLE OF CONTENTS.

|  | <i>Page.</i> |
|--|--------------|
| Officers for 1894.....   | v            |
| Articles of association.....   | vi           |
| Members for 1894.....  | vii          |
| Program for 1894.....  | ix           |
| Duties of the Food Commissioner.....                                       | xii          |
| Pure milk, standard of.....  | xv           |
| Proof of adulteration, how made.....                                       | xvii         |
| Fraudulent butter and cheese.....  | xvii         |
| Penalty for the sale of, etc.....  | xvii         |
| Adulteration of food.....  | xxii         |
| Adulteration of food and drugs.....  | xxii         |
| Adulteration of drugs and medicines.....                                   | xxiii        |
| Coloring grain.....  | xxiii        |
| The prevention of frauds, etc.....   | xxiv         |
| <br>PROCEEDINGS OF THE CONVENTION —  |              |
| Address of welcome, Hon. Wesley Mott.....                                  | 2            |
| Response to address of welcome, C. R. Beach.....                           | 4            |
| President Hoard's Address.....   | 7            |
| Reference to Oleo.....   | 12           |
| Price of Oleo.....   | 13           |
| Dairy Farmer.....  | 13           |
| Breeding Poor Cows.....  | 13           |
| Wisconsin Butter Possibilities.....  | 15           |
| How to Breed a Herd of Dairy Cows, F. A. George.....                       | 26           |
| How shall we Produce the Best Cow Feed? C. H. Everett....                  | 36           |
| How to Grow More Succulent Feed for our Dairy Stock, Geo.<br>McKerrow..... | 47           |
| The Cow that Pays the Most for Her Feed, C. P. Goodrich....                | 53           |
| The Value of Pedigree, Dr. Geo. A. Bowen.....                              | 66           |
| ✓ Farming has no Parallel, T. J. Van Matre.....                            | 73           |
| Milk for the Cheese Vat, John High.....                                    | 79           |
| Cheese Making, W. H. Phillips.....   | 90           |
| Odds and Ends in Cheese Making, E. L. Aderhold.....                        | 108          |
| Committee on Nominations.....  | 113          |
| Committee on Resolutions.....  | 113          |



| PROCEEDINGS OF THE CONVENTION — Continued.            | <i>Page.</i> |
|---|--------------|
| Committee on Dairy Implements .....                   | 113          |
| Committee on Legislation .....                        | 113          |
| Keeping Qualities of Milk, Prof. H. L. Russell .....  | 113          |
| Milk Testing, Prof. E. H. Farrington .....            | 125          |
| Rations for a Dairy Cow, Prof. W. F. Woll .....       | 144          |
| Dairy Banquet .....                                   | 158          |
| Awards on Butter and Cheese .....                     | 159          |
| Treasurer's Report .....                              | 162          |
| Secretary's Report .....                              | 164          |
| Dairy Products from Each County at World's Fair ..... | 170          |
| Awards, World's Fair 1893 .....                       | 174          |
| Best Returns from a Field of Corn, Will Widman .....  | 179          |
| Report of Committee on Resolutions .....              | 190          |
| Committee on Memorial Address .....                   | 192          |
| Report of Committee on Nominations .....              | 192          |
| Report of Committee on Dairy Implements .....         | 193          |
| How to Build and Fill a Silo, Prof. F. H. King .....  | 193          |
| My Experience with a Silo, Thos. Convey .....         | 200          |
| Dairy and Food Commission, D. L. Harkness .....       | 207          |
| Question Box .....                                    | 215          |
| Cheese at the World's Fair, N. Simon .....            | 221          |
| Babcock Test on the Farm, C. H. Everett .....         | 223          |
| Good Times Together, President Hoard .....            | 232          |
| In Memoriam—William Henry Morrison .....              | 235          |

## OFFICERS, 1894.

---

### PRESIDENT.

C. H. EVERETT,  
BELOIT, ROCK COUNTY.

### VICE PRESIDENTS.

HON. CHESTER HAZEN, LADOGA, FOND DU LAC COUNTY,  
President Wisconsin Dairymen's Association from 1872-4.

HON. HIRAM SMITH, SHEBOYGAN FALLS, SHEBOYGAN COUNTY,  
President Wisconsin Dairymen's Association from 1875-6. Died May  
15, 1890.

HON. A. DELAND, SHEBOYGAN FALLS, SHEBOYGAN COUNTY,  
President Wisconsin Dairymen's Association, 1877.

HON. H. F. DOUSMAN, WATERVILLE, WAUKESHA COUNTY,  
President Wisconsin Dairymen's Association, 1878.

HON. Z. G. SIMMONS, KENOSHA, KENOSHA COUNTY,  
President Wisconsin Dairymen's Association, 1879.

HON. STEPHEN FAVILL, MADISON, DANE COUNTY,  
President Wisconsin Dairymen's Association, 1880.

HON. C. R. BEACH, WHITEWATER, WALWORTH COUNTY,  
President Wisconsin Dairymen's Association from 1881-2.

HON. W. H. MORRISON, MADISON, DANE COUNTY,  
President Wisconsin Dairymen's Association from 1883-6. Died Decem-  
ber 13, 1893.

HON. H. C. ADAMS, MADISON, DANE COUNTY,  
President Wisconsin Dairymen's Association from 1887-9.

PROF. W. A. HENRY, MADISON, DANE COUNTY,  
President Wisconsin Dairymen's Association, 1890.

EX-GOV. W. D. HOARD, FORT ATKINSON, JEFFERSON COUNTY,  
President Wisconsin Dairymen's Association from 1891-3.

### SECRETARY.

D. W. CURTIS,  
FORT ATKINSON, JEFFERSON COUNTY.

### TREASURER.

H. K. LOOMIS,  
SHEBOYGAN FALLS, SHEBOYGAN COUNTY.

## ARTICLES OF ASSOCIATION.

[Adopted February 15, 1872.]

---

ARTICLE I. The name of this organization shall be, the Wisconsin Dairymen's Association.

ARTICLE II. The officers of this association shall consist of a president, secretary and treasurer.

ARTICLE III. The vice presidents of the association shall consist of all past presidents.

ARTICLE IV. The president, vice-presidents, secretary and treasurer shall constitute the executive board of the association.

ARTICLE V. The officers of the association shall be elected at the annual meeting and shall retain their office until their successors are chosen.

ARTICLE VI. The regular annual meeting of the association shall be held each year, at such place as the executive board shall designate.

ARTICLE VII. Any person may become a member of this association and be entitled to all its benefits, by the annual payment of one dollar.

ARTICLE VIII. The executive board shall have power to call special meetings whenever and at such places as in their judgment its interests so demand.

ARTICLE IX. The officers of the association shall perform such other duties as usually devolve upon the officers of like associations.

ARTICLE X. The treasurer shall have the custody of all moneys belonging to the association, and authority to pay out the same whenever an order is presented, signed by the president and secretary.

## MEMBERS FOR 1894.

---

Allen, Tim., Allensville.  
 Allen, C. R., Allensville.  
 Angus, J. J., Plymouth.  
 Avery, J. Dixon, Loomis Block,  
 Chicago.  
 Allanson, Neenah.  
 Adderhold, E. L., Neenah.

Becker, H., Neenah.  
 Babcock, H. H., Neenah.  
 Boyd, R. M., Racine.  
 Backer, John, Baraboo.  
 Bender, John, Oconomowoc.  
 Brigham, Chas. I., Blue Mounds.  
 Buchen, Geo., Cascade.  
 Bendixen, W. J., Waupaca.  
 Bamford, H. J., Plymouth.  
 Byers, W. H., Hawksbury, Canada.  
 Bowen, Dr. Geo. A., Woodstock, Ct.

Coats, S. T., Neenah.  
 Christensen, Albert, Crete.  
 Cronkhill, A. T., Allensville.  
 Cook, Albert A., Neenah.  
 Carpenter, W. H., Aniwa.  
 Culbertson, H. M., Medina.  
 Clark, J. J., Berlin.  
 Clark, A. J., Osman.  
 Culbertson, J. O., Medina.  
 Cornish, Curtis & Green, Fort At-  
 kinson.  
 Chaplin, H. H., Plymouth.  
 Convey, Thos., Ridgeway.  
 Curtis, D. W., Fort Atkinson.

Derby, Chas., Neenah.  
 Dickenson, Will., Neenah.  
 Denkert, John, Neenah.  
 Daily, J. G., Hudson.  
 Decker, A. J., Fond du Lac.  
 Davis & Rankin, Chicago.  
 Detroit Paper Pack. Co., Detroit,  
 Mich.  
 De Laval Sep'r Co., 74 Cortlandt  
 St., N. Y.  
 Dart, J. J., Neenah.  
 De Land, A. D., Sheboygan.

Eldred, H. S., Milwaukee.  
 Everett, C. H., Beloit.

Ful'erton, John, Neenah.  
 Farrington, Mrs. E. C., Rocky Run.  
 Friday, H. P., Markesan.  
 Frank, Harry J., Lamartine.  
 Farrington, Prof. E. H., Cham-  
 paign, Ill.

Greger, J. M., Neenah.  
 Gerughty, Pat., Neenah.  
 Grandine, J. D., Sherwood.  
 Gillingham, Fred., Neenah.  
 Grundy, Thomas, Clemensville.  
 Gray, James, Sherwood.  
 Grim, Nick., Clemensville.  
 George, F. A., Hale.  
 Goodrich, C. P., Fort Atkinson.

Harness, Arthur, Neenah.  
 Harder, W. S., Neenah.  
 Hough, I. J., Manchester.  
 Hughs Wm. S., Neenah.  
 Hodgson, John, Pewaukee.  
 Huxley, H. E., Neenah.  
 Hickman, J. M., Fremont.  
 High, John, Berlin.  
 Haecker, T. L., Minn. Exp. Sta.,  
 St. Anthony Park.  
 Hoard, W. D., Fort Atkinson.

Jones, G. C., Neenah.  
 Jones, F. R., Hancock.  
 Jamison, W. G., Greenville.  
 Jones, W. F., Burnett Junction.

Krueger, A. H. F., Neenah.  
 Kevill, David J., Winchester.  
 Kellogg, A. M., Neenah.  
 Kasper, P. H., Ni holson.  
 Kampine & Co., Seymour.  
 King, Prof. F. H., Madison.

Lubben Henry, Neenah.  
 Lord, John, Neenah.  
 Lipler, David, Jr., Neenah.

Leutenegger, J. J., Neenah.  
Loomis, H. K., Sheboygan Falls.

Miller, Charlie, Neenah.  
Miller, Anton, Neenah.  
Merrill, S. R., Neenah.  
Manley, C. O., Neenah.  
Madison, R. P., Neenah.  
Madison, R. P., Neenah.  
Madison, R. P., Neenah.  
Madison, R. P., Neenah.  
Madison, R. P., Neenah.  
Multard, Edward, Neenah.  
Mantor, M. T., Adensville.  
McKinney, F. M., Kirkwood.  
Murphy, A. L., Hortonville.  
McKerrow, Geo., Sussex.  
Merrill, P. H., Omro.  
Martin, John S. & Co., Chicago, Ill.  
McBride, Quincy, Milwaukee, care  
L. J. Pettit & Co.  
McCanna Faser Co., Burlington.  
McKerrow, Geo., Sussex.

Nienning, Wm., Neenah.  
Nelson, Halver, Winchester.  
Nadson, Geo. L., Neenah.

Olson, C., Neenah.

Pryse, E. J., Neenah.  
Palmer, Lloyd, Neenah.  
Prittenow, Wm. Zittan.  
Pribbernow, Chas., Zittan.  
Peffer, Miss Kate F., Pewaukee.  
Pewaukee Cream Co., Pewaukee.  
Pool Albert, Darlington.  
Phillips, W. H., Waupun.  
Potts, G. L., Appleton.  
Pringle, E. C., Chilton.

Radick, N. P., Neenah.  
Rasmussen, C. C., Neenah.  
Riverside Cream Co., Saukville.  
Robbins, J. H., Lomira.  
Robinson, A. S., Centralia.  
Reneking, F. C., Appleton.

Rust, J., North Greenfield.  
Rather, Frank A., Calumetville.  
Rowlands, John, Portage.  
Russell, Prof. H. L., Madison.

Stumm, John, Jr., Neenah.  
Strate, L. E., Neenah.  
Sorensen, Charlie, Neenah.  
Stein, Mrs. Peter, Neenah.  
Shells, Robert & Son, Neenah.  
Simon, N., Neenah.  
Scott, L. E., Neenah.  
Scott, L. E., Neenah.  
Simons, N., Neenah.  
Smith, C. R., Zion.  
Spiegelberg, Carl, Zittan.  
Skidmore, Lester, Stockbridge.  
Snyder, Byron, Clinton.

Tullar, F. S., Neenah.  
Tubbs, Peter, Seymour.  
Tolverson, N. C., Crete.  
Thorp, C., Burnett Junction.  
Taylor, H. C., Orfordville.

Vosburg, Frank, Clemersville.  
Vogt, John, Orihula.  
Vogt, Joseph, Orihula.  
Verity, W. H., Appleton.  
Ve. huest, Jacob, Readfield.

Ward, Wm. T., Neenah.  
Ward, Wm. T., Neenah.  
Weinman, Jacob, Neenah.  
Walker, C. C., Neenah.  
Whitenack, Joseph, Neenah.  
Wohld, Jacob, Neenah.  
Walker, Frank, Neenah.  
Wueff, Cansen & Co., Neenah.  
Williams, Joseph, New Glarus.  
Williams, R. W., Ripon.  
Wing, R. S., Appleton.  
Weaver, J. T., Templeton.  
Wittke, Robert, Brillion.  
Woll, Prof. F. W., Madison.  
Willmann, Will., Fort Atkinson.

TWENTY-SECOND ANNUAL MEETING  
OF THE  
WISCONSIN DAIRYMEN'S ASSOCIATION,

HELD AT  
Neenah, Wis., Wednesday, Thursday and Friday,  
February 14, 15 and 16, 1894.

---

PROGRAM.

MORNING SESSION.

10 A. M. Wednesday, 14th — I. President HOARD will call the Association to order, and the business of the Convention will commence at once.

1. Organization of Convention.
2. Address of Welcome by Hon. WESLEY MOTT, Neenah, Wis.
3. Response by C. R. BEACH, Whitewater, Wis.
4. Annual Address by the President.

AFTERNOON SESSION.

2 P. M. Wednesday — II. Milk Producers' Session. At this session will be discussed the best methods in use for the production of Milk, including the feed, care and surroundings of the Cow. Discussions will follow each paper read at the Convention.

1. How to Breed a Herd of Dairy Cows. F. A. GEORGE, Hale, Wis.
2. How Shall we Produce the Best Cow Feed? C. H. EVERETT, Beloit, Wis.
3. How to Grow More Succulent Feed for our Dairy Stock. GEO. MCKERROW, Sussex, Wis.

EVENING SESSION.

7 P. M. Wednesday — III. Milk Producers' Session (Continued).

1. The Cow that Pays the Most for Her Feed. C. P. GOODRICH, Fort Atkinson, Wis.
2. Farming Has No Parallel. T. J. VAN MATRE, Fayette, Wis.
3. The Value of Pedigree in Dairy Cattle. DR. GEO. A. BOWEN, President Connecticut Dairymen's Association.

MORNING SESSION.

9:30 A. M. Thursday, 15th — IV. Cheese Makers' Session. This session will be full of interest to cheese makers and patrons of cheese factories.

1. Handling Milk for Cheese Vat. JOHN HIGH, Cheese Instructor, Berlin, Wis.
2. Cheese Making. W. H. PHILLIPS, Cheese Instructor, Waupun, Wis.
3. The Odds and Ends of Cheese Making. E. L. ADERHOLD, Neenah, Wis.

AFTERNOON SESSION.

2 P. M. Thursday — V. The General Session. At this session will be discussed various questions pertaining to the dairy interest. It will be full of instruction and profit.

1. The Relations of Bacteria to the Keeping Qualities of Milk. Prof. H. L. RUSSELL, Agricultural Experiment Station, Madison, Wis.
2. Six Months of Milk Testing at the World's Fair Dairy Test. Prof. E. H. FARRINGTON, Agricultural Experiment Station, Champaign, Ill.
3. Rations for a Dairy Cow. Prof. F. W. WOLL, Agricultural Experiment Station, Madison, Wis.

Thursday Evening: Banquet by the Women's Relief Corps.

MORNING SESSION.

9:30 A. M. Friday, 16th — VI. The Silo.— How to Build and Fill it.

1. How to Get the Best Returns from a Field of Corn for the Dairy Cow. WILL WIDMANN, Fort Atkinson, Wis.
2. How to Build and Fill a Silo. Prof. F. H. KING, Agricultural Experiment Station, Madison, Wis.
3. My Experience With the Silo. THOS. CONVEY, Ridgeway, Wis.

AFTERNOON SESSION.

2 P. M. Friday — VII. "Free-for-all" Session. The Association desires any one who wants information on any subject pertaining to dairy matters to submit in writing such questions as they may wish answered, handing same to Secretary as early in the Convention as possible.

1. Notes of a Trip Among Eastern Dairymen. C. L. GABRILSON, Secretary Iowa Dairy Association, New Hampton, Iowa.
2. The Importance of Good Roads to the Factory. A. D. DE LAND, Sheboygan, Wis.
3. The Dairy and Food Commission and its Interest to the Dairymen of Wisconsin. D. L. HARKNESS, Dairy and Food Commissioner, Madison, Wis.
4. Why I Exhibited Cheese at the World's Fair. N. SIMON, Neenah, Wis.

PREMIUMS.— BUTTER AND CHEESE.

The Association offers the following Premiums on Wisconsin Dairy Products:

|   |         |
|---|---------|
| Class I.— Dairy Butter.....   | \$50 00 |
| Class II.— Creamery Butter.....   | 50 00   |
| Class III.— Print Butter. Not less than three pounds made into prints.  |         |
| First premium.....  | 85 00   |
| Second premium.....   | 3 00    |
| Third premium ..  | 1 50    |
| Class IV.— Cheese. Cheddars, Flats, Young Americas, Swiss or Brick..... | \$50 00 |
| Class V.— Silver Cup.— Special for Cheese. (See next page.)             |         |

The premiums under classes 1, 2 and 4 will be awarded on the excess pro-rata plan, to all entries in their respective classes, scoring 90 points and over. Exhibitors will be limited to one package only in each class, and not more than \$15 shall be awarded in one class to any exhibitor.

GEO. S. HART & Co., Produce Commission Merchants, 38 Pearl St., New York, offer a prize silver cup valued at \$100, to the manufacturer of the finest quality of full cream cheese; prize to be retained by the winner one year, then to be returned to the Association for renewed competition; the maker who is awarded the cup for three successive seasons to retain the same permanently. The prize cup is of sterling silver, satin finish, with gold border and lining. Upon one side of it is engraved the figure of a cow, and upon the reverse side an appropriate inscription.

---

BUTTER from the milk of a single herd of cows owned by one person, firm or corporation, and made on the premises where the milk is produced, shall be classed as Dairy Butter. Butter from the mixed milk or cream of two or more herds owned by different persons, firms or corporations, and made in a factory habitually using the milk or cream from more than a single herd, shall be classed as Creamery Butter.

## RULES.

### BUTTER AND CHEESE EXHIBIT.

1. Every exhibitor must be a member of the Association. One dollar secures a membership and the annual report of the Convention.
2. Butter made at any time and packed in eight pound pails, or twenty pound tubs, or over, except in Class 3.
3. Scale of points for judging butter: Flavor 45. Grain 25. Color 15. Salting 10. Packing 5. Total 100.
4. Scale of points for judging cheese: Flavor 45. Texture and Stock 30. Color 15. Finish 10. Total 100.
5. Exhibitors will be limited to one package only in each Class.
6. Butter and cheese may be shipped by express, charges must be prepaid, with name and address on each package, to H. K. Loomis, Neenah, Wis.

Manufacturers, dealers and inventors of dairy goods, are invited to make an exhibit. No award or premium will be given. Ample room in the City Hall.

Cheese and butter makers wanting situations for next season, should leave their names with the Secretary, written on a card, with their P. O. Address.



## OF THE OFFICE AND DUTIES OF THE FOOD AND DAIRY COMMISSIONER.

*Chapter 452, Laws of 1889.*

SECTION 1. The office of Dairy and Food Commissioner for the state of Wisconsin, is hereby created. Such commissioner shall be appointed by the governor, by and with the advice and consent of the senate, and his term of office shall be for two years from the date of his appointment, and until his successor is appointed and qualified; provided, that the term of office of the commissioner first appointed under this act shall expire on the first Monday in February, 1891, and vacancies occurring in the office for any cause shall be filled by appointment for the balance of the unexpired term. The salary of the commissioner shall be twenty-five hundred dollars per annum and his necessary and actual expenses incurred in the discharge of his official duties.

SECTION 2. Such commissioner may, with the consent and advice of the governor, appoint two assistants, each of acknowledged standing, ability and integrity, one of whom shall be an expert in the matter of dairy products and the other of whom shall be a practical analytical chemist. The salaries of such assistants shall not exceed eighteen hundred dollars each per annum and their necessary and actual expenses incurred in the discharge of their official duties.

SECTION 3. It shall be the duty of the commissioner to enforce all laws that now exist, or may hereafter be enacted in this state regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food or drink or of any drug, and personally or by his assistants, to inspect any article of milk, butter, cheese, lard, syrup, coffee or tea, or other article of food or drug made or offered for sale within this state, which he may suspect or have reason to believe to be impure, unhealthful, adulterated or counterfeit, and to prosecute, or cause to be prosecuted any person or persons, firm or firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food or drink or drug, contrary to the laws of this state.

SECTION 4. Said commissioner or any assistant shall have power in the performance of his official duties to enter any creamery, factory, store, salesroom or other place or building where he has reason to believe that any food or drink or drug is made, prepared, sold or offered

for sale, and to open any cask, tub, package or receptacle of any kind containing, or supposed to contain any such article, and to examine or cause to be examined and analyzed the contents thereof, and the commissioner or any of his assistants may seize or take any article of food or drink or drug for analysis, but if the person from whom such sample is taken shall request him to do so he shall at the same time, and in the presence of the person from whom such property is taken, securely seal up two samples of the article seized or taken, the one of which shall be for examination or analysis under the direction of the commissioner, and the other of which shall be delivered to the person from whom the articles were taken. And any person who shall obstruct the commissioner or any of his assistants by refusing to allow him entrance to any place where he desires to enter in the discharge of his official duty, or who refuses to deliver to him a sample of any article of food or drink or drug made, sold, offered or exposed for sale by such person, when the same is requested and when the value thereof is tendered, shall be deemed guilty of a misdemeanor punishable by a fine not exceeding twenty-five dollars for the first offense and not exceeding five hundred dollars or less than fifty dollars for each subsequent offense.

SECTION 5. It shall be the duty of the district attorney in any county of the state, when called upon by the commissioner or any of his assistants to render any legal assistance in his power to execute the laws, and to prosecute cases arising under the provisions of this act, and all fines and assessments collected in any prosecution begun or caused to be begun by said commissioner or his assistants shall be paid into the state treasury.

SECTION 6. With the consent of the governor, the state board of health may submit to the commissioner, or to any of his assistants, samples of water or of food or drink or drugs, for examination or analysis, and receive special report showing the result of such examination or analysis. And the governor may also authorize the commissioner or his assistants when not otherwise employed in the duties of their offices, to render such assistance in the farmers' institutes, dairy and farmers' conventions, and the agricultural department of the university, as shall by the authorities be deemed advisable.

SECTION 7. The salaries of the commissioner and his assistants shall be paid out of the state treasury in the same manner as the salaries of other officers are paid, and their official expenses shall be paid at the end of each calendar month upon bills duly itemized and approved by the governor, and the amount necessary to pay such salaries and expenses is hereby appropriated annually.

SECTION 8. The commissioner may, under the direction of the governor, fit up a laboratory, with sufficient apparatus for making the analyses contemplated in this act, and for such purpose the sum of fifteen hundred dollars, or so much thereof as may be necessary, is hereby appropriated,

and for the purpose of providing materials and for other necessary expenses connected with the making of such analysis, there is also hereby appropriated so much as may be necessary, not exceeding six hundred dollars annually. The appropriations provided for in this section shall be drawn from the state treasury upon the certificates of the governor.

SECTION 9. Said commissioner shall be furnished a suitable office in the capitol, at Madison, and shall make an annual report to the governor, which shall contain an itemized account of all expenses incurred and fines collected, with such statistics and other information as he may regard of value, and with the consent of the governor, not exceeding twenty thousand copies thereof, limited to three hundred pages, may be published, annually as other official reports are published, and of which five thousand copies shall be bound in cloth.

SECTION 10. All acts and parts of acts conflicting with this act are hereby repealed.

SECTION 11. This act shall take effect and be in force from and after its passage and publication.

Approved April 16, 1889.

---

**Note to Section 4, supra.**—If there is contradictory evidence concerning the sufficiency of the seal of a sample, and the credibility of the witnesses for the prosecution is submitted to the jury the defendant is not injured. If there is evidence that a few drops of carbolic acid was added to a sample of milk, and it is submitted to the jury as a question of fact whether this would change the character of the milk, make the analysis impossible or difficult, or in any way injuriously affect the sample for the purpose of analysis, the defendant has no cause of complaint. *Commonwealth vs. Spear*, 143 Mass., 172.

It is observed of a similar statute that it is intended to secure a fair examination and analysis, by providing the defendant with the means of making an analysis of a portion of the same specimen which the state has analyzed. If the sample is not saved, or not saved in proper condition, he has no means of showing that his evidence, if any he has as to the quality of the milk, applies to that with reference to which the government witnesses testify. It cannot be said that a portion reserved is sealed, within the meaning of the statute, when wax is merely placed on the top of the cork, and not extended over the mouth of the bottle and thus making it air tight, if it is shown that the character of the milk will be affected by the air. *Commonwealth vs. Lockhardt*, 144 Mass., 132.

Where the article analyzed has not been taken under the statute, the competency of evidence is to be determined by the common law, and the testimony of any person who had sufficient skill to analyze it, and who had analyzed some which was proven to have been sold by the defendant, is admissible. *Commonwealth vs. Holt*, 146 Mass., 38.

## PURE MILK, STANDARD OF.

*Chapter 425, Laws of 1889.*

SECTION 1. Any person who shall sell or offer for sale or furnish or deliver, or have in his possession, with intent to sell or offer for sale or furnish or deliver to any creamery, cheese factory, corporation, person or persons whatsoever, as pure, wholesome and unskimmed, any unmerchandise, adulterated, impure or unwholesome milk, shall upon conviction thereof, be punished by a fine of not less than ten nor more than one hundred dollars for each and every offense.

SECTION 2. In all prosecutions or other proceedings under this or any other law of this state relating to the sale or furnishing milk, if it shall be proven that the milk sold or offered for sale, or furnished or delivered, or had in possession with intent to sell or offer for sale, or to furnish or deliver as aforesaid, as pure, wholesome or unskimmed, contains less than three per centum of pure butter fat, when subjected to chemical analysis or other satisfactory test, or that it had been diluted or any part of its cream abstracted, or that it or any part of it was drawn from cows known to the person complained of to have been within fifteen days before or four days after parturition, or to have any disease or ulcers or other running sores, then and in either case the said milk shall be held, deemed and adjudged to have been unmerchandise and adulterated, impure or unwholesome, as the case may be.

SECTION 3. All acts or parts of acts conflicting with or contrary to the provisions of this act are hereby repealed.

SECTION 4. This act shall take effect and be in force from and after its passage and publication.

Approved Apr 16, 1889.

---

NOTE — **Validity.**— A New York law (chapter 183, of 1885; chapter 202 of 1884), provides that "no person or persons shall sell, supply or bring to be manufactured, to any butter or cheese manufactory, any milk diluted with water, or any unclean, impure, unhealthy, adulterated or unwholesome milk." *Held*, a valid exercise of legislative power. *People vs. West*, 106 N. Y., 293.

A statute is not invalid because it fixes an arbitrary standard for pure or unadulterated milk, though it is drawn from healthy cows, and is sold in its natural state. In *People vs. Clipperly*, 37 Hun. (N. Y.), 324, it was held otherwise, one judge dissenting.

On appeal this case was reversed, without opinion, on the grounds given in the dissenting opinion: 101 N. Y., 634. The supreme court of New Hampshire say on this question: Practically it makes no difference whether milk is diluted after it is drawn from the cow, or whether it is

made watery by giving her such food as will produce milk of an inferior quality, or whether the dilution, regarded by the legislature as excessive, arises from the nature of a particular animal, or a particular breed of cattle. The sale of such milk to unsuspecting consumers, for a price in excess of its value is a fraud, which the statute was designed to suppress. It is a valid exercise by the legislature of the police power for the prevention of fraud, and protection of the public health, and such as is constitutional. *State vs. Campbell*, 13 Atl. Rep., 585.

**Construction — Indictment.**— The New York law does not make fraudulent intent a necessary ingredient of the offense, and it would not be a reasonable construction of it to apply it to a dairyman who owns and conducts a butter or cheese factory for the manufacture of those articles from milk furnished exclusively by himself from his own cows. If the defendant is such a person, those facts are matter of defense, and their existence need not be negated on the face of the indictment. *People vs. West*, 106 N. Y., 293.

Under a Massachusetts law imposing a penalty for selling or offering to sell "adulterated milk, or milk to which any foreign substance has been added," it is immaterial whether the substance added is injurious or not. The indictment need not allege the quantity of such substance. *Commonwealth vs. Schaffner*, 16 Northeast. Rep., 280.

Under an act which prohibits the sale of milk which is not of a good, standard quality, the fact that the milk was delivered under a contract to furnish the person who bought it with the milk of one dairy, is not a defense if that furnished was not of such quality. The contract would be held to contemplate milk which could be bought and sold. *Commonwealth vs. Holt*, 15 Northeast. Rep., 280.

Where one is charged with having in his possession, with intent to sell, milk which is not of a good, standard quality, the fact that he was upon a wagon which had his name painted upon it, and that therein were cans of milk, and that a sample was given from one of them to one employed by the milk inspector for analysis, is competent evidence to go to the jury upon the question of his intent. *Commonwealth vs. Rowell*, 15 Northeast. Rep., 154.

**Effect of the act of 1889 upon previous laws.**— It seems reasonably clear that section 1, of chapter 425, laws of 1889, *supra*, supersedes section 1, of chapter 157, laws of 1887, as to the offense of selling diluted, impure and unclean milk. Both the acts referred to cover the provisions of section 4607, Revised Statutes, and hence that section is not in force.

## PROOF OF ADULTERATION, HOW MADE.

*Section 2, of Chapter 157, of the Laws of 1887, as amended by Chapter 344, Laws of 1889.*

SECTION 1. Proof of adulteration and skimming may be made with such standard tests and lactometers as are used to determine the quality of milk, or by chemical analysis.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

Approved April 10, 1889.

---

## FRAUDULENT BUTTER AND CHEESE.

*Chapter 165, Laws of 1891.*

SECTION 1. No person shall sell, exchange, expose or offer for sale or exchange, or ship or consign, or have in his possession with intent to sell, ship or consign any substance purporting, appearing, or represented to be butter or cheese, or having the semblance of either butter or cheese, which substance is not made wholly and directly from pure milk or cream, salt and harmless coloring matter, unless it be done under its true name, and each vessel, package, roll or parcel of such substance has distinctly and durably painted, stamped, stenciled or marked thereon the true name of such substance in ordinary bold faced capital letters, not less than five line pica in size, or sell or dispose of in any manner to another, any such substance in quantities less than the original package, without delivering with each amount sold or disposed of, a label, on which is plainly and legibly printed in ordinary bold-faced capital letters not less than five line pica in size, the true name of such substance.

SECTION 2. No person or persons shall manufacture out of any oleaginous substance or substances, or any compound of the same other than that produced wholly, directly and at the time of manufacture from unadulterated milk or cream, salt and harmless coloring matter, any article in imitation of or designed to be sold, shipped or consigned as butter or cheese. Nothing in this section shall prevent the use of pure skimmed milk in the manufacture of cheese; but cheese made wholly or in part from skimmed milk should be plainly labeled, "skimmed."

---

*(This section repeals chapter 424, laws of 1889.)*

SECTION 3. No person or persons shall manufacture, mix, compound with or add to natural or pure milk, cream, butter or cheese, any animal fats, animal, mineral or vegetable oils, or extraneous butter fat or oil, nor

shall any person or persons manufacture any oleaginous or other substance not produced wholly and at the time from pure milk or cream, salt and harmless coloring matter, or have the same in his possession with intent to offer or expose the same for sale or exchange, or sell, consign, ship, or in any manner dispose of the same as and for butter or cheese, nor shall any substance or compound so made be sold or disposed of to any one as and for butter or cheese.

SECTION 4. No person or persons shall sell, exchange, expose or offer for sale or exchange, dispose of, ship or consign or have in his possession any substance or article made in imitation or resemblance of any dairy product which is falsely branded, stenciled, labeled or marked.

SECTION 5. Every person in this state who shall deal in, keep for sale, expose or offer for sale or exchange, any substance other than butter or cheese, made wholly and directly from pure milk or cream, salt and harmless coloring matter, which appears to be, resembles or is made in imitation of, butter or cheese, shall keep a card, not less in size than ten by fourteen inches, posted in a conspicuous and visible place, where the same may be easily seen and read, in the store room, stand, booth, wagon or place where such substance is so kept or exposed for sale, on which card shall be printed on a white ground, in bold, black Roman letters, not less in size than twelve line pica, the words "oleomargarine," "butterine," or "imitation cheese" (as the case may be) "sold here," and said card shall not contain any other words than the ones above prescribed; and no person shall sell any oleomargarine, butterine, imitation cheese or other imitation dairy product, at retail or in any quantity less than the original package, tub or firkin, unless he shall first inform the purchaser that the substance is not butter or cheese, but an imitation of the same.

SECTION 6. Every proprietor, keeper or manager, or person in charge of any hotel, boarding house, restaurant, eating house, lunch counter, or lunch room, who therein sells, uses or disposes of any substance which appears to be, resembles, or is made in imitation of butter or cheese, under whatsoever name, and which substance is not wholly and directly made from pure milk or cream, salt and harmless coloring matter, shall display and keep a card posted in a conspicuous place, where the same may be easily seen and read, in the dining room, eating room, lunch room, restaurant and place where such substance is sold, used or disposed of, which card shall be white, and in size not less than ten by fourteen inches, upon which shall be printed in plain, black, Roman letters, not less in size than twelve line pica, the words, "oleomargarine used here," "butterine used here," or "imitation cheese used here" (as the case may be), and said card shall not contain any other words than the ones above prescribed, and such proprietor, keeper, manager or person in charge shall not sell, furnish or dispose of substance as and for "butter or

cheese" made from pure milk or cream, salt and harmless coloring matter, when butter or cheese is asked for.

SECTION 7. No butter or cheese not made wholly and directly from pure milk or cream, salt and harmless coloring matter, shall be used in any of the charitable or penal institutions of the state.

SECTION 8. Any person or persons violating any of the provisions or sections of this act, shall, upon conviction thereof, be fined not less than twenty-five nor more than fifty dollars for the first offense, or for each subsequent offense not less than fifty nor more than one hundred dollars, or be imprisoned in the county jail not less than ten nor more than ninety days or both.

SECTION 9. One half of all the fines collected under the provisions of this act shall be paid to the person or persons furnishing information upon which conviction is procured.

SECTION 10. All acts or parts of acts contravening the provisions of this act are hereby repealed.

SECTION 11. This act shall take effect and be in force from and after its passage and publication.

Approved April 6, 1891.

**Validity.**—Section 7, chapter 183, laws of New York, 1885, "prohibits: 1st. The manufacture out of any animal fat, or animal or vegetable oils not produced from unadulterated milk or cream from the same, any product in imitation or semblance or designed to take the place of natural butter produced from milk, etc. 2d. Mixing, compounding with, or adding to milk, cream or butter, any acids or other deleterious substances, or animal fats, etc., with design or intent to produce any article in imitation or resemblance of natural butter. 3d. Selling, or keeping or offering for sale any article manufactured in violation of the provisions of this section." *Held*, that if butter made from animal fat or oils is as wholesome and nutritious and suitable for food as dairy butter, the producers of butter made from animal fat or oils have no constitutional right to resort to devices for the purpose of making their products resemble in appearance the more expensive article known as dairy butter. It is competent for the legislature to enact laws to prevent the simulated article being put upon the market in such a form and manner as to be calculated to deceive. The statute is intended to reach a design and purposed imitation of dairy butter in manufacturing the product which is not such butter, and not a resemblance in qualities inherent in the articles and common to both kinds of butter. *People vs. Arensberg*, 105 N. Y., 123.

A state may lawfully prohibit the manufacture out of oleaginous substances, or out of any of its compounds, other than that produced from unadulterated milk or cream from such milk, of an article designed to take the place of butter or cheese produced from unadulterated milk.



It may also prohibit the manufacture or sale, or the offering for sale, of any imitation or adulterated butter or cheese, or the having of it in possession with intent to sell the same as an article of food. *Powell vs. Pennsylvania*, 127 U. S., 678.

Though it may be severe to punish those who unintentionally sell the article prohibited, the legislature has power to so provide in order that the much larger number may be protected. *State vs. Newton*, 14 Atl. Rep., 604.

The supreme court of New Jersey has held that a statute enacted for a purpose similar to that which caused the passage of this act is not invalid because it prohibits the sale of oleomargarine brought to that state from other states and not intended for further transportation. The act produces only an indirect and incidental effect upon interstate commerce. *State vs. Newton*, 14 Atl. Rep., 604.

---

TEXT AND SUGGESTIONS RELATING TO THE LAW PASSED  
BY THE LEGISLATURE OF 1893.

Chapter 228, Laws of 1893.

SECTION 1. No person shall offer for sale, sell, ship or consign cheese labeled with a false brand or label, as to the quality of the article.

SECTION 2. The state dairy and food commissioner is hereby authorized and directed to issue to the cheese manufactories of the state, upon proper application therefor and under such regulations as to the custody and use thereof as he may prescribe, a uniform stencil or brand, bearing a suitable device or motto and the words, "Wisconsin Full Cream Cheese."

SECTION 3. Every brand issued shall be used upon the side of the cheese on the bandage thereof, also upon the package containing the same, and shall bear a different number for each separate manufactory, and the commissioner shall keep a book in which shall be registered the name, location and number of each manufactory using the said brand, and the name or names of the persons at each manufactory, authorized to use the same.

SECTION 4. It shall be unlawful to use or permit such brand to be used upon any other than full cream cheese, or package containing the same.

SECTION 5. Every person who shall, at any cheese factory in the state, manufacture skimmed cheese, shall distinctly and durably stamp upon each and every such cheese and upon the box, the words "Wisconsin Skimmed Cheese." All cheese not manufactured as in sections 1, 2, 3 and 4, of this act, shall be deemed to be skimmed cheese under the provisions of this act. The brand herein provided by this section of this act, for designating the grade and quality of the cheese provided by this

section, shall be such as to produce an impression not less than three inches in width and five inches in length, and shall be in full-faced capital letters of as large a size as the space hereby provided for will permit, and the whole to be included within a plain heavy border. Ordinary stamping ink, either red, green or violet in color, and of such composition as to not to be easily removed or wholly obliterated by moisture, shall be used in stamping as provided for by this section.

SECTION 6. Whoever violates the provisions of this act shall be deemed guilty of a misdemeanor and for each and every package so falsely branded or omitted to be branded as herein provided, shall be punished by a fine of not less than twenty-five, nor more than fifty dollars, one half of which shall be paid to the person or persons furnishing the evidence upon which such conviction is made.

SECTION 7. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

SECTION 8. This act shall take effect and be in force from and after its passage and publication.

Approved April 17, 1893.

---

The law provides that the stamp or brand shall be not less than three by five inches, and inclosed by a plain heavy border. The ink shall be indelible, so that it will not rub off. The brand or stamp is to be placed upon the bandage of the cheese. A rubber stamp costs about the same as a stencil and does much better work.

The name of the manufacturer cannot be placed inside the border. If the maker wishes his name to appear, it can be placed on the cheese any where except within the impression.

Rubber stamp manufacturers are in possession of this law, and you can be provided with stamps by any of them. The firm from which you buy your supplies can furnish you the necessary stamps.

Filling cheese with foreign fat is prohibited by section 3, chapter 424, laws of 1889.

Enriching skim milk with butter is prohibited by chapter 165, laws of 1891.

---

#### PENALTY FOR THE SALE OF UNWHOLESOME PROVISIONS.

##### *Section 4599, Revised Statutes.*

SECTION 4599. Any person who shall knowingly sell any kind of diseased, corrupt or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, shall be punished by imprisonment in the county jail not more than six months, or by fine not exceeding one hundred dollars.

## ADULTERATION OF FOOD, LIQUORS AND CANDIES.

*Section 4600, Revised Statutes.*

SECTION 4600. Any person who shall fraudulently adulterate, for the purpose of sale, any substance intended for food, or any wine, spirits, malt liquor, or other spirituous liquors, or any other fluid, intended for drinking or any candy or sweetmeats, with any substance, coloring matter, or anything poisonous, deleterious or injurious to health, or who shall knowingly manufacture, sell, or offer for sale, any such adulterated food, liquor, candy or sweetmeat, shall be punished by imprisonment in the county jail, not more than six months, or by fine not exceeding one hundred dollars, and any article so adulterated shall be forfeited and destroyed.

NOTE — See chapter 248, laws of 1879, *infra*, which appears to supersede this section in part.

## ADULTERATION OF FOOD AND DRUGS — DECEPTIVE LABELING OF.

*Chapter 248, Laws of 1879.*

SECTION 1. No person shall mix, color, stain, powder, order or permit any other person to mix, color, stain or powder any article of food with any ingredient or material so as to render the article injurious to health, with intent that the same may be sold in that condition. And any person that shall sell any such article so mixed, colored, stained or powdered, shall be subject to a penalty in each case not exceeding a fine of fifty dollars for the first offense, and for a second offense shall be punished by imprisonment in the state prison for a period not exceeding one year with hard labor.

SECTION 2. No person shall, except for the purpose of compounding as hereinafter described, mix, color, stain or powder, or permit any other person to mix, color stain or powder any drug with any ingredient or material so as to effect injuriously the quality or potency of such drug, with intent that the same may be sold in that condition. And any person who shall sell any such drug so mixed, colored, stained or powdered shall be liable to the same penalty or punishment in each case respectively, as in the preceding section, for a first and subsequent offense; provided, that no person shall be liable to be convicted under the foregoing sections of this act, in respect to the sale of any article of food or of any drug, if he shows to the satisfaction of the justice or court before whom he is charged that he did not know of the article or drug sold by him being so mixed, colored, stained or powdered, as in that section mentioned, and that he could not, with reasonable diligence, have obtained that knowledge; or that such mixing, coloring, staining or

powdering was required for the production, extraction, preparation, preservation, consumption or transportation as an article of commerce in a state fit for carriage; or where the drug or food is supplied in the state required by the specification of the patent in force; or that the food or drug was unavoidably mixed with some extraneous matter in process of collection or preparation.

SECTION 3. Every person who shall compound or put up for sale any food, drug or liquor, in casks, boxes, bottles or packages, with any label, mark or device whatever, so as and with intent to mislead or deceive as to the true name, nature, kind and quality thereof, shall be liable to a penalty of not to exceed five hundred dollars for the first offense, and for every offense after the first offense shall be punished by imprisonment in the state prison for not less than one year nor more than ten years.

SECTION 4. The term "food" as herein used shall include every article used for food or drink by man other than drugs. The term "drug" shall include medicine for internal or external use.

SECTION 5. This act shall take effect and be in force from and after the first day of July, after its passage and publication.

Approved March 5, 1879.

---

#### ADULTERATION OF DRUGS AND MEDICINES.

##### *Section 4601, Revised Statutes.*

SECTION 4601. Any person who shall fraudulently adulterate, for the purpose of sale, any drug or medicine in such a manner as to render the same injurious to health, shall be punished by imprisonment in the county jail, not more than one year, or by fine not exceeding three hundred dollars.

NOTE.— See chapter 248, laws of 1879, *supra*.

---

#### COLORING GRAIN.

##### *Section 4606, Revised Statutes.*

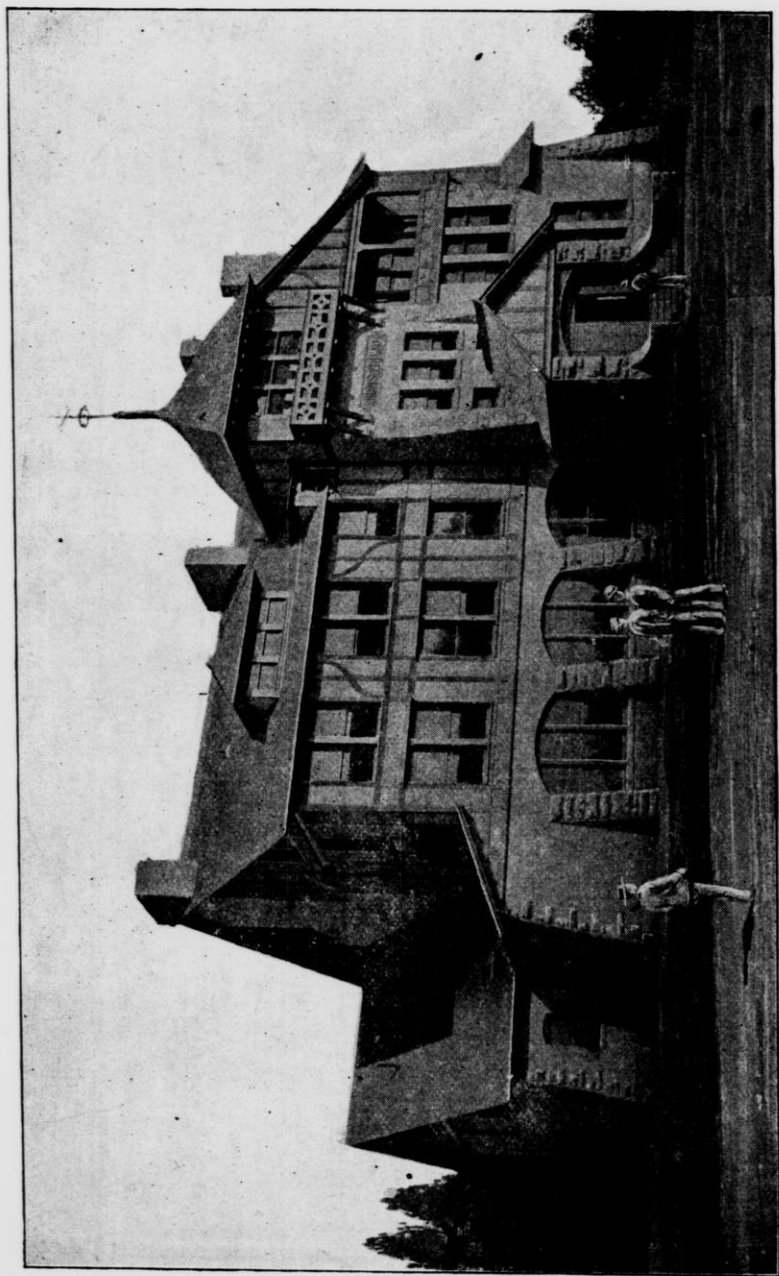
SECTION 4606. Any person who shall fumigate any barley, wheat or other grain, by the use of sulphur or other substance, or shall in any way, or by the use of any chemical, material or process, affect the color or healthfulness of such grain, or who shall sell or offer for sale any such grain, knowing that the same has been so fumigated, or the color or healthfulness thereof so affected, shall be punished by imprisonment in the county jail, not more than one month, or by fine not exceeding fifty dollars.

## THE PREVENTION OF FRAUD IN DAIRY MANUFACTORIES.

*Section 1494a, Revised Statutes.*

Any butter or cheese manufacturer who shall knowingly use, or allow any of his employes or any other person to use for his or their own individual benefit, any milk or cream from the milk, brought to said butter or cheese manufacturer, without the consent of all the owners thereof, or any butter or cheese manufacturer who shall refuse or neglect to keep, or cause to be kept, a correct account (open to the inspection of any one furnishing milk to such manufacturer), of the amount of milk daily received, or of the number of pounds of butter, and the number and aggregate weight of cheese made each day, or the number cut or otherwise disposed of, and the weight of each, shall, for each and every offense, forfeit and pay a sum of not less than twenty-five dollars, nor more than one hundred dollars, to be recovered in an action in any court of competent jurisdiction, one-half for the benefit of the person or persons, firm or association, or their assigns, upon whom such fraud or neglect shall be committed, first having made complaint therefor, the remainder to the school fund.





HIRAM SMITH HALL.  
Wisconsin Dairy School Building.

# TWENTY-SECOND ANNUAL MEETING

OF THE

## WISCONSIN DAIRYMEN'S ASSOCIATION,

HELD AT

Neenah, Wis., Wednesday, Thursday and Friday, Feb. 14-16, 1894.

---

The Twenty-second annual convention of the Wisconsin Dairymen's association opened at 10 o'clock A. M., February 14th, 1894.

President W. D. Hoard in the chair.

The President: Ladies and Gentlemen: I feel very much like congratulating you upon the auspicious opening of this our Twenty-second convention. I have been present at every convention in the eventful history of this organization from the first to the last, and I feel a good deal as an old Yankee felt when he was surrounded by his thirty grandchildren and said, "The Lord had blessed him and he didn't believe but what it would take a good while to kill off the family." And it is growing. We have pleasant weather this morning and we are convened in a warm-hearted, hospitable city. We have a goodly attendance; we are all in earnest and we all feel the importance of good, thoughtful work.

Now, we are going to spend nearly three days and this is to be our annual school. We come here, you know, to rest from the labor of the farm and the factory and to enlarge the intellectual part of our business, to rub up our minds, to get new ideas because ideas have always had to travel ahead of the hand and as a consequence we feel the need of this refreshment. I have noticed myself that almost all good Christians need to rub up against one another occasionally in order to refresh their Chris-



tianity. If they don't they sort of grow cold, you know, and the devil gets in and puts in his best licks right along on those Christians that don't associate with each other. Now, I am not so much of a religionist as not to believe that these things apply to good dairy work just the same. We need to rub up against one another.

---

### ADDRESS OF WELCOME.

---

Hon. Wesley Mott, Neenah, Wis.

Mr. President, Ladies and Gentlemen of the Wisconsin Dairymen's Association: We tender to you, with the utmost pleasure, the hospitality of the city of Neenah, and we do this remembering that you represent an interest which is second in importance perhaps to no material interest of our country. You represent one branch of the farming interest, and that in many respects the most important branch of that interest; a profession which has had its representatives for the last four thousand years in all parts of the world, from the time of Abraham, and before that time, down to the present. The mightiest kings, the mightiest law-givers, the warriors of the earth have all been cattlemen; the patriarchs were these. Job was a cattleman; and I have sometimes thought it would be mighty interesting if we could look over the old trade bulletins of Damascus and Babylon to see how their cheddars and their fancy creamery butter were quoted in the markets. But, alas, that is something we cannot have. Perhaps, my learned friends, some of you will say they did not know how to make butter and cheese in those days. If they did not, perhaps that is the reason why human life was so cheap, that they had no fancy butter and cheddar cheese to eat, and thereby reconcile themselves to the ills of existence.

But today we have those things; they are growing upon us;

today the wealth of Wisconsin is gradually becoming invested in dairy interests, because it is being found out that without the development of those interests farming cannot pay. That has come to be recognized by intelligent men. With the dairy interests we realize that they can at once make money and increase the fertility of their soil, rather than exhausting their resources; for this reason we feel that the dairying interest should be most carefully preserved and fostered.

We also realize that there is more than material importance in this question. We who have read history know that whenever the farmers of a nation rise the nation rises with them; we know that when they sink the nation sinks, not only in material but in the moral world. Scan the history of the past and you will see this demonstrated. You only have to look at the history of France for the last two hundred years to see that when her farmers became reduced the whole country came to ruin and the Reign of Terror was brought on, at the end of which she was nearly destroyed. You can look a little further and see how, when, she had divided her land among her small farmers and had thereby increased their hope and their courage, she was able to bear the enormous strain of the Napoleonic war, piled on top of one hundred years of Bourbon misrule and yet went through it with strength almost unimpaired. Under her former rule, with estates in which the wealth of the country was concentrated in a few hands, she could never have borne the immense strain.

That shows us in the most impressive manner the importance of the farming community to the whole country. We know that we in the cities cannot flourish unless the farmers flourish; we know that when they sink and fail to make money the city will become a desert and grass will grow in our streets. We know also that farming is the most essential industry known to mankind. All other industries may be dispensed with and yet we can retain a certain measure of comfort and refinement, but wipe out the farm and mankind as a whole suffers.

Therefore, we feel that your meeting here means more than the mere selfish local interest of Wisconsin farmers. It means the welfare, the upbuilding, the morality of the whole body politic. We know that if you are prosperous, we are all prosper-

ous; we know that if you are accumulating wealth and it is not concentrated in the hands of a few millionaires that all of us will prosper with you, and that the country will remain free, full of the spirit of yeomanry of which has been said:

“Princes or lords may flourish or may fade;  
A breath can make them, as a breath has made:  
But a bold peasantry, their country’s pride,  
When once destroy’d, can never be supplied.”

We know that the welfare of our nation depends upon the farmers and we look to you hoping that you may take advantage of every opportunity to brighten up your own ideas and bring yourselves up into line with the ideas of the present day.

We trust that your meeting may not only be greatly beneficial but that you may find our society agreeable, and that you may again meet many times in our midst and receive and accept our hospitalities.

We tender to you the hospitalities of our city. We ask you to enjoy them and all that we have and all that we can do for you will be freely given and done during this day and during the time in which you are with us.

---

#### RESPONSE TO ADDRESS OF WELCOME.

---

Mr. C. R. Beach, Whitewater, Wis.

I regret on your account, ladies and gentlemen, that Mr. Adams could not have been with us. I felt it was worth a journey from Whitewater to come here to listen to him today, as our programme says we should. I know of no man in the state who so honors this institution, by his labor and by his voice, as does Mr. H. C. Adams.

Further I much regret that I have not had more time to have prepared myself to do justice to the position in which I find my-

self placed, but the gentleman who has given us this welcome has made it so cordial a welcome, so heartfelt, so sincere, that I feel that without any response we could go on and do good work among you, knowing that it would be appreciated.

I do not flatter myself that this welcome is on account of any merit in our personality, but rather as an institution that has through the last twenty-one years, through good report and ill report, through discouragement and success, been laboring steadfastly forward and working for the upbuilding of one of the greatest departments of human industry throughout the country.

The dairy today employs more capital, more skill, more science than any other single industry in the country and its products enter more largely into our daily life, into our comfort and into our elevation, I may say; into the advancement of civilization than any other single product. Our friend spoke of dairying in the past and referred to Job who had cattle and also made butter, "When I washed my steps in butter," he said. You see he made it so plenty that he used to wash his feet in it. Milk has always been the symbol of the earthly paradise, "A land flowing with milk and honey;" and Isaiah in his prophetic vision says, "In that day a man shall nourish a cow and two sheep and for abundance of milk he shall eat butter, butter and honey shall every one eat in the land." And when that wisest of men would encourage a man to look well after his affairs, what does he offer him? "Look well to thy words, for riches are not everything, lands are for thy clothing and goats for the prize of the fields and thou shalt have goats' milk enough for thy feed and for the feed of thy household and for the maintenance of thy maidens." Even in those early days of civilization the dairy products were considered a part of the high civilization.

Joseph Cook, in one of his addresses said, that the civilization of ancient Greece was as much superior to our highest civilization as ours is superior to the most benighted African. I have often thought if I had seen some of the butter that the old Grecians ate, that I could tell better than I can by Joseph Cook's dogmatism, but as a dairyman and as a member of this association I feel like honoring our calling. In the first place it will yield better products for the capital invested than any

other known business. In this last year, in the terrible ruin that has swept over the country, have you heard of a dairyman that failed who was minding his business. Then again it yields direct profit, its returns are sure and quick; a man can sit down at the first of the year and estimate with almost positive certainty the amount of his income, and if he handles his business as he should, there come regularly and often the means by which he can pay his bills, every week if he chooses. Ready money is worth more than ten per cent. But I cannot dwell upon all the benefits of it and its influences today. Throughout the length and breadth of this land there are more scientific men engaged upon the great problems underlying milk production, the preparation of food, than there is in all the other branches put together, and they are working too in harmony with direct labor. Science is being married to work and therefore elevating the work and making it more noble, and further than this it is training those who are necessarily interested, and will become indispensable to the dairyman in his business, educating him to grasp questions beyond his business, questions of finance, of politics, etc., so that in the end it will be a great educator and uplifter of the masses to their true sphere as citizens.

Yesterday a man said to me, "My father has been working and I am working to have the farmers recognized more in politics." They will be recognized, and you and every man will be recognized when he makes himself worthy, and until we do we shall not be. But the way to become worthy is through uniting intelligence with labor, making it more intelligent, more scientific, more intellectual.

Butter and cheese as articles of food are great civilizers. Some of you old fellows have eaten salt pork so much and so long that it has made you stiff and dull. I advise you to give it up and take a glass of milk or some bread and butter and a piece of cheese.

I trust our stay here will be profitable, not only to you, but we know it will be profitable to us. This enlarging of the ideas, rubbing up against each other, ought to bring out the best that there is in us, and I trust that this coming together and exchanging of ideas will do us all good, that we shall all feel that it is our convention and that we have a right to take part in it.

The Chairman: I trust that you will all bear in mind this last suggestion of Mr. Beach. This is your convention. There are many questions you want to ask and we all need a great deal of fertilization and stirring up and agitating. I have said before that, though we may have the finest cream in the world, unless we churn it we never can get any butter.

---

### PRESIDENT'S ANNUAL ADDRESS.

W. D. Hoard, Fort Atkinson, Wis.

Gentlemen of the Convention.—It is now twenty-two years since this organization was formed. Every day of thought and effort, every laudable ambition which it has incited in the farmers of Wisconsin, every particle of ignorance and error which it has helped to displace with sound knowledge of dairy truth, every dollar of increased wealth and every encouragement to better manhood, better citizenship and better farming, which it has helped establish, all this has gone into the history of Wisconsin. It has proved to be a great work, a grand work for the people of this state, and the people of other states as well. The thought and experiences brought to light in our conventions, the truths told, the mistakes confessed, the enthusiasm aroused, have been mighty forces, for the betterment of the condition of the Wisconsin farmer. He owes a great deal to the unselfish and persistent efforts of the men who have kept this lamp burning.

For nearly a year the country has been plunged into a gulf of business depression and loss, unexampled in its history. The much lauded fortunes of merchant, banker and manufacturer have melted from view, as though swept with the besom of destruction. If there is a man in all the country that ought to be thankful for a safe harbor in this fierce storm, it is the dairy farmer. No branch of agriculture has withstood the shock like

dairying. A fair, stable market has been maintained so far for dairy products. But gentlemen we must expect to suffer soon with all other branches of business. Decreased prosperity on the part of our consumers, who are largely supported by trade and manufacturing, must result in decreased consumption of dairy products. This will of necessity force down prices, and right in this juncture of affairs, where will we place our surplus? Let me say that this question is already beginning to trouble the creamerymen of the land. Now is the time to do a little good thinking. Now is the time to look sharply at the several weaknesses of the dairy situation; to scan them well. Each man in the dairy business has two points to consider. 1. What must I do collectively with my neighbor to defend this interest, for in dairying more than any other branch of farming, we are tied together and must stand or fall together. 2. What must I do individually for the better economy of my work.

Let me sketch in a few words what I believe the dairymen of Wisconsin ought to do collectively. There are 2,500 cheese factories and creameries in this state. They represent at least 10,000 voters. There is an enemy abroad which is aiming at nothing short of a destruction of the dairy interest, and that too through fraud and counterfeiting. It is only through the right kind of laws and those vigorously enforced by a Dairy and Food Commissioner, who is a friend to the dairy interest, that this enemy can be dislodged from its position. What laws do we need? In my judgment we need a law in Wisconsin similar to that in Massachusetts and Connecticut, which forbids, under severe penalties, the manufacture or sale of any article in imitation of the color, form, or name of natural butter or cheese. An imitation is constructed to supplant the sale of the true article by fraud and deceit. It depends for its success upon deceiving the final consumer. From the manufacturer to the final retail dealer, all are aware of its character. But the consumer is not aware of it once in a hundred times. An imitation is a counterfeit per se, and has no rights before good law or reason as against the honest article. The sale of oleomargarine is based on deception. This has been incontestably proved. I will cite the case of the Connecticut law. There were over 60 retail licenses for the sale of oleomargarine in that state. When the

law was passed forbidding the sale of any imitation in the color of butter the licenses dropped to five. If there had been any demand for oleomargarine in its true character, would not the dealer gladly have paid the government license for the privilege of its sale? We can see by this fact what a large per cent. of the business is dependent on fraud and deception.

We need a National law similar to that, as I understand, offered by Senator Hill, and now before the United States Senate, sanctioning the placing of the sale of oleomargarine, and all other food adulterations, under the police jurisdiction of the states. When the Original Package decision came the temperance sentiment of the land was strong enough to secure such a law. Is not the dairy sentiment strong enough for a like result? In my opinion it is, if it will only stand together and assert itself. Senator Hill's bill would speedily become a law if every dairy farmer in the land would stop long enough to write a postal card to the Member of Congress from his district and one to each of the Senators from his state asking them to support that law. Such a movement would snow Congress under with postal cards. It would prove a magnificent and powerful expression of public sentiment, and I earnestly recommend to every dairy farmer that he do this one thing at once. It seems to me that it is a duty he owes himself and this great interest that he makes his influence felt as much as possible in this direction. I think this Association should take some practical steps to secure needed state legislation. We owe such action to the consumers as well as to ourselves, for they are defrauded more than the producers. As long as the counterfeit can be sold for butter the consumer is swindled into paying 20 to 25 cents for what cost 8 to 10 cents. He is charged a butter price for cotton seed oil and raw animal fat. Let the stuff stand in its own color, under its own name, and without the catch trap names of "creamery butterine," "Jersey butterine," "dairy butterine," all of which ought to convince the most skeptical of its swindling nature and character.

As an organized force in the State this Association should take the lead for the protection of the consumers and producers of honest dairy products. To this end I would recommend the appointment of a permanent Committee on Legislation, whose



duty it shall be to represent this Association in all matters of this, or any character, where legislation is required. Further more I hope we shall have some strong resolutions on this question and the maturing of some practical plan whereby the dairy sentiment of the State may be crystalized and brought sharply to bear on the powers that be. As an Association we must realize our responsibilities, for we are here to defend as well as encourage.

The wise dairyman studies the markets. He works for the justification of the market. If he is a shrewd, forecasting man he will take note of the tendencies of the dairy market, and govern himself accordingly. The butter and cheese market just now afford an opportunity for profitable study. Three things are slowly cornering the butter market, and causing some quite apprehensive forethought.

(1) The sale of counterfeit butter for real butter.

(2) The hard times is decreasing consumption very materially. People will not eat as much, or as high priced butter, when they are out of employment. The farmer and dairyman can see by this how important it is to him that other people prosper.

(3) The changing over of so many cheese factories to creameries and the making of butter and skim cheese, both at the same time, in a vast number of other factories, has greatly disturbed the balance between, what may be called, the milk of cheese making and that of butter making.

The first difficulty I have treated at some length.

The two last call for the individual thinking and acting by every dairy farmer. If the hard times continue, and who can expect anything else, for some time, he must at once set about studying how to decrease the cost of his milk. If he gets less for his butter he must produce the milk at less cost. How shall he do it? First weed out the poor cows. Here is a great leak. It seems to me that not one in a hundred realize it. I have known of many instances where dairy farmers have set to work determinedly to know just how many poor, unprofitable cows they were carrying along. In every instance where they had weeded out the poor ones, sometimes amounting to half the herd, they found themselves at the end of the year, with less milk of

course, but with more net cash. He can do this easily and cheaply with the Babcock test and the scales. Ten or twelve dollars will complete the cost of these. Second, he must study, more than he has, the question of feeding the cow wisely, and how to grow pretty much all the food on his own farm that she needs. If he grows one kind of grain and sells it to buy something else worth more as a dairy food, that amounts to the same thing. Then the cost of the feed is produced on the farm and does not come out of the milk money. Third—he must grapple more resolutely than ever before with the question of breeding and raising a dairy cow for himself. He can no longer depend on the general purpose breed or breeders for his cows. He cannot afford to put costly feed into such cows. If he is going to make the largest profit he must have a cow bred to the business. The farmers of Wisconsin have wasted millions of dollars I believe, in not paying more attention to the breeding of good dairy cows. All this has been said many times before. It is an old truth and yet it never bore as heavily on the farmer as it does today.

In the beginning I spoke of the disturbance of the commercial balance between the butter and cheese making milk, by the changing over of cheese factories to creameries and the making of skim cheese and butter both in the same factory. The present price of cheese as compared with butter is a clear warning to the wise that the tendency towards butter making has gone as far as it is safe.

If we had the splendid English trade we once had, and which we destroyed because of our short-sightedness and foolish greed, our cheese industry would be in the grandest of shape.

The lessons that were learned last summer at the World's Fair, on this cheese making business, ought to sink deep into the hearts and brains of all Wisconsin factory men, and especially the patrons who furnish the milk. Canada gave us clear proof of the wisdom of two things:

1. Organized factory instruction, whereby all factories make as uniform and fine an article of cheese as possible. That fact was seen in the general Canadian exhibit, which averaged together wonderfully in quality.
2. In her refusal to make a single skim or filled cheese. Canada has the confidence of Eng-

land, our old customer, because she has played an honest game and sent out nothing but honest cheese. How many more lessons do we need, that cheating the consumer is death to the producer.

The usual appropriation by this association for cheese factory instruction has been expended the past summer, though the work was considerably interrupted by the World's Fair. I am more than ever convinced of the paying character of this expenditure.

Since we last met death has again entered our circle and removed another of the former Presidents of this Association. Words will not adequately measure the great loss sustained by this organization and by the agricultural interests of the state, in the death of W. H. Morrison. He was always a warm friend, valued adviser and able defender of the dairy interests of Wisconsin. In the prosecution of the Farm Institute work, in which he was without a peer in the nation, he advanced the exposition of dairy knowledge and instruction to the very front, yet never forgot what was due to other branches of farming. Soon the "Old Guard" will have passed to their long rest, but the work they have so faithfully accomplished for the farmers of Wisconsin will live long years after them. The success of this association has been due to the harmony and loyalty of its members and officers to the great central question and to each other. I hope this example may be emulated by those into whose hands its destinies may fall in the future.

---

During the reading of the foregoing address the president, at different places, incorporated various extempore remarks and explanations, as follows:

In reference to Oleo—We hear a vast amount of silly talk with regard to this counterfeit. I hear men constantly talking and saying that they would rather have it than poor butter. Well, who wouldn't rather have peace and quietude in the fam-

ily than to have a poor, scolding, ugly wife to live with, but did any man ever hear of that being used as an argument against a good woman? On the contrary, it is one of the arguments to-day for good wifehood and good motherhood.

Now poor butter always advertises itself; no man needs to be deceived thereby; whereas a counterfeit and an imitation is always a deception and always men are deceived thereby.

Price of Oleo—The sworn statements before the New York Commission proved that it costs no more than six cents, and yet we find it in the state of Wisconsin from seventy-five to hundred thousand dollars worth a week of this stuff pouring into this State and men paying the highest kind of prices for it and being defrauded and cheated. The argument that it is for the poor is a humbug, for nothing under the sun is a greater lie than that statement.

Dairy Farmer—Remember one thing; that this Association lives and exists more largely for the purpose of creating right dairy thinking and right dairy practice on the farm than in the creamery or in the factory. The creamery or factory will take care of itself, the farmer more than all others needs the constant aid and encouragement and instruction that come from this organization.

Getting Rid of Poor Cows—That is the thing of all others he won't do. When a man has a poor cow he will not start in to determine it for himself, he won't get rid of her. I can't blame him, "The poor we have always with us." You can easily see that half a dozen poor cows in a herd of fifteen will knock out the entire profits of the year's work.

Breeding Poor Cows—Think of it, my friends. The cows of the greatest dairy state in the union, New York, with a million and a half of cows, average today only 3,000 pounds of milk per cow, or its equivalent, 125 pounds of butter. Not enough to pay for the cost of the keep of those cows. What are such men about? And I want to say to you that the cows of Wisconsin, taken as a whole, are nearly on the same scale. In the larger dairy districts where more thought has been had on this question and more intelligence exercised in the breeding of better cows, we have a larger average, and as a result, the farmer is lifted out of the condition of "no profit" into that of "some

profit" for the year's work. Do you know of a farmer in Wisconsin who is foolish enough to breed a Clydesdale, a Norman or a scrub to put in the trotting ring for his money? No, you can't fool a single farmer in Wisconsin on that proposition. But, what does he do? He reaches right back and pulls from a long line of trotting ancestry, for he says, "I must have a horse bred, as well as fed to my purposes." No such thing as a horse that has got two running legs and two trotting legs! You have to feed a horse for all four legs and they have got to be trotting legs, if he wins in the race. Now, the farmer is in the race in the dairy business, his money is at stake, just as though he was in the trotting ring, and that farmer that don't look at this thing in this light, stands in his own light. He needs dairy blood; he needs breeding for dairy purposes; he needs to keep less cows in Wisconsin by a good deal, and cows that are bred for the dairy. I do not want to see the cows of Wisconsin increase in number so much as I do in quality.

On Cheese Making—I remember when as secretary of this association I was corresponding with the buyers and dealers in Liverpool and London and Manchester and those men were writing to me, after our winning those prizes at the Centennial in 1876, about Wisconsin cheese. Do you know of any of them writing us at the present day? And who has stepped in and swept our trade away from us? Two persons, the Canadian skillful maker and the Wisconsin foolish cheese maker. The Wisconsin farmer ought to be hauled up here squarely and made to face his own foolishness. What has he done? He has allowed a foolish cheese maker to persuade him into the idea that there was more money in making poor cheese than there is in good cheese; that if he could turn his milk into part skim cheese and part butter that he could make more money, and already today the advancing line of corruption and debauchery is coming in from the southern part of the state and walking into many different neighborhoods, making a debauched cheese, making a filled cheese, contrary to the law of the state. My good friends, it is pretty near time that we began to look at this question in the light of plain common sense; pretty near time. The lessons that were learned last year at the World's Fair when your own fellowtownsman, Mr. Simon, showed conclusively to

the world at the great school of dairy industry what can be done in the making of a fine article of food, ought to sink into the hearts and brains of all Wisconsin men.

Canada.—Canada has not been dangling around, paying attention to the silly notions of men who have more selfishness than sense. Canada said, "We will conquer the world;" and she has got there. What has she done? She has organized a community of educators, she has put instructors into the field, she has gone to every cheese factory in the dominion, she has had wise men at the head of that department; Prof. Robertson has been there, she has gone into the field and when the factory men would not do as they ought to do, had put the law right square behind them and said, "You must do this thing according to rule and intelligence." Now, what is the result? Some men may have had their sensitiveness hurt a little and their prejudices run across, but Canada has swept the field, and today I tell you we ought to learn from those who compete against us. Napoleon said he could learn twice as much from the man he fought as he could from the man he fought with, and I believe we are on the eve of an important era in this business, if we will only take hold of it.

---

#### WISCONSIN BUTTER POSSIBILITIES.

The Chairman.—Now, we have an hour and we will have a sort of informal talk. I wish to bring sharply before this convention three experiences of Wisconsin men showing the value of intelligence on dairy matters, dairy intelligence,—not political intelligence, not mercantile intelligence, but dairy farming intelligence in the prosecution of dairy work to secure the largest profit on the dairy farm.

Here is the testimony of three witnesses, establishing the fact that an average yield of three hundred or more pounds of butter per cow in a year is entirely practicable in Wisconsin.

Sebastian Heller, Calumetville, Wis., milked five 2-year old heifers, eight 3-year-old heifers and seven mature cows from Oct. 1, 1892, to Sept. 30, 1893, and delivered 142,399 lbs. of milk to a neighboring creamery. This milk tested 3.99 per cent. fat and yielded 6,626.41 lbs. of butter, or 331.32 lbs. per cow. Butter sold at 21 1-2 cents per pound and amounted to \$1,390.33—\$69.54 for each cow.

C. L. Goodrich, Oakland, Wis., milked twenty-five cows during the year 1893, from which he made 8,477 pounds of butter, which sold in the Chicago market to net him \$2,294.31,—27 cents per pound. Average per cow, 339 lbs. butter and \$91.77 cash.

H. H. Bergen, Calumet Harbor, Wis., took the milk of one cow to a creamery. He delivered in twelve months 7,196 lbs., testing from 4 1-2 to 5 per cent. fat, the average being 4.86 per cent. He received credit for 408 lbs. of butter and was paid \$87.72 cash.

Mr. Beach—Mr. Goodrich, you hear what your boy is charged with. I want you to tell us do you think he has done as well as he ought to?

Mr. Goodrich—Not as well as I expect he will some day.

The Chairman—Mr. Goodrich, tell us about that dairy a little. We understand that those cows earned \$91.77 apiece last year. Now, we want to know if this statement gives all that he got out of them.

Mr. Goodrich—He didn't include the calves and skimmilk.

Mr. Beach—He has not done as well as I believe he can do if he keeps on, because he has not anywhere near reached the limit.

The Chairman—What would you recommend that he should do to increase the amount of butter per cow?

Mr. Beach—I would recommend that he keep right on using the Babcock test and selecting the best cows all the time and weeding out the poor ones.

Mr. Goodrich—I know there are some cows in that herd paying a great deal better than others. There are one or two that can show but very little profit. He is breeding from as good stock as he can get.

Mr. McKerrow—Do you think it possible to develop those

same cows and make them better by keeping right on in that same line and intensifying this dairy blood?

Mr. Goodrich—I do. I do not believe the limit is reached yet.

Mr. Thorpe—Didn't you do better than that yourself, Mr. Goodrich?

Mr. Goodrich—Yes, I got more per cow, but there were fewer heifers. In this herd there were twenty-five cows, three of those were two-year olds, five of them three-year old heifers, and we have to take some failures always with the successes. There is one cow in the lot that had her last and only calf when she was two years old. She is four and a half years old now, so we couldn't count her as a full cow. Then another one had the misfortune to lose half of her udder last fall. The other fifteen are excellent cows.

Mr. McKerrow—Does your son feed these cows all alike so far as the amount of grain and other food is concerned?

Mr. Goodrich—No, he intends to feed according to the capacity of the cow, and even the combination of the ration is different with different cows. If a cow shows an inclination to put on fat we give her less carbonaceous food. If she seems inclined to run down, we put in more cornmeal with such a cow's food. The water is warmed for them all to about 60 degrees. They are turned out twice a day to drink.

Question—Do you think a cow that has lost one of her teats will give as much milk as a full cow?

Mr. Goodrich—No, I think not. I am sure some cows are so constituted that they will turn more carbonaceous food into butter than others.

Question—What do you call a good dairy cow?

Mr. Goodrich—One that is determined to put all her food into milk.

Mr. Granville—Do you keep your cows out until four o'clock in the afternoon?

Mr. Goodrich—The cows are turned out usually about nine o'clock, and if it is a pleasant sunshiny day so that a man would be comfortable out in the yard, they are kept out two or three hours, but if it is cold they go right back.

Mr. Coleman—Can't you tell from the action of those cows whether it is necessary for them to be in the stable?



Mr. Goodrich—Oh, I think so. The cows use their own judgment. We are right there cleaning out the stables. We turn out one row, and if they want to come right back they have the privilege, and then we let out another row.

Mr. Aderhold—Do you make your cows rely on pasture altogether for what they eat in the summer time?

Mr. Goodrich—No. There are over thirty head of cattle altogether, colts and all, about thirty-five, and the pasture is twenty acres of the poorest land I have got; it is a little rolling and not very profitable land to plow. There will be a time when the grass is growing most rapidly along in June when they get about all the feed they need, but most of the year they have to have some other food. In fact it is offered to them every day.

Mr. Faville—We shall have Mr. Goodrich on the stand again. It seems to me we ought to discuss the president's message now; there were several very important suggestions.

Mr. George—What is the usual method employed in acting on the president's address, is it referred to a committee?

The Chairman—The Chair would prefer to have it in a committee of the whole, and would prefer to have it vigorously discussed.

Mr. Beach—How much oleomargarine is being made in the city of Chicago?

The Chairman—I cannot tell you.

Mr. Beach—I think about sixty-seven or sixty-eight millions in the United States. Wisconsin produces about twenty-five to thirty million pounds of butter.

The Chairman—About fifty millions of butter.

Mr. Beach—Very well. Chicago alone produces more oleomargarine by ten million pounds than the state of Wisconsin produces of butter. You can see what a disadvantage we are under. We both reach the same market, and that produce comes right in competition with our product. Carloads of it go into the northern part of our state, into the pineries and into the mines and compete with our product.

A Member—I live in the south tier of counties of this state, I am not engaged in the cheese business but I continually hear that such a factory is filling its cheese. Only last week I heard

of a factory inside our town which is filling its cheese down in the good old orthodox county of Walworth.

Mr. Faville—It is an old adage that people who live in glass houses must be particular about throwing stones, so I want to say to the dairymen of Wisconsin who are making a bogus butter, some of them getting oleomargarine and mixing it in with their butter in the factories and also making these filled cheese, we don't want to be heaving too many stones at those Chicago fellows until we have cleaned our own skirts. I haven't one word of apology to make for the Chicago men, but we want to be doing the right thing ourselves and then we can talk to the others.

The Chairman—Permit the Chair to say that as near as can be found out there are no oleomargarine factories in Wisconsin. There were a few in the southern part of the state that attempted to, but it is past and gone now.

Mr. Faville—I am glad to be corrected in that matter. The filling of cheese I know is going on, and we cannot sit down upon it too squarely. I was one of the oldest dairymen of the state and my practice has been never to make a skim cheese, and I have always opposed it in every way, but there is lots of it going on just the same, and we have lost our reputation. What we need is not so much dairy intelligence as dairy integrity, and the sooner we recognize this fact the better it will be for us. Canada has taken our laurels and it is bad business. We must wake up to the fact that we cannot eat our cake and sell it too. Canada has taken our reputation and our money, and we haven't got it and here we are.

Mr. Aderhold—I see that our Assistant Dairy and Food Commissioner is here, perhaps he could give us some information as to the number of factories that are making filled cheese in Wisconsin.

Mr. West—The manufacture of filled cheese is quite extensively carried on in Wisconsin in the southern part of the state. Many prosecutions have been made, but it don't stop it. The last one that was made was in Jefferson County.

The Chairman—Who was prosecuted?

Mr. West—B. A. Oestreich.

Mr. Aderhold—How many prosecutions have been made for filled cheese?

Mr. West—Five that I know of.

Mr. Aderhold—How many factories in your estimation in the state are making filled cheese?

Mr. West—I couldn't tell the number. I should think twenty-five.

The Chairman—By Section 3, Chapter 165 of the laws of 1891, the manufacture of filled cheese is prohibited.

Mr. West—Unless it is made under its true name. We have the opinion of the best attorney in Wisconsin, that the manufacture can be carried on if it is branded in its true name.

The Chairman—In these cases that you have prosecuted was it manufactured without branding?

Mr. West—It was shipped without branding.

The Chairman—What was the result of that prosecution?

Mr. West—Each one was found guilty and fined in no case less than \$25.00 and from that to \$65.00.

The Chairman—A gentleman requests to know the names of the five parties prosecuted.

Mr. West—Fulton Bros., prosecuted in Lake Geneva; Mooreville & Reynolds, Mr. Oestreich, Mr. Harvey Marr, of White-water, and the Mt. Vernon Cheese company. That was for selling skim cheese without branding. That is all I call to mind now.

A Member—I believe that the law was gotten up largely through your own advocacy?

Mr. West—No, sir, the skim cheese brand was added to the law last winter, as I remember it through a resolution introduced by Mr. Hoard at the convention of the cheesemakers at Madison.

The Chairman—Oh, no.

Mr. West—I think Mr. Hoard introduced the resolution that all cheese not included under Sections 1, 2, 3, and 4 should be so branded. The Dairy Commission wanted a law passed to wipe off the brand on standard cheese, and all cheese not full cream, expecting filled cheese to be sold on its merits similar to the law in New York state at the present time. They wanted filled cheese left the way it was in 1889.

A Member—It was left.

Mr. West—No, sir, it was not left. By that resolution intro-

duced at the cheese makers' convention at Madison. The next morning the resolution was printed and on each member's desk.

The Chairman—I do not think there was any intention on the part of the resolution of allowing filled cheese to be branded as skim cheese.

Mr. West—I can't help what the intention was. Those that voted for that did not understand the nature of the case, and they never would have voted for it if they had at that cheese makers' convention. By the way, there were only three voted for it and it went out as a resolution adopted at the cheese makers' convention.

The Chairman—This is hardly in accordance with my memory. By the law of 1889 a man could not make a cheese without branding it with its true name though the law did not give the name which it should be branded.

Mr. Faville—My proposition was not that we should discuss specific laws. I think that matter should be left to a committee that would consider the matter intelligently. I do not believe we will get any laws that will correct the matter wholly until we get a dairy integrity among ourselves, we who furnish the milk and make the cheese. We have got to feel that honesty is the best and right thing for us; and then it won't matter whether we have laws or not.

Mr. West—The law of 1889 was very misleading, inasmuch as it allowed a person manufacturing filled cheese to brand that cheese "Enriched Cheese." Most any person buying that cheese would think it was a good cheese with cream added. I think a law compelling the branding of skim cheese in that name is much preferable.

The Chairman—The law of 1889 did not provide for branding enriched cheese.

Mr. West—It did not provide for it, but it allowed it. It is enriched skim milk cheese and that is the way a great many are branding it.

The Chairman—The suggestions of the address were, for instance, along the line of securing legislation in this state. The president's address specifically recognized the enactment of such laws as exist in Massachusetts and Connecticut. Dr. Bowen of Connecticut is present, and we would be much pleased to hear

something about the practical working of the Connecticut law.

Dr. Bowen—I am much pleased with the character of your discussion this morning, because it reveals to me the conditions of your laws here in Wisconsin with regard to one of your greatest industries, and an industry which is today threatened by a very insidious foe and one that will take millions and millions of dollars away from this state in the future unless you guard it with good legislation and back that legislation up with good personal efforts on your own part. When you talk about the question of whether it was better to have a skim cheese or a filled cheese, you might just as well talk about the advisability of being a half-way Christian and a half-way heathen. They are all on a par. **The skim cheese** is in my opinion the own father of the filled cheese, and when you allow skim cheese to have its way in the state its progeny will spring up in the next generation.

With regard to our laws in Connecticut, we have a dairymen's association there, not so old as yours by about one half, but it is a strong organization, and we have come before the legislature with different laws from time to time until we have compelled oleomargarine to assume its proper guise, to be sold for what it is. We have the law all right, we have the sentiment of the people with us, we have the sentiment of the politician with us, because we have shown we are there, but we are laboring under one great disadvantage and that is the Original Package Act. Oleomargarine is manufactured in Chicago and sent into Connecticut in the original package, and it has defied us in every way, defied our dairy commissioner and his assistants and given us no end of trouble, and until that condition is changed and settled in the right way by a national act I believe that we shall have trouble continuously. But there is only one conclusion that we can draw from the history of all the various laws in the different states, and that is that we are beginning to hedge this enemy in, making it show itself in its true character, learning its bearings upon the industries of the state and the time will come, if we are true to our calling, and true to good American sentiment that each one of us should feel, that oleomargarine will be put upon its own merits alone and sold in

no other way. I cannot speak with regard to the cheese industries for we have but one cheese factory in the state and that is making a fancy cheese. I believe that in the future that industry of making fancy cheese will be largely developed. I believe that we shall make them better than they do in Europe, but it is the duty of today to make such laws as will protect the manufacturer of honest cheese throughout the country.

The Chairman—Another suggestion of the address was the appointment of a legislative committee as one of the permanent committees of the association.

Mr. Faville—I would like to endorse that suggestion. As an association, of course, we cannot watch these matters, though we are all interested in them, and the appointment of a standing committee that should confer with our Dairy and Food Commission and ascertain what is needed and then be on hand to secure such legislation as will meet the need, I think would be eminently advisable.

Dr. Bowen—Allow me one word further in regard to this committee, that it should not only commence work with the legislature, but in the formation of the legislature as we did in Connecticut. We had our legislative committee appointed; they met in Hartford, and appointed an agent in each of the twenty-four senatorial districts of the state, and as soon as a man received the nomination for state senator, whether republican or democratic or prohibitionist, within twenty-four hours he received a type-written letter, which was all prepared beforehand, asking for his sentiments upon the oleomargarine question, and the milk inspection question, and "Will you please give us this information by return mail?" So that when a candidate returned from his convention filled with satisfaction over his nomination, the very first mail brought this letter, and in many instances I have known of its being taken by that individual to the political manipulator in his district and he will say, "Look here, see what I have received. What shall I do with it? If I don't answer it right I am done for, if I don't answer it at all I am done for." But he answered it in every case. That letter was sent in a self-addressed envelope to every candidate; and within twenty-four hours from that time the answer was on file

in my office. I leave it to you to infer what we did after that. We got a law.

Mr. Everett—I have been very much interested in the remarks of the president in his message. There are a great many pertinent things in that message to us as dairymen, to us as the consumers, and to our prosperity. We must have laws; we must have integrity and industry. It has been my good fortune to study somewhat this dairy question in the past few years in our state and I have seen all sides of it. I am free to confess that ignorance and stupidity stalk abroad in our land in this matter of intelligent dairying among the farmers. We have got too many poor dairymen and poor cows. Over in Kewaunee county two weeks ago in one of our farmers' institutes, an old German came there and listened very attentively all through the first day's proceedings, and, in talking the second day, I made the statement that my cows earned for me more than \$60 each in a year, and he jumped up and said, "That is too much. My cows give me \$15, \$16. I will trade you ten of my cows for one of yours." And he said, "Gentlemen, I came to your meeting yesterday and sat me in my seat and listened, and it troubles me much. I go home and I couldn't sleep all night, I come back and take my same seat. The cows is all wrong, the milk is wrong, the feed is all wrong, and the cheese makers is all wrong; it is all wrong." And the old German was right. We found those conditions up there in Kewaunee county. Down in Fond du Lac county the proprietor of a cheese factory gets up and asks me this question: If three per cent. milk and six per cent. milk are pooled in a cheese factory and put into cheese does not the six per cent. rob the three per cent. milk? I was instantly on the alert, I knew there was something behind that question. We found that some one wanted to erect a creamery close by that cheese factory and that cheese factory was determined there should be none there. He brought the question into the institute and he was trying to make the farmers believe his way in the farmers' institute. I went down to Illinois last week, and I find they are pooling their milk there and selling it by the hundred. In this matter of oleomargarine it is a fraud, a bold, bad counterfeit. When the honest product of the cow, butter

and cheese, has to go into the markets of the world and there meet this deception and dishonesty in the shape of this bold counterfeit, I say that it is a shame. The wealth and prosperity of our people, as a whole, are in danger, and dignified American labor is outraged, and I say to my friends here and to the citizens of Neenah, and to everybody, that while we do not ask but few favors, we demand simple justice along this line, and we ask you all to help us by word and act. It is not much for you to do, but it will merit for you the blessings of honest men. I want to suggest that on this committee of legislation, there should be five placed.

The Chairman—That committee should be made up as nearly balanced as can be in political affiliations and if possible with no partisanship in the committee.

We have had a very pleasant opening session. We have rubbed up against one another and I think we have gotten some of the stiffness out. When I was a boy, father used to send me out to thresh with a flail in the barn, and it always took me about a day or so before I would get the hang of the barn. I think now we are in workable shape and can do good convention work. The excellent attendance this morning is very encouraging. We can see that there has been good work done here by Mr. Simon and Mr. Aderhold and others in working up a local interest. Our good friends of Neenah have offered us a sleigh-ride, to show us the beauties of the town. Remember, gentlemen, this is an old historic place. This section of the country was once the scene of wonderful aborigines, the Sacs and the Foxes lived here. When I was in Madison I used to look at the pleasant genial countenance of old Gov. Doty and think of the thoughts that he had about the future of this state when he was living in this town. He little knew of the wonderful growth and character that our commonwealth was destined to attain to.

Adjourned until 2 o'clock, same day.



## AFTERNOON SESSION, 2 P. M.

## "HOW TO BREED A HERD OF DAIRY COWS."

F. A. George, Hale, Wis.

I presume that it is the intention that I should give to a large extent my personal experience in breeding the herd of cows which I have, rather than to suggest any rules for the guidance of others, because there are many in this audience that would give you a far more extended plan of action than I can. I will give the farmers who are here, briefly, a synopsis of the last seven years of our experience on the farm in raising the herd of cattle that we now have.

There are two ways, of course, to secure a herd of dairy cattle; one is by purchase, and one is by raising them upon the farm, and probably the majority of you who are here present would prefer to improve the cattle that you have rather than to go out and purchase others. I would suggest that you must first learn to care for them properly, and by that I mean make them more comfortable. I believe that if one intends to improve his herd of cattle by feeding, breeding and care, that the care of the animals is the place to begin, because I have seen in our own locality many farmers who began to try to improve by breeding before they had learned to surround the cow with care and comfort, and give her the proper feed, and they have failed to reach satisfactory results. Now by the care of the cow I would say that I mean to make her extremely comfortable. I speak from the standpoint of a winter dairyman, and I know of no better way to give a cow all the comfort that she needs than to have your barn upon the south side and have plenty of windows so that there shall be lots of sunlight and the cow shall be kept warm and above all, to be kept dry, and I do not think that during the fall and winter and spring months there is any place where that cow can be more comfortable than in this very barn surrounded with these conditions. I would not let

her out even on a day like this for two or more hours at a time. I have no sympathy with the idea of the farmer in letting his cows out where the snow has been tramped down and the air is chilly, even though the sun shines, when he himself would not go out into the barnyard without overshoes. So much for that.

I would always warm the water to about sixty degrees, being careful not to raise it higher than that, nor let it drop much below.

Now, as regards the feed; after a cow has had the proper care and attention, has been made comfortable, of course we want to feed her well, and of course we want to feed her an economical and proper ration. As that question is to be brought up later, I will simply pass over this part of the subject by saying that we try to balance up all the products of our farm with the use of bran. When you have this cow fed properly, well cared for, properly surrounded with all the comforts that she should have, if you then find that she is a beef animal, which of course will be demonstrated by her ability to either give a good result at the pail or by taking on flesh, you can discard the poorest and keep the best; and right here it seems to me would be the proper time to pay attention to another branch of the improvement of cattle, namely, the breeding, and I would suggest and have practiced that the farmer who wishes to raise a herd of dairy cattle, that he would use a Jersey sire at the head of the herd. I mention this breed of cattle not to incite discussion, but because I have found them satisfactory and have found many others who have found them satisfactory.

Now, I would breed these cows so that they would become fresh the next fall, say in September, and while the cow is carrying the calf, I would continue this same good care and good feed during the whole period. I consider that a very essential point. Another thing that I have found very advisable is the use of an aged sire in preference to a younger one. When you have the cows well bred, well fed and well cared for, and have the increase of the herd, of course they will be half blood animals. Now, the raising of the calf and the feed and care of the animal until it is two years old is also very important. I would suggest the liberal use of skim milk, wheat bran, oats and clover hay during the first eight or nine months of the animal's life, then

turn it upon the pasture, continue the same, breeding her so that she would become of use when she is about two years of age. Of course it will require a long time to secure a herd of profitable dairy animals working in this way, but it seems to be the road that most of us farmers have to travel over. And while it has taken me nearly seven years to reach the point that I have reached, still I have found it all the way along comfortable and today find myself with a fairly good herd of cattle and a very much improved farm and the expenses of all the necessities and some of the luxuries of life have been enjoyed as we went along.

The actual results in my own case have not been near as good as were quoted here this forenoon. While all the animals upon the farm were raised there by ourselves we have been unable to reach over 304 pounds of butter per cow for the year. And I want to say a word about this. Some times speakers have mentioned that they have averaged so many cows. I wish to explain fully on this matter. We had thirty-nine cows the first day of January, 1893. In April of that year, or just upon turning upon grass, we sold six of them, as they were not desirable animals. At the time we sold we had two heifers drop their calves, the following fall we had five more, one cow had the milk fever in the fall and we closed the year with thirty-nine cows, and the result I have given you is the number of pounds of butter reported at the creamery. We make no account of the skim-milk or the cream used at home. We have great hopes the present year of carrying nearly a hundred head of cattle besides the horses upon the farm. So you see by following these simple rules I have not only been able to raise a fairly good herd of dairy animals, but at the same time I have been enabled to place a much greater value upon the farm where we lived.

---

#### DISCUSSION.

The Chairman—The Chair stated this morning that the average of Wisconsin was only about 125 pounds of butter per cow. Mr. George gives a statement of 304 pounds per cow. This gives us a margin of intelligent understanding as between the ordinary effort and effort that comes from study and care.

Mr. Thorpe—Mr. George, would you raise a calf from an inferior cow, even if you had an extra good sire, and expect to get a first class cow?

Mr. George—Yes, I would breed that cow with a dairy sire that I would select and I would do my best to raise that heifer calf. Of course, the result would not be as desirable as some others, but I would not throw her away on that account.

The Chairman—Wouldn't it depend upon what ancestry was behind her?

Mr. George—Yes, certainly, I would raise the calf.

Mr. Thorpe—My experience is that if they come from first class cows they don't make inferior cows. In the last three or four years I haven't raised a calf from a poor cow, and I wouldn't if you would give me one.

Mr. George—I have found myself to be obliged every year up till now to turn off at least six cows from the farm because they were not desirable animals.

Mr. Faville—How much have you improved your herd?

Mr. George—The first time we kept any record we had 212 pounds; that was four years ago.

The Chairman—What was the difference between the keep of those cows when they produced 212 pounds and the present cows at 304 pounds?

Mr. George—At the time we had the 212 pound cows, we went out and purchased a number and we fed them very liberally for that year, and they gave a large quantity of milk, we had 58 or 59 cows and we only received something like \$2,800 or \$2,900 from them, while this year we received over \$3,600 from thirty-nine cows.

Mr. Beach—Do you think you paid the same attention to balanced rations that you do now?

Mr. George—We did, with the exception that we use ensilage now. I think the difference is largely in the cow.

A Member—Do you think you could make any improvement in the cow by feeding the cow nitrogenous food?

Mr. George—If I understand your question I think the reason we failed to receive more than 212 pounds was from the facts that the cows we purchased had not been fed up to their limit.

Mr. McKerrow—You mean to say you improved your herd by a liberal system of feeding?

Mr. George—Yes, sir.

A Member—I want to know whether he thinks that feeding the cow nitrogenous food will help the calf.

Mr. George—Yes, I think so.

Mr. Bender—What special feed do you raise on your farm to mix in your bran?

Mr. George—We have a two hundred-ton silo and that is always filled, and we sometimes have some corn fodder left over. We have plenty of hay, coarse feed, and plenty of ensilage, and it is only necessary to balance that ration, which we do by buying bran. That is the only ground feed we use. We never feed any ground corn to the cows; if they get any corn at all, they get it through the silo or through corn that is dried and run through the ensilage cutter. Taking into consideration the manurial value and the fact that a cow will very rarely over-feed with bran, we find it better than oil meal or cottonseed meal.

Question—How many tons of corn do you raise to the acre?

Mr. George—We expect to get ten or twelve tons to the acre.

Dr. Bowen—How long would you keep your Jersey at the head of the herd? Would you breed more than one generation from him? Would you inbreed?

Mr. George—Up to the present year I have changed every two years. I am trying now ten cows inbreeding once because I have a very superior animal and it seems difficult to replace him with one equally as good. What the result will be I don't know, but as a rule with common stock I think that most farmers can with a little care make an exchange and avoid inbreeding.

The Chairman—Your idea is that where two or three farmers have aged sires of the same breed that instead of using younger animals they had better exchange?

Mr. George—I think so.

Mr. Brigham—Would you prefer the same sire when he is old rather than young?

Mr. George—I would, for the reason that he is more able when properly handled to impress his individuality upon the stock.

Mr. Taylor—Do you stick to the same breed of dairy cattle?

Mr. George—Certainly.

Mr. Taylor—Suppose you have used a sire for two years of the Signal family, then in two years you cross and take another family from the same breed, is that your practice?

Mr. George—No, sir, I would continue in the same family. I would use great pains when I started. The last three animals on my farm have all been of the same strain of Jerseys.

Mr. Taylor—I hope they will all catch that idea thoroughly, as I consider it a very important point. After careful investigation after I had concluded a certain line was a good line I would stick to that line.

The Chairman—This last remark was by Mr. Taylor, the breeder and owner of "Brown Bessie," the cow that made such a record at the world's fair. A man has a right to speak on this question who has bred such a cow.

Mr. McKerrow—Mr. George, supposing that you wished to buy a sire to put at the head of your herd, and had before you two animals—one older in the butter records of his ancestry than the other, the one of the plainer pedigree, offered to you for fifty dollars, and the other offered to you for two hundred, which would you take to breed your thirty or forty cows for a number of years?

Mr. George—I did take the two hundred dollar animal.

The Chairman—And your cows show it.

Mr. George—I would say right here, however, that perhaps I have done what most farmers would not do. I would say that while I have paid \$200 for the animal that showed a very superior record, when I could have gotten the other for fifty dollars, you can get today, a very good male animal that will amply repay you for two years when you can exchange again, so that this cost of improving the cattle is really so small as not to be considered at all. Of course, after you have gone along and got the high bred cattle you would be desirous of still further intensifying that strain and you would have to go a little higher in price, but if you have carefully fed and cared for these grades you will have the money to pay a higher price. The business pays for itself as it goes along.

A Member—You may have an extra good Jersey cow, well bred in all respects and a man may take good care of her him-

self, but isn't it possible to sell that cow and she become a poor cow on account of her nervous temperament and change of circumstances, I don't mean abuse.

Mr. George—It is not only possible, but very likely that she will become poorer if taken away from her good surroundings and good care and put where she has bad surroundings.

The Member—But wouldn't the change affect her nervous temperament?

Mr. George—Only a short time, if she had equally good care and attention in the hands of the new owner. Of course she would notice it at first, but if she were really a good cow the right kind of a man can soon get on the right side of her.

Mr. Everett—Does Mr. George believe it desirable to take very good care of a cow when she is fresh in milk for the first ten days, for instance, and if he forces that cow during the first thirty days, gradually force her feed and try to get her to her full capacity in the first thirty days, and if he cannot do that, can he again during that period of lactation get that cow to her full highest limit.

Mr. George—Of course, every farmer probably knows that it is very essential for the first week at least after a cow has dropped her calf to be very careful of her. At the end of a week perhaps if she is all right, you can begin to feed carefully, and at the end of thirty days, or at least at the end of six weeks that cow should be on her full feed, and I think if you go a great while longer than that that you will be unable to get her back to her normal condition until she has another calf. It depends something upon the individual cow.

Mr. Fuller—Do I understand the question refers to milk capacity or butter capacity?

Mr. Bender—I mean butter capacity.

Mr. Fuller—I do not hold entirely with the gentleman who has just spoken. I think if you obtain the full butter capacity at the beginning of lactation you do it at the expense of later product. I am satisfied with that proposition if your object is to obtain the full flow of milk. That must be done in the first thirty or forty-five days. The full butter capacity it seems to me is of a slower development.

The Chairman—First you would secure the kingdom of heaven

and its righteousness and then after that you would get the butter?

Mr. Fuller—I know that is the process that obtained in the World's fair, and I know the tenacity of the Jersey cows in the World's fair was remarkable, admittedly so by not only those who had heretofore acknowledged their tenacity but by skeptics who were converted.

Mr. Faville—Don't that squint a little towards feeding butter fat into the milk?

The Chairman—He brings the cow up to her natural capacity.

A Member—What may be considered the natural capacity of the cow. We heard a good deal about that and about limit.

Mr. George—Every cow has its own limit; that is, it has a certain point beyond which you cannot force her. It varies with individual cows, you have got to study the individual capacity of each cow.

The Chairman—How do you manage a young heifer when she first comes in milk in order to develop her and establish her as a dairy cow? We all understand that we can either enlarge a heifer or we can spoil her by good or bad management.

Mr. George—I confess I let my daughter do the milking and I do the feeding. We never have any kicking cows, and of course, I use great care in feeding the heifers, the amount of feed that I think they will consume. It requires constant care and attention to do this and when you have thirty-five or forty cows and each one with a different capacity you can readily see that the proper place of the dairyman is in front of the cow most of the time.

The Chairman—Isn't it true that a heifer's milking period is affected considerably through her after life by the way she has been handled in her first milking period?

Mr. George—That is very true, and right here comes in the advantage of having these heifers drop their first calves during the month of September and bred again to drop the calf a year from that time. You have the matter so to speak in your own hands, and you can continue the feeding, and above all continue the milking up to within perhaps eight or ten



weeks, when you can decrease the feed, and thus establish a limit, a long milking habit for that heifer for her whole future.

The Chairman—Then isn't there another advantage about fall calving, when they come in fresh to the spring feed they are restimulated and enlarged in their milk capacity at the end of the first six months.

Mr. George—That is true, there are some of them practically fresh cows when they strike the pasture in May or June. One caution I will give you, however, and that is in feeding grain to fall cows that period of the year, I think it is much better to take the grain from them.

Mr. Goodrich—How long would you let a young calf be with its mother?

Mr. George—Up to within two years I used to let them remain with the cow a day or so, but I have had the pleasure of attending several institutes the last few winters and I was led to change my method, and I tried the other way during the present year and we are very much pleased with it, which is to take the calf away from the cow perhaps within an hour or two, not let it suck the cow at all. As far as we have tried it it seems to be fully as satisfactory and a little less work than the old way.

The Chairman—Have you had any experience in milk fever?

Mr. George—Yes, we lose two or three each year. About all we have done for them is to use aconite, about twenty drops every hour, but this last winter I saved what I thought was a very bad case by completely covering the cow with blankets and using hot applications of salt and hot bran.

Mr. Thorpe—I have had experience with four cases of milk fever, and I have used that same remedy and never lost one.

Mr. Beach—I have lost many cases with milk fever. Last year and this year I have adopted the practice of giving a pound of salt within six or eight hours after the cow calves and I have lost none.

Mr. Belknap—When you weed out your poor cows how do you find out they are poor cows?

Mr. George—We have, of course, a Babcock test and a pair of scales, the last two years upon the farm and during the fall

and winter and spring months they are in almost daily use for one purpose or the other.

Mr. Taylor—I have had several cases of milk fever and never lost any. I have one cow in my herd that had the milk fever twice and did not die. I have made something of a study of this matter and I think that Mr. Beach is a little late in treating his cow as he says. I think this treatment should be given previously to parturition, a few hours at least, a day or two is all the better. In this pound of salt I would put a half ounce of nitrate of potash. As soon as the calf is born we always treat our cows with a small warm drink. We find that the cow becomes irritable and nervous if she does not have some drink at this time and she will thank you for it, and ask you in a great many different ways for it. She is in your care and you ought to see to it that this appetite of hers is somewhat appeased. I always give the cow ten drops of aconite preferring to use a homeopathic prescription, Humphrey's is good, and if the fever does not run up very much, twice or three times a day is sufficient. If it continues to run up I would give oftener, ten drops. If the bowels are loose and you don't feed very much sloppy food to these large producers, you won't have much milk fever providing you protect the cow from cold chilly blasts. My method is to keep the cow in the barn for thirty days and the first few days I would have a blanket on her. You gentlemen who have basement barns think that is all that is necessary but when the rest of the herd is turned out, she needs a blanket as much as a cow in a frame barn. Protect her from the weather. One of the best things you can give a cow in the way of concentrated foods before calving is a pound of oil meal daily. I think that is an excellent ration with the other grain, of course feeding very little corn meal, either before or after.

Question—How do you feed for a week before the cow drops her calf?

Mr. Taylor—I would feed her the same a month previous that I would a week. I would see to it that her bowels were somewhat open, at least a week before. Oil meal will correct any constipation that the cow may be inclined to. We feed bran and oats as one of our principal feeds, with oil meal and with

clover hay. We aim to get the cow in good, thrifty normal condition, and that means rather a lean condition, but not a poor condition. That leads me to the other idea that when a cow produces a calf and starts out on her work of maternity, she will give you normal quality. Now, feed this cow so as to increase the quantity and you will all the time have the normal quality. By keeping up the quantity you keep up the amount of butter that she is capable of producing, and by feeding for quantity of milk continually you will not only work your cow, but just as soon as you lose sight of quality and want to get the same amount of butter from less milk, you will force your cow into that retrogressive condition, where she will produce you an abnormal quality of butter, and you are doing her harm.

Mr. Beach—You speak of giving your cow a small quantity of water. How much do you mean?

Mr. Taylor—Half a pail, every once in two hours, perhaps a little oftener at first. She is thirsty and she will want more. I should take the chill off of that water.

Question—You give no slops?

Mr. Taylor—I would not feed slops to a cow that I wanted to prevent milk fever with for ten days.

Question—How do you feed your oil meal?

Mr. Taylor—I feed it dry. The cow at this time has some fever and she will not produce her normal quantity of milk until the fever passes, and if she does not come to her milk readily, it will very likely be because she has still some fever.

---

## HOW SHALL WE PRODUCE THE BEST COW FEED?

C. H. Everett, Beloit, Wis.

It is impossible for the dairyman to succeed unless he pays close attention to the kind and character of the different products of the soil that enter into the cow's ration, as well as

studying closely the best and cheapest way of producing them. While the cow will eat almost any plant we may grow on the farm, it is not wise to argue that all of them are best suited to her wants, or that she should be confined to any one or two varieties without due regard to character, simply because they happen to be produced in abundance on the farm. Many farmers ridicule the idea of a balanced ration, and will feed whatever they happen to have or can produce with the least trouble. The fact that food for any animal and for any purpose, becomes a question of the proper proportions of protein to carbohydrates must not, and cannot, profitably be ignored.

The dairyman should aim to raise those foods which are rich in protein, for it is this element in the cow's ration that makes it expensive. For instance, the ration I am feeding at present consists of 40 pounds of ensilage, six pounds of wheat bran, 2 pounds of pea meal, and about eight pounds of clover hay. The cost of this ration is 11 cents. The 40 pounds of ensilage furnishes mainly the carbohydrates and fat, and costs 2 cents, but to properly balance this 2 cents' worth of carbonaceous matter I have to add 9 cents worth of protein food.

In one hundred pounds of good clover hay there are 8 pounds of digestible protein. If you can produce three tons of hay to the acre as an average crop, then you have produced 480 pounds of digestible protein from the acre. If protein is worth 3 cents per pound, then the acre of clover is worth \$14.00 in this one constituent of milk and animal life, but this is not all, for the three tons of hay will contain two thousand six acre of ground, three tons of clover roots, which have stored up as much fertility as is found in the hay. This estimate may seem overdrawn; but it is not. On the other hand, it is a low estimate. It is true that we do not know just how much value the cow gets out of three tons of clover hay, or just how much of the manurial elements we save, neither do we know how much value is obtained and saved from a ton of \$25.00 oil meal. The estimate is based on the price we pay for protein and carbohydrates in the shape of bran, oil meal, cottonseed meal, etc. I can produce one acre of clover of three tons and put it in the barn for about \$7.00. I sow 4 quarts of medium red clover seed to the acre on rye or winter wheat very early in the spring.

By this method I have never failed to get a good stand. The following spring sow from 50 to 75 pounds of land plaster to the acre, cut early, commence as soon as two-thirds of the blossoms are out, cock up quite green and let it sweat, protecting from the weather with hay caps. Cut second crop for hay and cure in the same way. If it is light, however, I prefer to pasture. It must be remembered that any feed of good quality cheapens the cost of the cow's ration as against the same feed if of poor quality. In clover hay, cut at the right time and properly cured, there are more digestible nutrients than when such hay is allowed to become too ripe and then dried to death in the process of curing. I would rather have one ton of early cut, well cured clover hay, than two tons of over-ripe or badly cured hay. The value of any food lies in its digestibility. There is a wide difference in the composition of early and late cut clover, of mature and unripe corn fodder. As the crop ripens the nitrogen seems to decrease, and the carbohydrates increase.

The chemist finds 400 pounds of digestible protein in one ton of pea meal. He also finds 1,116 pounds of digestible carbohydrates and fat in one ton of this kind of feed. With protein at 3 cents a pound and carbohydrates at 1-2 cent a pound, then we have \$17 as the feeding value of one ton of pea meal. Where peas can be successfully grown, they can be produced at a cost of about \$12 per ton. I find no difficulty whatever in raising fine crops of oats and peas. I sow very early, as soon as I can work the soil. First, go over the ground with a disc harrow, then cross with smoothing harrow, after which sow two bushels of peas to the acre, and plow under, three or four inches deep. Then sow on one bushel of oats and harrow thoroughly. The object in fitting the ground before sowing the peas is to keep them from rolling into the furrow, and also to give them a fine seed bed; as the two inches of surface soil is turned down with the peas, this gives quick and even germination. There are various ways of harvesting the crop. I have had the best success with the mower by bolting two long arms on to divider board. The vines are quite readily pulled apart and into windrow. It is best to stack direct from swath as the peas will shell some when dry. There is no better cow feed raised on the farm than oat and pea hay. As a food I think as much of it

as I do of clover. It is not only good for the cow, but splendid for all stock. It is the best horse hay I ever raised. Sow two bushels of oats and one of peas, and cut the crop with the mower when the oats are in the milk, or a little before. Do not try to mature the grain; if you do you will lose more feeding value in the straw and pea vines than is gained in the mature grain. I cock up soon after it is cut and leave for two or three days to sweat; then open to the air for a short time, and draw to the barn. Such hay has a nice luxurious foliage, will be green, tender, and entirely free from dust. It makes very fine hay and has very little waste in feeding. I hope you will all try this crop next year as I have described. I feel sure that you will be more than satisfied. When you sow your oats next spring have a strip four to six rods wide around the outside, for oat and pea hay. I follow this practice with all my small grain. The hay is all cut and out of the way before harvest, leaving the field ready for the binder; no grain tangled and wasted by horses and machine, but nice clean work all through.

It is hardly necessary for me to say anything about the corn plant and silo. You are all well aware that ensilage is one of the best cow foods produced on the farm, and also the cheapest feed of its nature we can produce for the cow or steer, being very rich in carbohydrates. It should never be fed alone or in too large quantities, but must be balanced up with some nitrogenous food. A cow's ration should have a nutritive ratio of about one to six or seven. I mean by that one pound of protein to seven pounds of carbohydrates. Ensilage has a ratio of one to twelve, so you see that when fed by itself, the ration would be one-sided. Now, suppose you feed timothy hay or oat straw with ensilage, as some men do, with the idea that it makes a good ration. Timothy hay has a nutritive ratio of one to ten, and the ratio in straw is one to thirty. It must be plain to you that such feeding is not conducive to the best results as it is only getting farther and farther away from the mark. When you feed ensilage to a cow or steer balance it with something rich in albuminoids, like clover hay, oat and pea hay, bran, pea meal, oilmeal, etc., always taking into consideration the market value of the different foods you may have to purchase.

Over in Kewaunee county a young man rose in the audience and asked a question, saying, "It doesn't pay to feed cows;" that the gross receipts from his cows had been \$25 for the past year and that if he could get more money for his milk then he could afford to feed better. Another man arose in the same audience and made the statement that in the past year he had milked twenty-five cows and heifers and he had sold from them \$1,450 worth of butter. He evidently thought it paid to feed. One of these men was looking to the wrong end of his business, he was looking to the market end instead of the home end. The other was looking to the cost of production, the home end. The first man also had overlooked this important fact, that we cannot cheat the cow. Evidently he had not fed his cow but little more than the ration of maintenance which the cow must have for her own support, the functions of the body must be kept up from the food.

---

#### DISCUSSION.

Mr. Bender—Suppose a man has no silo and not in condition where it is easy to have it. What would he feed next?

Mr. Everett—Why, bran, oil meal and clover hay.

Mr. Bender—I am mixing corn and oats, 100 pounds each, and I give the cow a ration of about ten or twelve pounds a day; then I give what clover and timothy hay they will eat.

Mr. Everett—That is a very good ration. You would have to feed corn meal with the bran when you are not feeding ensilage. Oats are sometimes expensive and we can afford to sell oats and buy bran; a little oil meal is good for a cow, pea meal is also good if you can produce it on the farm.

Mr. Widmann—What kind of oats and what kind of peas do you sow?

Mr. Everett—I sow altogether what is known as the Canadian pea, and I have sown them with several varieties of oats. It makes but little difference where you are cutting for hay, whether it is an early or late variety, where you wish to get a grain crop, I prefer the late variety.

Mr. Phelps—How do you make those caps for the hay?

Mr. Everett—They are made of cotton cloth a yard square, weighted at the corner with a couple of stones, and they can be made at a cost of seven to eight cents. If I were making them again, I would make them a yard and a quarter.

Mr. Phelps—How many years will those caps last?

Mr. Everett—I cannot answer that. I have reason to believe that they will last a man a lifetime. I understood Mr. John M. True has used them constantly for twenty years.

Mr. Thorpe—How long after the hay is cut do you let it lay before bunching it?

Mr. Everett—We cut it in the forenoon after the dew is off two or three hours, and we cock it up in the afternoon. It lies probably two or three hours and becomes quite thoroughly wilted, and that is all we are after. We don't care to cure it in the sun, but our aim is to let it sweat out in the pile, then open it up to the air and dry out the moisture, then it is in good condition for the barn. Such hay does not reheat, at least not badly, and you save all the foliage and get more digestibility.

Mr. Goodrich—How large bunches do you put it up in?

Mr. Everett—About fifty or sixty pounds of cured hay, I should say. We begin cutting when the field looks universally red, when it is in bloom.

Mr. Goodrich—I believe in Mr. Everett's way of making hay and it is very successful whether you have the caps or not, but you have to be careful. One time I was riding on a train going from one institute to another, and a man came along and got hold of me with an iron grip and he says, "I have got something to say to you fellows. You fellows told me how to make hay and I spoiled all of mine." I says, "That wasn't I, that was Everett." I inquired into it and it turned out that he had cut it in a very green state, piled it up in great big piles, so as to economize with the hay caps; then there came on a rain and it rained a week and his hay wasn't good enough to feed his horses. Then out in another county I met another man who had listened to Mr. Everett telling about making hay. He had invested in hay caps, paid something near \$150, cost him 28 cents apiece, made of duck. He says he followed the rules



and he put it in and the juice was running down and dropping through the floor. Now, he had made a mistake too.

Mr. Everett—I met that same gentleman last week in Illinois, and he told me his trouble. He ordered his hired man to go out and open up the hay and air it and draw it in the barn while he went away from home on other business, and the man drew the hay in from the field without airing it at all, consequently it was full of juice and water. If you don't air it thoroughly you might as well cut it and draw it in green, the consequences will be the same. Of course the airing depends somewhat on the weather. In favorable weather two or three hours perhaps will dry this moisture out of it. You must take pains in loosening up the piles to air.

Question—Does it depend sometimes on the greenness of the hay? You have to use judgment all the way through, don't you?

Mr. Everett—Yes, that is it. When you cut up this hay it is green and it will shed water much better than you think.

The Chairman—In seeding your clover have you ever tried more than four quarts to the acre?

Mr. Everett—Yes, I used to sow six quarts, but I came to the conclusion that it was a waste of seed; and as I had obtained as good a stand from two quarts as I ever did from six I concluded that four ought to be ample. I think four quarts will be enough for any soil if it is good seed.

The Chairman—Do you ever find clover seed that is lacking in germination?

Mr. Everett—Yes, once in awhile.

Mr. Goodrich—I never failed to try my clover seed before sowing, and I think it pays me well. My attention was first called to this by a neighbor who owns land across the road from me. He was seeding with barley at the same time I was sowing. We both had a good stand, I on all my field but he on about half his field, and on the other half hardly anything. He didn't seem to know the reason why, but he finally remembered it was different seed; some was his own raising and some he had bought. I asked him if he had some of it left, and he said yes, and I went to his house and took a little of the seed home and I spread a cloth and put on a layer of clover seed

and spread another cloth over it and let it lay and kept it where it was warm, and after awhile I took off that upper cloth and there was not one seed out of a thousand that was sprouting. Since then I have always tried my clover seed and I never have found any that it all grew, and frequently not more than one half.

A Member—If the land is badly run to grain it seems to me that you ought to sow more seed.

Mr. Everett—The actual count of the number of kernels in one quart of clover seed will give a sufficient number of grains to make 12 plants to the square foot on an acre of ground from one quart of clover seed. By observation I have found that from five to seven or eight plants actually grow on the square foot. That being the case I argue that four quarts will be sufficient; that will allow for those that do not germinate. We sow in the spring on the snow, freezing and thawing. We sow with all small grain, but only two quarts. We sow for fall feed and for fertility. Barley is the best spring crop we can sow with for the reason that it does not draw the moisture so heavily from the soil.

The Chairman—In Connecticut I saw where they seeded with grain in the last cultivation and I never saw as fine seeding in my life as the clover sown in August at the last cultivation of corn, and very light surface cultivation given. When the corn was cut it had sprouted nicely, the ground was rolled down and the seeding was done very economically and evenly. The next year a full crop of clover was cut. Last year on an acre of ground I seeded with oats and then cut the oats when they were in the milk for hay. It was tremendously dry and the clover was killed all over Wisconsin by the drought. This clover came on and was pastured severely, but still maintained itself. I noticed that where the early oats were cut on my neighbor's field, the clover remained and staid through the whole season, but where they waited until the grain was ripe before cutting, the clover was killed. I believe that clover is often killed by the accompanying grain.

Mr. Bentley—I find it makes a difference how the oats are cut. Where I have cut with a mower it cuts so close to the ground that the sun bakes it and the clover dies.

Mr. Bender—A friend of mine who has a poor, sandy soil says he has the best seeding without sowing any crop with it at all.

Mr. Bentley—I have seen that done in limestone knolls with good success.

A Member—Why do you recommend the pea meal?

The Chairman—From its protein value, but you should always feed six or seven pounds of bran with two or three pounds of pea meal. The pea meal alone is too concentrated a feed.

Mr. Beach—Three or four years ago I had four acres of ground that I sowed so late that it did not come up, in the fall, then I harrowed it and sowed clover seed with rye. The rye grew so tremendously that I cut it down for hay, and after the rye was off, I cut a ton to a ton and a half of clover, and finer cow feed I never had. It had just commenced to blossom. The rye wasn't fit for hay, but it was good for bedding and I got four tons.

Mr. Everett—I notice a great many farmers want to cut the oat hay with a binder, and they want to let it get ripe enough to get some grain. That is a mistake. It must not go so far if you are to cut it for hay; we can't get both hay and grain. When we are cutting for clover hay we don't think of waiting until we get seed.

Mr. Widmann—Do you consider pea meal and oats good feed for calves?

Mr. Everett—In a limited way, yes. We feed largely oats to calves, but we avoid feeding any fattening food, particularly to heifer calves.

Mr. Goodrich—What can Mr. Thorpe tell us about clover ensilage?

Mr. Thorpe—After my butter is scored down stairs I can tell you more about it. I wasn't exactly suited with corn ensilage for cow feed, and the second year I filled my silo with clover. I put in eight or ten loads of the first crop of clover in one end of the pit and partitioned it off, and I liked it so well and the stock liked it so well just when the pasture was getting short and I secured such good results that I put in all the clover I had the next year, second crop, and I never had as good feed for dairy cattle. The next year I put in the first crop; I did not weight it and I lost considerable on

top but when I got down to the good ensilage, it was excellent. I feel as if I have gotten the best results from clover ensilage as between clover and corn and every year that I can get clover to fill my silo I shall not fill it with corn, but if I can't get the clover I shall certainly fill it with corn. I can't afford to give my cattle land enough for pasture to keep them without partial soiling. My pasture only contains eighteen acres of land and six or seven acres of that is covered with black oak timber, and I keep from twenty-five to twenty-eight head in there.

Mr. Thorpe—Last summer I couldn't get help. I went to the world's fair, as most of us did, and it put me back with my work. I went into the streets where the men were getting a dollar and a half a day, but staying handy to the saloons where they could spend it all and offered them two dollars to go and help me on the farm and they wouldn't go, and I had to fill my silo with one hired man and a boy about twelve years old, and we were nearly two weeks filling it, and had two or three heavy rains during that time, and the last of the clover got to be too ripe before we got it in the pit.

The Chairman—It don't make any difference whether the weather is good or bad, you go right along with this work, do you?

Mr. Thorpe—Yes, I don't like to put in wet clover and I don't if I can help it. Clover silage is a practically balanced ration.

A Member—I like to commence filling my silo a little earlier than Mr. Everett, and the first few days we are putting in I like to have it wilt about half a day, cut it in the forenoon, say, about nine or ten and let it lay until three or four in the afternoon, then turn it over and in the morning turn it over once more with the rake and put it in the silo. Mr. Noyes, last year filled his with green clover, and he drew it onto the scales and weighed it and had twenty tons to the acre by actual weight of the two crops.

Mr. Thorpe—What does it cost a ton to put it in the silo, is asked me. I will say that my man and this little boy and myself put in nearly an acre a day. We run it through a feed cutter. I prefer to cut in rather than to cut after the trouble of taking it out, and it makes splendid silage. I have seen them

try to get it out of Mr. Noyes' silo where it was put in whole and it was pretty hard work.

The Chairman—How much of a ration do you give your cows?

Mr. Thorpe—It averages about twenty-five pounds a day for a cow, that part of the ration. I raise some corn every year on purpose to feed those cows with the clover hay. It is shocked up in large shocks and then put in the barn after it is dry and we mix that with the clover hay, about half and half, and it is all run through the cutter. I want to cut it fresh at least every four days or perhaps it might heat up too much.

Mr. Dunn—Do you think cutting it adds to the feeding value of it any?

Mr. Thorpe—I can feed it more conveniently, enough so to pay for the trouble of cutting it.

Mr. Dunn—What power do you use on your cutter?

Mr. Thorpe—I use a ten-horse power, because I have one.

Mr. Dunn—Which is the nearest natural to feed it to the cows, cut or whole?

Mr. Thorpe—Which is the nearest natural for the cow, to be tied up or to be let loose?

Mr. Dunn—That is the reason that the Bidwell tie is so recommended because the cow is loose.

A Member—Did you have any difficulty with sweet corn moulding in the shock?

Mr. Thorpe—No, it is drilled corn and we put about 64 hills in a shock.

A Member—What would have been the difference in the quality of your ensilage, if it had not been exposed to the atmosphere as long as you say?

Mr. Thorpe—There is a little too much water in it and it makes it too acid. I don't know the difference in the results of feeding. When I commence it is pretty green and pretty wet.

## HOW TO GROW MORE SUCCULENT FEED FOR OUR DAIRY STOCK.

George McKerrow, Sussex, Wis.

This question of how to grow more succulent feeds to feed our dairy cows, I believe to be a very important one. The good feeder of all classes of stock has two objects in view in feeding; one to keep his animals up to the highest possible condition of health for their future use, the other to make them produce the highest possible amount of product for the food consumed that can be done and keep them up to this condition of health. Now, we have found that by feeding succulent feeds we are able to do this better than when depending entirely upon dry feeds. Now, the subject assigned to me is, how to grow more succulent feeds, relates to those who do not already grow them and to those who do grow them the question of growing more acres of such feeds. To do this they must have a better quality of land and give these feeds better culture that they may produce more per acre. It is not the number of acres in the crop that we care for, but the amount that we grow on the acres that will count on the profit side.

Clover is one of the best succulent feeds that we have for summer feeding, and when preserved in the silo it becomes a good succulent feed for winter use. This subject has been discussed and I will add a little more to it. I will only say that instead of sowing the land plaster as my friend Everett does the second year in the life of the clover, I sow it at the time I sow the clover seed, as I believe that is the time when the plant needs encouragement more than any other time in its life. I have found very satisfactory results from sowing clover alone in two particular cases where I needed clover that same season. I prepared the ground the fall before as I would for sowing fall grain, allowed it to lie through the winter and in the early spring I sowed this clover seed, three and a half quarts of medium clover, one half quart of Alsike, and with this also I sowed one quart of oats to the acre and I had very satisfac-

tory results in both cases, in one case a good hog pasture all through the season, in the other case a good growth of grass that I could cut for soiling purposes to help through the summer season. Now, some of the best dairymen in our section of the state find it almost indispensable to success in their business to have a series of succulent foods coming in through the summer season to keep up the milk flow. They begin with clover, follow it up with oats and peas and some men are sowing tares and oats. The great trouble with tares is to get seed at a reasonable price. The tare is a very rich feeding plant, richer, I believe, than the pea and I was much pleased with the results of feeding mixed tares and oats, more so than from any other mixture I have had. The plant does not stand up very well, and it has to depend upon what has to hold it up.

To get a good crop in any of these grains that we have mentioned we need a good, rich soil. Mr. Everett has told us how clover enriches the soil. I am considerable of a clover crank. I believe it is the most valuable plant that we can raise in Wisconsin, the only plant that we can sow for a forage plant and at the same time leave our land richer than we find it. It acts as a pump, drawing up by capillary action from the subsoil below, fertility that has been stored there for ages, and leaving it in a fine condition for any other crop that shall be put into the ground. It loosens up the earth, too, so that the air passes up and down. In preparing soil for any other succulent crop I would say first sow a crop of clover, and by all means top dress that clover crop with good stable manure; by doing so you enrich the surface soil, you feed the clover plant and make it stronger, better able to reach down for its support, and better able to draw its support from the air through the small microbes that infest the nodules of the root. It holds the water which comes up by capillary action from below and so in a dry time the plant is kept moistened, if we protect the surface in some way by a dust blanket or by putting a mulch on it.

Now, in the growing of the corn crop we get a great deal of succulence both from feeding through dry spells in the summer and for putting in the silo. We do the same in growing a good root crop, in growing a good crop of oats and peas or oats and

tares, or a good crop of mangle-wurzels, turnips, or something of that kind, and as a preparation for any of these, we can have no better preparation than by top-dressing the soil. Now, in sowing root crops I should say, follow the plow and roll it down immediately after plowing, harrow it in the spring so as to be ready for fine spring work, then early in the spring you may ridge up, if you prefer, into ridges two feet apart and plant upon the top of the ridges, or if you like, you can follow level culture, as I have for several years with very satisfactory results. For root crops, such as the turnip and the rape, I prefer spring plowing after the clover has begun to grow and is two or three inches high, and also the same kind of plowing as for corn. I reason that after the clover is two or three inches high there is a good deal of succulence there and when we turn that crop down and it begins decomposition it will warm up the soil and help the growing of the plants on the surface. Now, you all know how to grow a corn crop, and I will simply say, be sure and get good seed. Then our method is to drill it in with drills, follow with the harrow, harrow two or three times before it comes up and several times after it comes up until it is three or four inches high. Always harrow in the warmth of the day when the plants are limber and will bend under your harrow rather than break; then follow with the cultivator, and it is well to have a cultivator with a fine tooth, that you can set to run shallow at first and then deeper and after rains have packed the ground run deep enough so as to loosen up the surface soil that it may quickly dry out. Sometimes the weeds will get the start of us in early culture and it is best then to run the cultivator through as close to the row as possible and then cross-harrow; keep the harrow going, work the ground thoroughly. I should have said after the spring plowing we keep a roller in the field and roll right down after the plow and harrow it once with a disc harrow. After the clover is three or four inches high we plow it once a week, for three or four weeks until we are ready to sow turnips or rape, and then we are pretty sure of not being troubled with weeds.



## DISCUSSION.

Mr. Thorpe—Do you think rape is a good cow feed?

Mr. McKerrow—Our few cows have had rape every fall. It is the last succulent feed that they can get as it grows on the ground. It can be had very succulent and green quite late, until the frosts are severe, and it has given us very good success. I am asked to explain what rape is. It is like a sweet turnip all gone to top. The stalk grows up two and a half or three feet high; there is a large amount of foliage, and a very rich feed. All feeds of this class are very rich. They tell us that one hundred per cent. of the solid portions of these roots are digestible, I mean turnips, rape, mangle-werzels, etc., and that covers everything in them.

Mr. Bender—Would not such roots replace the silo to a certain extent?

Mr. McKerrow—I think so. Mr. George Hardy tells me he cannot get the very best results without adding a small ration of roots to his silage.

Dr. Bowen—You said that rape is the latest plant grown. Is not barley a later crop and have you ever used that as a succulent feed?

Mr. McKerrow—You mean to sow the barley late in the season and have it green before frost?

Dr. Bowen—And cut it with your mittens on.

Mr. McKerrow—You can do that with your rape, and it will stand the early frost better than barley. It is possible that the rape will affect the flavor of the milk if fed very heavily, so will oil cake or cottonseed meal. Some people claim you can feed turnips right after milking and avoid this taint; I don't know about that. I find carrots and sugar beets the best roots to feed to cows, there is no fear of taint with them.

Mr. Bender—What kind of rape do you plant?

Mr. Kerrow—Dwarf Essex rape is the proper kind to sow; if you sow broadcast, you can sow five or six pounds to the acre and it costs fifteen cents a pound. I have bought it of Ferry Bros., in Milwaukee.

A Member—Did you ever know of trouble in getting it out of the land?

Mr. McKerrow—No, not this kind; we have had a German rape that went to seed the first year and that probably would be troublesome.

Dr. Bowen—To those who are interested in this subject of rape, I will say that the department of agriculture have issued a very excellent little pamphlet on this topic, which any of you can procure by writing to your congressman. I wish to say I first obtained the idea of sowing barley for late use from Dr. Cheever of Boston, the editor of the New England Farmer, one of the most practical agriculturists we have in New England and a man who carries twenty-five cows and a number of horses on twenty-five acres, and he said he did it entirely by the succulent feeds, feeding them in the bulk. Some years he would sell one or two tons of hay from his twenty-five acres in addition to carrying his stock. I cannot give you his rotation, but depending somewhat upon the season when he had cleared a piece of land by cutting whatever crop he had grown, sowing his barley late in the summer, he would get sufficient of a crop to help out late in the fall the very last of all succulent crops. I followed his suggestions and with my own hands cut for several days barley with my mittens on. Of course it had been frozen somewhat, but still there was a succulence in it and it was good feed. It was fed immediately to the cows, not cut for hay.

Mr. Thorpe—Last year when I got my barley crop off in August I went to work and plowed the ground and sowed a bushel and a half of barley and a bushel and a half of oats to the acre. I plowed it and rolled it and a man with another team harrowed it and drilled it and harrowed it again and rolled it again, and we had a crop of barley and oats there that kept our herd of cows, not altogether of course, but they were on there more or less, about twenty-five head of them, on twelve acres for nearly six weeks. They got the majority of their feed on that twelve acres, and I estimate the value of that crop to me in the fall at \$100. I know I got more than \$100 during the time they were running. I think it is better too for the ground to be shaded during that time; it helps the next crop.

Question—What is friend McKerrow's opinion as to millet?

Mr. McKerrow—Millet has a great many warm friends among

men who have grown it. When it is cut in the proper stage, and well matured, I have heard dairymen say that it is one of the richest cow feeds; it should be cut in the grain stage just when the berry is coming toward the milk stage, so that when it is cured you won't find any hard berries or woody substance.

The Chairman—It is very dangerous for horses after the seed is formed.

Question—Did you ever try any rye for early soiling?

Mr. McKerrow—I did one season. For a few days rye will answer very well, but it soon got too rank, was not as good as clover, although the clover was a little watery.

A Member—I tried it last spring; it kind of spelled the pasture along until the clover got ready to cut.

Mr. Dunn—I would like to ask Mr. Thorpe what the effect of feeding frozen barley was last fall.

Mr. Thorpe—The effects of the frozen barley were all right, but the effect of frozen corn was all wrong. I understand what this gentleman is getting at because he was buying my butter at that time. I had about an acre of ensilage corn that I did not cut off before the frost, pretty hard frost, too. The corn was pretty green when it was frozen, and against my better judgment, I fed a portion of it. We cut it up after it was frozen, and there was too much water in to begin putting it in the barn, and we fed all the cattle could eat of it, and it put exactly no flavor into my milk and butter. The butter seemed all right except that it lacked flavor. I knew it was wrong when I took a certain tub down to him, and he says, "Charley, what's the matter with your butter?" I says, "It is all wrong." I saw that he had got onto it, and I told him what was the matter, and told him that I would remedy that before he got another tub. I went home and opened my silo that day and began to feed as I usually do and I never heard another word of fault about the flavor of the butter.

Dr. Bowen—I hope no one will get the idea that they can cut barley when the grain is frozen. I only mention it to show how late in the season we can grow a barley crop.

Mr. Thorpe—While we are on the subject of flavor, I want to say, that corn had a very peculiar, sour smell. We ran it through the feed cutter and the butter didn't have that nice

aroma that there is in butter made from early cut corn, and I fed no other kind of feed excepting the grain that I gave them, and the effect was as I have told you.

The convention adjourned to meet at 7 o'clock.

---

### EVENING SESSION.

7 P. M.

President Hoard in the Chair.

#### THE COW THAT PAYS THE MOST FOR HER FEED.

C. P. Goodrich, Ft. Atkinson.

All farmers desire to sell the products of their farms in the market where they can obtain the highest price. The best farmers think it is wisdom to feed out on the farm what is grown on it to some kind of stock, thereby maintaining the fertility of the soil, and at the same time getting a better price for the products of the soil than could be obtained by selling them direct in the market. We dairymen believe that no animal pays better for her feed than the cow. But what kind of a cow pays most? is the question. All cows produce, through themselves or their offspring, either milk or beef, or both. If, by making beef, we get the best price for the feed then we should keep cows of some beef breed and produce as much beef as possible, through the cow as well as her steer calves, at the same time taking what milk the cow has to give. If by producing milk we get the best price for the feed, then we want the cow that will turn all of her feed, except what is necessary to sustain her own life, into milk, and feed no steers.

The determination of this question depends on the relative market price of beef and milk products. It has been claimed, and, I believe rightly, that the food cost of a pound of dressed beef, with the best beef animal, was as great as the food cost of a pound of butter with the best dairy cow. If this be true

then the dairy cow pays better for her feed than the beef cow as long as butter is worth more than beef. At the experiment stations of both Kansas and Iowa careful experiments have been conducted to determine the cost of making beef. At the Kansas station dressed beef cost 10.56 cents per pound. At the Iowa station about the same.

Iowa Experiment.—Eighteen steers weighed March 1, 1892, 15,651 2-3 pounds; sold in Chicago Jan. 4, 1893, weighed 27,530 pounds; a net gain of 11,878 1-3 pounds. The food cost at Iowa prices \$800.46, which is at the rate of 6.74 cents for each pound of live weight gain. They dressed 63.6 per cent., which makes the cost of each pound of dressed beef 10.6 cents. Now, with feed at Kansas and Iowa prices, with the best dairy cows, fed and managed in the best manner, the food cost of a pound of butter would not be more.

Although it is possible and quite probable that, for years to come, dairy products may not bring as high a price as in the past, yet there is no likelihood that good butter will not be enough higher than beef to much more than pay for the extra work of producing it. But what we want is to reduce the cost of production to the lowest possible point. To that end we want the dairy cow that will pay the most for her food. In other words, that will produce a pound of butter or cheese at the least cost of food. Each of the different breeds of dairy cows has its friends, claiming that their favorites are superior to all others in this respect. Many believe that large cows are the most economical producers, while some believe that small ones are just as good. It was difficult to determine who was right until we had a fair, impartial test, extending over a period of considerable length. By far the best test ever made was at the World's fair the past summer. It is very much to be regretted that all of the different dairy breeds were not represented so that the world could know more of their relative merits. As it was, but three breeds were on trial—the Jerseys, Guernseys and Shorthorns. It is fair to suppose that the best specimens of each of those breeds, that money and experts could secure, were in the test. Each herd was in charge of a skillful and experienced feeder, and, it is fair to suppose that each cow was fed in the best manner possible under the cir-

cumstances. The conditions were the same for all. The prizes were to go to the cows and herds that made the largest net gains.

I have been studying the record of these tests to see what lessons I could draw from them in relation to the question now before us, What kind of a cow pays most for her feed? and here are some of the facts I have discovered.

## THE CHEESE TEST, 15 DAYS.

## JERSEYS.

|                   | Weight at beginning. | Pounds Cheese. | Cost of Food. | Food cost per pound. |
|-------------------|----------------------|----------------|---------------|----------------------|
| Ida Marigold..... | 1,078                | 70.92          | \$4 23        | 5.96 Cts.            |
| Exile's Lulu..... | 880                  | 64.95          | 3 65          | 5.62 Cts.            |
| Merry Maiden..... | 906                  | 70.07          | 4 05          | 5.78 Cts.            |
| Alteration.....   | 791                  | 65.47          | 3 73          | 5.69 Cts.            |
| Grace Pansy.....  | 1,041                | 46.98          | 3 86          | 8.21 Cts.            |

Ida Marigold produced the most cheese and won the prize as having made the largest net profit. But she also took more food and did not pay as good a price for it as two of the smallest cows, Exile's Lulu and Alteration. The next largest of the herd, Grace Pansy, paid the least for her food and made cheese at the greatest cost of any of the Jerseys. If the credited price of cheese had been low instead of about 13 cents per pound, the award would not have gone where it did. For instance, if the price of cheese had been 5 3-4 cents per pound, Ida Marigold and all of the larger cows would have produced it at a loss, and only the two medium sized cows, Exile's Lulu and Alteration, would have made any profit at all. So we find that among the Jerseys in this test the medium sized cow paid the most for her feed. I say medium size, because that is what the smallest ones in the test were. There were no small Jerseys there. Seven cows like Exile's Lulu could have been kept on the same amount of feed eaten by six like Ida Marigold and would have produced nearly two pounds more of cheese a day.

## GUERNSEYS.

|                                   | Weight at beginning. | Pounds of Cheese. | Cost of Food. | Cost per pound. |
|-----------------------------------|----------------------|-------------------|---------------|-----------------|
| Sweet Ada, (largest cow.).....    | 1,066                | 54.05             | \$3.25        | 6.01 cts.       |
| Amanda .....                      | 1,011                | 52.56             | 2.52          | 4.79 cts.       |
| Materna .....                     | 1,059                | 62.01             | 3.33          | 5.37 cts.       |
| Rosabella .....                   | 948                  | 39.24             | 3.18          | 8.10 cts.       |
| Lawn Tennis, (smallest cow.)..... | 731                  | 41.56             | 3.15          | 7.82 cts.       |

Here again we find the medium size cows—that is medium size for Guernseys—they being a larger breed than Jerseys, paying the most for their feed. The largest cow paying a little less and the smallest cow, Lawn Tennis, paying very much less. The case of Rosabella seems to be an exception to this rule. Her weight, 948 pounds, would be called medium, yet she took 8.10 cents worth of feed to make a pound of cheese—more than any other Guernsey in this test.

## SHORTHORNS.

|   | Weight at beginning. | Pounds of cheese. | Cost of food | Cost per pound. |
|---|----------------------|-------------------|--------------|-----------------|
| Marchioness 6th (largest cow) . . . . . | 1,450                | 48.64             | \$4 98       | 10.24 Cts.      |
| Waterloo Daisy.....                     | 1,263                | 64.05             | 4 78         | 7.46 Cts.       |
| Nora.....                               | 1,064                | 60.56             | 4 60         | 7.59 Cts.       |
| Genevieve... ..                         | 1,166                | 59.13             | 4 43         | 7.49 Cts.       |
| Fill Pail, 8th (smallest cow).....      | 938                  | 27.71             | 3 66         | 13.13 Cts.      |

Here again we see that it is not the largest nor the smallest but the medium size cow that pays the most for her feed.

## NINETY DAY BUTTER TEST.

## JERSEYS.

|                                   | Weight at beginning. | Pounds of butter. | Cost of food. | Cost per lb. of butter. |
|-----------------------------------|----------------------|-------------------|---------------|-------------------------|
| Brown Bessie.....                 | 969                  | 216.64            | \$25 21       | 11.63 Cts.              |
| Merry Maiden.....                 | 924                  | 200.52            | 23 39         | 11.66 Cts.              |
| Ida Marigold (largest cow).....   | 1,106                | 199.76            | 27 13         | 13.57 Cts.              |
| Annice Magnet (smallest cow)..... | 856                  | 119.28            | 20 58         | 17.25 Cts.              |

Annice Magnet was sick a few days in fore part of test.

## GUERNSEYS.

|   | Weight at beginning | Pounds of butter. | Cost of food. | Cost per lb. butter. |
|---|---------------------|-------------------|---------------|----------------------|
| Sweet Ada (largest cow).....              | 1,066               | 178.14            | \$22 05       | 12.32 cts.           |
| Essence.....                              | 1,004               | 160.03            | 19 21         | 12.00 cts.           |
| Materna (prize cow).....                  | 1,059               | 185.16            | 22 69         | 12.25 cts.           |
| Daisy Flower (smallest in this test)..... | 804                 | 118.40            | 18 76         | 15.84 cts.           |

## SHORTHORNS.

|  | Weight at beginning. | Pounds of butter. | Cost of food. | Cost per lb. butter. |
|--|----------------------|-------------------|---------------|----------------------|
| Nora.....                              | 1,120                | 160.58            | \$24 11       | 15.01 cts.           |
| Genevieve.....                         | 1,300                | 154.28            | 22 50         | 14.55 cts.           |
| Marchioness 6th (the largest cow)..... | 1,499                | 119.90            | 23 21         | 19.35 cts.           |
| Orange Girl (one of the smallest)..... | 993                  | 95.81             | 19 09         | 19.92 cts.           |

We find the same thing in the butter test as in the cheese test; that it is the medium size cow in each breed that pays the best for her feed.



Some other things I have found by studying this World's fair record. The herds produced in the cheese test as follows:

|                  | Pounds<br>cheese. | Food cost. | Food cost<br>per pound. |
|------------------|-------------------|------------|-------------------------|
| Jerseys .....    | 1,450.76          | \$98 14    | 6.76 cents.             |
| Guernseys .....  | 1,130.62          | 76 25      | 6.74 cents.             |
| Shorthorns ..... | 1,077.60          | 99 36      | 9.22 cents.             |

*Gain in weight during cheese test:*

|                  |             |
|------------------|-------------|
| Jerseys .....    | 327 pounds. |
| Guernseys .....  | 480 pounds. |
| Shorthorns ..... | 709 pounds. |

Now, if the pounds of cheese produced by the Jerseys be added to their gain in weight, and the same done for the Shorthorns, their sums would be very nearly equal; and, as the cost of food was nearly the same with each herd, this fact would seem to indicate that the food cost of a pound gain in weight was about the same as the food cost of a pound of cured cheese. In other words, if the cheese had been credited at 4 1-2 cents per pound, the same as the gain in weight, instead of about 13 cents, the value of the product of the two herds would have been almost exactly alike.

IN THE 90-DAY BUTTER TEST.

|                  | Pounds<br>Butter. | Food cost. | Food cost<br>per pound. |
|------------------|-------------------|------------|-------------------------|
| Jerseys .....    | 4,274.01          | \$587 50   | 13.75 cts.              |
| Guernseys .....  | 3,360.43          | 484 14     | 14.41 cts.              |
| Shorthorns ..... | 2,890.87          | 501 79     | 17.46 cts               |

*Gain in weight in this test:*

|                  |            |
|------------------|------------|
| Jerseys .....    | 776 lbs.   |
| Guernseys .....  | 865 lbs.   |
| Shorthorns ..... | 2,803 lbs. |

By the same kind of figuring, these figures would seem to show that the food cost of one pound of live weight gain was about the same as that of one half pound of butter. If the

butter had been credited at 9 cents a pound and with the live weight gain at 4 1-2 cents the value of the product of the two herds, Jerseys and Shorthorns, would have shown very nearly the same ratio to the cost of food. This goes far towards proving the truth of the assertion that a pound of dressed beef costs as much in food as a pound of butter.

As none of the cows were in the World's fair test more than 155 days, nothing can be learned from this record concerning their "staying" qualities, or all the year round work. Cows must be fed for the whole year, and they pay for it by doing a year's work. That cow pays best that not only pays well for a few months but keeps on paying well for nearly the whole year, like one of which I have the record here, owned by H. H. Bergen, of Calumet Harbor, Wis. Here is her record by months for the year 1893:

|                         | Pounds milk. | Test. |
|-------------------------|--------------|-------|
| January she gave.....   | 630          | 5.3   |
| February she gave.....  | 617          | 5.0   |
| March she gave.....     | 625          | 5.0   |
| April she gave.....     | 540          | 5.1   |
| May she gave.....       | 806          | 4.5   |
| June she gave.....      | 750          | 4.5   |
| July she gave.....      | 725          | 4.6   |
| August she gave.....    | 640          | ..... |
| September she gave..... | 520          | ..... |
| October she gave.....   | 360          | ..... |
| November she gave.....  | 146          | ..... |
| December she gave.....  | 887          | ..... |
| Total.....              | 7,196        | ..... |
| Average test.....       |              | 4.86  |

This would make 408 pounds of butter of 85 per cent. butter fat; and yet her best daily average for a month was but 27 pounds—about 13 quarts of milk. You will notice that she gave milk every month in the year. She came in fresh the latter part of November and in December following did better than she had done any time previous. She is a high grade Jersey.

Mr. Bergen estimates her weight at 800 pounds, and the value of her food for the year at about \$36, making the food cost of a pound of butter at less than 9 cents. She was dry 21 days in November. Her daily ration was 25 pounds ensilage, 6 pounds clover hay, all the dry corn fodder she would eat, 7 pounds bran, 3 pounds ground wheat and 1 pound oil meal during January, February, March, April and up to the 20th of May; then turned out to good grass and fed about 4 pounds corn bran a day till October 1st. Had no grain feed during October and up to November 21st. After that had well eared corn ensilage and clover hay for roughage, and 10 to 12 pounds wheat middlings a day.

To sum up then, the cow that pays the most for her feed is a true dairy cow. One that has been bred specially for milk production from a breed or family that have been bred and used for that purpose only, for generations past. She should be of medium size for the breed to which she belongs; should be able to consume and digest a large amount of milk producing food in proportion to her size, and should also be able to convert all of this food, except what she needs for support, into milk and none of it into beef. She should be a persistent milker, holding out well nearly all the year.

Now, the practical question is, Can one tell such a cow when he sees her? Not with absolute certainty as to all these points by the looks alone. Still a good judge can do a great deal towards it, for there is a dairy form which is in sharp contrast to the beef form.

When visiting the World's fair last summer, and studying the dairy cows, I was struck with the many points of resemblance between all of those great producers, especially in the Jersey and Guernsey herds. And the best producers in the Shorthorn herd had this same dairy form. There was with each the same clean, fine head, bright eye, slim neck, thin shoulders, strong back, broad and deep loin and sides, wedge shape, large milk veins, thin hams, and, above all, the well developed udder extending well back and also well forward.

And now, fellow dairymen, the best wish I can have for you is, that each of you may own a herd of dairy cows of the kind that pay most for their feed, for I have fears that in the future

the price of dairy products will be such that but little profit can be made with any other than the best.

I want to speak a little more about this cow of Mr. Bergen. You will notice she is a medium sized Jersey and that she did not have very big rations but she kept on giving milk right through the whole year. That is what counts every time. We all want to know how to get such cows as will pay us the most, and I will tell you my way of doing it. My way is to select the best cows. I built up my herd that way, I take the Babcock test and weigh the milk and find out how it tests and if I find a cow don't give but twenty pounds of milk a day, if she will make 400 pounds of butter in the course of the year she is still the cow to tie to every time. In my own herd I was wonderfully astonished when I went to testing them with a Babcock test. I had one great big cow with an immense udder that I supposed was the best cow I had. She was a Shorthorn; she didn't give milk all the year, but she gave such a quantity, 50 pounds a day, that I thought she was the best one I had. Right beside of her was a little Jersey that never gave over 20 pounds in her life. When I came to figure up at the end of the year I found that not only had the little cow given more milk than the other one, but it was better milk. Well, you know, the big cow didn't stay with me, I couldn't afford it. I would advise breeding your cows to the best dairy-bred sire you can find and then sort them out. I believe the Babcock test is going to revolutionize the dairy business.

---

#### DISCUSSION.

Prof. Farrington—What was the test of that cow of Mr. Bergen in January and May?

Mr. Goodrich—In May it was 41.2 per cent.; in January it was 5.3. I believe Gov. Hoard instructed just right when he says, "There isn't any good in corn bran."

The Chairman—The only use I know of corn bran being put to profitably is by some swindlers down in New York who invented some machinery and they have gone to St. Louis and bought white corn bran and they are grinding it up with ordi-

nary corn bran and selling the whole thing for middlings. I got onto their work when I was down there last year. It is the outer or silex covering of the corn. Its digestibility is very much to be doubted, and its goodness I never heard of being rated as anything very valuable.

Mr. Fuller—Have you the weight there of Romp's Princess, in the Jersey herd?

Mr. Goodrich—No, I have not.

Mr. Fuller—My recollection is that she was the smallest cow in the herd. Annice Magnet might have weighed less after she had been sick some time. But I should not call them medium sized Jerseys. I should call them small; she was about 750 pounds.

The Chairman—Taking the average thoroughbreds as they run through the country what would you estimate to be the average weight of them?

Mr. Fuller—That would depend upon whether it is east or west. According to my experience the Jerseys in the west are heavier cows than they are in the east or south. The weight of the Jersey cow has doubtless increased in the last five years, and the Jersey cow today in this country is a larger animal than those that are found on the island of Jersey or imported from it. I judge that the average Jersey cow of the north or northwest will go more than 800 pounds.

Mr. Goodrich—It struck me as it did a good many others that I talked with that those Jerseys at the World's fair were large Jerseys; that is, that they averaged large.

The Chairman—They were picked out to stand the racket.

Mr. Goodrich—The one to win the prize was the one that could make the greatest net gain with the prices that were fixed. What I have been trying to show is the cow that could stand the lowest price.

Mr. Fuller—If I understand your premises you have taken a position directly opposite to what was taken there. The greatest percentage of profit, not the greatest net profit. It is not the cow that puts the most money in your pocket in the year that is the best cow, it is the cow that will give you the most percentage of profit on your investment. Let me illustrate your reasoning. We will take thirty days. Cow A makes

one pound of butter a day, which we will say is worth twenty-five cents a pound: In thirty days she has made a gross earning of \$7.50. That has cost 13 cents a pound to make, so that the expenditure for food is \$3.90. Now, she has a net profit of \$3.60 for that one month. Cow B makes two pounds of butter a day, worth 25 cents a pound. She has made in thirty days fifteen dollars for butter. That butter has cost 14 cents a pound to make, which is one cent a pound more than Cow A, or \$8.40. Now, that cow gives me \$5.60 actual net allowing for her cost of food. The other cow gives me \$3.60. According to your reasoning the cow that gives the net profit of \$3.60 is the better cow. For my part I will take the cow that will give me \$5.60 or \$2 more, and put it in my pocket every time.

Mr. Goodrich—The point I was looking for was the one that paid the greatest price for her feed. Now, here, I could keep on the same feed that it took to keep six cows seven of the two kinds that I compared. There is the same outlay of food and I could get two pounds more of butter a day with the seven.

Mr. Fuller—You have got to take into consideration the value of your investment in the extra cow; also the value of the feeding of the cow and tending her. The question of profits with any man is handling his business right in the outlay, if he will get it back in thirty days, and if he is going to get it back with nearly 100 per cent. profit I think it economical financiering to lay out that money and get back the large per cent.

Mr. Goodrich—I was discussing it from the point of low prices. If we have to take up your price here of 41-2 cents a pound for cheese, there were only two cows among the Jersey cows that would have paid anything, and they were not the ones that made the greatest profit. This problem was given me to figure out, what cow paid the best price for her feed.

Mr. Fuller—Of course, I recognize that every person has a right to take these figures and deal with them as he sees fit. I simply desire, as a matter of record, to point out what I have pointed out, so that the person who reads what you have said in the future in this great dairy state of Wisconsin may know exactly upon what basis that was done. I desire, as a matter

of record, to say this, that if the question of the value of butter has got to be revised as compared with what was done in Chicago, then in all fairness, the question of the cost of the feed must be revised. I desire to explain exactly how that was reached. Mr. Buchanan entered into correspondence with people in the west, people in the east, and all through the country who were buying a high class article of butter, such as that actually was, and the average price of the butter so fixed was the average price at which that butter could be sold from seventy-five cows. I know that I can handle the milk from seventy-five cows, making an article as good as that was and get forty cents a pound the whole year around. Now, upon the same reasoning the price of feed was fixed upon the wholesale price, carload lots, between New York, Buffalo and Chicago, an average, so that if you are going to scale down the price of butter you must scale down the prices of those feeds, and you must change all those figures, and you must have a jury to say how much the butter is going to be scored down and how much the feed is going to be scored down. This test has been a great one. It cost the World's Columbian association \$73,000; it cost other associations interested in it close on to \$50,000. Let the figures be twisted as they may, any man can twist them to suit his own object, they will go down to posterity as something to work upon, one of the greatest tests that has ever taken place in the world, or will take place for many years, and those figures will show, as they do today, that the Jersey cow is the supreme cow of all.

The Chairman—Taking those figures at 40 cents a pound, wouldn't it have been rather more just, for instance, for the application to the great dairy element and interest of the whole country if they had taken the average prices of the Elgin Board of Trade? The average price last year for butter sold on the Elgin Board of Trade was twenty-six cents and a fraction. Now, that governs the price of the great mass of all the fine butter in the country. In your estimate what would have been the result had that been taken as the standard? I want to know fairly whether you don't think it would have accorded more with what might be called the general average of the best dairy results?

Mr. Fuller—It might have had that result, but at the same time when you fix the price of butter at forty cents a pound, such an article of butter as was made there, I know what it was—it is not more nor as much as you can get certainly in Buffalo, or in the east for such an article of butter as that, but the fact remains that if you scale down the price, you should scale down the feed. The feed was taken at an average between the east and west and middle.

Mr. Goodrich—What I was after was to show this audience what kind of cow will give the biggest results, we will say for \$100 worth of feed, not which cow was worth the most or which I would take.

Mr. Bender—You will find a hundred cows through the country that will give a pound a day where you will find one that will give two.

Mr. Goodrich—But will they give as much for their feed?

Mr. Bender—My impression is that you wouldn't find enough two-pound cows to work on.

Mr. Taylor—I have some figures I would like to impose on this audience. There was \$107 worth more of feed given to the Jersey cows than there was to the Guernseys during this test, and for this \$107 more feed they made \$307 worth more butter than the Guernseys did.

The Chairman—Mr. Fuller, of what practical use to the dairy farmer was it to put in that question of gain in live weight?

Mr. Fuller—In my opinion, none.

The Chairman—Why wouldn't it have been just as well to put in the length of the horns?

Mr. Fuller—I think the general feeling among dairy people is that that is not a dairy problem, because you cannot have your cake and eat it. You have got to kill your cow to get the benefit of the increased weight. That was done, as I understand it, not at the instigation of the Shorthorns, but at the instigation of the Holstein.

The Chairman—The main thing is to get at the central proportion of the proposition, as it affects me today. If I have got a cow I want to see in her a sufficiently lymphatic tendency to keep her in health, but, if I have got to make four-cent beef of her, instead of twenty-five-cent butter, I am on the wrong track to use the dairy cow at all.



Mr. Fuller—I was on the committee when that proposition was made. I want to make this general statement according to my limited experience and idea. According to this paper it is the smallest feeder that is the most profitable. Now, I am against that proposition. The cow that made the greatest return on her feed during the thirty days' test in any breed was a cow named Hugo's Countess. She had been an uncommon producer; unfortunately the cow in the adjoining stall stepped on her teat and I had a great deal of difficulty with her udder, and I had to cut off her feed, and yet she showed the best results in profit. You want a cow that is a good feeder and that has the property of assimilating a large quantity of food, and I can point to the fact of a cow that took and assimilated a large quantity of food and made the largest net profit, nearly 300 per cent. I want to handle cows of that nature.

---

### THE VALUE OF PEDIGREE IN DAIRY CATTLE.

Dr. George A. Bowen, Woodstock, Conn., Pres. Connecticut Dairy Association.

I only wish that my brief address of this evening could have followed the president's address of this morning, because he gave a very fitting introduction to the matter which I shall present to you.

We have heard a good deal today of this great foster mother of the human race; of her breeding, her uses; and in his introductory remarks he told you a great deal about the future of dairying, not only in this state but throughout the whole of our broad land. It is this one little point that I shall present to you tonight, one of the incidentals of our future dairying.

When we look at our dairy cattle we find that they are, taking the whole country through, what we might term a scrub race. They are not brought up to anything like the perfection that we would like to have them, or that we believe they can

be brought up to, and the question comes to us, how shall we do it, what are the means within our power to elevate them, to make them more pliant in our hands, to get better results from them, and to get better results for our bank account, and it is for this reason that I present this side issue, the question of pedigree.

I have heard a great many state that they did not care for pedigree, that they would not question the value of pedigree in making the purchase of an animal, and yet when we bring it down we find that there is really the foundation of all our herds.

I believe that the future of dairying will follow that thought, will follow the future of other callings in our country, manufacturing and general merchandise and we have got to come down to their standards, and we can only meet that great question of the future by a closer production and closer counting of the cost.

Now, I want to make two positive statements here tonight, and I believe that every dairyman in this audience will agree with me upon them.

One of those is, that the original cow, the early cow was a small and feeble milker.

The second is, that the improved dairy cow is a heavy and persistent milker. Those are the two points that we wish to see incorporated in our dairy stock. I will make a further statement in which I think you will agree with me, and that is, that rich lacteal secretions and the power to transmit such to the future offspring cannot come through coarse or cold channels. Therefore, we must study closely the question of pedigree to know what those channels were that preceded our races.

Here you see a little portrait of one of the famous old Jerseys, old Dandelion, taken in her sixteenth year when she made a test, I believe, of sixteen pounds nine ounces. Over against that we have the picture of a Shorthorn that was raised in my own town, which gives exactly the beef type.

Now, when we consider how those two animals were brought up and made to differ so very essentially in their forms, the question arises, How did it happen? How did they come to be so very dissimilar in their outline? Simply by bringing into play

the laws of breeding, as we understand them, and when we look through them we find at the head of them stands the great law of heredity. That is the power that is transmitted from parent to offspring, and is illustrated by the axioms "like produces like," "blood will tell," and such common expressions.

We find that there are certain points which will always reproduce themselves in the offspring of our animals, or in the human race. We have a celebrated instance in Le Comte who was blind at the age of eighteen, and among his children and grandchildren there were something like thirty who also went blind at that age. That was the influence of heredity. You find it also among the descendants of Sebastian Bach, the composer. In a few generations, among his descendants, there were twenty-nine distinguished singers, all of them undoubtedly taking their talent through that one law of heredity, and so we might go on giving innumerable instances in the human race. We find, as you all know, that insanity is hereditary, and in like manner we find that certain traits are given in our cattle to their offspring.

When we breed, however, we find that heredity does not always have this strong force. There is another law that comes in, and that is termed variation or change and we find that certain animals will not take back true to the type exactly until that type has become firmly fixed. We can by breeding for certain points, for instance, these milking points, having that always in view and selecting that type, we can more firmly fix the tendency in every succeeding generation.

We have another law coming in here termed Atavism, or taking back, the children not representing the parents, but the grandparents. I can illustrate that by a little incident that occurred in Massachusetts. A friend of mine, a very scientific man and a breeder, was riding with a friend. They passed a field in which was a beautiful white heifer with shaggy hair and brown ears. My friend at once pointed to it and said, "There is an instance where cross-bred animals have produced an animal which by the law of atavism, has taken back to the original wild cattle of Europe. I believe the parents of that white heifer were grades." His friend doubted it and they immediately had a little wager of five dollars on the result, and

went to the house nearby and enquired. The farmer said, "No, it was not the result of cross-breeds, it is just scrub stock, all the way through." One of the gentlemen said to the other, "Give me your five dollars—I have won it." He says, "I will bet five dollars on top of the other that this man knows nothing about it." They learned that he was not the breeder of it, but the man on the next farm was. They went to the adjoining farm and found the farmer and made enquiries, and found that he bred the animal and he told them that it was the product of grade Ayrshire and grade Jersey. It was simply by this law of atavism that it took back through thousands of generations.

Then we have another law, if we can term it a law—it is the condition of the environment or surroundings; that means also our feed, our stable arrangements and care which we give to the animal. Let me tell you that in coming through your magnificent state the other day, in the midst of the howling storm that we had, I saw dairy cattle standing in the yards of the barns with their backs humped up. They tell us that the atmosphere is forty-five miles deep, and I thought they were trying to get up to a higher one, and I thought at once that there was a question of environment, and I imagine that the yard in which they stood was not half so warm or half so comfortable as the stable that was right back of it, and let me tell you, Wisconsin Dairymen, that it is easier by far for the rich man to go through the eye of a camel than for a Wisconsin dairyman to warm up the atmosphere of this magnificent big state by turning his cattle into his barn yard.

Then we have also another little law coming in, which we term "Nicking," that is, the blending of temperaments, the same as we find certain temperaments in certain individuals will blend, and although the parents are not particularly gifted in any respect, the children are really brilliant. We find that same little law coming out in cattle. We can understand a great deal better these conditions when we see it put before us. Suppose we have bred, taking these laws into consideration so well, that we have a perfectly bred shorthorn, a handsome animal, one of the most beautiful creatures of man's handiwork in my estimation. Suppose, also, we keep on breeding Shorthorns forever, by great care and management and skill in food we im-

prove and improve the race. Suppose you have bred Ayrshires in the same way and you go on breeding Ayrshires, generation after generation, this law of heredity will gain strength in every generation and you finally produce a better animal than the one with which you started. Suppose, however, you should bring together those two lines of heredity through the Shorthorn and through the Ayrshire, what would you get? You would have a cross-bred animal, one half of each, but which law takes the precedence, the law that produces the beef animal, or the law that produces that beautiful, well-turned milker? You see at once the current is interrupted and the law of variation or change comes in. Well, that cross-bred animal may be a magnificent creature. It may have the size of the Shorthorn with the nervous temperament of the Ayrshire, and you may get a magnificent animal that you would say is far better for all your purposes than either of its parents.

Suppose we had another line here and we took in the Holsteins on a Jersey cross and we have there a cross-bred animal, which is one half each. Now, suppose we should cross those together, breeding these two animals together, what result do we get? We have a mixed-bred animal, one quarter of the blood of each. But where is your law of heredity gone to? It has been broken in every direction, and this law of variation has gained the ascendancy. A good many people understand this subject better when we apply it to horses. I have in my stable a thorough-bred mare, I mean by that the English running horse. She is a small horse, will not weigh quite nine hundred pounds, yet stands high, well up, a well formed barrel and limbs that are as clean as a deer, a good broad forehead, indicating intelligence, and that animal never knew fear. The first time I drove her to where she could see a railroad train, I stopped her within a couple of rods of it, and she stood firmly planting her feet on the ground, her head raised, ears forward, eyes distended, and yet, placing implicit confidence in my voice not moving a muscle in fear. She never was tired and yet I have driven her miles and miles in a day. Her action has always been strong and steady like that of a machine. Now, where did she get it? Through her ancestors, which I can trace back in this way

Now, let us take the same intelligence with which we breed our horses and breed our cattle; not for fleetness or for strength, but for the other qualities that we prize so highly in the dairy, and we find that we can carry those qualities just exactly as we can those of form or fleetness.

We find in the breeding of cattle that the type has been selected which made the dairy animal, and instead of the racing performance, we have the milking performance fixed.

By studying this chart, which is before you, you can see how these qualities have been fixed in many noted animals.

We can follow such things up, and when we look at our herds we can study how to build them up through these laws, grafting onto our herds these qualities of performance which we are after. Through this law of heredity we can gain over every animal in our herds a preponderance of power that will show itself in future generations; we can bring our herds up to as great a degree of perfection as it is possible for us to obtain. Of course these principles apply to people as well as to animals. When we look at our people here in America, we find that we have one of the strongest nations on earth in the power to do, the power to achieve; we are the astonishment of the world. We have conquered this continent; all within a few generations, and where does that power come from? We simply couldn't help it, that was all, it was in our pedigree; it was put there as an inheritance to us through that power of heredity, and it is an interesting question to carry our investigations through and see what has been done to form this race of people.

I have brought in here a pedigree of the English people; we are all English people in one sense of the word; that is, we are an Anglo Saxon race, we begin way down here in this corner of the Celts; we find them the original inhabitants of England, that great Celtic race; then the Romans came into the country and mingled with the Celts and formed the English of 450. Then there came down in England, the race of the Picts and Scots, who were also a Celtic race, and conquering the English, fused with them to a certain extent, and they formed the English of Anno Domino 500.

Then came another great immigration, and we find the Angles and Saxons, who were also Celtic, coming in to drive out the

Picts and Scots, but instead of doing so they fused with them as allies, and so became the English and gave their name to the Island, Angle Land, which we now call England.

Then farther along came in the French conquerors, the Normans, and we find the early Goths coming in and grafting on the Cimric race.

So, made up of all these elements, and more, we find our people, the American-English nation is a line-bred nation tracing seven times to the Celtic origin.

Just the same in our cattle, when we trace the early breeds we find they have been line-bred until a certain character of type has been fixed. This great English nation has secured its pre-potency by the continuation of line-breeding, not carried out by the hand of man, but by the hand of the Almighty God;—we can't help it, we are a powerful nation, because we are made so by the race stock from which we have sprung, and we may go still farther in this by considering the trend of the emigration of the day. We have the Scandinavians here in great abundance, we find the Teutons in abundance, an off-shot of the Celtic race, and we find these nations blending with our American people, and making a strong people; they fuse easily with us and give character to our American people. It is not so with those who come from the southern parts of Europe; they are a different race entirely, they do not blend, there is not the nicking, and where they do blend with us, they make by this law of change a mixed-bred or a mongrel population. There is no such thing as getting away from these facts of history, and there is no such thing as getting away from the facts of history in breeding our cattle.

There is no time to go into details on these matters, so I have simply presented these few facts to you and ask you in the development of your herds to consider this subject, take it as part of your instruction as dairymen, and as dairymen consider it your duty to look at it, from the position of performance alone, and breed from these standpoints and by intelligent breeding, success will, I am sure, crown your efforts.

The Chairman—When men say "I don't care a continental for pedigree," they are saying they don't care a continental for history. All the same, they cannot get away from history, and it is time that men got out of this low-down, diseased condition

of judgment and when they have their fate in their hands and are struggling day after day to bring to themselves fortune, shall they deny history? Shall they deny the effect of brain and thought?

Talking about Celtic blood, an old Irishman dug a ditch for me, and his name was O'Brien, and he did such a beautiful job that I said to him in admiration, "That ditch is fit for a king." Taking off his hat, he said, "Sir, the O'Briens were kings once." He was right, too, they were kings of Munster and Connaught and he had good blood in him, and he made a good ditch.

---

### FARMING HAS NO PARALLEL.

T. J. Van Matre, Fayette, Wis.

"Truth crushed to earth shall rise again,  
The eternal days of God are hers.  
But error mangled writhes in pain  
And dies amid her votaries."

I suppose the object of this association is to raise the dairy banner from the dust of error and place it beneath the white light of truth. And, not as a practical dairyman, but as a plain practical framer which I am, I wish to pat you on the back and extend to you the right hand of fellowship. For we are all members of one great family. It is true all farmers are not dairymen. But all dairymen must be farmers. And observation has led me to conclude they are as a rule most excellent farmers. There are two questions uppermost in my mind here tonight. The one is why should I be asked to come up here to Neenah and address this meeting when there are scores of men present, the latchet of whose shoes I am entirely unworthy to stoop down and unloose? And the other is why in my weakness did I consent to come? To the former echo answers why. To the latter I answer that I might become better acquainted



with the progressive dairymen of this state and by a comparison of methods we might receive a mutual benefit. I am proud to stand before the people of my own state as a practical representative of a business upon which a thousand millions of men are dependent for daily sustenance, and upon which two hundred millions devote their daily toil. It is usually expected if a man presumes to discuss any particular subject, that he will very naturally paint his subject red. Tonight I shall use no color for my subject. It needs none. Behold it for yourselves! It stands unparalleled! Like the tall cedar that lifts its head high above the surrounding forest, "like the strong oak that strikes its roots deeply into the earth," it fears no competitor. Agricultural industry finds a natural home in these United States; it has ever been a great and constantly increasing contributor to our nation's wealth and prosperity in time of peace, and our country's mainstay in time of depression and war. During the great financial troubles of the past summer, which shook this country from center to circumference, not one farmer did I hear of making an assignment or going into bankruptcy, but the papers recorded the daily suspension of many banks and business houses. Its growth has been almost phenomenal; a varied climate and inviting soil has encouraged native energy and held out perpetual inducement to immigration. The national government has fostered this industry believing it to be the safest investment and the best criterion of permanent progress. It has thrown open its public lands to actual settlers, and to some who are not so actual, at almost nominal figures, and has encouraged its citizenship to engage in the most healthful of occupations. It is to be regretted, however, that farming has not been carried on in this country as an exact study. But latterly the department at Washington and the different state experimental stations have done much to encourage and stimulate thought in connection with farm labor and the breeding and feeding of stock. This oversight may be attributed to the excellent native qualities of our soil, the kindliness of our climate and the rush after extended acres so characteristic of our people. In this country a farm means more than in almost any other country. It is in general a man's own acres and thus becomes a direct contributor to thrift and independence of char-

acter. Farm occupancy is not as a rule humble tenancy, but proud ownership. Yet with all the advantages of a favorable climate and productive soil we must remember that success in any undertaking is always the reward of industry and pains and that there is no excellence without great labor. Many instances may be cited where the seductive influences of a luxurious climate in conjunction with the love of ease have paralyzed the noblest faculties of the mind and have lulled to repose the energies of the body. Repeated instances have passed under my immediate observation of men of the greatest natural genius whose beginning promised much but who have degenerated wretchedly as they advanced, simply because they depended too much upon their own natural gifts and made no effort to improve. We are all climbers upon a ladder upon which we are just as likely to descend as mount higher. And the very instant that any of the faculties of the mind or body ceases to operate, that instant retrogression begins. Should I say to a boy, my boy what are you doing? and he should make reply I am thinking, I would at once conclude that I had discovered in that boy material for future greatness. Rome had her Mars hill dedicated to the god of war. Wisconsin has her Madison and Madison her college hill dedicated to science, literature, agriculture and the arts of peace. And now while our minds are directed toward college hill I wish to call your attention to what the state of Wisconsin, through Prof. Henry, aided by his efficient corps of assistants, is trying to do for your boy and for mine and which only our extreme indifference can prevent. Perhaps there is not a farmer in this state who has not heard of our agricultural college at Madison, but alas! how few there are who comprehend its scope and usefulness. In regard to the situation of this institution I want to say there is not on the face of this great green earth a more inviting natural situation than that occupied by our state university. And the agricultural department in which we as farmers should feel most interest consists of three courses. The graduate course, the long course and the short course in agriculture, and it is in this latter that our interests as practical farmers principally center and to which I wish to call your attention. This course is designed to meet the wants of young men who are anxious to ex-

cel in their chosen vocation of farming and who feel the need of more and better preparation before entering upon their life work. The time which such persons can devote to study is often limited, and for this reason everything has been arranged so as to afford the greatest amount of information and assistance possible without over crowding. Those studies are taught in regard to which every young farmer should have definite knowledge, and they are handled in such a way as to benefit the student in the highest degree. The intelligent and progressive father no longer questions the advantages of an agricultural education to his boys; he realizes that education and training pay on the farm as they pay elsewhere in business. And the question with every young man should not be, can I afford to take this course? but rather can I afford not to take it? I am acquainted with a number of young men who have taken this course and also the dairy training, whose services are being anxiously sought after at a salary of twelve hundred dollars a year and time will no doubt develop many more of the same kind, while thousands of young men all over this state with equal natural ability but wanting this same mental training are seeking situations at one fourth this amount. With a state over-flowing with young men, as ours is; with a nation thirsting after advanced agricultural knowledge as ours is, and with an agricultural college equipped as ours is, I say it is a shame that we have to go over this state begging for boys to avail themselves of the splendid opportunities offered at our agricultural college, while all the literary institutions of learning throughout the length and breadth of this land are full to over-flowing preparing men for the different vocations of life, while how very few there are who think it necessary for a boy who is to follow the most complicated business on earth, that of farming, should have any education at all. I ask brother farmers how long you think we can maintain this unequal contest, putting ignorance against knowledge, muscle against brains?

There is no other enemy with which we have to contend so great as that of ignorance. And it has always been a very great surprise to me, at least, to witness the very feeble effort made by the great masses of the people to overcome this their

greatest enemy. Of all things on earth there is nothing excepting a good mother which can be compared with a good school. Often men without sense or capital adopt farming as a life work and then spend their time arguing themselves into the belief that farming don't pay. A business does not consist entirely in the dollars and cents which may be gotten out of it. But we should also take into consideration the pleasure, the independence and the health. And viewed along these lines there is no business on earth which can compare with farming. Our constant contact with nature and the ever varying scenery makes it pleasant. The fact that all other business rests upon farming as a basis makes it the most independent. And our constant exercise in the open air with the most wholesome food makes it, as statistics show, the most healthful. And I would rather work twelve hours each day, if need be, upon a farm well supplied with its modern improved equipage, than I would work eight hours a day grading a road or digging a ditch. And I want to say to you young gentlemen assembled here tonight the man who grades a road or digs a ditch, if he does it well and faithfully, is entitled to just as much consideration as the president who occupies a position in any of our great institutions of learning. Ah! you say I would neither grade a road nor dig a ditch. I would be an engineer, a lawyer or a merchant. An engineer making a daily run between two large cities in this state told me recently that it was two years after before he noticed that the timber had been removed and a beautiful residence erected along his run so intent was his mind and his eye upon his business. He was a part of his engine, a mere machine. The engineers running the flying trains between New York and Chicago the past summer, averaging forty-eight miles an hour, were only able to work three hours out of twenty-four, so great was the physical strain and when at the end of their run they would clamber down from their cab pale and exhausted they had none of that elasticity of step seen in an ordinary granger after he has ridden a John Deere or a Cassady sulkey plow for ten or twelve consecutive hours. And from my standpoint I never could see any very great deal of pleasure in a law office where the occupant continually halted between hope and fear at the sound of every foot fall—hope on the one hand of meet-

ing an unfortunate client—fear on the other of meeting an irate and unfair house-holder. Oh! you say many lawyers are rich and revel in luxury. Grant it; those are the exception and not the rule. And the great trouble with us in comparing our condition with that of the rich is we entirely overlook the great gulf of poverty which intervenes between us and by which we are very likely to be swallowed up. And I have often thought it would be a grand good thing if some of our farmer boys who find so much to condemn on the farm and so little to commend could only have one year's experience behind the counter in some large retail establishment in the city of Chicago or some other equally dark and sooty city where artificial light must be provided day and night for six months in the year, and where the sunbeams come struggling in dim and late as if they loathed the sight.

In conclusion let me say to the young ladies and gentlemen present here tonight who are sons and daughters of farmers: Don't be in a hurry to leave the old farm, for city dissipation is swallowing up more people annually than all the monsters which lurk in the turbulent waters of the east. In the city you may see costly pictures, luxurious carpets and silken curtains, but remember it takes wealth to secure these great luxuries and if you have the wealth you may enjoy all of these comforts in the country as well as in the city.

The convention adjourned to meet at 9:30 A. M. the next day.

---

9:30 A. M. Thursday, Feb. 15, 1894, convention met pursuant to adjournment.

President Hoard in the chair.

## CHEESE-MAKERS SESSION.

CARE AND MANAGEMENT OF MILK FOR THE CHEESE  
VAT.

John High, Berlin, Wis.

In old times when it was counted a more noble achievement to destroy human lives than to make provision for their sustenance and comfort by providing an abundance of wholesome food and convenient clothing, the leaders were accustomed to stimulate the people to prepare for success in their barbarous and deplorable line of endeavor by urging the prudence of the common maxim,—where there's a will, there's a way.

Farmers in Wisconsin today need to be stirred up by some means to prepare and equip themselves for winning success in their noble line of effort, during these years of keen conflict and productive competition that are now coming upon them.

The milk of cows is a secretion or direct elaboration from their blood. Whatever interferes with the health and comfort of the animal will also affect the quality and quantity of their milk.

Too much care cannot be exercised in providing feed that is cheap, succulent, easily digestible, wholesome and nutritious.

The grass of early summer is too watery and weak in feeding substance to be fed alone to the greatest advantage. A judicious allowance of bran, oats, oil cake or cotton seed meal, will increase the milk supply and fortify the cow's system for the production of a larger quantity of milk during the mid-summer, fall and winter. A soiling crop of some kind or kinds should be grown, to furnish plenty of green fodder at the time when pasture may be bare from prolonged dry weather. Water is nature's vehicle for conveying about most of the matter which she requires to move from place to place. (The great boulders were quietly clasped in her arms and without apparent effort brought from the northern ridges to the southern

part of our state.) The tiniest specks of nourishing matter needed to replace the worn out tissues of the body are likewise carried to their proper places in this wonderful omnibus. The identical water swallowed by a cow to serve as a carrying medium in her blood, for the equal distribution of the element of nutrition throughout her whole body, is made to serve a like function in the milk which she yields. If that water be impure in the first place, it is liable to carry the impurity with it through its whole mission, from the drinking of the cow until after its consumption by the creatures which consume the cow's product. Water which has been contaminated by decaying animal matter is especially likely to retain its pollution. The milk from cows which drink such water is a menace and danger to the public health and interferes greatly with the commercial value of all dairy products. There should be an abundant supply of pure water easily accessible by the cows during hot weather. It should be furnished at a comfortable temperature during the cold weather of winter. Cows which are denied access to an abundance of water will not give as much milk, or milk of as good quality as when plenty of water is provided with wholesome satisfying food. Dairy cattle should have access to salt every day and salt should be added to all their stable feed daily.

It has been found by a series of experiments carried on in the Ontario Experiment Station at Guelph that when cows were denied salt for a period of even one week, they will yield from fourteen and one half to seventeen and one half per cent. less milk and that of an inferior quality. Such milk on an average turns sour in twenty-four hours less time than milk drawn from the same cows which obtain a due allowance of salt, all other conditions of the treatment being equal. Shelter should be provided for the health and well being of cows. Stables through the winter should have at least a temperature constantly within the range of 55 degrees Fahr. and in summer time a shade should be provided in the pasture fields, but fortunately the farmers of this state are blessed with shade trees throughout the pasture fields, which is a great protection for the cows from the hot sun through July and August.

Now comes the milking of the cow. When practicable the

milking of the cow should be done by the same person and with regularity as to time. He only that has clean hands should be allowed to milk a cow. I say he, because I think the men of the farm should do most of the milking. It is no more difficult to milk with dry hands than with wet, and it is certainly more cleanly, and leaves the milk in a much more desirable condition for table use or manufacture. A pure atmosphere in the stable is necessary to prevent contamination from that source. Immediate straining will remove impurities which otherwise might be dissolved to the permanent injury of the whole product. After the straining is attended to, the milk should be aerated. Too often it is poured into one large can and left there just as the cows give it. The neglect implies three things that are very injurious to its quality for cheese making. 1st. The peculiar odor which the cow imparts to the milk will be left in it until it becomes fixed in its flavor. 2nd. The germs of fermentation that come in the milk and from the air have the best conditions for growth and action when the milk is left undisturbed. 3d. The milk will become in a degree unfit for perfect coagulation by rennet. Hence it is needful and advantageous to aerate it for three reasons.—First—Because by dipping or by trickling it over an exposed surface there is elevated from the milk by evaporation any objectionable odor or element that may be in it. Secondly—Because the milk contains germs of fermentation. A strang peculiarity about some of these microbes is that they become active only in the absence of free oxygen. Neglect of aeration will increase the quantity of milk required to make a pound of fine cheese. Thirdly—Because the airing seems to give vigor to the germs of fermentation that will bring about an acid condition of the milk, without producing the acid. So much is this so that it has been found impracticable to make strictly first class Cheddar cheese from milk that has not been aerated. Milk is a liquid of absorbent nature and it should be protected against injury that would result from exposure to impure air. Therefore milk should not be allowed to stand around the stable after it is drawn from the cows. Milk from cows in good health and apparent contentment only should be used and until after the eighth milking, it should not be offered to a cheese factory.



Pure cold water should be allowed in quantities limited by the cow's capacity and desire to drink, and a box of salt to which the cows have access every day. Cows should be prohibited from drinking stagnant impure water, the responsibility of which rests wholly with the individual farmer. Wild leeks and other weeds common in bush pasture give an offensive odor and flavor to the milk of animals which eat them and in most cases is carried to the product. All vessels used in the handling of milk, should be cleaned thoroughly immediately after their use. A washing in warm water to which has been added a little gold dust,\* and then scalding with boiling water, will prepare them for airing, that they may remain perfectly sweet. Cows should be milked with dry hands and only after the udders have been washed or brushed clean. Tin pails only should be used and then as soon as the cow is milked, the milk should be strained in the can and not allowed to set in the stable until another pail is full, and then aired, treating the morning milk just the same as the evening. Milk is better for being kept over night in small quantities rather than in a large quantity in one vessel. Only pure, clean, honest milk should be offered. And if you will still persist in bringing filth in your milk, the cheese-maker would much rather you would bring the filth in one can and the milk in another, and by so doing it will enable the cheese-maker to mix it to suit himself, as he can tell much better how much he wants in, and then try and see how rich milk you can deliver instead of trying to see how much you can get by adding water; then insist upon paying by the Babcock test.

---

\*The reference here and in the discussion following, is to a prepared soda or washing powder called "gold dust."

## DISCUSSION.

The Chairman—Now, gentlemen, Mr. High has had a good deal of experience, not only in making cheese, but in the department of instruction. I want to ask Mr. High what his experience has been as an instructor as to the condition in which he has found the various cheese factories.

Mr. High—In the majority of places I find the cans filthy. In many places we find they take the whey home in the can, and it sets there till noon, when they dump out the sour whey which is not fit to go into a can at all, and they set it under the pump and rinse it out and put the milk into it and bring it to the factory and they think it is all right. If you say anything to them about it, they will tell you that their fathers and mothers made cheese years ago and did it this way. The fact remains that it is absolutely impossible to make strictly first-class cheese from such milk. I think I have found cans this summer that I am safe to say had not had a scraping out this year or last year, just as filthy as could be. That taints the milk, and makes what we call pinhole cheese.

The Chairman—Knocking off how much per pound in the value of the cheese?

Mr. High—It will run all the way from a quarter of a cent to two cents a pound.

Mr. Philips—I think it is safe to put it at four cents a pound.

Mr. Goodrich—Isn't it also true that the quantity of the cheese is less? That you can get ten pounds of cheese out of a hundred pounds of good milk where it will take eleven or eleven and a half pounds of such milk to make a pound of cheese? I have found it so.

Mr. Philips—Isn't it safe to say that one half of the cans used for delivering milk to the factories are not fit to use for that purpose?

Mr. High—I think it is safe to say that three quarters of them are.

Mr. Aderhold—Did you ever see a milk can that was properly soldered in the seams and corners?

Mr. High—I have seen very few. I have in several places in-

structed the patrons to take their cans to the tin factory and have their seams soldered over perfectly smooth, and then there will not be so much trouble in cleaning them. They cannot take a rag and wash a can perfectly clean without scouring it with a brush.

A Member—Couldn't you get the seam soldered for as much as your brush would cost?

Mr. High—I would use both the brush and the solder and by all means use gold dust and not soft soap made from bits of grease. I clean all my cans three times a week, with salt, and I clean them with gold dust every week.

Mr. Philips—Would you advise your patrons to have their milk pails soldered?

Mr. High—Yes, although it is not as necessary as the can, because as soon as you are through milking you are supposed to clean the pail and the milk does not stand over night in it. The pail washes a good deal better, however, if it is soldered.

Mr. Clark—Will it pay the farmers to have a separate can to carry the whey home in?

Mr. High—Yes, I think that they will save in the wear of the can, because the acid in the sour whey will eat the tin off your cans, and as soon as the tin is eaten off the iron begins to rust.

Question—What kind of a can should they have for whey?

Mr. High—I think that a barrel would be better than any can.

Question—Does it pay to carry home the whey at all?

Mr. High—Yes, if it has not been sterilized.

Question—What makes the whey so sour?

Mr. High—Because their tanks are not cleaned out from one year's end to the other.

Mr. Philips—Why not advise your patrons to use their old cans for the whey and the new ones for the milk?

Mr. High—I invariably do advise that. When I come to such a can as that I say, "You better get you a new can and carry your whey home in this one. It doesn't take near so much washing, less time and less labor.

Question—Wouldn't the salt be liable to injure your can?

Mr. High—No, it doesn't cut the tin. If your cans are scoured with salt and then rinsed out and scalded with boiling

water they will be all right, but the water wants to be boiling, not simply hot water.

The Chairman—When I made cheese thirty-five years ago we had tin. What have we know?

A Member—American tin now.

Another Member—As good as a foreigner ever made.

The Chairman—Should not the cheese-carrying can be made of the very best tin?

Mr. High—Yes.

The Chairman—Isn't it a fact that most generally the great question with the patron is not how to get a good can but a cheap one?

Mr. High—That is the great question with all patrons, to get all their goods cheap. If they can get a cheesemaker for twenty-five dollars a month, they think they have saved twenty-five dollars a month, when very often he will spoil more in one week than enough to pay his wages for three months.

The Chairman—It seems to me it is the highest economy for us to get all of our dairy utensils always of the very best material.

Mr. High—Yes, there is always money saved in buying the best you can.

A Member—I want to know if there is a case of the milk being too rich to make into cheese so that there would be a loss?

Mr. High—It is possible but not probable. We haven't got any of it yet. You may find now and then a cow that if you were to make her milk up alone it would be too rich to be profitable, but you never find a herd that way.

The Member—You spoke of the Babcock test. In testing milk for a factory supposing I was bringing five per cent. milk and you three per cent. milk, and it would all be paid for by the test, would you be robbing me or I you?

Mr. High—If you were paid by the test I think you would come nearer to getting just what belongs to you than any other way.

Mr. Bender—Do you consider it safe, Mr. High, to take milk to the factory after the eighth milking?

Mr. High—I would leave that to the man's own judgment.

He can tell whether his cow is in good health. If she is I think the eighth milking is all right.

The Chairman—You spoke about the importance of pure water. It is true, is it not, that farmers should take special care to fence the cows away from pools and stagnant water, etc.? What is your opinion as to the effect of that water on the character of the cheese?

Mr. High—It will give you an off flavor. You take any bad flavor that is in that water, a proportional amount of it is carried to the milk, and that is carried right through to the cheese, and I don't believe it can be worked out. It may be aerated but I don't believe you can ever get it all out. That is one of the worst things we have to contend with.

Mr. Goodrich—How about feeding turnips in cheese making?

Mr. High—My experience is that the milk carries the flavor of the turnip right to the cheese. Some people say that if the milking is done just before feeding the turnips, it wouldn't have that effect. I don't know about that.

Mr. Aderhold—I think there is a difference in the variety of turnips fed. I have four patrons in my factory who feed turnips right after milking and I did not notice any change in the flavor of the milk or cheese.

A Member—The quantity fed also comes in there. You can feed a little with safety. What kind of turnips are those, Mr. Aderhold?

Mr. Aderhold—They call them milk turnips.

The Chairman—Mr. High spoke of the effect of the milker on the cow. This is not very perfectly understood, though quite generally conceded by farmers, that there ought to be regularity in the milking, and that the same milkers ought to milk the same cows. Dr. Babcock, at my request, made some experiments along this line, and he found a condition of things that amazed him. He found one man was actually taking two tenths of one per cent. of butter fat from a cow more than another man. It is the physiological or psychological effect of the sympathetic milker upon the cow herself. There are lots of secrets in this business that we are contemptuous of; there are lots of things that will pay to read and study about. When such a man as Dr. Babcock, with all his investigation, confesses

that milk is today to him a great mystery, what must it be to the man who has never read an hour and a half in his life on the proposition.

Mr. Bender—Wouldn't that difference in the percentage be caused somewhat by one man not getting the strippings as close as another? Possibly that is the difference.

The Chairman—They were both milked dry, but I don't know—that is getting inside the cow and that is an awful dark place.

Prof. Woll—In that experiment, the poor milker got more milk and richer milk every time.

Mr. Fuller—How long had the poor milker been milking that cow?

Prof. Woll—It was tried in periods of five days.

Mr. Fuller—At the end of the five days was the cow giving as much butter fat to the good milker as to the poor milker?

Prof. Woll—No, she gave better milk and more milk to the poor milker.

A Member—Will milk that has been milked and hung up in the stable while it is cooling, take on bad odors?

The Chairman—It will take on whatever there is in the stable. Milk should never be set in the stable a moment.

The Member—Then you would advise, as soon as you get a pail of milk to start right for the house?

The Chairman—Start out of that stable as quick as the Lord and time will allow you. These things come to me very sharply as they do to Mr. High, as a cheesemaker. Take it in our own creameries and see where the loss has come from carelessness of patrons, and yet you can't convince those men who go along stupid and unwilling to do the straight, fair thing, and every man is endangering the health of those around him the same as if he persisted in having smallpox and let it go and said, "It is my smallpox."

A Member—Prof. Woll, did those milkers milk dry or wet?

Prof. Woll—Milked dry.

Mr. Alderhold—We had a patron at one of our factories last year that insisted on aerating his milk in the cow stable. What do you think of that?

Mr. High—Couldn't get any better place if you wanted to get lots of bacteria in your milk. In the first place, you would take

on the impurities in the stable a hundred times as fast as if you didn't aerate it at all. Take your milk right out and run it through the strainer and then through the aerator at once, and by doing so you get the impurities out while the milk is at a high temperature, when they will go out much faster than when it is cold.

The Chairman—It is more important to have fine milk for cheese making than it is for butter making, because the separator gives it a wonderful aeration and agitation and the flavors are much more delicate; it is a much more delicate piece of work to make cheese than it is to make butter. I feel this very deeply because I see the reputation of my state at stake so tremendously, and I wish we could get this into the judgment of the milk makers all over the state; it would do wonders to bring up the name of the state of Wisconsin.

Dr. Bowen—I trust you will not allow this question of impurities in milk to go by until you have gone one degree further and questioned whether the impurities cannot be communicated to the milk before it has left the udder. I have a belief that where cattle are stabled in very impure stables, that such a cause of taint to the milk is brought about. I think I have seen cases where we could almost say it did come in that way.

Mr. High—I remember one time we had a great deal of trouble with one man's milk and we worked and worked to find out what was the trouble. Finally we went to his pasture field and in hunting it over, we found a dead carcass that was there badly decayed and simply a terrible odor came from it. We asked him to take his cows out of that field for a time entirely, and he did so, and about three days afterwards, the milk came all right. The odor that was in the milk when it was heated up to about 150 degrees was just the same as that carcass, and I always thought that the tainted air that the cow inhaled had passed through into the milk, although I know many people think that is nonsense.

The Chairman—If every cow in this state was cared for and in the hands of the women of the state, we would make 100 per cent. better cheese than we do. It is the stupidity of men. Now, a woman is a mother, and a woman understands something about the laws of motherhood. Half of the men don't under-

stand the laws of fatherhood even. Now, I want to show you just the effect of this. There is that bovine mother that you saw on the picture last night, you see them in your yards every day. She is a mother, she gives milk according to the laws of motherhood, the same as all other mothers do. Now, what is the effect upon the milk? Turn to the physiological books, you know they give you the facts about human mothers. I want you to remember this incident. It is related,—showing the effect of the condition of the mother upon the milk,—it is related in numerous instances in French books, in German books, in English books, that human mothers while nursing children, being thrown into sudden anger and then the child taking the milk of the mother, that the child has been thrown into spasms at once. Now, these are facts, the emotion of the mother, the condition of the mother affects the character of the milk.

My friends, it is just as true of the bovine mother as it is of the human mother. There is dignity, there is character, there is a Godlike condition about this thing, and it is not down here in the dirt and filth of the stable, it is up here in character and the condition of men and women and motherhood and life, and we must lift this question up so that brains and intelligence and those things that are wholesome and right and sweet and pure in thought and mind shall group about it. Now, when these things are true of human mothers, true of bovine mothers, shall men refuse to study, to read, to think, to understand it, and then expect that heaven will bless their effort and give them profit and give them money and prosperity and all? No. I could talk to you an hour, but I don't want to talk another minute.

A Member—Isn't it a fact that while milk is giving off its animal heat, it cannot take in impurities?

The Chairman—That has been asserted but it has never been scientifically proved.

Mr. Everett—No matter whether it gives off or takes on, the fact remains that if it remains in the stable these bacteria are dropping into it from the air, whether cold or warm.

The Chairman—You can see whether the condition of the stable affects the milk by the reports of the boards of health upon swill milk stables. The milk produced there was found



to be poisonous. We can all see, by opening our eyes a very little, the great differences in the qualities of milk, and that the conditions surrounding it in the stable, certainly have much to do with that difference. Mr. Fuller said to you last night that it was not an unusual thing for men to get forty cents a pound for butter. It is not an unusual thing for a large proportion of the butter of Wisconsin to sell for sixteen cents, either. Now, these differences in prices appeal to the selfishness of our pocket; we cannot be too intelligent upon this question of milk when a man who has spent his life studying it, as Dr. Babcock has, says it is a great puzzle to him yet.

---

### CHEESE MAKING.

W. H. Philips, Waupun, Wis.

The obstacles that lie in the way of making uniformly good cheese throughout the state are numerous. I like to strike at the roots of the evil. I shall begin with the patrons.

To their honor be it said that all are not like those I am going to speak of. The farmers who are here show by their presence that they seek advancement and are willing to adopt new methods as soon as they are proved better than the old; and not only that, but they are continually seeking more information concerning their business. For this class of farmers I have nothing but praise.

But what shall we say of that other very numerous class whose faces are never seen in any such gathering as this, who sneer at new ways simply because they are new? Like clams, they live within their shells, contented with doing as their fathers did and having no desire to rise above their present situation. These never take or read a dairy paper and do not attempt to conceal their contempt for book farming.

Of what use is it to talk to these men about improving the

methods of making cheese or building up a reputation for the article? They take no stock in such nonsense. It is the government that is to blame because farming don't pay. It is the tariff or anything except that they don't know their business. It is a hard task, indeed, to enlighten such men as these, yet we must try to do it if we are to make our cheese industry profitable. Much hope lies with the young men. If we can reach them and cause them to study their business we shall soon see a great difference.

A great obstacle to well-conducted cheese factories is the apparent impossibility for farmers to pull together. In other occupations we find men uniting and bending their energies toward a common good, but anyone who has seen many communities of farmers must notice the resemblance to the school boys' game of crack-the-whip where each pulls a different way, sometimes indeed drawing others with him only to be jerked back in his turn and perhaps thrown upon the ground where he may rub his bruises and bewail his foolishness. I want to cite one community in Wisconsin as an example of this kind of work. The patrons in this community have at their service a new and finely-equipped combined factory. The farms in its vicinity are well calculated to keep cows for profit and nothing stands in the way of a successful, profitable business being done except the pig-headedness, if I may use the term, of these patrons. Their chief delight and object in life apparently is to find fault with the management of the factory, and their fault-finding takes the form of anonymous letters to the proprietor of grumbling at the maker—of threats to carry the milk elsewhere and various other methods of making themselves disagreeable and ridiculous. The Babcock test is new to them and furnishes a text for no end of grumbling simply because they do not understand its workings. They way is open for them to learn all about it but they make no attempt to find out, fearing perhaps that if they once understand it their occupation as grumblers will be gone. The result of all this is that things are in a bad way with no apparent prospect of better times.

The remedy is easily in reach, but not likely to be applied. Some mistakes there have been and still exist in the management of the factory, but all could be set right if only these men

could be made to pull together. In this way they could easily control the management of the factory so as to bring peace in their midst and money into their pockets. But they fail to see that their common interest lies in one direction—that of securing the best possible product from their milk and business-like methods for its disposition. Were they agreed in this and as a whole insist on it the difficulties would all vanish. But instead they grumble and kick and take no measures to right the wrongs and so they will probably do to the end of the chapter.

I have no doubt that most of the members of this association can recall communities similar to the one I have described, and to this lack of co-operation may be traced much of the failure to secure good results in factories.

Patrons are also blameworthy in many other respects. They fail to keep good cows and to properly feed and care for those they have. Their carelessness is apparent in the poor quality and condition of the milk which is brought to our factories. They not only do not seem to realize that it takes good milk to make good cheese but they fail in many cases to realize that it takes good cheese to create and sustain a profitable market for the same.

Only a short time since I received a letter from a party inquiring about buying skim milk for the purpose of making filled cheese. It is not only a disgrace to our state that the stuff is allowed to be made within its borders, but every pound of such cheese that is made and put on the market damages our reputation and lessens the demand for honest goods. Great pains are taken by the manufacturers of this article to make a good-looking, neat package. Truly "the children of this world are wiser in their generation than the children of light." I would recommend a little of this regard for appearances to the makers of honest goods though it should be backed by real merit. Those cheese would sell on their appearance for a first-class article, but woe to the unlucky consumer. He won't want any more cheese to eat and so the demand for cheese is lessened. When farmers will consent to have their milk or any part of it to be used to make a bogus article they should not complain if they find their market for the genuine destroyed.

H. C. Thom, our food commissioner, wrote to the committee

on cheese of the New York Produce Exchange, "I am in favor of a national law that will prohibit the filling of cheese in any way. We have made it so very warm for parties in Wisconsin who have been filling cheese with low grade butter that the business has been discontinued, and I feel safe in saying that not a pound of filled cheese is being made in the state at the present date."

True, it was long since discovered that our state laws were insufficient to prevent the manufacture of "filled cheese," but the work done by Commissioner Thom had waked up a lively public sentiment and but for the change in administration we should no doubt before this have had strong laws on the question. I have strayed somewhat from my talk on the faults of patrons but it all comes back to them finally, for if every patron would steadfastly refuse to allow his milk to be used in making dishonest goods there would be no need of laws to prevent it.

In order to achieve the best results in our cheese industry farmers should insist on furnishing the best milk to be used in making the best cheese which shall command the very highest market price, thereby giving the best satisfaction to patron, maker and consumer. To this end he must demand that the factory in which his milk is converted into cheese shall be a good one, constructed on approved principles, being well-ventilated, heated by steam, and having all the best modern appliances, including a well constructed curing room, or better still two of them, one to receive the cheese from the press and another for cheese which it is desirable to hold for any length of time. We should place expense secondary to suitability in the equipment of the factory though observing all needful economy. Likewise concerning the maker, the farmer should see to it that a sufficient salary is offered to secure a thoroughly well-skilled man for this place—a man whom he shall then require not only to produce a first-class merchantable article but to keep the factory and premises clean, orderly and free from foul odors. Nor should he require the maker to give "a pound for ten" or any number of pounds of milk, thereby tempting him to leave surplus whey in the cheese in order to piece out the lacking weight, thus at once insuring a poor quality of cheese while

you set a premium on dishonesty. The patron should require the maker to get all the cheese out of the milk that it contains. Whether he does this or not may be very easily determined by testing the whey as can easily be done if there is a Babcock test in the factory as there certainly should be. I say patrons should insist on all these things, because it is in reality the patron who should control the policy of the factory, since he is the one most concerned. And patrons can easily do it if they will but co-operate as I have said before in this paper.

So the patron should be well informed on questions relating to his interest and should not hesitate to speak his mind concerning the management of the factory, not merely in a grumbling, fault-finding manner but straight to the point and putting his remarks where they will do the most good. If the factory is co-operative then so much the better, always providing it is well managed.

Above all avoid the mistaken idea that more money can be made by furnishing a poor article and cheating the consumer than by providing a good one which will satisfy the purchaser.

One trial of poor cheese is enough to satisfy the average customer and ruin the market in that direction, while a person gets a taste of good cheese, as a natural consequence, wants more and is generally willing to pay a good price for it. So a demand is created which calls for a constant supply.

It is in the power of patrons to exclude poor or indifferent makers from factories and they should make it a point to do so. No maker should be employed who is not well recommended as to his experience and all qualifications of a successful maker. And the recommendation should come from one who is competent to judge and not from a person who knows nothing of the business himself.

There is at present a prospect that the state will be overrun with cheese makers who will not all be good ones. The increasing interest in dairying has caused many young men to rush into the business without regard to their natural fitness and too often with insufficient preparation. Indeed it looks much as if many are choosing the business because they hope to obtain good pay without undergoing the long apprenticeship necessary in other trades. I may be considered over-particular, but I be-

lieve that cheese makers are to some extent like poets, "born and not made;" or, in other words, a man should have some natural fitness for the work. He should be naturally neat, clean and orderly, and with a disposition to study his business in order to secure the best results. Having these natural traits he may with safety attempt to become a cheese maker but on no account should he take the short cut to the business which I have just described. He should consider in his own mind the various other trades and the time it takes to become master of each. Then let him ask himself whether any of them have greater interests or more money involved than this that he contemplates trying.

Milk is a curious thing to handle and by no means always alike. Not only does it require different handling at different seasons, but from week to week, almost from day to day, it is liable to vary and to require some slight difference in the manipulation if the best results are to be obtained. The maker who can successfully handle the milk under these varying circumstances must not only know the general process of cheese making but he must be acquainted with these variations and to be acquainted he must have seen it, handled it, made it into cheese, until his experience will tell him at a glance just the course to pursue each time. All this takes time. Even the old maker will constantly be finding out something he has not before noticed, but a new man should, in my opinion, have two years' experience before undertaking to manage a business in which so much money and so many interests are involved.

I believe that a large percentage of the faults of cheese makers is traceable to the insufficient preparation they have had. When employers learn to insist on experience as a leading qualification in the makers they hire, we may expect a great improvement in the business. But while laying such stress on experience, I would also insist on every maker, no matter how much experience he has had, taking a term at the dairy school. He will there gain many points which he will never get elsewhere, and, moreover, his ideas get a general waking up there which will make him intelligent and progressive.

As before stated the number of cheese makers is going to be vastly increased now, and on the principle of "the greatest good

to the greatest number," there must be a sifting out process whereby the efficient makers will be placed in charge of factories while those less worthy must be left among the learners or dropped altogether. The success of our business demands this. A word to the wise is sufficient. Another great obstacle that confronts us is the extreme backwardness and unwillingness of many makers and owners of factories to accept the help that is offered them and to become enlightened as to improved methods. This opposition comes chiefly from makers of several years' standing and in some cases these are backed by unscrupulous buyers who have no interest in seeing better cheese made, since their profits come largely from what they make on so-called "off-goods." Strange to say, we have whole counties in the state that have fought against this work from the beginning, and the feeling still exists in many localities. Yet these very people are among the heaviest losers from poor cheese. A buyer told me two years ago while speaking of one of these counties, that had all of the cheese from that county received the highest market price, those farmers would have received \$50,000 more than they did get for it. Think of it, \$50,000 lost in one year and still those factory-men cling to their old way and refuse to take any steps toward bettering matters. Suppose you see a man in deep water and you throw him a rope. He refuses to grasp it, insisting that the water will not drown him. He does not believe in your rope anyway. You would say the man was insane. Yet this is just the attitude of the men we are trying to reach and do them good in spite of themselves.

This last summer I was called to visit a factory in the county I have been speaking of. I was informed that the man who owned the factory had lost from \$100 to \$500 every year since he owned the plant—some six or seven years. Yet he steadfastly refused to employ an instructor until last summer when his maker requested it and he was finally persuaded by one of our cheese missionaries to put in some new machinery and send for an instructor. Since then he has had no losses and he made the statement that he would never employ another maker unless he understood the method of making cheese as taught by our state instructors.

Another factory, not far from this one, has a maker who flatly

refuses to make use of the help within his reach, though heavy losses continually attest his need of it. Still another has met with so much misfortune that it has been forced to close down. Here are cases where the patrons who help to support this maker should step in and say to the maker, "You must use means to prevent these losses or you cannot have our milk."

Just here I want to say a word of warning to makers. These constant losses from poor cheese have paved the way for a few tricky buyers to "share" the salesman on really good cheese by representing that it is "off" in some way. A maker should himself be a good judge of cheese and when he knows it is good he should have sufficient "nerve" to stand up for his rights and not allow any buyer to "pull the wool over his eyes."

A great deal less poor cheese would be made if there were fewer poor tumble-down shanties dignified by the name of factories. Those who are not familiar with the facts of this matter would be horrified could they take a trip with me in mid-summer and see some of the circumstances under which men are trying to make cheese. The lack of room, the old and broken down apparatus, the self-heating vats, with which no one can at all times make good cheese—all these things need to be seen to be fully appreciated. The wonder is that any one will consent to work at all under such disadvantages or that they can ever by any effort turn out good cheese. These are dark pictures but those who know will tell you that they but poorly represent the facts.

But let us turn from this to the consideration of a pleasanter prospect. Let me tell you of another section where I have spent considerable time. Most of you will know the section to which I refer—the southwestern portion of our state, just adjacent to the Wisconsin river. Here I found very few poor factories. Among the sixty or thereabouts that I visited during the season of 1890 I believe I found but three self-heating vats and the factories were otherwise well equipped. The country is a first-class one for dairy purposes and many farmers were extensively engaged in it. Yet strange to say, at the time of which I speak Lone Rock cheese had fallen into disrepute. Losses on cheese were frequent and heavy and many factory-men were well nigh discouraged. A Chicago buyer told



me at one time that it was only necessary to know that cheese came from Lone Rock for men to even to refuse to look at them so much had their reputation suffered. The difficulty here was that makers did not rightly understand their business nor did the farmers take proper care of their milk. With every facility for producing a first-class article they failed through ignorance of right methods on the farm and in the factory.

But these men were teachable. They eagerly sought for knowledge and when obtained they put it to a practical use and things at once began to mend. Mr. Schoenman, a leading maker of that section, said before the association at our annual meeting in '91, in speaking of that season's work, "All our best cheese makers agree that we (including about 40 factories) were benefited to the extent of at least 1-4 cent per pound on an average, which means \$10,000 extra into the pockets of our milk producers." Now, when the dairy board meets at Lone Rock, instead of one or two buyers only being present, there are plenty of buyers, all eager to get hold of the cheese, for it has nobly redeemed its reputation, and the cheese sells on that board at prices second to none in the state. Had all our cheese men been as willing to improve, as anxious for advancement as these of whom I speak, Wisconsin cheese would have a reputation today equal to that made in any part of the world.

I want to speak of one more group of factories which stands alone, as an example of what two or three men can do to better our cheese industry. I refer to those owned and operated by N. Simon & Co. of this place. This group includes about 30 factories, part of them owned and part rented by this firm. These gentlemen have employed no half-way methods in trying to better the condition of things under their control. Wherever they own the factories they have set to work to improve the plants, especially in the matter of curing rooms. They have built in some of their factories two basement curing rooms which are well ventilated and have the temperature under control. They are as nearly perfect as possible for the purpose for which they are intended. Last spring they secured the services of Mr. E. L. Aderhold (who was employed by this association the previous season) to act as instructor for their factories and placed all of them under his supervision and control. The patrons of these

factories are compelled to observe all necessary precautions in caring for their milk and all are expected to use aerators. Their cans are overlooked too and they are expected to have all seams filled at the tinsmith's to lessen the danger of uncleanness. The Babcock test is used in all factories though all patrons have not as yet consented to have their dividends determined by it. Good milk, however, is strictly demanded from them and wherever a patron is found tampering with his milk he is promptly dealt with. Mr. Aderhold, in inspecting the different factories, not only pays attention to the quality of the cheese but insists that they shall be prepared for market in neat, tasteful packages. Wherever he finds bandages out of shape or the cheese presenting a slovenly appearance in any way the maker is fined for his neglect. It is needless to say that these careful, business-like methods have secured the most satisfactory results. The awards received by their cheese at the World's Fair speak for themselves. It has happened several times within the past season that I have dropped into the warehouse of Simon & Co. and I always found a good uniform lot of cheese, fit to place on any market. It presents a great contrast to other warehouses where the cheese is usually of all degrees of excellence or rather the lack of it.

I have endeavored in this paper to name the obstacles that lie in the way. These obstacles are sufficiently formidable to call for much work to overcome them and this work we have begun to do as I have tried to show. A few words as to our needs in the work.

We need most of all a healthy public sentiment to prepare the people to receive the instructions they so much need. The constant losses from poor cheese are great educators and are slowly but surely bringing dairymen to their senses. Truly, "experience is a dear school," but there will always be a certain class of people who will learn in no other. But knowledge gained in the school of experience is always of slow growth and we should all try to aid the growth of public sentiment in all proper ways. A great aid is our dairy literature, particularly our own Hoard's Dairyman. Then we have our Dairymen's association, our Cheesemakers' association and our dairy school—all valuable helps in the work. In addition to this, every indi-

vidual dairyman should aid the work by talking or writing or whatever work he feels most fitted for.

We need laws to suppress the manufacture of bogus goods. These we shall get when we have public sentiment to back them. We need also a better enforcement of the laws we have, especially those relating to skimming and adulterating milk.

We need most of all a larger appropriation to carry on this work. This is necessary in order that we may employ a larger force of instructors in the field. As it is, the few who are employed have too large a territory to work and obtain the best results. We need to have matters arranged so that each instructor shall have not more than 40 factories under his charge during the season. Could we but show to our people the astonishing returns in cash which follow a small outlay for cheese-instruction we should have less difficulty in obtaining the necessary funds. "The provincial government of Ontario gave grants last year amounting to \$6,500 to help to pay instructors, and as an immediate harvest from that little sowing we got back in cash \$475,000 more than we would have got if our cheese had been sold at the American prices." This information comes to me in a letter from that province.

The \$10,000 which Mr. Schoenmann says was gained in one season in his section came to reward an outlay of less than \$650.

I feel that I can do no better in closing than to quote still further. "But the \$475,000 is not all we get back from that investment of \$6,500. Our people have been educated in the making of finer cheese and the fruits of that education will be theirs for all the coming years. Besides the very fact that our cheese has such a reputation abroad makes our farmers proud of the business, and being proud of it, more of them support it than otherwise would have been engaged in it. Sometimes farmers are wont to think that what they call sentiment belongs to literary people alone—people who wear very long hair and use a good deal of hair oil. But if you can put right sentiment into a farmer's life and make him feel proud of his business, he will do that business the better for it and such sentiment to him will prove a paying acquisition."

## DISCUSSION.

Question—At what age would you take the cheese out of the first curing room and put it in the second where you have two curing rooms?

Mr. Philips—Say at fifteen days.

The Chairman—What temperature would you keep the first curing room?

Mr. Philips—About 60 degrees, as near as possible, and the second anywhere from 40 degrees to 45 degrees. The cheese will be ready to go on the market as quick as a cheese is cured in the warm room, we will say in thirty days they will be ready to ship.

Mr. Favill—Will they be fit to eat in that time?

Mr. Philips—No, sir, there is no cheese fit to eat in thirty days. We have to sell it when the buyers want it. They are taking most of the cheese within ten or fifteen days from the press.

Mr. Favill—Will it ever be fit to eat?

Mr. Philips—If it is put in a proper place after it is taken from the factories, it will cure up all right.

Question—Has the climate of Canada anything to do with their making good cheese?

Mr. Philips—I have never been there among their factories, but I don't see why we haven't just as good a climate here as they have in Canada for making cheese. I don't believe there is any better climate in the world for manufacturing milk and cheese than they have here in Sheboygan county and Manitowoc county, if the farmers will take care of their milk as they ought to and the makers handle as they ought to.

The Chairman—Things never mend till they get to their worst, is a maxim in politics, and I guess it is true about some things with regard to the dairy business.

Mr. Jones—Isn't it a fact that a great many factorymen let their factories run down, the floors and drains, let the slop run under, and a great deal of bacteria and filth remains standing there?

Mr. Philips—You will find that apply in nine factories out of ten throughout the state.

The Chairman—Isn't it a wonder that we get any good cheese any way?

Mr. Philips—Yes, it is.

Mr. Favill—We don't get but mightly little that is good to eat at all. We don't get it in our retail stores.

The Chairman—We never get a piece of good cheese in Fort Atkinson after the first of March or April, from that time on again, until the first of January. There are two reasons which enter into it. In the first place the grocery-man himself has no ambition to put any money into a proper receptacle or store-house for curing that cheese until it is fit to use; second, there is nobody else has any ambition to do it and in consequence it is a good deal like a baby—it is not fit for the duties of life until it has had some education, some training, and the idea of putting a baby-cheese and baby-this and baby-that onto the market, is where we are. I have always managed to secure some good cheese, but if I am going to have it in the summer time I have to buy it and handle and cure it myself.

Mr. Favill—Why, in Sam Hill, don't you make the factories do it?

The Chairman—Mr. Favill, you are an old cheese maker. You know yourself how many bad things you have done.

Mr. Philips—You take it all through this state you will find some poor cheese made in the very best factories. The buyer will come along and he will say, "There is a day's make that isn't all right," there is two day's make, "I will give you so much." The cheesemaker don't want to lose on those cheese, if he guarantees the make, and if he don't guarantee the make, he don't want his patrons to lose. He goes down town and sells those cheese to the grocery and they will buy them, because they can work it out in trade, and doing that, he can get the market price for those cheese and you get that very cheese to eat.

A Member—Do you think the cheese maker ought to guarantee his cheese without the patrons guarantee their milk?

Mr. Philips—I don't think the cheese maker ought to guarantee his cheese anyway; I don't think the patrons ought to ask him to do it. I don't think the patron ought to be obliged to guarantee his milk. He ought to be educated in the matter so

that he knows when he has got good milk he is to take it to the factory, and when it is not good leave it at home.

Mr. West—I think the cheese maker ought to be compelled to guarantee his cheese, and I think the cheese maker that don't know enough to take in good milk ought to lose by it. If he does get good milk he ought to deliver good goods, and if he takes in poor milk he ought to be responsible.

Mr. Aderhold—Did you ever make cheese?

Mr. West—I made it ten years and always guaranteed my cheese.

Mr. Philips—Can you always tell poor milk at the weigh can, Mr. West?

Mr. West—No, sir.

Mr. Philips—Then, how under the sun, are you going to know whether you are taking in good milk or poor milk?

Mr. West—If a farmer delivers me milk I can detect it by setting it in cans, or in some way, in a short time. I will be responsible.

Mr. Aderhold—Are you in the business now?

Mr. West—No, sir.

Mr. Aderhold—That is what I thought.

Mr. West—I have been for three years connected with the dairy and food commission. I would like to ask a question. If there was a case ever successfully prosecuted for making filled cheese in this state until Mr. Harkness became dairy commissioner.

Mr. Philips—I never knew of any prosecution since Mr. Harkness came into his office until this last fall for skim cheese and filled cheese. I won't say skim cheese. I would like to ask Mr. West one more question. Why is it that the food commissioner and his assistants do not work with the cheese instructors and prosecute the cases of skimming, as I think it is their duty?

Mr. West—There have been hundreds of cases—I won't say hundreds—there have been many cases prosecuted for skimming milk. I, myself, prosecuted in one factory nineteen cases. I prosecuted thirty-one cases over in Manitowoc and the record stands there.

Mr. Philips—I would like to ask Mr. Harkness, or his assistant, the reason why they didn't prosecute those eleven cases in

Mr. Verity's factories at Appleton. I don't believe that you had any other milk that tested any lower than the milk tested in that factory a year ago last summer.

Mr. West—I don't know anything about that case.

Mr. Philips—There were persons in that factory that tested as low as two per cent. with Mr. Harkness' test and Mr. Verity's test all through the summer, each week. Why was it he didn't prosecute those? They kept right on skimming in that factory. They didn't believe that we could tell anything about their milk by the Babcock test, because they were not prosecuted. In Mr. Aderhold's factory I believe he found seven a year ago last summer that tested below three per cent. and he didn't prosecute those. I can name lots and lots of cases that you never prosecuted.

Mr. West—I would like to hear you name lots and lots. There is once in awhile a factory that is not prosecuted, but when you say lots and lots, it isn't so. They have been prosecuted in almost every case that has come under the attention of the commissioner, and not one case was prosecuted before the present dairy and food commissioner came into office.

Mr. Philips—We had no trouble in getting parties prosecuted at the time H. C. Thom was in that office. I called on him time and time again to test and prosecute patrons and it was always done. He stood with the cheese makers and helped the instructors. Of course, there are dozens of farmers that don't want to see you, but there are enough farmers and dairymen in this state that want to see this done, and to see our reputation built up, and we never can do it unless cases are prosecuted.

Mr. West—I had a talk with a prominent cheese buyer at Appleton a short time ago, where I was attending to some business with some factories, and they asked me the question, how it was I got time to get around to these factories. They said, my predecessor in the office never had time to get there.

A Member—How many cases did you report to Mr. Thom that he prosecuted?

Mr. Philips—I don't know how many there were, but I never reported one that was not.

Mr. West—I know the records only show eight cases in all Mr. Thom's administration.

A Member—How is it that milk can be tested a good deal lower at factories than it can at Madison when it is sent there for trial?

Mr. High—I have been to a good many factories of the state and never at but one factory have they taken samples of the same kind that I did, and I have found that when the milk would not test the same at Madison and at the factory, it had been because the sample was not properly taken, or it was not taken at exactly the same time.

A Member—I think it is a question about the weakness or strength of the acid, if the acid is not strong enough it throws the caseine up into the butter fat, and it doesn't show as large a per cent.

Prof. Woll—If the acid is too weak there will be found some caseine, but you will readily see it.

A Member—In one test I took this summer, I took the milk in and it was quite cold, and the acid didn't work as it ought to, it threw the caseine up with the cream, so that that sample tested five per cent. I knew there was something wrong, so I took two more samples of the same milk and warmed it and both samples gave over four and a half per cent. of butter, so that showed there was a half per cent. of caseine mixed in with the butter fat.

The Chairman—That shows the condition of the temperature of your milk, not the strength of your acid.

Prof. Woll—If the acid is too weak you will have a milky substance under the layer of fat. Of course, the temperature has a good deal to do in determining the clearness of the separation. I will say to this gentleman that asks about the tests made in Madison and at the factory, that if it came higher in Madison, it shows conclusively to my mind that the test was not correctly made at the factory, and I think the reason for this is most likely to be found in this, that the maker did not turn his machine fast enough. You have to be careful about turning up to the required speed in making a test by the Babcock milk test, especially in the case of these small hand-machines, where the diameter is very small.

Mr. Aderhold—In comparing the test at the factory with that at Madison, we have to be sure that the two samples are taken



by the same person. In the case that this man speaks of I think one sample was taken at the factory by the cheese maker, and the other was taken by the farmer at home.

The Member—No, the other sample was taken by the food commissioner. The cheese maker took the one that was tested in the factory. The samples were taken the same day out of the same can.

Prof. Woll—Where there is any doubt about the test, the best way is to make another test and turn more rapidly. If it is higher it will show that you did not have sufficient speed in the first test.

Mr. Harkness—We found out last season at a great many factories that the pipettes are too small. We find a great many pipettes that won't go over fourteen.

The Chairman—We test every pipette.

Prof. Hacker—There is a great deal of discrepancy in the tests made. We make a great many tests for farmers who send in their milk and we generally find out that they do not know how to take a sample properly. We find that they stir it in a circular motion instead of up and down through the vessel and they do not bring the milk into such motion as will stir it from top to bottom. Many of them will merely give it a little stir on the top not going more than an inch or two into the pail.

Mr. Thom—With your permission, since my name has been handled without gloves, I would like to say just a word in defense of the organization and the establishment of the commission. By the very force of the energy and the intelligence of the brain behind a few men, the establishment of that commission was passed in the legislature. The law in its scope simply comprehended the establishment of a commission as to one or two minor laws. When I took charge of that department I found my hands tied behind me and my feet fettered on account of the lack of efficient law, but, nevertheless I felt what the sentiment of the few men who had worked for the establishment of the commission was, and to the best of my ability and intelligence I did what I could; very often I went outside of the scope of the law and by a mere bluff which I knew would be backed up by the sentiment of the people who were interested in the business we succeeded in doing considerable good to the dairy indus-

try of Wisconsin, and I am proud of it, and as Mr. Philips said, there was a time in Wisconsin when there was not a pound of filled cheese made, and we had factories on the state line where there are now factories in the same business, that were drawing their skim milk across the Illinois line and there making it into skim cheese because they were afraid of the efforts that the commissioners were making. We turned over to the present incumbent cases that we were promised should be prosecuted that never have been prosecuted. We have made ourselves amenable to prosecution, but what we did or what this commission has done or has not done has nothing to do with the question. The organization at its beginning was a baby, it is now five years of age, and it if has not done at the end of the fifth year more than fifty times what it did during the first year, it has made an ignominious failure.

Too much cannot be said about the inroads that this fraud is making upon one of the best industries of this state, an industry that has in it more dollars and more cents than all the national and state offices and more men and more women and more children are dependent upon it today than are upon any other single industry. Still we have been attempting to establish a sentiment that would give this commission a strength and an energy and a hold upon people, so that it could go upon its way backed up by the legislature of Wisconsin in such a way that the food commissioner could have power almost omnipotent to take hold of fraud and throttle it to its last death.

I tell you, my friends, there isn't any use, there isn't any purpose in recriminating what the commission has done in one year, or what it will do in the next ten years. I want every man who has this industry at heart, who is interested in the welfare of his own commonwealth to put his back and his shoulder and all the strength there is in him behind this matter so that it will grow up and you will be proud of it, and that it will have within its scope not only the fraud that is perpetrated within your border limits, but also that the health department itself will be comprehended in the field of the dairy and food commission. My friends, you cannot spend your strength and your energy in a cause which is more closely identified with your own personal interests than the dairy and food commission.

The poor cheese that is put upon the market has just as damning an effect upon the cheese that stands beside it as if it were all the same kind. You do not realize today the effect upon your pocket and upon the market, but some of us know that when we lost our reputation it took a long, long while before we could back the standard and sell our goods for what they were worth. Our people don't know good cheese when they see it. You will find that out if you put a good cheese upon the counter of one of our local groceries. We must cultivate the taste of the people. There is a good deal to be done all around in this matter and we must stand shoulder to shoulder with the commission and hold up the hands of the commission so that it will be a credit to the state, a saving to the state and a thing that we will all be proud of.

---

#### THE ODDS AND ENDS IN CHEESE MAKING.

E. L. Aderhold, Neenah.

If any man has good opportunities for observing imperfections and follies in the management of our factories and the manufacture of cheese, it is the instructor.

Last season I was engaged in instructing the cheese makers and patrons in about 20 factories and while coming in contact daily with patrons and makers, I was also in a position where I could see the commercial outcome of both correct and fallacious methods practiced in Wisconsin cheese factories.

Perhaps the greatest eye-opener I had last year—in the shape of cheese—was that great six months' object lesson, the cheese contest at the Columbian exposition. This lesson, together with my practical experience, has forced upon me a few impressions, which I will endeavor to make known to you, as to some improvements that must be made before our cheese are as good as it is possible to make them.

During the month of October it was my good fortune to see and compare the finest cheese made in the United States and Canada, probably the greatest exhibit of skill ever made in that line. Prof. Robertson was there, and very kindly showed us his Canadian cheese, and tried as many for us as we wished him to. He showed us cheese all the way from several months to two years old. The flavor of those old cheese was wonderfully well preserved. We had cheese in the same room that scored 97 points, but they were not "in it" with Canadian cheese. Their cheese was perfectly close, had a good body, a silky texture, and such a full, mild, clean flavor.

In showing us those cheese the professor did us a great favor, and I have an idea that he experienced considerable satisfaction himself at the time. Now, then, knowing the points of superiority of the Canadian cheese over ours, it behooves us to study the cause of the difference.

In my judgment the cause is this:

In Canada they practice greater cleanliness in milking and with dairy utensils.

Makers don't get control of factories until they are competent to manage them well. They use more salt in their cheese. Those cheese were probably pressed for two days or else treated with continuous pressure. And, last but not least, they had the temperature of their curing rooms under control. They did nothing but what can be done just as well in Wisconsin.

The Wisconsin curing rooms are no good. We want basements half under ground and banked up. If we could keep our curing rooms at 65 degrees and somewhat moist, there might be a double saving in yield. Cheese would require less acid and they would not shrink so much. I have a theory (and it is not near as nervous as Hoard's theory), that such cheese would turn out richer, more buttery.

Right here I feel like roasting Prof. Henry. What is our Experiment Station doing for us in the line of advanced work? With his Chemists, Bacteriologist, Cheese instructor and Dairy Hall always at hand, he might do some experimental work. Is Prof. Henry satisfied to sit on a back seat or is he only taking a nap? If he possesses much of the spirit he showed one morn-

ing when my friend Verity and your humble servant came late to his class, he will have Mr. Decker make some cheese and cure them at different temperatures and with various amounts of moisture in the air.

He will have Dr. Russell cultivate the pure lactic ferment and with it prepare starters to be used in those experiments.

There is a large field for work along this line. In making sweet curd cheese, we at times are troubled with gas and we can't find the cause of it. It seems to me that our Experiment Station could do much good if they took up this matter of tainted and gassy milk. Might it not be possible that some harmless chemical can be discovered that will drive bad flavor out of milk? A case is reported from Germany where cheese bloated badly with no apparent cause. A chemical analysis of the milk revealed an unusually low per cent. of mineral matter. A further investigation showed a correspondingly low per cent. of mineral matter in the food consumed by the cows. The trouble was entirely stopped by adding to the milk those elements in the proper proportions, that were lacking in the mineral matter.

As nothing is impossible now days I will make another suggestion. Supposing our Dr. Russell were to take a cheese perfect in flavor, go to work and lasso a pair of each specie of bacteria that are required to produce a fine flavored cheese, then practice a series of line breeding, and send to us by mail, from time to time, these thoroughbred registered bacteria with their pedigrees attached to them, so that we could inoculate our cheese with them and make the cheese "get there" whether they want to or not. Wouldn't there be millions in it, boys—I mean millions of bacteria.

How long will it be before we will have an all around improvement in the cheese industry?

It will be when patrons will have the seams of their dairy utensils soldered flush with the tin.

When our makers will keep the curd knives filed sharp.

When fifty per cent. of our makers are less slouchy in regard to the appearance of their cheese.

When we will have continuous presses.

When we cure our cheese in rooms where the temperature can be controlled.

When there will be an instructor for every thirty factories and all instructors work under one head.

When our factories will whirl out their dividends with Babcock Testers that are speeded up higher than those now on the market, and, when the filled cheese champions will not be in it, at least not in our Dairy and Food Department.

---

### DISCUSSION.

A Member—Do you consider it strictly honest to pay cheese dividends by the Babcock test?

Mr. Aderhold—It is by far the nearest to being strictly honest of any way that is practiced in Wisconsin and there is no better way that I know of.

Prof. Haecker—During the past week at the Minnesota Experiment Station we have been engaged in experimental work on sweet curd cheese, and while we were manufacturing Edams last Monday, we had a superb curd. It seemed as if it were about perfect. When we have control of every individual cow, her feed and care and method of milking, we have entire control. Last Monday's work was exceedingly fine. Tuesday the cheese began to have a hollow sound when we patted them. Something was wrong. I went down to the barn and looked over the cows and everything seemed to be all right. I came back, and looked at the daily test for each cow, and I noticed that a certain cow was tested too high, she was about 2 per cent. above the normal. I went back and examined that cow again and I found a feverish condition, not enough for a casual observer to notice, but there was some fever there and it showed more in the test of her milk than it did in the cow. We took the cheese from each day and cut it in two, one of them was completely full of holes about the size of a Canadian pea to a Marrowfat, and there were as many holes as you would see in an ordinary Swiss cheese, while the other day's milk was per-

fectly firm, all right, and the next day's cheese was all right. Then, again, we went through the same process and we found that a cow down in the barn was off her feed. We examined the record of her milk and found it tested 1 1-2 per cent above the normal. I simply call your attention to these points to show how small a matter may injure the milk. One single cow that is in a fevered condition will spoil the whole mass of that day's milk, so you see the importance of the farmers taking special care, not only to have clean utensils, but to take good care of their cows and not overfeed, as had been done in the cases I speak of.

Prof. Woll—How about the quantity of milk given by those cows?

Prof. Haecker—I did not look at the milk record. It has been my experience that in such a case they would drop off in the quantity of their milk and increase in the per cent. of fat.

Mr. Aderhold—Mr. West this morning acknowledged that he could not tell good milk from poor milk in the weigh can, and yet he said he thought the cheesemaker ought to guarantee all cheese. Do you think that the cheesemaker ought to stand the loss in such a case as Prof. Haecker has just spoken of?

Mr. West—I have been making cheese in the southern part of the state where it is much harder to make good cheese than in this climate, and we guarantee our farmers the highest market price for their goods and pay them accordingly, and we never suffered any losses.

Mr. Aderhold—What kind of goods was your market price based on?

Mr. West—Strictly fancy full cream cheese. The price down there for full cream cheese is fully up to what it is here. That is down in Walworth county.

## APPOINTMENT OF COMMITTEES.

Committee on Nominations:—C. R. Beach, C. W. Jones, A. L. Aderhold.

Committee on Resolutions:—H. C. Adams, H. C. Thom, Chester Hazen.

Committee on Dairy Implements:—Stephen Faville, A. B. DeLand, F. A. George.

Permanent Committee on Legislation:—(To be added to at the wish of the President) Chairman, H. C. Adams, Hon. John Dazziel, N. Simon, August Shuete, R. H. Huston.

Convention adjourned till 2 o'clock.

---

Convention met at 2 o'clock.

Mr. Faville in the Chair.

**BACTERIA IN THEIR RELATION TO THE KEEPING QUALITIES OF MILK.**

Prof. H. L. Russell, Agricultural Experimental Station, Madison, Wis.

[NOTE.—Prof. Russell's address was not written out in full, but was based upon the memoranda and notes given below.]

Long before bacteria were heard of, cleanliness was a cardinal factor in successful dairying.

Experience is sometimes a dear teacher and a slow one, but often we learn by it before the scientists give us the fundamental reason of things.

From purely the standpoint of actual experience we might have adopted the motto that cleanliness is the most important factor in keeping milk in a normal condition, but in the light of recent scientific investigations, we now know the reason why that cleanliness is such an important factor in dairy pursuits.

No one will deny but that the scientific explanation of an ascertained truth broadens the basis of its application and en-



ables not only the investigator, but the practical worker to approach his work in a more satisfactory way.

Today we shall attempt to show the effect of some of the factors that affect the keeping qualities of milk, and in dealing with these shall restrict our discussion mainly to the influence that bacterial life has upon milk and its products.

Dirt and filth, in fact, all conditions favoring uncleanness, are known to exert a deleterious effect on milk, but when we come to examine the subject a little more thoroughly, we shall find that it is not the dirt itself, but what it contains, that does the mischief. This invisible dirt, as we may call it, is nothing more nor less than bacterial germs that are growing and multiplying in the milk and causing such changes that soon it becomes a worthless substance for human consumption.

Bacteria are so widely known today that it is almost unnecessary to describe them to a reading public, yet there are so many misconceptions concerning them arising from sensational articles, that a brief resume of their mode of life and distribution may not be amiss.

What Are Bacteria?—First, they are living beings and as such they live, move, grow, or reproduce and die like all other animate existence. They are so infinitely small that an adjective needs to be coined that means a 1,000 times smaller than tiny to apply to this class of living things.

Examples of Size.—Small as they are, yet they are endowed with powers that affect even the lords of creation for weal or woe.

Their presence is forced unmistakably upon us in their relation to disease and in the many processes of fermentation, rotting and decay that are to be seen on every hand.

Under their influence all organic substances are liable to decomposition, and in this way milk is profoundly affected by many species.

Milk in the udder of the cow is perfectly sterile. If it could be secured in the condition that it is in the cow, it would remain for an indefinite period without change, but bacterial life is so abundant that it is impossible for us to secure milk under such conditions that it will not sooner or later sour. All the changes that take place in this fluid are brought about by the

entrance of foreign organisms and all conditions that favor the access of these, favor the decomposition changes that always occur in milk.

**Milk Disorders.**—Not only does the germ that causes the souring of milk gain access to milk after it leaves the udder of the cow but all those disorders such as ropy, stringy, bitter, blue, red and green milk are caused by the entrance from some outside source of the specific germs that bring about such destructive conditions.

To prohibit the entrance of these into the perfectly germ free milk of the cow is the aim of every enterprising dairyman.

**Must Deal with Conditions that Surround the Cow.**—To successfully do this, we must go back farther than the milk as it comes from the cow. We must prepare the conditions that surround the milk so that there will be little or no danger from contamination. Every influence that allows the entrance of filth and dirt and impure air increases the germ contents of the milk, and hastens the changes that are brought about in the fluid. Therefore the removal of all these conditions from the dairy and the stable will decrease the opportunity that germs have of gaining access to the milk.

Every one of you know full well that this is no new thing, so that what I have had to say is what any one of you might say.

But let us look a little more closely into the different factors that enter into the contamination of milk, and see what relative importance they assume.

1. **The Contamination to Milk Arising from Dirty Vessels.**—By dirty vessels, I do not mean vessels filled with filth and slime, for I presume no man who considers himself a progressive dairyman will admit that visible dirt could be found in any of the vessels that he used for the keeping of milk.

While vessels may not contain visible dirt, yet enormous numbers of germs adhere to the walls and are imbedded in the cracks and joints of pails and vessels that are ordinarily used to secure the milk. These vessels may have been cleaned in hot water; they may have received even the application of boiling steam, but even this as ordinarily applied is quite insufficient to kill out the little mischief makers that cause these troubles.

Momentary contact of bacterial germs with steam is quite insufficient to kill them entirely. It needs a continuance of 1-2 hour or more before they succumb.

The best cleansing that vessels ordinarily receive will at best remove only the visible dirt and the bacteria that this contains; but this is totally insufficient as can be shown by making cultures of the material rubbed off the sides of a vessel cleaned in the ordinary way.

Experiment, Sterilizing Pail in Steam; other conditions the same; effect on milk.

|                   | Ordinary can soured in | Sterile can soured in |
|-------------------|------------------------|-----------------------|
| September 13..... | 23 hours.              | 28½ hours             |
| September 20..... | 39 hours.              | 48½ hours.            |

Ordinary milk, 500 germs per drop.

In milk, sterile pail 11 germs per drop.

Application of this not only to milking vessels but all vessels that come in contact with the milk.

Strainers, cans for creaming, factory cans, dippers, all should be sterilized in toto before using.

Hot Water Totally Insufficient.—Danger arising from returning factory waste products (skim milk and whey) in factory cans.

Inevitable contamination of putrefactive forms.

Possibility of the introduction of milk disorders, as taints; where cans are cleaned by boiling or steaming, this is impossible.

2. Another fruitful source of contamination is from the dust and dirt that comes directly from the cow and milker.

This a most fruitful source of contamination to milk. Dust and bacteria are invariably associated. Where dust is present there germ life will be found in abundance. Now the animal itself harbors innumerable germs in its skin that are easily dislodged and fall into the milking vessel. These are derived from the particles of excreta that cover the flanks of the animal or dried bits of mud that adhere to the animal as she may have passed through some foul place in the pasture.

In thousand and one ways, the animal comes in contact with bacterial life, and the germs adhere to the coat of the animal and become dried, so that the slightest touch dislodges them.

Now every movement of milker and animal during the milking process dislodges innumerable organisms from the hair and skin, and these fall continuously into the milking pail and there find the best possible conditions in this warm nutrient medium for development.

In this way often obscure and troublesome disorders arise where contaminated material has been carried by the animal from a distant source, to the dairy. The recognition of these as due to a bacterial cause, enables the investigator to trace them to a proper source and much loss and inconvenience is prevented.

Now bacteria are easily dislodged from a dry surface, but when a surface is thoroughly moistened, they can not be easily shaken from it, so that washing the udder and under parts of the cow lessens the danger from this source very materially.

Not only does a thorough washing the udder remove the accumulated dirt and filth of the day, but a good moistening effectually prevents in large part the dislodgment of the myriads of germs that fill the hair and skin.

Not only does this safeguard apply to the animal, but the milker's hands should also be thoroughly cleaned with soap and hot water. This should immediately precede the milking process so that when once cleaned they may not be contaminated again.

These precautions may seem unnecessary to some, but the value of them may easily be demonstrated by actual experiment.

Illustrated by photograph showing number of germs falling on moist surface of a sterile gelatine plate when exposed under udder of cow during milking.

Five hundred and sixty germs per minute fell into a 10 inch milk pail when udder was washed.

Seventeen hundred under ordinary conditions.

Five hundred and sixty includes the germs from the air which of course could not be kept out so this would be reduced.

Dust in the barn aside from this is another factor, although seemingly a minor one in contaminating milk.

All conditions favoring the raising of dust, of necessity increase the germ content of the air so that the feeding of hay and straw or the bedding of animals during or immediately preceding the milking time increases the danger by one more factor.

The factor is not, however, as important as the other one, for the conditions usually do not favor the introduction of very many germs, but some forms that are often deleterious to milk are to be found on hay or straw, as for instance, the hay bacillus.

3. Fore Milk.—Another source of bacterial contamination is the presence of large numbers of bacteria that remain in the few drops of milk that remain in the milk duct of the teat. Usually a few drops remain, and under these conditions the bacterial organisms from the outside easily gain an entrance, and finding warmth, food, and moisture, grow and reproduce greatly. The milk duct becomes, then, a veritable incubator and these bacteria inevitably contaminate the milk as it is withdrawn at the next milking. While the number of germs that may thus be directly added to the milk may often be very large, they are also in such a condition that they are able to begin their development at once.

Most of the bacteria that are to be found on hay and straw and gain access by means of the dust, are in the resting stage and it requires a certain period of incubation before the organism can germinate and begin to grow rapidly. The early development of an organism is then of immense advantage where the rate of growth is the doubling of the number of individual cells every half hour.

The fore milk will usually contain lactic organisms whose chief function is to sour the milk, but often germs are introduced that are undesirable. Especially is this true where cows have access to stagnant water rich in decomposing organic material and get their udders covered with filth from the place.

It may be said that certain fermentations are desirable, as for instance, the lactic ferment in cheese making,—that a certain degree of acidity is necessary for the proper making of cheese but how much better it is to control the production of acid by adding if desired, a pure starter, than it is to let the acid get the upper hand of us.

We do not claim, indeed it would be futile to expect that by the most careful manipulation we could prohibit the entrance completely of all bacterial life—that we could handle the milk under such aseptic conditions as the surgeon must in his operations so that milk would be kept in as pure condition as it is in the cow—that is that it would be perfectly devoid of germ life.

If we successfully exclude the entrance of the great majority of bacteria from the beginning then we are in position to govern the fermentation processes as we desire and not let them govern us.

Not all bacteria are harmful in milk but if we allow innumerable organisms to gain access to milk by dust, dirt and filth, we increase the seed that is to grow up and increase many thousand fold and bring forth tares as well as wheat.

Suppose that we have observed the most rigid precautions in the securing of the milk and that we have it with the bacterial contents much reduced. Is our duty finished completely? By no means.

We must surround it with those conditions that retard and restrain the development of the bacterial life that will inevitably gain access to it.

If when we have taken all possible conditions as to cleanliness we place the milk in a favorable condition for the development of the contained germs then all of our labor will have been in vain.

Now in milk we have the best conditions as far as food supply is concerned. All that is necessary for further development of most organisms is presence of oxygen and a suitable temperature.

If these conditions prevail no matter how small the number of germs may be that will inevitably get into the milk, they will under such favorable conditions for development soon people it thoroughly.

Bacteria need a certain degree of heat in order to grow just as your corn plant or barley grain.

If kept at a temperature lower than this they continue in a dormant condition and as such will have little or no effect on milk. So the cooling of milk immediately after milking checks

the development of the germs that will inevitably gain access to the milk under the best of conditions.

The observance of such precautions, simple in themselves and easily executed will make a vast change in the commercial value of milk whether it is used as milk or whether it is worked up into some other product.

---

### DISCUSSION.

Mr. Everett—Professor, does it have any effect and if so, what, for cows to inhale impure air in stables?

Prof. Russell—Speaking entirely from a bacteriological standpoint, the inhaling of impure air by the cows will have no effect upon the milk as far as the bacterial contents are concerned. Of course, if the impure air is in a stable it will come into contact with the milk probably, and that is where the danger arises. Milk in the healthy cow is perfectly sterile. If it were possible to insert a sterilized catheter, milk might be drawn perfectly pure, and in that case it would remain unchanged for a dozen years if it did not dry up.

Mr. Goodrich—Are we to infer from what the professor says that it is better to milk with wet hands and a wet udder?

Prof. Russell—I do not mean to convey the idea that the udder should be dripping wet, or the milker's hands so that the moisture would drop off from them, but the udder should be thoroughly moistened. The milker's hands should be washed with soap and hot water and those conditions will increase the time that the milk will remain sweet for several hours. The udder should be washed with a sponge or rag and warm water so that what germs remain on its surface should be largely dislodged. Those that still adhere to the udder will not fall off into pail, if the hair has been thoroughly wetted. When the udder is dry fine scales and dirt will always be dislodged by the movements of cow and milker.

Mr. Goodrich—Do we understand that a small quantity of milk remaining in the udder becomes contaminated with bacteria?

Prof. Russell—No, they cannot gain access to the udder, but the lower part of the milk duct is often contaminated with bacteria that work in from the surface.

Mr. Goodrich—Is it not better to use tin pails than wooden?

Prof. Russell—By all means. Wooden pails should never be used for milking purposes, nothing but tin pails should be used, and only those where there is no chance of cracks or joints offering a condition for the dirt to gather.

Mr. Taylor—If we can keep our cream sweet till a few hours before churning, will these bacteria produce any deleterious effects on the butter?

Prof. Russell—There are good and bad forms of bacteria and these, of course, are incorporated in the butter. The forms producing the desirable flavor we of course wish to cultivate. The ripening of cream is entirely a bacteriological process. If we could sterilize our cream it would remain sweet for a long time. Butter can of course be made from sweet cream as well as from sour cream, but it is not generally considered desirable.

Mr. Beach—We simply sour it to get the flavor. It is a disputed point whether we get more butter from sour than from sweet cream. Experiments in Germany are in favor of getting fully as much, but experiments in this country show the reverse. The flavor of butter is entirely due to the fine flavors produced by these bacteria. The quality of the food has something to do with it.

The Chairman—If the cream is churned sweet can you get that fine, nutty flavor that we are after? Will it come about in the butter after it is churned?

Prof. Russell—If the cream contains bacteria it may be churned sweet, and they will develop to a certain extent in butter, but butter itself is very poor food for the bacteria, as it contains so small an amount of casein. They thrive better in the cream than in the butter. The conditions for bacterial growth are not so favorable in butter fat as they are in the full skim milk or cream.



Mr. Everett—Can you tell us by what means we can make sure of developing the right form of bacteria?

Prof. Russell—We are working on that at Madison. I did not bring any of the full-blooded, registered bacteria with me. The first question is to learn how to keep the milk sweet. That is the foundation stone. We have got to learn to govern the conditions all the way through.

Mr. Fuller—It has taken me five years of hard work to pound into my men the method that I insist upon their pursuing as to cleanliness. I always have the cow's udder washed with hot water and a sponge after the milker has washed his own hands, then after he has washed the cow's udder, he washes his own hands again and dries them. The cow likes it.

Prof. Russell—You must remember that all the forms of bacteria that are found on the cow are not bad; if they were we would be unable to get proper effects. Possibly ninety-nine per cent. make good butter. Then again, some forms of bacteria will be present today and not tomorrow, or throughout the year. Suppose your cow has been in a wet pasture and through a stagnant pool and has become contaminated, the milk will be affected.

Mr. Beach—In our excessive pains to get rid of this wicked bacteria, isn't there danger of getting rid of the right bacteria?

Prof. Russell—There is.

Mr. Beach—Have you tried John Boyd's starter?

Prof. Russell—I understand that is nothing but skim milk or buttermilk and in it is developed the same form of bacteria as those that drop from the cow.

Mr. Beach—Then Boyd hasn't any patent on the bacteria, only on the machine?

Prof. Russell—No, sir.

Mr. Goodrich—Mr. Boyd claims that at a temperature of 90 degrees a better breed of bacteria is developed than at any other temperature.

Prof. Russell—I would like Mr. Boyd to produce cultures to show that. As a usual thing the evil forms of bacteria are the ones that gain the ascendancy when they have better conditions. It is only on account of the increased number of good forms that we have any advantage at all. What we want is to govern

this thing so that we can make a uniform product 365 days in the year.

Mr. Beach—Is there any hostility between the two kinds of bacteria?

Prof. Russell—Not necessarily. The amount of food is quite sufficient for all of them. The competition is not quite as strong as it is in the case of human beings.

Mr. Thorpe—After we have got our cream and held it sweet until we are ready to ripen it, by what you say I would infer that by ripening at a lower temperature you are more apt to develop the right kind of bacteria.

Prof. Russell—No, the point of holding the temperature low, is to prevent the development of any kind of bacteria, and consequently, hold back the ripening. After adding your proper starter, then you want to warm it up.

Mr. Thorpe—Suppose we heat the cream the right temperature and let it start itself without using a starter.

Prof. Russell—It won't start if there is nothing in it; that is, if you have heated it sufficiently high to kill out everything and kept it from the germs of the air. As cream ordinarily stands in a dairy, you can't keep them out, but in a cream vat you can.

Mr. Beach—What temperature destroys bacteria?

Prof. Russell—Most of them are destroyed at about 150 degrees Fahr. For the rest of them it takes the temperature of boiling steam for a longer time. In the pasteurizing process only those forms are killed out that are in a growing condition. The spores remain, consequently, and it is necessary to lower the temperature below their germinating point and then by adding the proper starter you can do what you wish. We are working at that at Madison with very good results. There are firms which put these starters on the market, but I am not prepared to say anything about them. The process is the only point that I wish to discuss.

Dr. Bowen—I will say that in Connecticut the same line of investigation has been carried on, and the proper culture has been carried on at that place for quite a number of months, and one creamery has experimented with it under the direction of Prof. Conn at the station and at the last meeting of our dairy

association specimens of butter made from that culture were passed through the audience and it was a much better flavor than that of ordinary, plebeian bacteria. We, in Connecticut, are prepared to send out those cultures, Yankee bacteria from the Nutmeg State, with a nutmeg flavor.

Prof. Russell—Our Connecticut brethren have done good work in this line. I can show you in Madison samples of pure butter culture which have been made at various periods of time and you can compare them with the creamery product made at the dairy school in Madison. It scored at a higher per cent. than that did, and the dairy school students think they know how to make butter.

Mr. Thorpe—I have found that when we ripen at a lower we get a better flavor than when we ripen at a higher temperature.

Prof. Russell—What I have given you today has been the result of our own investigation at Madison. This department has only been inaugurated a little more than three months and of course we haven't had time to do very much yet. We shall be very glad to welcome you to Madison at any time.

Mr. Bender—I think there is a law in Denmark requiring the factoryman to scald the skim milk so that a patron cannot take home bad bacteria brought there by his neighbor.

Prof. Russell—We owe much in this line to Denmark. They are the originators of this process and in this country it is largely in an experimental stage as yet.

A Member—What about aeration?

Prof. Russell—I have not discussed the matter of aeration and cooling because we have not experimented much on this point. The value of this with milk seems to be that it dissipates the animal odor that is present in freshly drawn milk.

## SIX MONTHS OF MILK TESTING AT THE WORLD'S FAIR DAIRY TEST.

Prof. E. H. Farrington, Agricultural Experiment Station, Champaign, Ill.

The World's Columbian exposition was a source of many surprises. From the Midway to the Peristyle and from the Art Gallery to the Dairy Building there were many wonderful things to be seen. This was the experience not only of persons who made short visits, but of those who were present every day for six months. The expressions of amazement seen on the faces of many visitors were very noticeable. A never to be forgotten expression of surprise was seen on the face of a woman who was looking at the representations of the Columbus caravels. She read the names of the craft in which Columbus and his sailors crossed the ocean and discovered America, and remarked to a friend, "Why where is the Mayflower? Didn't Columbus come over in the Mayflower?"

A Chicago paper stated during the summer that the directors were now convinced that in many features of this fair results had been sacrificed "to an inordinate desire for bigness." After wandering about the fair for a few days some humble citizens began to be amused by so frequently running against exhibits which were labelled "the biggest in the world."

It becomes a much more serious matter, however, and a rather interesting topic of conversation when a person realizes or finds by analysis that the work of the fair with which he is connected is by far the greatest thing of its kind that was ever undertaken. This may be truly claimed and clearly demonstrated of the dairy tests at the World's Fair.

It is probable that a proportionally small number of the twenty-one million paid attendants at the fair were interested in the dairy end of the show, but the World's Columbian Exposition dairy test supplied its full share of surprises, not only to those who were particularly interested in cows and cows' products, but to the daily visitor as well.

A great many lessons have already been drawn from the

records of these tests and published in the different agricultural papers. Some of these will bear repeating until they are familiar evidence in every dairyman's household. Many years will pass before the teachings from these tests become exhausted. It is not my intention, however, to exhaust this audience by trying to tell you all about it, but will confine my remarks to the discussion of three things: The Babcock Milk Test, The Cheese and Butter Scores, and The Temperature of Churning Cream.

### THE BABCOCK MILK TEST.

One thing that surprised the writer during his six months of milk testing at the World's Fair was the ignorance displayed by so many agricultural visitors in regard to the Babcock test. Many had never heard of it.

When the inventor gave this method of milk testing to the public, it was first tried by chemists of Experiment Stations, or persons who were somewhat familiar with the chemical actions involved in the process. They found the results obtained by it were accurate as compared with those of the gravimetric methods they had previously used for getting the per cent. of fat in milk, and to them the making of a test was wonderfully simple. The directions first sent out by Dr. Babcock with the test were sufficient instructions for that class of workers to get good results.

As its field of usefulness broadened, and the men who milked the cows began to use the tester, it was soon discovered that the Babcock milk test was not an automatic machine. Although very simple to a chemist, it was found to be not like a clock which only needed to be wound up and left to run itself for ten minutes to give accurate results, but the wheels must be watched, the milk properly mixed, and the strength of the acid correct.

It has generally been supposed to be easier to test a mixture of the milk of several cows than the milk of one cow, and that possibly there might be found a cow's milk which could not be successfully tested. The milk of each of 107 cows was tested at the World's Fair, and for four months there were made at least 150 tests of milk every day. This gave many tests of a

great variety of milk. There was a great variation in the composition of these milks, and in the characteristics and health of the cows. Nevertheless we were able to test successfully every one of these samples of milk, and by proper manipulation to get a very clear separation of the fat.

Any one who uses a Babcock test may profit by our experience in two points at least: First, he can have perfect confidence in the process as described by Dr. Babcock, that it has, given and can give, satisfactory tests of milk; and second, that if any one has trouble with the test he can find out the difficulty himself.

Investigate for yourselves. Find a reason for occasional poor separations of the fat, if you have them. You can find a remedy yourself just as well as by applying to the doctor.

The inquiries contained in some of the dairy papers seem to indicate that black or white stuff separating with the fat is the difficulty most frequently met with. This makes an obscure reading of the per cent. of fat because of the indistinct separation of the liquids. The common remedy suggested for this difficulty has been a change of acid. If there is "black stuff" in the fat get a weaker acid, if a white curd separates in the fat column change to a stronger acid. That a too strong or too weak acid may cause this trouble is undoubtedly true in many cases, but not always. The manipulations of the test may also cause these defects.

My experience with the Babcock test has taught me to follow the directions given by the originator of the method, and in doing so to keep a watchful eye on the following points:

1. Mixing and temperature of the milk.
2. Strength, temperature and quantity of the acid.
3. The manner of pouring the acid into the milk in the test bottle.
4. Mixing the milk and acid in the test bottle.
5. Adding the hot water, kind of water, hard or soft.
6. Measuring the fat.
7. The speed of the machine.
8. Keep the acid bottle corked when not in use.

These are not given in the order of their importance. Neither are they supposed to cover every difficulty that may be met

with in the use of the Babcock test. They represent some things that have had an influence on the proper working of the test and there is a reason for every one of them.

1. A thorough mixing of the milk, so that the fat is evenly distributed all through the sample to be tested is sufficiently obvious, and needs no explanation to Wisconsin dairymen at least.

2. The intensity of the action of the acid on the milk is shown by the fat separation in the neck of the test bottle, either by the color of the fat or by the black or white stuff that sometimes separates at the bottom of the fat column. The black substance is probably charred fat, and indicates too strong an action of the acid on the milk. The white adulteration shows too weak a reaction. The strength, temperature and quantity of the acid used, as well as the temperature of the milk, all have an influence on the action of the acid on the milk. Too strong acid, and warm acid or milk, may be the cause of the black stuff in the fat. Hence it may be advisable to use a little less acid or cool either the milk or acid, or both, before mixing the two liquids in the test bottle. On the other hand, if a white curdy substance separates with the fat this may be remedied by using a little more than the graduated measure full of acid, or by warming the milk or acid 10 or 20 degrees before making the test. None of these precautions will be necessary, if the acid has a specific gravity of 1.82 and both milk and acid are at 60 degrees to 70 degrees F. when used.

3. When measuring the acid into the test bottle hold it at an angle which will cause the acid to follow the inside walls to the bottom, and not drop through the milk in the center of the bottle. Because by the latter way of pouring the acid, a portion of the milk may be acted on by the strong acid before it is diluted by the water of the milk. This makes a more intense action of the acid on a small part of the milk and the fat it contains is somewhat decomposed and blackened. This black substance is then separated with the fat by the usual method of finishing the test. If properly poured into the test bottle there will be a distinct layer of milk and acid with little or no black color between them.

4. Thoroughly mix the milk and acid as soon as measured

into the test bottle. This is not always necessary but for the same reasons just mentioned a better separation of fat is sometimes obtained by mixing at once, than by allowing the two liquids to stand partially mixed in the bottle, as often happens when the acid is poured in.

5. Add the hot water in two portions and run the centrifuge after each addition of water. Use soft water for this purpose, because many hard waters contain so much carbonate of lime that the carbonic acid set free by the sulphuric acid makes considerable foam at the top of the fat column. Some waters can be used to fill the test bottles without causing any foam, if the water is first boiled a short time.

6. When the test bottles are first taken from the machine it is a good plan to put them into water at 140 degrees to 160 degrees F. The fat is kept liquid at this temperature. Each end of the fat column can be distinctly seen and its amount measured.

7. Too low results will be obtained if the centrifuge does not have sufficient speed. The machines have to be watched as constant use wears some of them, so that the speed designed by the manufacturer is not attained.

8. Keep the acid bottle corked when not in use, because sulphuric acid takes up water from the air, and is thus diluted or weakened.

9. When testing skim milks and butter milks, which have a very small per cent. of fat, (two tenths of one per cent. or less), the reading of the per cent. of fat should be made immediately on taking the test bottle from the centrifuge. If this is not done, and the test bottle cools before taking the reading, the contraction of the liquid in the bottle will leave the fat spread over the inside surface of the measuring tube so that it is not seen, but has the appearance of being only a dirty tube. If read when taken from the machine, the small fat globules can be seen and estimated.

10. The Babcock milk test was one of the things that made a ten strike at the World's Fair. It went through a trial which gave it a very thorough test. An understanding of the daily records made by this test at the World's Fair, ought to convince any fair minded person that the Babcock milk test deserves the



highest award. Some who had previously expressed doubt about its accuracy and practicability freely confessed their conversion. You probably all know also that the awards given in the last or heifer test were based on the amount of butter fat found in the different cow's milk by the Babcock milk test.

The milk given by each cow was tested daily through all the different tests from May to November. During the two butter tests the skim milk, butter milk, and butter were also analyzed. The amount of fat in these three products should be equal to that found by the tests of the milk from which they came. During these butter tests, three balance sheets of this kind were made daily, making a total of 360 accounts.

Each of these accounts included tests of 25 samples of milk one on one side, and on the other tests of one sample each of skim milk and butter milk and an analysis of one sample of butter. The difference between these two records of the butter fat was called mechanical loss. Sometimes it was a gain.

The complete records are not yet available, but the writer has 312 of the total 360 comparisons which can be made. These include 120 Jerseys, 90 Guernseys and 102 Shorthorn records. They show the following results:

The number of times there was a mechanical gain was Jersey 42, Guernsey 22, and Shorthorn 19 per cent. of the whole number of days.

The greatest gain observed on any day was for Jersey 1.22, Guernsey 1.31, and Shorthorn 0.81 pounds fat.

The greatest loss was Jersey 1.93, Guernsey 1.63, and Shorthorn 1.26 pounds fat. The average weight of fat unaccounted for daily was Jersey 0.35, Guernsey 0.37, Shorthorn 0.38 pounds. These weights of fat were for the Jersey 0.9, Guernsey 1.2, Shorthorn 1.4 per cent. of the total weight of fat produced daily during the 90 day test; or for the Jersey 0.043, Guernsey 0.054, and Shorthorn 0.052 per cent. of the milk produced per day in the 90 day test.

Considering the great difficulty of getting a fair sample of 40 pounds or more of butter, the analysis of which must come into every one of these 360 accounts, and the fact that the fat is measured in the test bottles instead of weighed, these results

show very close work, not only by all the men connected with the dairy test, but also by the Babcock milk test.

### THE CHEESE AND BUTTER SCORES.

The rules governing these tests provided that the cheese manufactured in Breed Test No 1, should be judged upon the following scale of points: Flavor, 55, Texture, 25, Keeping quality, 15, Color, 5, Total, 100.

Cheese scaling from 75 to 80 points at 8 cents per lb.

Cheese scaling from 80 to 85 points at 10 cents per lb.

Cheese scaling from 85 to 90 points at 12 cents per lb.

Cheese scaling from 90 to 95 points at 14 cents per lb.

Cheese scaling from 95 to 100 points at 16 cents per lb.

A scoring was made of the cheese manufactured from the milk produced by the three breeds of cows during ten days.

The quantity of cheese made obviously depends on the amount and richness of the milk produced by the different cows.

The records of this cheese test supply some data for studying the influence of breed characteristics in milk, on the quality of this cheese. All the cheese was made by the same process and men. There were three sets of apparatus for making cheese—one for the milk of each herd.

There are three ways of studying these cheese scores: Comparing the scores of the cheese made from the milk of the three breeds. Comparing the cheese made on the ten days. The scores of the thirty lots of cheese.

An analysis of the scores shows that there was just as high scoring cheese made from the milk of one herd as another.

Without further discussion of this point, I will simply submit the following table as evidence of the truth of this statement:

*Highest and lowest scoring cheese made from the milk of the three breeds during ten days.*

|                   | Flavor. | Texture. | Keeping Quality. | Color. | Total. |
|-------------------|---------|----------|------------------|--------|--------|
| <b>GUERNSEY.</b>  |         |          |                  |        |        |
| Highest .....     | 51.7    | 23.7     | 14               | 4.3    | 93.3   |
| Lowest .....      | 46.3    | 19.6     | 10.7             | 3.7    | 83.7   |
| Difference .....  | 5.4     | 4.1      | 3.3              | 0.6    | 9.6    |
| Average .....     | 44.9    | 21.7     | 12.3             | 4.5    | 87.2   |
| <b>SHORTHORN.</b> |         |          |                  |        |        |
| Highest .....     | 51.7    | 23.8     | 14               | 5      | 94     |
| Lowest .....      | 50      | 20       | 12.7             | 4      | 87.7   |
| Difference .....  | 1.7     | 3.8      | 1.3              | 1.00   | 6.3    |
| Average .....     | 50.4    | 22.3     | 13.3             | 4.35   | 90.5   |
| <b>JERSEY.</b>    |         |          |                  |        |        |
| Highest .....     | 51      | 24       | 14               | 4.7    | 92.7   |
| Lowest .....      | 47.3    | 22       | 12.3             | 3.7    | 87.7   |
| Difference .....  | 3.7     | 2        | 1.7              | 1      | 5      |
| Average .....     | 49.8    | 23.2     | 13.3             | 4.2    | 90.8   |
| Standard .....    | 55      | 25       | 15               | 5      | 100    |

An examination of these figures shows that each of the breeds produced cheese which scored higher than some of that made from the milk of the other two breeds. This can be illustrated by the scoring on any one of the four different qualities on which the cheese was judged.

The scores on "flavor," for instance, show that the Shorthorn cheese averaged 0.6 of one point higher than the Jersey, and 1.5 points higher than the Guernsey cheese, but there were both Jersey and Guernsey cheese that scored higher than some Shorthorn cheese on "flavor." The highest score on flavor, 51.7 was made by both Guernsey and Shorthorn cheese and the Jersey cheese came within 0.7 of one point of this score.

Similar variations may be noticed in the scorings of other qualities of the cheese, showing that no one of the three breeds uniformly excelled the others in quality of the cheese made.

A complete list of the scores is not given here as it has al-

ready been printed in several agricultural and dairy papers. The following summary has been made from the detail scorings: The letters indicate the breed whose cheese scored the highest each day, and the figures show the variation between the highest and lowest of the three lots of cheese scored each day.

*Breed showing highest scoring of cheese (S. G. J.) and difference in extreme score (10 days cheese score.)*

| Date.       | Flavor.   | Texture.  | Keeping quality. | Color.    | Total     | Highest score. |
|-------------|-----------|-----------|------------------|-----------|-----------|----------------|
| May 16..... | S 0.6     | J 2.0     | J 1.3            | J & S 0.3 | J & S 3.6 | 89.3           |
| 17.....     | S 2       | S 3.4     | S 3.3            | S 1.0     | S 8.7     | 94             |
| 18.....     | All same. | J 0.7     | G & S 0.7        | J & S 0.3 | S 0.7     | 88.7           |
| 19.....     | S & G 0.3 | J 2       | J 0.7            | All same. | J 2.3     | 92             |
| 21.....     | J 3.7     | J 2       | J 3              | All same. | J 8.7     | 92.7           |
| 22.....     | S 4.4     | S 2.3     | S 2              | J 0.7     | S 10      | 93.7           |
| 23.....     | G 1.7     | G 2.9     | G 1.3            | All same. | G 5.6     | 93.3           |
| 24.....     | S 2.6     | S 2.4     | S 1.7            | S & J 0.3 | S 7.0     | 92.3           |
| 25.....     | J 3.7     | J & G 0.7 | J 1              | S 0.4     | S 4       | 92.7           |
| 26.....     | S & J 1.7 | J 3.7     | S & J 1.3        | All same. | J 4.7     | 92             |

The lowest total score of the thirty lots of cheese was 83.7, the highest 94, a difference of 10.3. The highest total score of the three lots of cheese made daily was reached by the Guernsey once, the Jersey on four days and the Shorthorn on four days. Both Jersey and Shorthorn cheese scored the same on one day during the ten.

The scoring on flavor gave the highest flavor to the Shorthorn cheese on four days, Jersey on two days and Guernsey on one day, with a tie between the Jersey and Shorthorn scores on one day. The table shows that the difference in the "flavor" scores during the ten days was from 0 to 4.4 points.

The scoring on "texture" was Jersey best on 5 days, Shorthorn best on 3 days, Guernsey best on one day and a tie between Jersey and Guernsey on one day. There was a variation in the "texture" scorings of 0.7 to 3.7 points.

"Keeping quality" was best in Jersey cheese on four days, Shorthorn cheese three days, Guernsey cheese two days, with a

tie between Shorthorn and Jersey on one day. This score varied during the ten days from 0.7 to 3.3 points.

"Color" was nearest perfection in Shorthorn cheese on two days, Jersey one day, a tie between Shorthorn and Jersey on three days and all three scored the same on four days. The variation in color was from nothing to 1.0 point.

This shows that no one of the three breeds' milk always made the best or poorest cheese throughout the ten days. The Jersey and Shorthorn cheese each scored the highest on four days, and the Guernsey on one day.

### THE BUTTER SCORES.

The rules governing the butter tests provided that the butter should be judged upon the following scale of points: Flavor,, 55, Grain, 25, Solidity, 10, Color, 10, Total, 100.

Butter scoring 75 to 80 points credited at 25 cents, 80 to 85 at 30 cents, 85 to 90 at 35 cents, 90 to 95 at 40 cents, and 95 to 100 at 45 cents per pound. There were two butter tests. One covered a period of 90 days from June 1st to August 30th, and the three breeds entered in this test were represented by twenty-five cows each. The other, or thirty days' butter test, from August 30th to September 29th, was entered by only fifteen cows in each breed. Nearly all the butter in the 90 days' test scored 90 to 95 points, and in the 30 days' test one or two points higher, so that with a few exceptions the butter in the first test was credited at 40 cents per pound, and in the second test at 45 cents to 47 cents per pound.

It is quite generally claimed that the period of lactation has an influence on the quality of the butter produced by a cow, that butter made from the milk of a fresh cow, is of better quality than that made from a stripper's milk. An examination of the scores of the butter made in the 90 day test, shows a slight increase in the quality of the last butter, over that made at the beginning of the test.

These 90 days do not, of course, represent the two extremes of the period of lactation, nor the butter of a fresh cow as compared with that of a stripper, but they do show that during

about one third of the period of lactation, the quality of the butter did not decline with the advance of the milking period.

A further study of the butter scores shows that there was no uniform relation between the amount of fat, water and curd in the butters and a high or low scoring.

An analysis was made of 360 samples of butter. It included an estimation of the fat, water, curd, and salt. The extremes and average of these analyses was as follows:

|                           | Fat.  | Water. | Salt. | Curd. |
|---------------------------|-------|--------|-------|-------|
| Average per cent. . . . . | 84.88 | 11.62  | 2.78  | 0.95  |
| Highest per cent. . . . . | 88.26 | 15.00  | 8.15  | 2.14  |
| Lowest per cent. . . . .  | 76.53 | 8.63   | 1.01  | 0.50  |

There were only four samples which had less than 80 per cent. fat, and 14 with over 87 per cent. Only one sample contained more than 14 per cent. water, and one less than 9 per cent. water. Five samples had over 6 per cent. salt, and none less than one per cent., while 242 of the 360 samples had from 2 to 4 per cent. salt. Only one sample contained over 2 per cent. curd, and 9 over 1.5 per cent. curd.

Undoubtedly there would have been a greater variation in the composition of 360 lots of butter, collected from different dairies and creameries, but with a few exceptions these were all made by the same method and men. A comparison of the butter scores and analyses, shows that the differences in amount of water, fat, and curd do not follow or correspond with the difference in scoring of the butters.

Comparing the butter scores of the thirty day test in the same way that has already been done with the cheese scores shows a much smaller difference between the scorings of the butter of the three breeds on any one day than was observed in the cheese scorings. The cheese of the different breeds showed a variation of 1 to 10 points in the daily scores. The butter produced by the different breeds sometimes scored the same on one day, and as a rule there was not more than one half a point

difference in the three daily scores. The difference between the best and poorest butter made each day as shown by the scoring is given in the following table. The letters indicate for each day the breed which produced the highest scoring butter. The figures show how much this score was above the lowest of the three scores of that day.

For example, the table shows that on September 4th the Guernsey and Shorthorn butter scored the same on "flavor" and their score was 0.3 of one point higher than the Jersey. The Jersey butter scored half a point higher on both "grain" and "solidity," than the lowest score touched by either of the other two breeds on that day, and in the total score the Shorthorn butter was one tenth of a point higher than the other two butters.

September 6th the Shorthorn butter was 0.4 of a point higher in "flavor," the Guernsey 0.3 higher in "grain," the Jersey 0.1 higher in "solidity" and on the total score the Guernsey butter was half a point higher than the lowest score obtained that day.

September 20th the Guernsey butter was one point higher in "flavor," the three butters scored the same on "grain," the Jersey was 0.2 of a point higher on "solidity" and the Shorthorn butter 0.7 higher than the lowest total score that day.

The details of the butter scores are not given for the first five days, hence are not included in this table. The scoring on color is also left out of the table. The butter was scored perfect in "color" in 59 out of 75 lots.

*Difference between the extreme scores of the three lots of butter made each day, September 3 to 28, inclusive.*

|                  | Flavor.   | Grain.   | Solidity. | Total.     | Highest score. |
|------------------|-----------|----------|-----------|------------|----------------|
| September 4...   | G & S 0.3 | J 0.5    | J 0.5     | S 0.1      | 95.8           |
| September 5....  | G & S .3  | J .5     | J .5      | J .7       | 96.7           |
| September 6....  | S .4      | G .3     | J .1      | G .5       | 96.3           |
| September 7....  | G & S .2  | .....    | J .3      | G & J .1   | 96.3           |
| September 8....  | G & S .5  | G & J .3 | G & J .2  | G .5       | 96.5           |
| September 9....  | G & S .6  | J .3     | G & J .1  | G .5       | 96.3           |
| September 10...  | G & S .4  | J .7     | J .3      | J .5       | 96.2           |
| September 11.... | J .2      | J .1     | G .2      | J .3       | 95.5           |
| September 12 ... | G .2      | J .2     | J .2      | J .4       | 96.0           |
| September 13 ..  | S & J .1  | J .2     | J .4      | J .7       | 96.5           |
| September 14 ... | G .2      | J .4     | J .5      | J .8       | 96.5           |
| September 15...  | S .2      | J .3     | J .5      | J .8       | 96.5           |
| September 16.... | J .2      | J .1     | J .2      | J .5       | 96.3           |
| September 17.... | S .5      | S .3     | .....     | S .2       | 96.8           |
| September 18 ..  | G & S .9  | .....    | J & S .2  | G & S .7   | 97.2           |
| September 19 ..  | J .4      | G & J .1 | J .2      | J .7       | 97.3           |
| September 20 ... | G 1.0     | .....    | J .2      | S .7       | 97.2           |
| September 21 ... | J .6      | G & J .4 | J .5      | J 1.5 *1.5 | 97.8           |
| September 22..   | J .9      | J .4     | J .5      | J 2.8 1.8  | 97.8           |
| September 23 ..  | .....     | .....    | .....     | J 1.9 1.1  | 97.2           |
| September 24 ... | J .7      | J .4     | J .3      | J 2.0 1.3  | 96.8           |
| September 25.... | J .5      | J .3     | J .3      | J 1.1 1.1  | 96.3           |
| September 26.... | J .5      | J .2     | J .3      | J 1.5 1.0  | 93.8           |
| September 27.... | J .3      | .....    | J .3      | J 1.4 .7   | 97.0           |
| September 28 ... | J & S .1  | J .2     | J .1      | J 1.1 .4   | 97.3           |
| Average...       | .4        | 0.26     | 0.29      | 0.84       |                |

\* Deducting the points scored off on color

The greater difference in the total scores during the last few days is due in part to the scoring on color. The color had been scored perfect in nearly every case up to September 22d. After this date some of the butter was daily scored down about 0.7 of a point on color. Hence the larger difference in the total scoring of the butters from September 20th to 28th than was observed previously to that time, is not entirely due to a change



in flavor, grain, and solidity, but in some degree to change in color.

The table shows that the average difference between the best and poorest butter scored daily was as follows:—Flavor 0.4 point, grain 0.26 point, solidity 0.29 point, and on total score 0.84 point. It also shows that the butter of each of the breeds excelled that of the others on some days, but it was nearly always a fraction of one point only. As a rule the Jersey butter scored a trifle the highest on "solidity," while that of the Guernsey and Shorthorn was about the same amount higher in flavor.

The two extremes of solidity and flavor do not occur in the same sample of butter. The constituent parts which give butter its flavor are less solid than some of the more tasteless parts; hence an increase in one tends to decrease the other.

Aside from this characteristic of the butters their quality seems to be largely influenced by something outside of the cow.

The following summary has been made from the scorings on the 345 different lots of butter produced by the three breeds during the test:

|                   | 90-DAY BUTTER TEST. |        |           |        | 30-DAY BUTTER TEST. |        |           |        |
|-------------------|---------------------|--------|-----------|--------|---------------------|--------|-----------|--------|
|                   | Flavor.             | Grain. | Solidity. | Total. | Flavor.             | Grain. | Solidity. | Total. |
| <b>SHORTHORN.</b> |                     |        |           |        |                     |        |           |        |
| Highest .....     | 53.3                | 23.5   | 9.2       | 95.7   | 53.3                | 24.2   | 10        | 97.2   |
| Lowest .....      | 47                  | 21.7   | 8         | 85.7   | 52.2                | 23.3   | 9.2       | 95.3   |
| Average. ...      | 52.03               | 22.85  | 8.71      | 93.36  | 52.93               | 23.8   | 9.44      | 96.1   |
| <b>GUERNSEY.</b>  |                     |        |           |        |                     |        |           |        |
| Highest .....     | 53                  | 23.9   | 9.2       | 95.5   | 53.3                | 24.2   | 9.8       | 97.2   |
| Lowest .....      | 49                  | 21.7   | 8.2       | 88     | 52.5                | 23.5   | 9.1       | 94.8   |
| Average.....      | 51.8                | 22.87  | 8.86      | 93.59  | 52.91               | 23.98  | 9.45      | 95.95  |
| <b>JERSEY.</b>    |                     |        |           |        |                     |        |           |        |
| Highest... ..     | 52.5                | 24.2   | 10        | 95.8   | 53.7                | 24.3   | 10        | 97.8   |
| Lowest .....      | 47                  | 23     | 8.7       | 88.3   | 52.3                | 23.7   | 9.3       | 95.5   |
| Average.....      | 51.01               | 23.6   | 9.59      | 94.03  | 52.89               | 23.97  | 9.69      | 96.47  |

## TEMPERATURE AND TIME OF CHURNING CREAM AT THE WORLD'S FAIR DAIRY.

The length of time required to churn cream into butter is largely influenced by the thickness of the cream. A cream containing 30 per cent. fat, can be churned at 50 to 55 degrees F. in about one hour, but it is almost impossible to churn at this temperature, cream containing 10 to 15 per cent. fat.

Records were kept of the time and temperature of every churning made at the World's Fair dairy. They show that there are breed characteristics which influence the churning of cream. That the proper thickness of cream is not the only factor to be considered when we want a thorough churning in a reasonable length of time.

The churning records of the three breeds show that the Guernsey and Shorthorn cream was churned at a lower temperature than the Jersey cream. There was not much difference in the churning records of the first two breeds mentioned.

The temperature at the end of 191 churnings of cream, including 90 Guernsey and 101 Shorthorn churnings was as follows:

15 times between 45 and 48 degrees F.

95 times between 48 and 52 degrees F.

74 times between 52 and 56 degrees F.

7 times between 56 and 62 degrees F.

All but two of the 90 churnings of Guernsey cream were at 56 degrees F. or lower when completed. One of these two was 57 degrees and the other at 58 degrees, so that taken as a whole the Guernsey cream churned at a little the lowest temperature though there was not much difference between it and the Shorthorn cream in this respect.

The temperature of churning the Jersey cream was considerably higher than that of the other two breeds. The temperature of every one of the 117 churnings of Jersey cream was above 50 degrees F. Only eight churnings were completed between 50 and 54 degrees. Seventy-nine churnings ended at 54 to 58 degrees, and thirty at 58 to 62 degrees F.

There was a difference of about 8 degrees F. between the temperature of churning the Jersey cream, and that of the other two herds.

The temperature of the cream at the beginning of these 308 churnings varied from 12 to 19 degrees in extreme cases. The average temperature of the Guernsey and Shorthorn cream was 45 degrees, the Jersey cream 53 degrees when the churn was started.

*Temperature of cream at beginning of churning.*

|                           | Guernsey. | Shorthorn. | Jersey. |
|---------------------------|-----------|------------|---------|
| Highest temperature. .... | 52        | 58         | 57      |
| Lowest temperature. ....  | 40        | 39         | 44      |
| Average. ....             | 45.8      | 45.3       | 52.8    |

There was a slight rise in temperature between the beginning and end of each churning. The cream was almost invariably churned in a room where the temperature was higher than that of the cream.

The difference in temperature between the beginning and end of these churnings was in a few extreme cases 12 degrees and in some only 2 degrees, but the average difference was 6 degrees in the Guernsey and Shorthorn cream, and 4.4 degrees in the Jersey cream churnings.

#### TIME OF CHURNING.

The record of 308 churnings shows that the average time per churning of

90 lots of Guernsey cream was fifty minutes.

101 lots of Shorthorn cream was fifty-eight minutes.

117 lots of Jersey cream was fifty-nine minutes.

|   | Guernsey | Short-horn. | Jersey. |
|---|----------|-------------|---------|
| The longest time per churning, minutes .....                | 130      | 120         | 150     |
| The shortest time per churning, minutes .....               | 25       | 18          | 17      |
| Number of churnings that required over 90 minutes .....     | 3        | 18          | 14      |
| Number of churnings that required less than 30 minutes. . . | 3        | 6           | 6       |

This shows that in 308 churnings only 35 of them required over an hour and a half per churning, and 14 were churned in a little less than half an hour each.

The longest time of churning any one lot of cream was two and a half hours, and the shortest time seventeen minutes.

There was no uniform relation between the time required to churn cream and the temperature at which the butter "came." The lot of cream that was churned two hours and a half was started at 51 degrees F. and ended at 62 degrees F. There were other churnings of similar cream that were started at 51 degrees, and the butter came in one hour, and several lots of cream that were 62 degrees at the end of the churning had only been churned half an hour.

The World's Columbian Exposition Dairy Test gives a very complete record of 107 cows.

They have been fed, weighed, and milked, now we have an opportunity to milk this record for our future instruction.

It is quite generally known that the amount and quality of the milk obtained from the same cow, varies somewhat with the milker. The same thing may be true of the various information extracted from the records of this dairy test, but like the solicitations for charitable purposes, I assume that "small contributions are thankfully received."

#### DISCUSSION.

Mr. Fuller—The professor has excellently condensed a very large subject, and in doing so there may be some points it was impossible to bring out. Now, the price of cheese was fixed by

the score, therefore I take it that that cheese that scored the highest had the highest price, and that taking the average price of cheese or butter that that highest average price would indicate cheese or butter of the highest quality. I agree with what Prof. Farrington says that there were times when one class of cheese was better than the other in individual points. The same must of necessity apply to individual churnings and the scores composing that churning, but I take it that the cheese that had the highest average price per pound for the ten days in which cheese was actually made and the butter that has the highest average price for the thirty or ninety days in which butter was actually made and scored, must of necessity have been the highest average on butter and cheese scored. I want to give some of the figures as a matter of record. I wish to give the average price of the breeds for the cheese and the average price for the thirty-day and ninety-day butter. The average price per pound for cheese for Jerseys, was 13.3 cents, Guernseys, 11.7; Shorthorns, 13 cents, and in the ninety-day test the average price allowed per pound of butter for the Jerseys was 40.8; Guernseys, 40.3; Shorthorns, 40.5. The average price per pound of butter in the thirty-day test was: Jerseys, 46.5; Guernseys, 45.5; Shorthorns, 45.6. My object in stating that is this, that the idea cannot be carried away that there are no characteristics in the breeds. On individual tests, individual portions of that score varied, but in total, there were distinct characteristics; for instance, if careful examination is made it will be found that solidity in the Jersey butter was so marked and continued that it may be called a Jersey characteristic. The same thing applies to the grain of the Jersey butter. On the other hand the flavor in some portions of the ninety-day test of a large portion of the Guernsey and Shorthorn butter was better than that of the Jersey, raising the question whether it was a breed question or whether it was in the feed. For myself I do not hold the theory that flavor is a breed characteristic, but I do hold the idea that it is fed to the cow and of necessity must give an aroma in the butter. There was also the further characteristic developed, which does not affect you gentlemen of the north so much as it does the gentlemen of the south, and as it did at the World's Fair where the rooms were always too warm,

that Jersey cream can be churned at a higher temperature and the butter can be worked at a higher temperature, and still maintain its solidity and texture, than other cream. I wish to ask Prof. Farrington what conclusions he has come to as to the value of the test made from any one cow in any one day. In other words, if you take a one day's test of a cow how far is that a criterion of her merit?

Prof. Farrington—Of course I have studied these figures very carefully, and as I was not a champion of any one breed I tried to study those records impartially and arrive at some results of value. One question I had in mind was, Whether one breed of cows always gave the best or the poorest butter, or the best or the poorest cheese? The figures undoubtedly show that that is not the fact. There were two things quite constantly noticed, the Jersey butter was almost always harder than the other butter and the butter from the other two breeds was of higher flavor; that was uniformly true.

Mr. Fuller—No, not in the thirty-day test.

Prof. Farrington—Yes, I have studied those figures very carefully, and I think it is so shown. In the latter part of the thirty-day test the color was scored off. That is a thing that the buttermaker can make perfect himself, and so it was scored off. The hard butter has been proved to be generally a flavorless butter, and if you increase the flavor of butter you decrease the solidity. Of course, about the single day test, those records of the World's Fair show very conclusively that a one day's test might give a very erroneous impression of a cow's capacity for a longer time. I have looked over the records for the twenty-six cows that went through the whole test, and those records show that among those twenty-six cows, taking the days when they test poorest and highest, the cow that tested uniformly the poorest, her extremely highest test was greater than the poorest ones of all the others, or, in other words, if the poorest cow was tested on a certain day she would be better than all the others, so that one day's test is not a fair criterion of what a cow can do. Some of those cows varied from one to two pounds in butter fat in two successive days.

Mr. Fuller—I think that if Prof. Farrington will look at the record for the thirty-day test, he will remember that the Jer-

seys were higher in flavor. You will remember that in the ninety-day test, the work was all done as a committee ordered it done. In the thirty-day test the manager of each breed had charge of the work, and the flavor of the Jerseys was uniformly better than the other two. My object in asking the last question of Prof. Farrington was this: I had a stable full of World's Fair cows before any test began, and I was testing them. I had charge of nearly fifty. I would have a cow shipped in by freight one day, and taking a composite test of her milk within twenty-four hours after she arrived, I invariably found that that cow gave a higher percentage of butter fat than she ever gave afterwards during my experience. There were jumps among those cows from 1.75 pounds to 2.75 or 3 pounds in a day, and if we took the test on the day she gave the rich work, we would think we had a stunning cow. The next day it would go down again without any cause at all. There was some disturbing element that was working on her and I think it has been emphatically proved that such a test is absolutely valueless; it is misleading; there must be a test of more than one day.

Mr. McKerrow—Would a three or four days' test be anywhere near accurate?

Mr. Fuller—I have taken a composite test for a week of a whole herd and I have taken at the same time an individual test, and it was remarkable how it would vary. A cow that was getting sick, for a day or two before in a feverish condition, would jump way up. A disturbing element seems rather to affect the quality of the milk more than the quantity.

---

#### RATIONS FOR A DAIRY COW.

---

Prof. F. W. Woll, Agricultural Experiment Station, Madison, Wis.

A few years ago, a farmer sent a letter to our experiment station asking for an explanation of a problem which had puzzled him a good deal. He had been studying up the German system of "rational feeding," and being short of coarse fodder, had pro-

ceeded to make up a ration for his cows consisting of oat straw and oil meal; he supplied very nearly the exact quantities of dry matter and digestible components recommended by the rations; within a couple of days, the cows were losing their appetites and dropping off in milk, and in a short while they refused the feed entirely. He wrote to find out what was the matter. If a combination can be made of straw and oil meal which will contain the required two and one half pounds of digestible protein, and have a ratio of digestible nitrogenous to non nitrogenous components of about 1:5.4, why should the cows strike and refuse to eat it?

Twenty-two pounds of oat straw and 7 pounds of oil meal certainly furnish about the quantities of both total and digestible components recommended, and in the right proportion of these components. In his calculations he left out the most important part, however,—the cow herself. When the cow finds it too much work to extract the necessary nutrients from 20 pounds of straw or more a day, she does not hesitate to say so, or to plainly show her opinion in the matter, German rations or no German rations. And if seven pounds of oil meal is too much for her system, as it is for most cows, she will lose her appetite and refuse the feed, with a poorly filled milk pail as the result.

This incident shows plainly that the cow must be consulted first of all in making up feed rations; no matter how beautiful a combination looks on the paper and how near it comes to some fine-spun scientific system of feeding set forth,—if the cow says, no, that ends it, and there is no appeal from that sentence.

The question of the rational feeding of farm animals has been a fertile field for theorizing, and a good deal of dogmatic preaching has been done, and is being done, by writers on agricultural subjects in this country and out of it. While I have the greatest admiration for the early German investigators in this field, the pioneers, who for more than a generation have patiently worked along these lines, and who have taught us nearly all we know about the laws of animal nutrition, and the office of the different nutrients in animal economy, I have none of the same feeling for many of their numerous followers who swear by anything the leaders say, and proceed to enlighten their fellow-beings concerning the proper solution of their problems.



We have an illustration of this matter in the dogmatic way in which we have been told we must feed our dairy cows, in order to obtain the best results. In the study of this subject, the German experimenters soon found that the relatively highest production of milk and butter could only be obtained when the cows receive a highly nitrogenous ration, one containing a large quantity of digestible protein. This is necessary for the rapid building up of the cells of the milk glands, the raw material of the milk; the more liberal supply of protein therefor, up to the limit of the capacity of the glands of each cow, the greater the flow of milk. The best ratio between the digestible nitrogenous to non-nitrogenous constituents according to Wolff is 1:5 or 5.4 that is, the ratio found in good pasture grass.

This ratio, as well as all standard rations for farm animals proposed by these experimenters, are the outcome of earlier experiments in this line; they were given out without any regard to the cost of the feed, looking at absolute and not economical yields. Suppose, e. g., we find that a cow will give 20 pounds of milk a day on 2 pounds of digestible protein; if now the protein is increased to 2.5 pounds, feeding otherwise in about the same way, we may expect a daily yield of say 22 pounds; but it may easily happen that the extra protein will cost more than the two pounds of milk gained will bring. What becomes then of the economy of the more nitrogenous feeding? I have this criticism against the German standard rations, and the nutritive ratios of the same, and it seems to me that it is a very grave criticism, that they are theoretical, pure and simple, in so far as they do not take view of the economy of the various feeds; "such and such feed rations give the best, the highest results in milk and milk solids, hence feed this way."

This is an entirely fallacious guide to offer those in need of help; what the farmer wants to know is not what kind of feeds and what nutritive elements will give the highest results, but what feeds and what combinations will give the most profitable results. The one question is one of physiological chemistry, the other is one of practical economics. It is the former system offered by German scientists, and indiscriminating followers of them; it is the other which American Experiment Sta-

tions are slowly working out, and concerning which they are gathering more and more data.

We here deal more especially with the feeding of dairy cows; the so-called standard German ration which has been directly transferred to our conditions and preached to us as the only way to salvation, says to feed 2 1-2 pounds of digestible protein daily to a cow with 12.5 pounds of digestible carbohydrates and .4 pound digestible fat, in order to obtain the best results; now, as against this standard we find that our best American dairymen, successful business men of superior intelligence and experience, do not feed much more than 2 pounds of digestible fat, a ration containing about seven times as large a quantity of non-nitrogenous constituents as nitrogenous constituents, against 5.4 in the German ration. This is an average of 128 American rations for dairy cows, as actually fed in different herds, and it would seem that its teachings are conclusive.

The practical importance of the subject comes in here, that the foods rich in protein are most expensive; the cost of the ration is therefore increased by feeding much of them. We have abundant supplies of carbohydrates (i. e. starch, sugar, etc.) in our coarse fodders, corn silage and fodder, hay and in grains; we usually have to go outside of our regular farm products for a good supply of protein; hence the less we need of them, the better. We may then depend largely on our staple crops, corn, hay, grains, when the price of the latter allows them to be fed with advantage, and need only reinforce the same by smaller quantities of protein foods, like refuse feeds from flour and oil mills, etc. If a farmer arranges to have clover hay on hand nearly the whole season, and oats or peas, he will have the protein substances needed for the proper nutrition of his dairy cows, and will be independent of millers, oil companies, distillers or brewers. The cash outlay for concentrated feeds which may come easy to the capitalist, is a hard difficulty to overcome for many dairy farmers.

Our experience teaches us, however, that feeding a good supply of concentrated feedstuffs rich in protein is along the line of wisdom; with market prices for protein foods and starchy foods about similar, select the former; with prices higher for protein-foods feed only enough of them to bring the nutritive

ratio down to about 1:7. Corn fodder, silage or ordinary hay with ground cereals do not furnish flesh-forming substances in sufficient quantities to produce the most economical results, and must be supplemented by some protein-foods like clover hay, or feeds like bran, shorts, malt sprouts, gluten meal, or different kinds of oil meal. In the selection of these concentrated feed-stuffs, the farmer must carefully consider the market prices of the various feeds. Our knowledge of the chemical composition of the feeds, and of their digestibility, in so far as we know this with any degree of accuracy, will here be of good service to us. While the feeds on hand must decide which of these feedstuffs are the most valuable for our purpose, we may say, in general that there is ordinarily no great difference in the feeding value of the cereals and the mill refusé feeds; wheat bran at \$12 is usually cheaper than oats at 25 cents a bushel or more; wheat at 50 cents a bushel may be considered of similar value to corn at \$16 per ton, or barley at 40 cents a bushel. As between the linseed meal or cotton seed meal on the one hand, and the bran or oats on the other, the latter are usually the cheaper feeds at our ordinary market prices; comparative feeding experiments of oil mill refuse feeds and cereals or flour mill refuse feeds have failed to show any great superiority of the former over the last mentioned ones. Thus, cotton seed meal was found only one-fifth more valuable than corn for milk production, at the Pennsylvania station, and oil meal only slightly more valuable than corn meal, at our own station. As the price of oil meal is usually about 50 per cent. higher than corn meal, and double that of bran, while the difference is still greater between these and cotton seed meal, it is evident that at our Wisconsin prices, we ought not, as a rule, feed more of these feeds than is necessary to furnish variety and stimulate the appetites of the cows; in this respect they possess a value that cannot be measured by their protein content or the content of any other single component.

Rations for dairy cows must vary with the animals fed, the stage of lactation, the system of farming followed and many other conditions. It might therefore seem futile to speak of feeding standards and of fixed rations. This may safely be done, however, if we remember that the rations allow of con-

siderable latitude; the quantities given are for good cows of medium weight in full flow of milk, and any dairy farmer will then know that a cow at the last stages of lactation, or a poorly yielding cow ought to receive less feed, while an extraordinarily rich milker must have more to do her best. The grain feeding may amount to 8 to 12 pounds a day per cow; our best feeders give as much as 10 or 12 pounds. In the 90 day breed test in Chicago last summer the Jersey and Guernsey cows were fed 20 pounds of grain feeds on an average, and the Short Horns 18 1-2 pounds; but very few farmers have cows that will stand such intense feeding, and give returns for the same in the milk pail. Most good cows will stand up to 12 pounds or thereabout, however; and this must be remembered: that by heavy feeding we increase not the cost of maintenance of the cow, but only her productive energy. Hence, we find that the best dairymen are heavy feeders and are feeding each cow in their herds to her full capacity. It is almost the unanimous testimony of our most successful dairymen, that heavy feeding pays, that nothing but liberal feeding pays, and that the farmer who does not feed his cows with a liberal hand will not obtain good results.

In closing I would recommend all dairymen present who are anxious to improve their business, to study carefully the bulletin from our experiment station on the system of feeding dairy cows practiced by one hundred American dairymen and breeders; I have gathered in the bulletin the views of successful farmers on many subjects connected with the feeding of milch cows, and believe that there are many suggestions brought out in the statements included that will prove of importance to every farmer studying how to realize greater gains from his cows.

---

#### DISCUSSION.

The Chairman—You say that according to the experiments at the Wisconsin station, oil meal is but little more valuable than corn meal. Now, have you considered the tendency of corn meal to throw the cow out of milk production into a fattening condition?

Prof. Woll—No, sir, that point was not at all considered. It was a question of actual production of milk and butter.

The Chairman—But here comes in a factor which is of wonderful importance to the dairyman. I will give two experiments that I tried with my own cows. I had a seven-eighths grade Jersey cow, which gave 3,240 pounds of milk in ninety days, from the 21st day of January to the 21st day of April. The milk was taken to our own creamery and by the oil test made me a credit of 160 pounds of butter. This cow was of such a decided dairy temperament that you couldn't switch her off, no matter what you fed her, she held steadily to the turning of the food into the milk channel. She refused to fatten, she took as high as fourteen pounds of corn meal a day and did not show a particle of increase in fat. I then bought a scrub cow, a native, and a good one. I found that this cow would not take over eight pounds of corn meal a day without diverting it right from the milk into putting into fat on her own body. Now, isn't there a factor here that requires some additional study as to the economy of food?

Prof. Farrington—Yes, but ought you to have any cows of that kind in your dairy that would turn the food into fat?

The Chairman—No, but supposing that all of us were where we ought to be, where would we be? Here is the question: we must consider the selection of the cows just as well as the selection of the foods, and you can much more easily change your food than you can change your cows. The fact of the matter is this: A dairyman must be as a god, knowing good from evil.

Mr. Taylor—We have now struck the basis of successful dairying and I don't want it to escape your notice. The basis of successful dairying is that of the selection of cows. Coupled with this selection is feed, care and training of the dairy cows, but you may select your feeds forever, you may balance your ration forever, if you don't make a wise selection of the cow that is going to consume it, all will be futile. A wise dairyman studies the characteristics of his animal, and if he finds as Bro. Hoard did, that one cow consumes a large amount of corn meal at a profit he has made a wonderful discovery, and shows his wisdom by continually feeding that cow large quantities of corn meal, which is the cheapest ration that the Wisconsin farmer

can produce upon his farm. We have a thorough-bred cow, within easy reach of the dairymen of Wisconsin and I want to say to you that it is unwise for you to try to get butter fat out of a cow with generations behind her converting that food into tallow or into fat, or into lean meat.

The Chairman—An old farmer said to me once, "I tell you the breed is in the corn crib." I was amused, and I says, "Uncle, let's you and I inquire into this thing just a moment. Do you remember that hog we used to have here about forty years ago in Wisconsin, that razor-back, that could go through a pair of bars by turning edgeways?" "Yes," he said he remembered it. "Well, now, if the breed is in the corn crib, how many bushels of corn would you feed him to make him over into a Poland China?" Then I says, "How would you feed a race horse to make a draught horse of him?" Well, the old man saw that he had overstated that truth and half the truth is always the most confusing of anything. The breed and the feed, of course, go together. He stood a moment and then he shook his old head dogmatically and he says, "You may say just as much as you are a mind to, I believe it." But all the same I think he doesn't believe it quite as much as he did, it will begin to dawn a little on his mind, that feeding skill needs to go with selecting skill. What we all need to do is to sit down and do some good hard thinking and if you could get the farmers of Wisconsin to do that for six months you wouldn't recognize most of them.

A Member—Was there any feed that you could have given that cow that would only take eight pounds of corn meal that would make her give more milk and put on less fat?

The Chairman—Yes, I found out that I must give her less fattening food and more nitrogenous food, give her, for instance, more cottonseed meal, more oats, more bran, more oil meal, and by that I mean new process oil meal, with the fat taken out.

Mr. Goodrich—I want to ask Prof. Woll an old question: Can the amount of butter fat in the milk be changed in any manner by the change of feed? Can you change the relative proportion of butter fat to the whole amount of milk?

Prof. Woll—As a matter of general observation we know that when the cows are turned out on the pasture in May, on

the juicy grass, very succulent feed, the milk flow will increase and invariably, in this country anyway, the percentage of fat will go down. Now, certainly there is one food that does influence the milk. When you come to feed of the same character, then all the experiments that have been made with only one or two exceptions, prove that feeding a cow up to her full capacity the percentage of fat is not changed in any fixed manner by the method of feeding used.

The Chairman—By the percentage of fat you mean that the relation of the fat to the casein and the milk sugar, the relative percentages, one to the other.

Prof. Woll—I mean the absolute percentage of fat present in the milk. For instance, you feed a cow so that she will produce 3 1-2 or 4 per cent. of fat in the milk. Now, you feed her in another way and you cannot increase or decrease that appreciably. You can by a very juicy food; then you will have a decrease of fat; you cannot increase it in any way that anybody knows about.

The Chairman—After you have decreased it by the juicy food can't you bring it back again?

Prof. Woll—Yes.

Mr. Goodrich—Your method of decreasing it would be watering the milk through the cow. Now, after they have been turned onto grass and had this juicy, watery food and made the milk poorer, then suppose we add a grain ration to this juicy food, will that increase the per cent. of butter fat without increasing the quantity of milk.

Prof. Woll—There has not been much work done on that line, but careful experiments at the station have shown that it did not have any immediate effect to add grain feed to a good pasture, but they found this condition, that the cows that had received the grain ration during the latter part of the fall held out better during their period of lactation, they gave milk longer and a better flow of milk later on and they did better the next year on account of the grain feed being added to the pasture.

Mr. Goodrich—I can give the result of some observations that were made at a factory and the changes of food noted. A year ago last summer my son was making cheese in Sheboy-

gan county, and he took a great deal of pains to visit and talk with all the patrons, and know when they changed feed. I was up there and looked over the records. He went to them, advising them to feed better and such a day Mr. A. commenced to feed corn fodder, it was pretty watery; such a day Mr. B. turned the cows out onto summer pasture, into a second crop of clover, and so on through; there was the whole record. Then he had the record of the test and in every instance where they turned into the clover field, the per cent. of butter fat went up, in every instance where they fed this green watery corn fodder, the per cent. went down. It varied from two to three-tenths per cent.

Mr. Curtis—Isn't it a fact that Prof. Henry and Dr. Babcock, both say, this thing cannot be done?

Prof. Farrington—As I understand it, Mr. Goodrich and I agree perfectly. It was just a more juicy food given, and the quality going down as a result.

Mr. Thorpe—How soon will the quality of milk be changed in turning them on grass?

Prof. Farrington—It ought not to be more than a couple of days.

Mr. Thorpe—Last spring after hearing what Mr. Goodrich had to say about this I took particular notice of just how many pounds of milk it took to make a pound of butter. Before I turned my cows out it took 17 1-2. I kept feeding them grain when I turned them out, they were fed grain twice a day, but very little, and they refused to eat that, because I had a very good pasture. The first two churnings after they were on grass it took between 17 1-2 and 18 pounds of milk for a pound of butter; I was churning every third day, and after that it took 22 pounds of milk to make a pound of butter, but in another week the amount of milk had decreased again, it ran down to twenty pounds of milk to make a pound of butter, but I couldn't get it back to 17 1-2. However, I got the most butter while they were on the grass because I got more milk.

The Chairman—The churn is a deceiving test. If you had taken the test by the actual per cent., the Babcock test, then



you would have had something reliable. You know butter takes more water at different periods.

Mr. McKerrow—You use a separator, do you?

Mr. Thorpe—Yes.

Mr. McKerrow—And the Babcock test?

Mr. Thorpe—Yes.

Mr. McKerrow—Did you test the skim milk and the butter milk?

Mr. Thorpe—Not in those cases.

Mr. McKerrow—That would tell something.

The Chairman—The experiments in our creamery show that under different conditions of feed that butter fat absorbs water varying from 12 per cent. to 25 per cent., and that would almost make up the difference in your figures. That is where the churn test is deceptive.

Mr. Jones—It seems to me that the important question in this regard is not, Can I increase the fat in the milk percentage, but can I increase the productive capacity of the cow, the total product from the cow per day, and when we look at the question that way there is no doubt that rich food up to the full limit of the cow will give the best results.

The Chairman—Just tell them what you mean by that one thing, the limit of the cow. We know that the limit of cows varies all the way from three to eight per cent.

Prof. Woll—I want to get away from the percentage idea and consider the total product from the cow by the day.

The Chairman—Cows vary constitutionally. One cow will never get above four per cent., another you can never get above five, and so on, every cow has a constitutional limit that is established in her individually.

Prof. Woll—I think there is apt to be a misconception in this regard. The talk is made that food does not influence the fat in milk and many farmers get the impression that it does not pay to feed heavily then because they don't get any more fat. That is entirely wrong. The more you feed the more you will get from the cow, but, of course, there is a limit to the cow; eight pounds of corn meal was the limit of this cow of Mr. Hoard.

The Chairman—Mr. Fuller was the owner of the Jersey cow,

Mary Ann of St. Lambert, when she made her great test. Perhaps he can tell us something about this.

Mr. Fuller—I think that is a problem that will be worked out some day by the scientists.

A Member—Prof. Woll, at what stage do you consider clover a balanced ration for a cow?

Prof. Woll—When it is very ripe, it is very highly nitrogenous, and it contains too much flesh-producing material to give first-class results. I would cut it just past the bloom, as is the practice of the best farmers.

The Member—In siloing I have found that the cows eat it the best when it is just in bloom, or just before it comes in full bloom.

Prof. Woll—That is for siloing. You wouldn't cut it for hay at that time, because you will get more per acre when it is past bloom, when the blossoms begin to turn brown.

The Chairman—Isn't that increase in fiber and not in value?

Prof. Woll—No, it is increase in starch and carbohydrates generally. It is less digestible as it goes on and perhaps the cow wastes more, but the increase in weight is greater than the decrease in digestibility.

Mr. Bender—I would like to ask these gentlemen how they grind their wheat for feeding? I have tried it a little and I have tried middlings and the cows got off their feed, they didn't like it.

The Chairman—I think it adds to the value of it to soak it.

Mr. McKerrow—I have fed considerable wheat, but it has to be fed carefully, there is danger of foundering the animals. I have found that soaking gives me the best results. I have fed it to sheep, hogs, cows and horses, but, of course, not alone,—as a part of a mixed ration in every case. I soak it not less than six hours. It won't soak as quick as corn.

A Member—How about wheat screenings? I have fed it dry with clover hay and liked it very well.

Another Member—I have fed it to hogs and cows and I think it is very good for both. I soaked it about twelve hours for the hogs and I think it is better than corn. I did not soak it for the cows, but I mixed it with the oats and bran. It was ground pretty fine.

Mr. Bender—I have fed ground rye, but I didn't like it, it didn't give me any milk.

Mr. Phillips—I have been feeding it all winter. I grind one bag of rye with two of oats and feed it an average of about ten pounds a day per cow and I like it as far as I have gone.

Mr. Linse—I have been feeding some wheat that had got damaged by getting in the Mississippi river, but I found it was not digestible by the animal. Of course I couldn't grind it because it was wet.

A Member—How many pounds more butter than fat would you get from a hundred pounds of milk?

The Chairman—About fifteen per cent. more than the butter fat.

Mr. McKerrow—We have heard it reported that certain factories would have an overplus of thirty per cent. Could that be correct?

Prof. Woll—It shows either that the butter contained an undue amount of water or that they took the readings very low.

Mr. McKerrow—What would be the object of their taking a low test and then turning the surplus over to the patrons?

The Chairman—On account of getting some sort of competitive reading against some other creamery, I should suppose. It is a bluff game.

A Member—What do you think of feeding skim milk?

The Chairman—I am trying it on a three-year-old Guernsey cow, and I will tell you about it next year.

Mr. Goodrich—On my farm we thought we would bring up some calves and keep them eating milk all the time, so they would have a taste for it, but they stopped after a little while, all except one, refused to take it. One has been giving milk now nearly a year and she has been fed skim milk without any grain ration; she has had, I think, thirty-six pounds a day. She is doing fairly as well as any of the heifers of her age that are being fed a grain ration.

The Chairman—A cow will be bought in the country from a farmer who is making a moderate success with her and she will come into a village where she is made a family pet perhaps, and she will very readily acquire the habit of eating most

everything. She will develop into a cow worth nearly one third more than she was with the farmer.

Mr. Goodrich—Suppose you take that cow back to somebody's farm, would she be good for anything there? I tried that once and I will never do it again.

Prof. Farrington—There was one thing about the feeding of the cows at the World's Fair that interested me very much, and I would like to ask Mr. Fuller if there is any virtue in a variety of grain food? I noticed that the cows there were fed from six to eight different kinds of grain, perhaps one to three pounds of each. Now, I would like him to say whether there was some reason for that great variety.

Mr. Fuller—I don't know that I fed as many as six, though I fed quite a number. I did it because it seemed to me that the cows preferred it; I always consulted the cow. In the beginning I did not feed as many varieties as I did later. I changed more in the variety than in the quantity.

Mr. Hodgson—About feeding skim milk. We started in the fall and started to feed the cows gradually with milk, soaking their feed with it, and where we didn't have milk enough we put water in. After we got the cows thoroughly used to it we weighed the skim milk, we fed that and weighed the results. I took three or four days between the two. The first week, with the milk, they gave 1,712 pounds and were fed 765 pounds of skim milk. Without the skim milk they gave 1,460 3-4 pounds. We figured that the skim milk was worth about 60 cents a hundred. We are now trying the cows with dry feed. We fed the skim milk with bran and middlings. I have never fed skim milk entirely alone. I think it is worth more to feed hogs.

A Member—How about buckwheat bran as a feed?

Prof. Woll—It all depends on how much of the fine flour is mixed in with it. If it is merely the hulls there is very little value to the milch cow; if there is a good deal of the fine flour mixed in with it, it is good feed in limited quantities. I wouldn't feed more than two or three pounds per cow a day. I would feed bran dry, because in feeding it dry you stimulate the secretion of saliva in the mouth of the cow. This is the first process of digestion.

Mr. Phillips—How about corn and cobs ground together?

Prof. Woll—The general experience is that corn and cob meal is about of the same value as the same weight of corn meal.

Mr. Widmann—I suppose that depends on the corn, the proportion of cob to grain. We bought some corn last fall that we had shelled and ground and it ground 80 pounds of shelled corn to the 100 pounds of cob and corn. Then we bought some other corn and it shelled less than 70 pounds. The first was Yellow Dent and the other White Dent.

A Member—I would like to ask how long can you milk a cow without raising a calf from her, and if you do milk her two years and a half, is the milk as good as it is from a new milk cow?

Prof. Woll—As long as there is a good flow of milk the quality will not deteriorate on account of the prolonged period of lactation. Such cases are very rare, and I don't know that there have been any analyses made on such cow's milk.

The Member—I have a cow that gave more milk after I had been milking her two and a half years than ever before.

The Chairman—A farrow cow's milk, except at certain periods, is almost identical with a spayed cow's milk. It is counted very fine milk.

The convention adjourned for Dairy Banquet to meet at 9:30 a. m. the next morning.

---

### THE DAIRY BANQUET.

“The banquet given in honor of the association at Princess Rink last evening, was under the management of the Woman's Relief Corps. To say that they proved adequate to the occasion would only half express it, for such an abundance of the good things of the table was never before set before mortals. The menu comprised all the seasonable and appropriate dishes and were prepared to suit the palate of an epicure. The seating capacity of the tables which was something over four hundred was taxed to its limit, and many of them were reset to accommodate the large number in attendance. At the close of

the banquet which began at six o'clock, speeches were in order with Hon. S. A. Cook as toastmaster, who discharged the responsibilities of the position in a most acceptable manner, and at the introduction of each speaker managed to work in an appropriate hit in so adroit a way as to demonstrate the wisdom of the committee that made him master of ceremonies."

POST-PRANDIAL.

HON. S. A. COOK, Toastmaster.

1. Overture—"A Night in New York."—Brooks ..... Arion Full Orchestra.
2. The City of Neenah; It's Greeting of Hospitality..... A. Williams.
3. The Wisconsin Dairymen's Association: The Work it Has Done, and Has to Do. .... Ex-Governor W. D. Hoard.
4. Operatic Selection:—Itzel.... Full Orchestra.
5. Connecticut's Greeting to Wisconsin..... Dr. Geo. A. Bowen.
6. Politics vs. The Cow; My Experience In Milking Both..... Hon. H. C. Adams.
7. The Dairy Farmer: The "Right Bower" of Our Agricultural Prosperity..... H. E. Huxley.
8. Medley Overture—"Jolly Minstrel"—Catlin..... Full Orchestra.
9. How I Became a Noted Dairyman..... H. C. Them.
10. Our Dairymen: What Of Them?..... C. H. Everett.
11. Overture—"Encouragement"—Tobani..... Full Orchestra.

---

The convention met at 9:30 the next morning.

President Hoard in the Chair.

The secretary read the report of Awards on Butter and Cheese as follows:

AWARDS ON BUTTER AND CHEESE.

The premiums under classes 1, 2 and 4 will be awarded on the excess pro-rata plan, to all entries in their respective classes scoring 90 points and over.

## DAIRY BUTTER.

| NAME AND ADDRESS.                | Flavor. | Grain. | Color. | Salt. | Pack-<br>ing. | Total. |
|----------------------------------|---------|--------|--------|-------|---------------|--------|
| Maximum.....                     | 45      | 25     | 15     | 10    | 5             | 100    |
| Miss Kate Peffer, Pewaukee ..... | 40      | 20     | 10     | 10    | 5             | 85     |
| Byron Snyder, Clinton .....      | 40      | 25     | 13     | 10    | 5             | 93     |
| W. J. Jamison, Greenville .....  | 43      | 21     | 15     | 10    | 5             | 96     |
| Jonn Rowlands, Portage .....     | 42      | 20     | 14     | 8     | 5             | 89     |
| J. D. Grandine, Sherwood .....   | 40      | 22     | 15     | 10    | 5             | 92     |
| C. R. Smith, Zion .....          | 44      | 22     | 15     | 10    | 5             | 96     |
| C. Thorp, Burnett Junction.....  | 38      | 25     | 13     | 10    | 5             | 91     |
| F. R. Jones, Hancock .....       | 39      | 22     | 14     | 10    | 5             | 90     |
| J. H. Denhardt, Neenah.....      | 42      | 22     | 13     | 10    | 4             | 91     |
| N. C. Tolverson, Crete .....     | 35      | 22     | 13     | 10    | 4             | 84     |
| W. H. Carpenter, Aniwa .....     | 30      | 25     | 14     | 10    | 5             | 84     |

## CREAMERY BUTTER.

| NAME AND ADDRESS.                     | Flavor. | Grain. | Color. | Salt. | Pack-<br>ing. | Total. |
|---------------------------------------|---------|--------|--------|-------|---------------|--------|
| Jos. Williams, New Glarus .....       | 42      | 22     | 15     | 9     | 5             | 93     |
| Koehn & Potts, Appleton .....         | 38      | 20     | 13     | 9     | 4             | 84     |
| Mrs. E. C. Farrington, Rocky Run..... | 44      | 23     | 15     | 9     | 4             | 95     |
| R. W. Williams, Ripon .....           | 38      | 22     | 14     | 10    | 4             | 88     |
| W. R. Johnson, Appleton.....          | 40      | 22     | 13     | 10    | 4             | 89     |
| John Barker, Baraboo .....            | 36      | 22     | 13     | 10    | 5             | 86     |
| Riverside Cr. Co., Saukville .....    | 41      | 23     | 13     | 9     | 5             | 91     |
| Albert Poole, Darlington .....        | 42      | 24     | 14     | 10    | 3             | 93     |
| Pewaukee Cr. Co., Pewaukee .....      | 38      | 23     | 14     | 9     | 5             | 89     |
| C. R. Allen, Allenville .....         | 43      | 22     | 14     | 10    | 5             | 94     |
| Peter Tubbs, Seymour .....            | 38      | 22     | 14     | 9     | 3             | 86     |

PRINT BUTTER.

| NAME AND ADDRESS.               | Flavor. | Grain | Color. | Salt. | Pack-<br>ing. | Total. |
|---------------------------------|---------|-------|--------|-------|---------------|--------|
| Pewaukee Cr. Co., Pewaukee..... | 42      | 25    | 15     | 10    | 5             | 97     |
| C. R. Smith, Zion. . . . .      | 42      | 24    | 15     | 9     | 5             | 95     |
| Miss Kate Pepper, Pewaukee..... | 40      | 22    | 15     | 10    | 5             | 92     |
| W. R. Johnson, Appleton.....    | 44      | 25    | 14     | 10    | 5             | 98     |
| J. H. Denhardt, Neenah.....     | 35      | 22    | 14     | 10    | 5             | 86     |
| F. R. Jones, Hancock.....       | 38      | 23    | 14     | 10    | 5             | 90     |
| W. L. Jones, Neenah.....        | 38      | 24    | 14     | 10    | 5             | 91     |
| J. D. Grandine, Sherwood.....   | 42      | 23    | 15     | 10    | 4             | 94     |

CHEESE.

|                               |           |
|-------------------------------|-----------|
| W. L. Jones, Neenah.....      | 84 points |
| N. Simon, Neenah.....         | 94½ "     |
| E. L. Eastman, Saukville..... | 82 "      |
| C. Paul, Neenah.....          | 95½ "     |
| P. H. Casper, Nicholson.....  | 87½ "     |
| F. M. McKinney, Kirkwood..... | 93¾ "     |

SWISS CHEESE.

|                       |       |
|-----------------------|-------|
| N. Simon, Neenah..... | 94½ " |
|-----------------------|-------|

BRICK CHEESE.

|                                |       |
|--------------------------------|-------|
| Danhardt & Miller, Neenah..... | 90 "  |
| C. Paul, Neenah.....           | 87 "  |
| J. Wohld, Neenah.....          | 94½ " |

SILVER CUP.

|                            |       |
|----------------------------|-------|
| C. B. Cornallus, Dale..... | 94½ " |
|----------------------------|-------|

Geo. S. Hart & Co., Produce Commission Merchants, 38 Pearl St., New York, offer a prize silver cup, valued at \$100 to the manufacturer of the finest quality of full cream cheese; prize to be retained by the winner one year, then to be returned to the Association for renewed competition; the maker who is awarded the cup for three successive seasons to retain the same permanently. The prize cup is of sterling silver, satin finish, with gold border and lining. Upon one side of it is engraved the figure of a cow, and upon the reverse side an appropriate inscription.



The previous winners of the silver cup are: A. H. Wheaton, Auroraville, 1878; Olin & Clinton, Waukesha, 1879; W. S. Baker, Cold Spring, 1880; H. A. Conger & Son, Whitewater, 1881; August Cleasing, Centerville, 1882; Marr & Dyer, Whitewater, 1883; E. P. Ingalls, Milford, 1884; H. Z. Fish, Richland Center, 1885; T. P. Fish, Richland Center, 1886; Burns Cheese Association, Burns, 1887; H. Z. Fish, Richland Center, 1888; S. Fish, Cazenovia, 1889; W. H. Porter, Marshall, 1890; J. W. Decker, Madison, 1891; Angus & Humphrey, Oshkosh, 1892; W. A. Nelson, Weyauwega, 1893; C. B. Cornalius, Dale, 1894.

### TREASURER'S REPORT.

Mr. President and Members of the Association: The following report is made showing the source from which all moneys paid into the treasurer's hands were received and the disbursements paid on orders from the secretary which I hold as vouchers.

#### RECEIPTS.

|        |  |                   |
|--------|--|-------------------|
|        | Amount in hands of treasurer as per last report..... | \$1,453 29        |
|        | Membership.....                                      | 152 00            |
| Aug. 4 | Received from state treasurer.....                   | 2,000 00          |
|        |  | <u>\$3,605 29</u> |

#### DISBURSEMENTS.

|          |  |        |
|----------|--|--------|
| March 14 | Express on Canada cheese .....   | \$0 65 |
| March 15 | W. D. Hoard, printing.....   | 60 35  |
|          | Chas. L. Hill, expenses attending annual meeting at Wau-<br>paca.....  | 8 70   |
|          | E. L. Aderhold, expenses attending annual meeting at Wau-<br>paca..... | 4 80   |
|          | Will Widman, expenses attending annual meeting at Wau-<br>paca.....    | 9 97   |
|          | Mark Curtis, expenses attending annual meeting at Wau-<br>paca.....    | 11 25  |
|          | F. A. George, expenses attending annual meeting at Wau-<br>paca.....   | 9 20   |
|          | Stephen Favill, expenses attending annual meeting at<br>Waupaca.....   | 10 71  |
|          | C. R. Beach, expenses attending annual meeting at Wau-<br>paca.....    | 10 50  |

|           |   |        |
|-----------|---|--------|
|           | H. K. Loomis, expenses attending annual meeting at Waupaca.....     | \$8 07 |
|           | H. K. Loomis, express on reports, etc .....                         | 18 80  |
|           | Hotel bills of speakers and executive committee.....                | 72 25  |
|           | Prof. L. L. Van Slyke, services and expenses.....                   | 105 38 |
|           | A. J. Adda, judge on dairy products.....                            | 16 04  |
|           | H. S. Matteson, services and expenses.....                          | 86 79  |
|           | F. C. Curtis, premium.....  | 2 20   |
|           | R. F. Faulks, premium .....   | 88     |
|           | J. T. Faulks, premium.....  | 44     |
|           | W. M. Faulks, premium.....  | 66     |
|           | E. Korbe, premium .....   | 12 50  |
|           | Lewis Parrot, premium.....  | 2 53   |
|           | W. H. Carpenter, premium.....                                       | 3 30   |
|           | F. R. Jones, premium .....  | 3 74   |
|           | E. O. Conner, premium.....  | 2 53   |
|           | J. M. Hutch, premium.....   | 33     |
|           | Geo. Lindsay, premium.....  | 4 73   |
|           | Geo. Lindsay, premium.....  | 1 50   |
|           | A. W. Warren, premium.....  | 3 63   |
|           | A. Rasmonson, premium.....  | 3 96   |
|           | J. D. Grandine, premium.....  | 3 52   |
|           | Mrs. N. E. Allen, premium.....                                      | 3 41   |
|           | Mrs. N. E. Allen, premium.....                                      | 5 00   |
|           | Miss Kate Peffer, premium.....                                      | 2 86   |
|           | Miss Kate Peffer, premium.....                                      | 3 09   |
|           | N. G. Nelson, premium.....  | 10 00  |
|           | E. L. Aderhold, premium.....  | 2 50   |
|           | Mat. Kramer, premium.....   | 15 00  |
|           | Smith & Eastman, premium.....                                       | 13 17  |
|           | John Baker, premium.....  | 13 93  |
|           | R. E. Newberry, premium .....                                       | 11 67  |
|           | Robert Wittke, premium .....  | 11 30  |
|           | C. R. Johnson, premium.....   | 2 53   |
|           | C. R. Smith, premium.....   | 3 08   |
|           | Elmer Coleman, premium.....   | 3 74   |
|           | A. F. Gubel, premium.....   | 2 31   |
|           | Express on Canada cheese, Waupaca to Ft. Atkinson .....             | 15     |
| March 18  | H. C. Weeks, expenses attending annual meeting at Waupaca. ....     | 9 00   |
| March 21  | D. W. Curtis, expenses attending annual meeting at Waupaca .....    | 9 63   |
|           | W. H. Morrison, reading proof.....                                  | 10 00  |
| April 1   | Mrs. Howard Kelly, reporting meeting .....                          | 95 00  |
| April 22  | A. X. Hyatt, expenses attending annual meeting at Berlin, 1891..... | 4 60   |
|           | A. X. Hyatt, expenses attending annual meeting at Waupaca.....      | 8 32   |
| July 6    | A. J. Clark, instructor.....  | 21 50  |
|           | W. H. Phillips, instructor.....                                     | 110 00 |
|           | John High, instructor.....  | 95 00  |
| August 1  | W. D. Hoard, printing.....  | 3 00   |
| August 8  | J. A. Clark, instructor.....  | 62 00  |
| August 29 | John High, instructor.....  | 80 00  |

|       |    |   |                   |
|-------|----|---|-------------------|
| Aug.  | 31 | W. H. Phillips, instructor.....                             | \$75 00           |
| Sept. | 28 | John High, instructor.....                                  | 90 00             |
|       |    | W. H. Phillips, instructor.....                             | 85 00             |
|       |    | A. J. Clark, instructor.....                                | 41 50             |
| Oct.  | 4  | John High, instructor.....                                  | 115 00            |
|       |    | A. J. Clark, instructor.....                                | 82 00             |
|       |    | W. H. Phillips, instructor ..                               | 125 00            |
| Oct.  | 20 | D. W. Curtis, salary as secretary.....                      | 250 00            |
|       |    | W. D. Hoard, printing.....                                  | 49 70             |
| Nov.  | 8  | A. J. Clark, instructor.....                                | 103 50            |
| Nov.  | 9  | A. D. DeLand, expenses attending annual meeting, Waupaca    | 7 37              |
| Nov.  | 13 | John High, instructor.....                                  | 115 00            |
|       |    | John High, instructor.....                                  | 15 00             |
|       |    | W. D. Hoard, printing.....                                  | 24 80             |
| Nov.  | 16 | A. J. Clark, instructor.....                                | 68 50             |
| Nov.  | 18 | Milwaukee Engraving Co.....                                 | 8 00              |
| Nov.  | 21 | W. H. Phillips, instructor.....                             | 115 00            |
|       |    | W. H. Phillips, instructor.....                             | 65 00             |
| Nov.  | 24 | H. K. Loomis, expenses meeting executive committee.....     | 7 30              |
| 1894  |    |   |                   |
| Jan.  | 6  | H. K. Loomis, expenses meeting executive committee.....     | 7 95              |
| Jan.  | 20 | Binner Engraving Co.....                                    | 8 00              |
| Jan.  | 31 | D. W. Curtis, expenses secretary's office.....              | 110 00            |
| Feb.  | 12 | W. D. Hoard, printing.....                                  | 81 00             |
|       |    | D. W. Curtis, expenses as delegate to Cleveland, Ohio.....  | 37 90             |
|       |    | D. W. Curtis, balance due expenses secretary's office....   | 21 95             |
|       |    | H. K. Loomis, expenses as de egate to Cleveland, Ohio. .... | 43 25             |
|       |    | Postage and exchange on drafts.....                         | 7 56              |
|       |    | Balance in hands of treasurer... ..                         | 752 65            |
|       |    |   | <u>\$3,605 29</u> |

The accounts have been submitted to the executive committee, examined and approved.

Respectfully submitted,  
H. K. Loomis, Treasurer.

### SECRETARY'S REPORT.

Mr. President:—The work of the association the past year has been one of advancement in all directions.

The work of the cheese instructors and making a display of dairy products at the World's Fair, has kept our dairymen thinking in the right direction, and it is believed for the best interest of the dairy industry of the state.

Cheese instructing was carried on the same as last year—(three instructors being in the field. The state should be di-

vided into districts, and an instructor for each district, but the appropriation made for this work is not sufficient to carry out the work as originally mapped out by the executive committee of the association. The territory covered by an instructor is so large, that it is not possible for him to do the best work.

W. H. Phillips, instructor, visited factories in Fond du Lac, Sheboygan, Manitowoc, Outagamie, Green Lake, Winnebago, Jefferson, Dodge, Iowa, Waupaca and Grant counties. This gives a fairly good idea of the large territory which instructors must travel over in order to meet the calls of the cheese makers. Sometimes the work of today is twenty miles distant from the work performed yesterday. If each instructor had about forty factories to give instruction to, then the work could be mapped out so that he could go from one factory to another without taking such long jumps, which would enable him to do a little better work.

W. H. Phillips made 72 visits to different factories in the counties which he visited. All of the factories received two visits each, and most of them three. Each factory is required to pay \$5 on the first visit of the instructor; all of the other visits are free. This money goes to help pay the instructors, and enables the association to do just so much more work. Mr. Phillips received from the factories which he visited \$150.

John High, instructor, covered a large territory and made 92 visits to different factories and received from them \$170.

A. J. Clark, instructor, worked in Manitowoc, Calumet, Brown and Kewaunee counties. The association had not been able to place an instructor in this territory before, and the work done there has been well received. Mr. Clark made 82 visits to factories and received from them \$215.

The total amount received from factories is \$535. Total amount paid cheese instructors, including that received from factories \$1,999.

The expense of the secretary's office for the past year has been \$155.27. An itemized account has been furnished the executive committee and approved.

The following report was made to the state board of control regarding the exhibit of dairy products at the World's Fair:

At the annual meeting of the Wisconsin Dairymen's Association held at Oshkosh, Feb. 10—12, 1892,

W. H. Morrison moved "That the president of the association appoint a committee to confer with the state commission in reference to a plan (of a scope commensurate with Wisconsin's great industries) in relation to the exhibit of butter and cheese to be made at the World's Fair."

The chair appointed as such committee, D. W. Curtis, Fort Atkinson; B. E. Sampson, Oakfield; H. S. Weeks, Oconomowoc.

In June following the committee met and the state board of World's Fair managers of Wisconsin through the executive commissioner, R. B. Kirkland, delegated to the committee of the Dairymen's Association full power to go on with the work and make an exhibit of dairy products from Wisconsin at the Columbian exposition.

It was desired to make, first of all, a collective exhibit of cheese from a large number of factories, to be known as the "Wisconsin State Exhibit." The exhibit was to have been made in the agricultural building on the opening of the exposition, May 1st, from cheese made in 1892, which would have to be carried over during the winter.

This exhibit was to be received a month in advance of the regular dairy exhibits.

Visits were made to the dairy boards of trade, and circulars, both English and German, sent to all of the factories soliciting cheese for this exhibit. A large number were pledged, but late in the fall when the time came to ship them to some point for storage and safe keeping until spring, the number fell off very largely from what was promised.

As the Columbian exposition was to be one of education and not of competition every cheese factory, creamery and private dairy was urged to exhibit and learn from the results, by comparison, many valuable lessons relative to methods of manufacture, and the value of skill.

No inspectors were appointed to determine whether the butter and cheese offered for any of the exhibits was good or poor, and no package was refused because of its bad appearance at the dairy building.

All kinds of cheese manufactured in the state were solicited, and no attempt was made, as before stated, to select from the finest, but an earnest effort was put forth to have all of the factories represented.

It might be well to state in this connection that the association has never lost an opportunity to advance the dairy interest of the state in every legitimate way. It was the first to inaugurate a Dairy Fair in this country in connection with the State Fair in September, 1875.

At the International Dairy Fair held in New York in December, 1878, Wisconsin dairy products were exhibited. Again in December, 1879, at the International Dairy Fair held in New York. Two exhibitions were made in 1876 at the Centennial Exhibition at Philadelphia. Again in Milwaukee at the Grand Union Dairy Fair in December, 1882, and at the Cotton Centennial Exposition at New Orleans in 1885.

Most all of the cheese made in 1892 for the Columbian Exhibit were sent to the Sheboygan Cold Storage Co., to be kept and cared for until wanted for the May Exhibit.

The agricultural building was not ready for a display of this kind at the opening, and the dairy building was not finished. The cheese were not shipped until the 6th of June, at the opening of the regular exhibit of butter and cheese.

### JUNE EXHIBIT.

Efforts were made with creameries, private dairies and cheese factories by letter, circulars, and personal visits to have them exhibit their products. In the minds of many a cash premium holds sway over any other inducement that can be offered, and when this is not offered the interest in the exhibit seems to be lost.

The June Exhibit in many respects was a peculiar one. The buildings were new and not finished, and refrigeration lacking. The clerks were new at the business, and the management with no experience in matters of this kind was not always friendly to the great amount of advice that was freely given.

The cheese was exhibited in barn, No. 5, in what proved to be about the hottest part of the season. The 1892 cheese were

nearly ten days in reaching the fair grounds, because of the great amount of freight on the side tracks. The sun poured down on the roof of barn No. 5., and the oil poured out of the cheese. Cold storage cheese under these conditions were not in as good shape for the judges as was anticipated. Wisconsin cheese were the first to receive the attention of the judges, and the score cards were all made out. Two days afterwards the judges went over the cheese, or the score cards again, and lowered the score, claiming that they were scored too high, when they were the first cheese scored, and purely on their merits. Protests were made but of no avail. This action of the judges has no parallel in judging dairy products, and has never been equaled by a back-woods county fair.

In the judging of butter for June there has probably never been a better commercial rating given, basing that judgment on the market value of the product. There was some adverse criticism on scoring butter at 100, but there can be no valid objection to this score in June, when everything that goes to make fine butter is at its best. The flavor as fine as it can be, and no fault with the making, is there any reason why it should not score as perfect, or 100. The advanced steps taken by the jury of awards on butter in June is fully in keeping with the great exposition.

#### JULY, SEPTEMBER AND OCTOBER EXHIBITS.

The exhibits made during the months of July, September and October were on the same ground plan as the June exhibit.

Butter cases with glass fronts for the continuous exhibit of butter, being kept cool by pipes in which ammonia was forced through for refrigeration were in successful operation during July, September and October and over one hundred 60 pound tubs of butter were placed on exhibition and kept there until the fair closed.

At the opening of the June exhibit it was intended to make a permanent exhibit of cheese during the fair, and shelving was put up, but the temperature of the building could not be controlled and this part of the exhibit had to be abandoned.

In many respects the dairy building was poorly constructed for the exhibition of the great dairy industry of the country.

In point of fact the display as it had to be made, was not in keeping with the other industries in other buildings, and could not be made so from the location of the building and its faulty construction.

On the butter and cheese shipped during the fair the express or freight charges were prepaid by the exhibitors, and all subsequent charges were borne by the state. The product was sold outright at the dairy building and the proceeds remitted direct to the exhibitor.

H. K. Loomis, treasurer of the Dairymen's association, who has had much experience in matters of this kind was in charge of the dairy products from Wisconsin, at the dairy building.

The total expense of the dairy exhibit from this state has been \$3,902.12. Vouchers for every expense incurred have been filed with the secretary of the board.

Every member of the board of managers has treated the dairy department with courteous consideration from first to last.

The table following will show the number and kind of cheese and packages of butter exhibited, also list of awards.

Concerning this exhibit of Wisconsin dairy products to the greatest fair the world has ever known there can be but one opinion. It has advertised our dairy products to the world, and has shown by the high scores and the numbers of them, that our state still holds first place for fine butter and cheese.

Respectfully submitted,

D. W. Curtis, Secretary.



Table showing kind and number of cheese from each county, also packages of butter for the month of June, 1893.

| COUNTY.          | Cheese.<br>1892. | Cheese.<br>1893. | Cheese.<br>Swiss. | Cheese.<br>Brick. | Butter.<br>Creamery. | Butter.<br>Dairy. |
|------------------|------------------|------------------|-------------------|-------------------|----------------------|-------------------|
| Adams.....       |                  |                  |                   |                   |                      | 1                 |
| Brown.....       | 2                |                  |                   |                   |                      |                   |
| Buffalo.....     |                  |                  | 2                 |                   |                      |                   |
| Calumet.....     | 7                | 7                |                   |                   | 4                    |                   |
| Columbia.....    | 1                |                  |                   |                   | 2                    | 1                 |
| Clark.....       |                  |                  |                   |                   |                      | 1                 |
| Chippewa.....    |                  |                  |                   |                   |                      | 1                 |
| Dane.....        |                  | 2                |                   |                   | 8                    |                   |
| Dodge.....       |                  |                  |                   | 2                 | 3                    | 5                 |
| Door.....        | 1                | 1                |                   |                   |                      |                   |
| Eau Claire.....  | 1                |                  |                   |                   | 2                    |                   |
| Fond du Lac..... | 11               | 15               |                   |                   | 4                    | 1                 |
| Grant.....       | 5                | 6                |                   |                   |                      |                   |
| Green.....       | 1                |                  | 17                |                   |                      |                   |
| Green Lake.....  | 2                | 1                |                   |                   | 1                    | 1                 |
| Iowa.....        | 3                | 1                |                   |                   |                      |                   |
| Jefferson.....   |                  |                  |                   |                   | 23                   | 2                 |
| Juneau.....      | 2                |                  |                   |                   |                      |                   |
| Kewaunee.....    | 1                |                  |                   |                   |                      |                   |
| La Crosse.....   |                  |                  |                   |                   |                      | 1                 |
| La Fayette.....  |                  |                  |                   |                   | 3                    |                   |
| Manitowoc.....   | 32               | 2                |                   |                   |                      | 1                 |
| Milwaukee.....   |                  |                  |                   |                   | 1                    |                   |
| Outagamie.....   | 15               | 8                |                   |                   | 2                    | 2                 |
| Ozaukee.....     | 3                | 1                |                   |                   |                      | 1                 |
| Richland.....    | 10               | 4                |                   | 1                 | 2                    |                   |
| Racine.....      |                  |                  |                   |                   | 10                   |                   |
| Rock.....        |                  |                  |                   |                   | 4                    | 1                 |
| Sauk.....        | 6                | 1                |                   |                   |                      |                   |
| Sheboygan.....   | 48               | 24               |                   |                   | 1                    |                   |
| St. Croix.....   |                  |                  |                   |                   |                      | 1                 |
| Trempealeau..... |                  |                  |                   |                   |                      | 1                 |
| Waupaca.....     | 2                | 1                |                   |                   |                      | 1                 |
| Waushara.....    | 1                |                  |                   |                   |                      | 1                 |
| Waukesha.....    |                  |                  |                   |                   | 1                    | 1                 |
| Washington.....  |                  |                  |                   |                   | 1                    |                   |
| Winnebago.....   | 3                |                  |                   |                   |                      | 1                 |

Table showing kind and number of cheese from each county, also packages of butter for the month of July 1893.

| County.          | Cheese.<br>1893 | Cheese.<br>Brick. | Butter.<br>Creamery. | Butter.<br>Dairy. |
|------------------|-----------------|-------------------|----------------------|-------------------|
| Adams .....      |                 |                   |                      | 1                 |
| Calumet .....    |                 |                   | 3                    |                   |
| Columbia .....   |                 |                   |                      | 1                 |
| Clark .....      |                 |                   |                      | 1                 |
| Chippewa .....   |                 |                   |                      | 1                 |
| Dane.....        | 2               |                   | 6                    |                   |
| Dodge.....       |                 | 1                 | 2                    | 3                 |
| Door.....        | 1               |                   |                      |                   |
| Fond du Lac..... | 1               |                   |                      |                   |
| Grant.....       | 1               |                   |                      |                   |
| Jefferson .....  |                 |                   | 9                    |                   |
| Kenosha .....    |                 |                   |                      | 1                 |
| La Fayette.....  |                 |                   | 2                    |                   |
| La Crosse.....   |                 |                   |                      | 1                 |
| Milwaukee.....   |                 |                   |                      | 1                 |
| Outagamie.....   | 8               |                   | 2                    |                   |
| Racine .....     |                 |                   | 1                    |                   |
| Richland .....   | 3               | 2                 |                      |                   |
| Rock .....       |                 |                   | 5                    | 2                 |
| Sheboygan.....   | 2               |                   | 1                    |                   |
| Sauk .....       | 1               |                   |                      |                   |
| Trempealeau..... |                 |                   | 1                    |                   |
| Washington.....  |                 |                   | 1                    |                   |
| Waukesha.....    |                 |                   | 1                    | 2                 |
| Waupaca.....     | 7               |                   |                      | 1                 |
| Waushara.....    | 1               |                   |                      |                   |
| Winnebago.....   | 16              |                   |                      |                   |

Table showing kind and number of cheeses from each county, also packages of butter for the month of September.

| County.          | Cheese.<br>1893. | Cheese.<br>Swiss. | Cheese.<br>Brick. | Butter.<br>Creamery. | Butter.<br>Dairy. |
|------------------|------------------|-------------------|-------------------|----------------------|-------------------|
| Brown.....       | 4                |                   |                   |                      |                   |
| Buffalo.....     |                  |                   | 1                 |                      |                   |
| Calumet.....     | 2                |                   |                   | 2                    |                   |
| Columbia.....    | 1                |                   |                   |                      | 1                 |
| Dane.....        |                  |                   |                   | 1                    |                   |
| Dodge.....       |                  |                   | 1                 | 2                    | 4                 |
| Door.....        | 1                |                   |                   |                      |                   |
| Fond du Lac..... | 6                |                   |                   | 6                    |                   |
| Grant.....       | 1                |                   |                   |                      |                   |
| Green.....       |                  | 4                 |                   |                      |                   |
| Jefferson.....   |                  |                   |                   | 16                   |                   |
| La Fayette.....  |                  |                   |                   | 2                    |                   |
| La Crosse.....   |                  |                   |                   |                      | 1                 |
| Manitowoc.....   | 1                |                   |                   |                      |                   |
| Outagamie.....   | 6                |                   |                   | 3                    |                   |
| Richland.....    | 3                |                   |                   |                      |                   |
| Rock.....        | 1                |                   |                   | 2                    |                   |
| Sheboygan.....   | 19               |                   |                   | 2                    |                   |
| Sauk.....        | 3                |                   |                   | 1                    |                   |
| Shawano.....     | 1                |                   |                   |                      |                   |
| Vernon.....      |                  |                   |                   | 1                    |                   |
| Waupaca.....     | 6                |                   |                   |                      | 1                 |
| Waushara.....    | 1                |                   |                   | 1                    |                   |
| Walworth.....    | 1                |                   |                   |                      |                   |
| Winnebago.....   | 25               |                   |                   | 2                    |                   |
| Wood.....        |                  |                   |                   |                      | 1                 |

Table showing kind and number of cheese from each county, also packages of butter for the month of October, 1933.

| COUNTY.          | Cheese.<br>1933. | Cheese.<br>Swiss. | Cheese.<br>Brick. | Butter.<br>Creamery. | Butter.<br>Dairy. |
|------------------|------------------|-------------------|-------------------|----------------------|-------------------|
| Buffalo.....     | 1                | 1                 | 3                 |                      |                   |
| Brown.....       | 1                |                   |                   |                      |                   |
| Calumet.....     |                  |                   |                   | 3                    |                   |
| Columbia.....    | 1                |                   |                   | 1                    |                   |
| Dane.....        |                  |                   |                   | 3                    |                   |
| Dodge.....       |                  | 1                 | 2                 | 3                    | 1                 |
| Door.....        | 1                |                   |                   |                      |                   |
| Eau Claire.....  |                  |                   |                   | 1                    |                   |
| Fond du Lac..... | 8                |                   |                   | 4                    |                   |
| Grant.....       | 1                |                   |                   |                      |                   |
| Green Lake.....  | 1                |                   |                   |                      |                   |
| Green.....       |                  | 8                 |                   |                      |                   |
| Jefferson.....   | 1                |                   |                   | 7                    |                   |
| Juneau.....      |                  |                   |                   |                      | 1                 |
| Kewaunee.....    | 1                |                   |                   |                      |                   |
| La Fayette.....  |                  |                   |                   | 1                    |                   |
| La Crosse.....   |                  |                   |                   |                      | 1                 |
| Manitowoc.....   | 19               |                   |                   |                      | 1                 |
| Monroe.....      |                  |                   |                   |                      | 1                 |
| Outagamie.....   | 15               |                   |                   | 2                    |                   |
| Richland.....    | 2                |                   | 1                 |                      |                   |
| Racine.....      |                  |                   |                   |                      | 1                 |
| Rock.....        | 2                |                   |                   | 4                    | 1                 |
| Sheboygan.....   | 14               |                   |                   | 2                    |                   |
| Sauk.....        | 1                |                   |                   | 1                    |                   |
| Shawano.....     |                  |                   |                   |                      | 1                 |
| Vernon.....      |                  |                   |                   | 1                    | 1                 |
| Waupaca.....     | 3                |                   |                   |                      | 1                 |
| Walworth.....    | 1                |                   |                   |                      |                   |
| Waukesha.....    |                  |                   |                   | 1                    |                   |
| Waushara.....    |                  |                   |                   | 1                    |                   |
| Winnebago.....   | 15               |                   | 6                 | 3                    |                   |
| Wood.....        | 1                |                   |                   |                      |                   |

## WISCONSIN DAIRY PRODUCTS AT THE WORLD'S FAIR.

In the exhibition of Dairy Products at the World's Columbian Exhibition during the months of June, July, September and October, 1893, the following awards were made:

## BUTTER.

| NAME.                    | POST OFFICE.          | SCORES. |       |       |      |
|--------------------------|-----------------------|---------|-------|-------|------|
|                          |                       | June.   | July. | Sept. | Oct. |
| Austin, G. A.....        | Neillsville.....      |         | 98    |       |      |
| Allen, C. R.....         | Allenville.....       |         |       |       | 97   |
| Alma Creamery Co.....    | Alma.....             | 97      |       |       |      |
| Breakey, O. A.....       | Blair.....            | 98      |       |       |      |
| Bush, Fred.....          | Augusta.....          | 97      |       |       |      |
| Berlin Creamery Co.....  | Berlin.....           | 99      |       |       |      |
| Barkholtz, Herman.....   | Verona.....           | 98      |       |       |      |
| Blackman, H.....         | Kenosha.....          |         | 98    |       |      |
| Bussard, R. M.....       | Black Earth.....      |         |       | 98    |      |
| Belmont Creamery Co..    | Belmont.....          |         |       | 95.5  | 95.5 |
| Christians, H. C.....    | Johnson's Creek.....  | 99      | 96    | 95.5  |      |
| Aztalan Creamery.....    | Johnson's Creek.....  |         | 97    | 95.5  |      |
| Crosby, D. S.....        | Fond du Lac.....      | 98      |       |       |      |
| Center Creamery Co.....  | Janesville.....       | 99      |       |       |      |
| Cook, Frank.....         | Mazomanie.....        | 99      |       |       |      |
| Candlish, Robert.....    | Rosendale.....        | 99      |       | 97.5  | 95.5 |
| Centerville Creamery Co  | St. Wendell.....      | 99      |       |       |      |
| Drowatzky, B.....        | Tomah.....            |         |       |       | 95   |
| Dodge, C. J.....         | Windsor.....          |         |       |       | 95.5 |
| Ely, O. C.....           | Spring Creek.....     | 100     |       |       |      |
| Edgerton Creamery Co..   | Edgerton.....         |         | 95.5  |       |      |
| Stoughton Creamery.....  | Edgerton.....         | 100     |       |       | 96   |
| Pleasant Grove Creamery  | Edgerton.....         | 99      |       |       |      |
| Utica Creamery.....      | Edgerton.....         |         |       |       | 95   |
| Creamery No. 10.....     | Edgerton.....         |         |       |       | 95.5 |
| Eureka Creamery Co.....  | Oshkosh.....          |         |       |       | 95   |
| Greene, M. B.....        | Oshkosh.....          | 98      |       |       |      |
| Grashorn, Carl.....      | Mayville.....         | 97      |       |       |      |
| German, Charles.....     | Verona.....           |         | 97    |       |      |
| Gerlach, Aug.....        | Apple Creek.....      |         | 95.5  |       | 95   |
| Houston, John E.....     | Beloit.....           | 98      |       |       | 94.5 |
| Hoard's Creameries.....  | Fort Atkinson.....    | 99      |       |       |      |
| Hoard's Creameries.....  | Fort Atkinson.....    | 98      | 98    | 95.5  |      |
| North Branch Creamery    | Fort Atkinson.....    | 99      |       | 96.5  |      |
| Whitney Creamery.....    | Fort Atkinson.....    | 98      | 98.5  |       | 95.5 |
| Cambridge Creamery.....  | Fort Atkinson.....    | 97      | 96    |       | 96   |
| Oakland Creamery.....    | Fort Atkinson.....    | 98      | 96    | 95.5  |      |
| Lima Creamery.....       | Fort Atkinson.....    | 97      | 97    | 95.5  |      |
| Star Creamery.....       | Fort Atkinson.....    | 99      |       |       |      |
| Koshkonong Creamery..    | Fort Atkinson.....    |         | 96.5  | 95    |      |
| Jones, H. H.....         | Dartford.....         | 98      |       |       |      |
| Jones, F. R.....         | Hancock.....          | 98      |       |       |      |
| Jones, W. F.....         | Burnett Junction..... | 97      | 96    | 97.5  | 97   |
| Jones, W. F.....         | Rolling Prairie.....  | 100     | 97    |       |      |
| Jackett, Chas. & Co..... | Riley.....            | 98      |       |       |      |

BUTTER.—Continued.

| NAME.                     | POST OFFICE.          | SCORES. |       |       |      |
|---------------------------|-----------------------|---------|-------|-------|------|
|                           |                       | June.   | July. | Sept. | Oct. |
| Kalschuer, Frank.....     | Pine Bluff .....      | 99      |       |       |      |
| Kraemer, Matt.....        | Charlesburg .....     | 97      |       |       |      |
| Lindsay, Geo .. .....     | Manawa .....          | 100     | 94    |       |      |
| Linse, Chas.....          | La Crosse.....        | 100     | 95    | 93    |      |
| McAdam, James .....       | Hales' Corners.....   | 99      |       |       |      |
| Mansfield, Geo. C.....    | John-on's Creek.....  | 98      |       |       |      |
| Milford Creamery .....    | Johnson's Creek.....  | 98      |       |       |      |
| Hubbleton Creamery.....   | Johnson's Creek.....  | 97      |       |       |      |
| McCanna, C. B. & Co.....  | Burlington.....       | 99      |       |       |      |
| Caldwell Creamery.....    | Burlington.....       | 99      |       |       |      |
| Kansasville Creamery..... | Burlington.....       | 100     |       |       |      |
| Rochester Creamery.....   | Burlington.....       | 97      |       |       |      |
| Dover Creamery .....      | Burlington.....       | 97      |       |       |      |
| Waterford Creamery.....   | Burlington.....       | 98      |       |       |      |
| Prospect Creamery.....    | Burlington.....       | 97      |       |       |      |
| Mortensen, M. O.....      | Thompsonville.....    | 100     |       |       |      |
| Kneeland Creamery.....    | Thompsonville.....    | 98      |       |       |      |
| Moersch, Mat.....         | Calumet Harbor.....   | 98      |       |       |      |
| Mazomanie Creamery.....   | Mazomanie.....        | 99      |       |       |      |
| Martin, J. W.....         | Richland City.....    | 99      |       |       |      |
| Manwaring & Bennett.....  | Black Earth.....      |         | 97    |       |      |
| Meyerpeter, Joseph.....   | Beaver Dam.....       |         | 98.5  |       |      |
| Pewaukee Creamery Co..... | Pewaukee .....        |         |       |       | 96   |
| Poole, Albert.....        | Darlington.....       |         |       | 97.5  |      |
| Ripp, H. C. & Bro.....    | Cross Plains.....     | 99      |       |       |      |
| Roach & Seeber.....       | Waterloo.....         | 99      |       |       |      |
| Sun Prairie Creamery..... | Waterloo.....         | 99      |       |       |      |
| Burke Creamery .....      | Waterloo.....         | 98      |       |       |      |
| Ripon Creamery Co.....    | Ripon.....            |         |       | 95.5  | 96   |
| Ripon Creamery Co.....    | Ripon.....            |         |       |       | 95.5 |
| Race, F. C.....           | Saukville.....        | 97      |       |       |      |
| Smith, Albert.....        | Augusta.....          | 98      |       |       |      |
| Schempf, Henry.....       | Fort Atkinson.....    | 99      |       |       |      |
| Hillside Creamery.....    | Fort Atkinson.....    | 99      |       | 95.5  |      |
| Red Clover Creamery.....  | Fort Atkinson.....    |         |       | 96    |      |
| Sumner Creamery.....      | Fort Atkinson.....    |         |       | 97    | 96   |
| Hebron Creamery.....      | Fort Atkinson.....    | 99      |       | 96    | 95   |
| Schlichenmaier Crea'ery   | Fort Atkinson.....    | 99      |       | 97.5  | 96   |
| Cold Spring Creamery..... | Fort Atkinson.....    |         |       |       |      |
| Sheboygan Milk Co.....    | Sheboygan.....        | 98      | 97.5  |       |      |
| Simons & Hutson.....      | Lodi.....             |         |       |       | 96   |
| Thorp, Chas.....          | Burnett Junction..... | 97      |       |       |      |
| Thomas, J. W.....         | Anson.....            | 97      | 94    |       |      |
| Tubbs, Peter.....         | Seymour.....          | 97      |       |       |      |
| Tretrail, James W.....    | Shullsburg.....       | 99      |       |       |      |
| Uehling, F. O. & Co.....  | Hanover .....         |         | 96    | 96    |      |
| Winn, J. S.....           | Richland Center.....  | 97      |       |       |      |
| Werner, J. H.....         | Brillion.....         |         | 97    | 96    |      |
| Wittke, Robert.....       | Brillion.....         |         | 98    |       |      |

## CHEESE.

| Name.              | Post Office.    | SCORES. |       |       |      |
|--------------------|-----------------|---------|-------|-------|------|
|                    |                 | June.   | July. | Sept. | Oct. |
| Aderhold, E. L     | Neenah          |         | 96    | 96    |      |
| Aderhold, E. L     | Neenah          |         | 95    | 96    |      |
| Aderhold, E. L     | Neenah          |         |       | 96    | 97   |
| Ammon, Peter       | Brandon         |         |       | 95    |      |
| Allen, T. R        | Allenville      |         |       |       | 97.5 |
| Allen, Mrs. T. R   | Allenville      |         |       |       | 97   |
| Ahrndt, Henry      | Allenville      |         |       |       | 96   |
| Buchen, G          | Cascade         | 91      |       |       | 95.5 |
| Buchen, G          | Cascade         | 91      |       |       |      |
| Beach, O. C.       | Appleton        |         |       |       | 95   |
| Bilgrien, H        | Iron Ridge      |         |       |       | 96   |
| Blessner, P. D.    | Manitowoc       |         |       |       | 95   |
| Benecke, D         | Fontenoy        |         |       |       | 95.5 |
| Bargenbruch, Henry | Rube            |         |       |       | 97   |
| Breitruick, Chas   | Sagole          |         |       |       | 95.5 |
| Breitruick, Chas   | Sagole          |         |       | 96    |      |
| Barret, W. F       | Sheboygan       |         |       | 95    |      |
| Bamford, H. J.     | Plymouth        |         |       | 96    | 97.5 |
| Boaz Factory       | Boaz            |         |       | 96    |      |
| Chambers, A. I.    | Berlin          | 90      |       |       | 96.5 |
| Charnley, C        | Orihula         |         | 96    | 96    | 96   |
| Charnley, C        | Orihula         |         | 96    | 96    |      |
| Charnley, C        | Orihula         |         | 96    | 95    |      |
| Carswell Bros.     | Lone Rock       |         | 96    | 96    | 95   |
| Cannon, S.         | Dale            |         |       | 97    |      |
| Cornalius, C.      | Winchester      |         |       | 96    | 97   |
| Chapin, Wm         | Plymouth        |         |       | 95    |      |
| Cannon, John       | Dale            |         |       |       | 95   |
| Comstock, A. E.    | Janesville      |         |       |       | 97   |
| Dolliver, J. F.    | Rodney          | 90      |       |       |      |
| Denhardt, J.       | Neenah          |         |       |       | 97   |
| Decker, A. F       | Stephensville   |         |       |       | 96   |
| De Lain, Joseph.   | Lincoln         |         |       |       | 97   |
| Drew, Aug.         | Dale            |         | 96    |       |      |
| Diestch, C. G.     | Plymouth        | 90      |       | 96    |      |
| Donner, John       | Muscoda         |         |       | 95    |      |
| Drews, Albert      | Dale            |         | 95    |       |      |
| Danforth, O. A.    | Meeme           | 90      |       |       |      |
| Dassow & Widder.   | Sheboygan Falls | 90      |       | 95    |      |
| Dassow & Blauke.   | Sheboygan Falls | 90      |       |       |      |
| Dassow & Klemme    | Sheboygan Falls | 90      |       |       |      |
| Eberle, John       | Alma            | 91      |       |       | 95   |
| Eberle, John       | Alma            | 93      |       |       | 95.5 |
| Freund, Otto       | Gravesville     |         |       | 96    |      |
| Fieweger J. L.     | Menasha         |         |       | 95    | 97   |
| Fasse, Adolph      | Johnsonville    | 92      |       |       |      |
| Goehring, L. B.    | Scott           |         |       | 96    |      |
| Goehring, L. B.    | Scott           |         |       | 95    |      |
| Gowin, F. W.       | Plymouth        |         |       | 96    |      |
| Grupe, L. G.       | Becker          |         |       |       | 96   |
| Henseler, Anton    | Bakerville      |         |       |       | 95   |
| Hornick, Henry     | Rhine           |         |       | 95    |      |
| Hanson, J.         | Neenah          |         |       | 96    | 97   |
| Hickman, J. M.     | Fremont         |         | 95    | 95    |      |
| Hickman, J. M.     | Fremont         |         | 96    |       |      |
| John Bros          | Sheboygan Falls | 91      |       |       |      |
| Jones, Wm. L.      | Neenah          |         | 96    | 98    |      |
| Jones, Wm. L.      | Neenah          |         | 95    |       |      |
| Johnson, C. A.     | New London      |         |       | 95    |      |
| Jones, D. D.       | Fond du Lac     |         |       |       | 96   |

CHEESE—Continued.

| NAME.                     | POST OFFICE.   | SCORES. |       |       |      |
|---------------------------|----------------|---------|-------|-------|------|
|                           |                | June.   | July. | Sept. | Oct. |
| Karstaedt, C. F. F.       | Mosel          | 94      | 95    |       | 95   |
| Karstaedt, C. F. F.       | Mosel          | 94      |       |       |      |
| Kohl & Fenner             | Howard's Grove | 90      |       |       | 95   |
| Kohl, W. J.               | Howard's Grove | 91      |       |       | 96.5 |
| Karlen, J. & Son          | Monroe (No. 4) | 93      |       |       |      |
| Factory No. 5             | Monroe         | 93      |       |       |      |
| Factory No. 7             | Monroe         | 91      |       |       |      |
| Factory No. 2             | Monroe         | 90      |       |       |      |
| Factory No. 3             | Monroe         | 90      |       |       |      |
| Factory No. 8             | Monroe         | 91      |       |       |      |
| Kelly, Thos. J.           | Eden           |         |       | 96    |      |
| Knott, J. E.              | New London     |         | 95    | 96    |      |
| Knott, J. E.              | New London     |         | 95    |       |      |
| Kasper, P. H.             | Nicholson      |         | 96    | 95    | 95.5 |
| Lemkull, H. J.            | Waldo          |         |       |       | 95.5 |
| Michels, Rosa             | Calumet Harbor | 94      |       |       |      |
| Montgomery, P. H.         | Armstrong      |         |       |       | 96.5 |
| Montgomery, Oren          | Armstrong      |         |       |       | 96   |
| Mabbefeld, H. J.          | Sazole         |         |       |       | 96   |
| Manley, W. H.             | Stephensville  |         |       |       | 95.5 |
| Miller, C.                | Neenah         |         |       | 96    | 96   |
| Miller, A.                | Neenah         |         |       | 95    |      |
| Michels, M. J.            | Calumet Harbor | 92      |       |       |      |
| Murphy, A. L.             | Hortonville    | 93      |       |       |      |
| Miller, Louis.            | Neenah         |         |       |       | 96   |
| Noyes, H. J.              | Richland City  |         |       | 95    |      |
| Nelson, Birdell           | Dale           | 90      |       |       | 96.5 |
| Nelson, Andrew            | Dale           |         | 95    | 96    | 95.5 |
| Nelson, Andrew            | Dale           |         | 95    | 96    |      |
| Nelson, N.                | Crete          |         | 96    | 96    | 96.5 |
| Nelson, N.                | Crete          |         | 95    | 95    |      |
| Nelson, N.                | Crete          |         |       | 96    |      |
| Nelson, John              | Readfield      |         |       | 96    |      |
| Pozorsky, J. P.           | Two Rivers     |         |       |       | 95.5 |
| Peacock, P. H.            | Sheboygan      |         |       | 96    |      |
| Portman, A.               | Orhula         |         |       | 95    | 96.5 |
| Pfeiffer, J. T.           | Franklin       |         |       | 95    |      |
| Pribbonow, Wm.            | Zittau         |         | 95    | 95    |      |
| Pribbonow, Wm.            | Zittau         |         | 95    |       |      |
| Powell, J. K.             | Muscoda        | 90      |       |       |      |
| Pingle, E. C.             | Chiton         | 90      |       |       |      |
| Reineking, Aug            | Franklin       | 90      |       | 95    |      |
| Regez, Jacob              | Monroe         | 91      |       |       |      |
| Blanchardville Factory    | Monroe         | 90      |       |       | 96.5 |
| Munera Point Factory      | Monroe         | 90      |       |       |      |
| Riverside Creamery Co.    | Saukville      | 93      |       |       |      |
| Reed, S. L.               | Medina         | 93      | 96    | 95    |      |
| Roth & Stauffacher, No. 1 | Monroe         |         |       | 95    | 96   |
| Roth & Stauffacher, No. 2 | Monroe         |         |       | 95    | 95.5 |
| Roth & Stauffacher, No. 3 | Monroe         |         |       | 95    | 95.5 |
| Roth & Stauffacher, No. 4 | Monroe         |         |       |       | 95   |
| Straub, F. Ottinger       | Monroe         |         |       |       | 95.5 |
| Steffin, J. H.            | Mackville      |         |       |       | 96.5 |
| Spacht, Herman            | Manitowoc      |         |       |       | 96   |
| Stephenson, L. R.         | Sturgeon Bay   |         |       |       | 95   |
| Straithoff H. M.          | Alverne        |         |       |       | 95   |
| Sheboygan Cheese Co.      | Sheboygan      |         |       | 96    |      |
| Schindelholz, S.          | Tustin         |         |       | 95    |      |
| Sette, F.                 | Iron Ridge     |         | 97    |       |      |
| Strassberger, E. P.       | Black Earth    |         | 96    |       |      |
| Schanrock, C.             | New London     |         | 96    |       |      |
| Schanrock, C.             | New London     |         | 96    |       |      |



## CHEESE—Continued.

| NAME.                     | Post Office.         | SCORES. |       |       |      |
|---------------------------|----------------------|---------|-------|-------|------|
|                           |                      | June.   | July. | Sept. | Oct. |
| Scheibe, H .....          | Plymouth .....       | 90      |       |       |      |
| Schulze, H .....          | Johnsonville .....   | 90      |       |       |      |
| Stork, Frank .....        | Muscoda .....        | 90      |       |       |      |
| Schneider, Ed vari .....  | Howard's Grove ..... | 90      |       |       |      |
| Schmidt, Albert .....     | Fond du Lac .....    | 90      |       |       | 95.5 |
| Sette, M .....            | Juneau .....         | 90      | 97    |       | 98   |
| Schoenman, A .....        | Plain .....          | 90      | 95    | 96    |      |
| Factory No. 2 .....       | Plain .....          |         |       | 96    |      |
| Simon, N. & Co. ....      | Neenah .....         | 92      | 97    | 96    | 97   |
| Clover Hill Factory ..... | Neenah .....         |         |       | 96    |      |
| Themar, C. F. ....        | Sheboygan .....      | 90      |       |       |      |
| Tesdendorf, E. ....       | Fond du Lac .....    | 90      |       |       |      |
| Udell, S. R. & Co. ....   | Green Bay .....      |         |       | 96    |      |
| University of Wisconsin   | Madison .....        | 93      |       |       |      |
| University of Wisconsin   | Madison .....        | 91      |       |       |      |
| Vogt Bros .....           | Orihula .....        |         | 95    |       |      |
| Vogt, John .....          | Orihula .....        |         |       |       | 96.5 |
| Vogt, Joseph .....        | Orihula .....        |         |       | 95    | 96   |
| Wohld, J .....            | Neenah .....         |         |       | 97    | 98   |
| Walfort, W. H. ....       | Oosburg .....        |         |       |       | 96.5 |
| Westgate, Charles .....   | Hortonville .....    |         |       |       | 96.5 |
| Winter, L .....           | Tustin .....         |         | 96    | 96    |      |
| Whiting, A. C. ....       | Ladoga .....         | 90      |       |       |      |
| Wohld, Mark .....         | Neenah .....         |         |       |       | 96   |
| Zwicky, Wm .....          | Van Dyne .....       |         |       |       | 97.5 |
| Zwicky, Wm .....          | Van Dyne .....       |         |       |       | 95.5 |

The total awards on butter ..... 190

The total awards on cheese ..... 205

Butter and cheese were scored on the following points:

| BUTTER.       | Points. | CHEESE.                | Points. |
|---------------|---------|------------------------|---------|
| Flavor .....  | 45      | Flavor .....           | 45      |
| Grain .....   | 25      | Texture and body ..... | 30      |
| Color .....   | 15      | Color .....            | 5       |
| Salting ..... | 10      | Finish .....           | 10      |
| Packing ..... | 5       |                        |         |
| Total .....   | 100     | Total .....            | 100     |

The minimum number of points which entitled the exhibitors to an award is given in the table below:

| BUTTER.            |         |         |         | CHEESE.            |       |       |
|--------------------|---------|---------|---------|--------------------|-------|-------|
|                    | (D. B.) | (S. C.) | (G. C.) |                    | 1892. | 1893. |
| June .. . . . .    | 97      | 97      | 97      | June .. . . . .    | 90    | 95    |
| July..... . . . .  | 94      | 96      | 95      | July..... . . . .  | 90    | 95    |
| September ...      | 93      | 95      | 94      | September ....     | 90    | 95    |
| October .. . . . . | 93      | 95      | 91      | October .. . . . . | 90    | 95    |

(D. B.) Dairy Butter. (S. C.) Separator Creamery Butter. (G. C.) Gathered Cream Butter. (1892) Cheese made in 1892. (1893) Cheese made in 1893.

### HOW TO GET THE BEST RETURNS FROM A FIELD OF CORN FOR THE DAIRY COW.

Will Widmann, Ft. Atkinson, Wis.

There is always a first thing to do. In making a "rabbit pie" this first thing, so the recipe runs, is "to catch the rabbit."

So in order "to get the best returns from a field of corn for a dairy cow," it is necessary first of all, to make sure of the field of corn. To do this one must have some knowledge of the different varieties of corn and of their adaptation to his soil and seasons. My own experience has been very limited, covering but a few years, and my opportunity for observation has been confined to scarcely more than a single township.

We usually have quite as good corn as any of our neighbors but I would not like to say that we get the best possible results, or as good as we ought to.

My brother, "who is two years older than I" and myself carry on the farm. We were born and raised in a village, and knew nothing about farming until eleven years ago when my father, himself without experience as a farmer, moved on to the place

where we now live. I sometimes think that our want of knowledge and experience was a benefit to us, as we had nothing to forget or unlearn and were consequently all the more ready to learn of others and follow the suggestions that came to us in bulletins and papers. We carry on the farm for the purpose of making money. With this object in view we keep cows and care for them, and feed them, so as to make them do as well as possible. We take our milk to the creamery and bring home the skim milk for calves and hogs. Having both hogs and cows we plant corn for two purposes, one for the fodder to put in the silo and the other for the grain which we feed to the hogs and the stover for cows and horses. For the silo we have been planting a flint variety that was obtained from the experiment station at Madison; our reasons are that it is earlier, grows to a good height and has an abundance of leaves and shapely ears that go readily through the feed cutter. For the other corn we look for a variety that will produce the largest amount of shelled corn. And we are careful to know before planting time that our seed will grow.

Then comes preparing the ground, which if other than clover sod, is plowed in the fall, and during the winter and early spring, we haul manure thereon, as far as it goes, and plow it again or work it up with a disc harrow in the spring. If it is clover sod we do not plow until just before planting.

Our practice is to have corn follow some other crop than corn, such as clover, or grain or timothy sod. We sow clover with all of our grain and if it makes a good growth in the fall we pasture it, and in the spring what we do not need for hay we turn over for corn. The ensilage corn is planted first and as early as the weather will permit, so that we may get it in the silo before the other corn is fit to cut. The ground is pulverized thoroughly, and the corn planted in drills three and one-half feet apart, and from ten to twelve quarts of seed to the acre. Just about when it is coming up we harrow it, going the same way that we did with the planter, then again crosswise. As the weather and condition of the soil are not always alike we can have no set rules for cultivation. If every thing is favorable, when the corn is about four inches high, we cultivate it "for the first time" rather shallow with shovels set as close as

we can without damaging the corn and the shields raised high enough to permit the loose dirt to crowd up to the corn and cover the small weeds that are struggling for existence "where the shovels of the cultivator cannot get at them to dig them out," but not high enough to allow it to cover the corn. The next time we set the shovels a little farther apart and the shields somewhat higher. The third time the shovels are set still wider apart and if there are any large weeds in the middle of the row the outside shovels are set deep enough to either cover or dig them out and the shields raised still higher. The fourth or about the last time, if the corn stands upright, the shields are taken off, but if not they are set so as to prevent what is down from getting covered, and the shovels still farther apart and those nearest the corn quite shallow so as not to cut the roots. If we have time after the corn is too high to cultivate with a double cultivator we use a single one, going once in a row. Care is taken not to dig out the roots.

When the lower leaves of the corn begin to get dry and the kernels get hard we commence putting it in the silo. We cut the corn in the field with a reaper if it can be made to work to advantage but if not it is cut by hand. Our way of managing this is to cut two rows of corn, and put them in one row of piles. One man cuts until he gets an armful of the first row, and brings the butts over to the next row, and drops the top outward, while another follows him and cuts the next row, dropping his armful on the same pile. This is easy to pick up and makes a good armful to carry on to the wagon. In order to make it handy loading, we cut eight or twelve rows at a time going up on one side, and down the other, throwing the corn out each time. The last row of piles is thrown out a little farther than the rest to leave a clean space for the wagon. When we are done we have two or three rows of piles on each side of an open space in the middle to drive in. We haul it to the silo on wide tire truck wheel wagons and a rack (similar to a wood rack) fifteen feet long, and pile the corn crosswise on the load. In order to keep it from rubbing on the hind wheels, we take a two by twelve inch plank three feet long and set it up sideways on each side of the rack, between the hind wheels

to keep the corn from rubbing on them. A plank ten or twelve feet long is fastened to the back end of the rack to walk up on.

Two men with one team and two wagons do the loading and hauling to the silo. At the silo one man unloads and puts it on the feed cutter table, while another feeds it to the machine, and the third drives the horses. Three teams furnish the power to do the cutting and elevating to the silo. After each load is cut two or three men go in the silo to scatter and tramp the ensilage. We take a great deal of pains to keep it packed solid near the wall, especially where there are doors, and in the corners. We seldom have any spoil near the wall and not but a little in the corners. Sometimes we find some mouldy about a foot from the wall. This we think is caused by its not being tramped alike, that next to the wall being packed quite solid, while that farther away is not packed as hard, the outside keeps it from settling, air gets in and causes it to spoil. If the partition between the silos were strong enough we would fill first one, then the other, but as it is not, we fill one day in one pit, and the next day in the other, our aim is to get them full in the least time possible.

When the silos are full, or the corn all in, we cover one pit with plank and paper, and if we do not have other feed suitable for a fresh milking cow, we do not cover the other, but commence feeding from it at once. The ensilage is kept covered with boards the first month or two, to keep it from moulding on top, and the doors and windows of the silo are left open to allow the damp air to pass out, and the ensilage to cool off. In feeding we take the silage from the top one half of the pit one day, and the other half the next. Each cow is fed as much as she will eat, and if there is any left in the manger it is taken out and fed to horses and colts. If the weather is mild in the winter we open the doors and windows of the silo to prevent the inside from getting too warm. If the weather is cold enough to freeze the ensilage in the silo we cover it with boards.

The corn that we plant for the grain is planted with a check rower cornplanter three feet and ten inches apart each way, three kernels to the hill. This corn is harrowed and cultivated the same way as that for the silo, except that it is cultivated

crosswise and two or three times oftener. As soon as the corn is ripe, we cut and shock it, being careful to have the shocks well balanced and securely bound near the top to prevent the wind from blowing them apart and exposing the fodder to the rain and snow. As soon as the corn and stalks are dry enough we commence husking and try to get it all husked before winter even if we are obliged to hire extra help which we generally do. The corn is put in the crib as soon as husked and the stover is bound in bundles and set up in shocks and left there until we get a day that is damp enough to prevent the leaves from breaking off, while handling, then we put them in long and narrow stacks, being careful to keep the middle solid, and plenty of downward slant on the outside stalks, to keep the water out. We have tried and I know of others who have tried putting them in a barn, but with poor results as they are almost sure to mould and the mice and rats do a large amount of damage to the fodder.

Before we had a silo and before we knew that corn fodder must be thoroughly dry before it is stacked, we had five or six acres of corn planted for fodder, that was cut and shocked, and as soon as the leaves and part of the stalks were dry, they were put into a wide and high stack. This was the second year of our farming, we had never had any experience in handling corn fodder as our first year's corn crop froze, and was not cut. Our father did not pretend to know anything about handling corn fodder and always listened to no small amount of talking from us boys about what we had better do, but we were young and anxious to have the work done. This got quite hot, the stack settled about one half and the fodder inside was brown but just as good as any ensilage that we ever had in the silo, the cows ate it readily, but there was a great deal spoiled on the top and sides. As we were obliged to chop it loose to get enough to feed, and as we had other fodder, we finally let it lay until it thawed out in the spring. Another time we had a large variety. This instead of stacking we left in the field and hauled it and cut it up as we wished to feed it but if we would cut enough to last any length of time it would heat. Although the cows ate it we did not like it on ac-

count of there being so much mouldy and finally concluded to build a silo.

Take the labor and waste of shocking the fodder in the field and hauling it in the winter when it is covered with snow and ice and often frozen to the ground, or binding it in bundles and stacking it where the mice and rats open the bundles by gnawing the bands in two and destroy the fodder, the work of running it through the feed cutter, or feeding it whole in the yard where the strongest cows get the corn and tramp on the fodder, and compare it to siloing it. It seems as though the profits are in favor of putting it in the silo; for then you have your work done early, at one time, and less of it, consequently less cost. The fodder will be where the rain and snow cannot damage it and the cows will eat it all, which they will not do if fed dry cut or not cut. Beside this you have your field clear to plow in the fall for the next year's crop.

---

#### DISCUSSION.

Mr. Phillips—What were the returns for your cows last year?

Mr. Widmann—I read a paper last year finishing up in October, so I figured it out this year from November 1st. We had twenty-four cows the first of November, and about the 15th of March we sold nine of the poorest. Then about June we had another two and a half year old heifer come fresh and that left us sixteen, so I figure we had had twenty-four cows for four months and a half, and sixteen for the remainder of the year. From them we got \$1,535, for our milk at the creamery.

Mr. Curtis—If you have a table prepared about your herd, won't you read it?

Mr. Widmann—The number of pounds of milk that we got was 149,312, butter 6,680 lbs., or \$1,535.50 for the herd. The average pounds of milk per cow, 7,465; average pounds of butter per cow, 334; average price in dollars from the factory per cow, \$76.57. Besides this we had the skim milk, which we figured at 25 cents a hundred, because we sold our hogs for 8 cents a

pound and six and five, so I think it is safe to call it twenty-five cents. The figures I have given are what is left after taking out the four cents a pound for making the butter.

Mr. Goodrich—How much grain did you feed those cows?

Mr. Widmann—We fed different rations. Sometimes last winter it was pretty cold and we fed pretty heavy. We were short of ensilage and we fed a great deal more grain than we did this winter. It cost us \$18.75 per cow for grain. I think it cost us altogether for keeping our cows last year between forty and forty-five dollars apiece. This year it won't cost so much. We are not feeding as much grain and we have plenty of corn fodder.

The Chairman—Your skim milk would figure about \$14 per cow.

Mr. Widmann—More than that. I figure it like this, we can take buttermilk or skim milk, whichever we want to, I think buttermilk is worth more for hogs than skim milk, and worth enough more to make up for the number of pounds of butter that are taken out.

The Chairman—What was the average per cent. of your milk in butter fat?

Mr. Widmann—I couldn't tell you, about 3.8 per cent.

The Chairman—Then you got \$91 per cow in her milk earnings.

Mr. Widmann—Yes, and a calf worth about \$2.00. We raised all the calves.

Mr. Goodrich—What breed have you?

Mr. Widmann—We started with scrub, and we are grading them up with Guernseys.

Mr. Goodrich—Don't call those cows scrubs, call them natives.

Mr. Widmann—They were scrubs when we started.

Mr. Goodrich—Mr. Chairman, if the word "scrub" is to be used, oughtn't it be applied to the feeder every time?

The Chairman—Yes, if he deserves it.

Mr. Convey—Why do you estimate butter milk as worth more than skim milk?

Mr. Widmann—We can get more out of it. We tried this winter feeding sweet skim milk to hogs and they didn't do well,



every little while we would lose one. We had a veterinary, who came up and examined the hogs, and he advised us to feed sour milk and lots of corn.

Mr. Phillips—Did that stop them from dying?

Mr. Widmann—They do a good deal better than they did before. We fed sour milk and scalded middlings. Last spring we raised seventy-two and fed them on sour milk right from the sour milk tank and scalded middlings, mixed together, and it was all warm, made a slop of it.

Mr. Convey—Dry, ground middlings is unfit food for any animal, and if that was the way you fed them at first, might not the improvement be due to changing in that respect?

Mr. Widmann—I don't know; I have told you how it came out.

Mr. Phillips—I think if you put a little salt in the sweet milk you would not have lost your hogs. What did you realize for each pound of butter or butter fat?

Mr. Widmann—Twenty-three cents. Our butter was made when butter was high.

The Chairman—In our factory once we went to the expense of determining the value of skim milk; we bought, I think it was thirty-six shoats, weighing an average of 100 pounds each. We wanted to convince the farmers of two things; first, the value of skim milk as a food, and second, the value of feeding it rightly to young animals. So we fed these shoats for fifty-six days on nothing but skim milk, just as the farmer himself would feed it; we did not feed it intelligently with something else, because, if we did he would say, "Oh, that ain't the way we do it." Now, if we had fed it intelligently we would have bought middlings and corn meal and mixed with it, but we didn't. We fed these pigs fifty-six days. We bought them at \$4.50 a hundred, we sold them again at \$4.50 a hundred, and kept track of all the skim milk and fed them nothing but skim milk, and the skim milk netted us 22 1-2 cents a hundred. Then we wanted to show the farmers that if we had fed this intelligently, with corn meal and shorts and bran, mixed with it, it would bring more, so we did that. We did prove that at the same price for pork we could obtain for the corn meal and shorts and have the skim milk stand us in at 27 cents a hun-

dred. Those are some figures that we made. They cost us some little money and time, but we wanted to get the farmers around there to understand it. We wanted to prove that skim milk to be made profitable must be fed to young pigs in the young and growing stage. You take a 250 pound hog and you might pretty nearly as well fatten a mill by running oats through it. Then we proved that it helps the grain very much to mix with skim milk. It has got so now that an intelligent feeder never feeds a pig over six to eight months, but I remember when the farmers in Wisconsin almost universally fed hogs to eighteen months old, wintered the hogs and fed them the second year.

Mr. Goodrich—I tried an experiment. I wanted to determine the value of skim milk to feed hogs. I bought a lot of shoats about five months old, weighing about 125 pounds. I divided them into three lots, one lot I fed nothing but skim milk; one lot I fed nothing but corn and gave them water to drink and one lot I fed corn and skim milk together. Those that I fed skim milk made five pounds gain for every hundred pounds of skim milk. Those that I fed nothing but corn and had water to drink, made ten pounds gain for every bushel of corn, so that being fed separately 100 pounds of skim milk was worth as much as half a bushel of corn. The other lot were fed both, that is, one feed of milk and one of corn, a ration of half a bushel of corn to 100 pounds of skim milk. Now, you see where they were fed separately a bushel of corn and a hundred pounds of skim milk made fifteen pounds of live weight gain. Where they were fed together, it made eighteen pounds' gain. Now, if I had nothing but corn every 100 pounds of skim milk would have paid me eight pounds' gain so I could have afforded to buy it and pay a good price. If I had nothing but milk every bushel of corn would have made thirteen pounds' gain. So that with the live weight of hogs, at four cents a pound, fed separately, the skim milk was worth twenty cents, and the corn forty cents a bushel; fed together, both were higher.

Mr. Beach—This combining of food is the secret of getting all there is out of it.

Mr. Everett—I want Charley Beach to answer how many pounds of butter fat can you get from an acre of land?

Mr. Beach—I don't know any more about it than the man in the moon, nor nobody else.

The Chairman—I have heard you tell it mighty strong.

Mr. Beach—I have told a great many lies and I have repented.

A Member—At what stage do you cut your corn to get the most value out of it for your cows?

Mr. Widmann—Just about when the ears begin to get glazed. Sometimes we have an awful dry windstorm and we have to cut it a little earlier. We have to work according to circumstances and use judgment. We cut our corn for the silo a little early so as to get around to cut the other corn before it gets too dry.

The Chairman—You have reported here a pretty large return from your herd of cows, in all about \$90. Now, is that due altogether to feed, or is it due to breed, the care of your cows and to the fact that you have been weeding them out and trying to get down to nothing but first class cows.

Mr. Widmann—All around, every little thing helps.

Mr. Everett—I think a great deal of that is due to the fact that he didn't have anything to unlearn when he began farming.

Dr. Bowen—There is a little fact running through the whole of these meetings that should not be lost sight of. Mr. Widmann has stated that he sold nine cows from his herd in weeding it, and in a low voice he stated that they were the poorest ones. Of course they were, and here we have heard session after session about weeding out the poorest cows by the use of the Babcock test, and the question arises: What becomes of these poor cows? I have a strong suspicion that the same conditions exist here as we have in the east, that some other fellow buys them and puts them into his herd and then he curses dairying, he says it doesn't pay, and I maintain that it would not pay. Now, out of this, I want to impress the lesson that the only safe way to build up a herd is to place a good sire at the head of the herd and knowing what you are breeding and what you can count upon, breed up your own herd. Our cows are partners in the business and we should understand that, and look

back at their ancestry, just as we would look at the record of any one we were going to take with us as a partner in business

Mr. Beach—The results that we get from any given kind of food depend upon so many circumstances that no man can state positively its value. He must understand all the surroundings, the kind of a cow, the condition that she is in, her relations to the length of time that she has been giving milk, the stable that she is in, the man that feeds her, the methods of feeding, all these things enter into it, and you cannot put your finger upon this result and that result and say that it is the result of this kind of feed or that kind of feed. It is a combination of the whole. I presume that Mr. Everett's question refers to the amount of feed that I obtained out of silage. I will make the statement and the statement will be correct, although you may draw the wrong conclusions from it. It was with regard to feeding four and one half acres of silage corn out of a silo to dairy cows in milk. It was the first silo that I built, and I had a good many misgivings and I opened it with fear and trembling. We had about forty cows, most of them giving milk and in good condition. The day we opened it, we opened in a snow storm, so that if it was all rotten and not worth feeding, we wouldn't let anybody know it. I said, "Now, we want to know something about this; we will keep an exact account of the cows and the grain we feed in connection with this silo. There are four and a half acres of corn to this pit." We fed a hundred and twenty dollars' worth of grain; we estimated the hay to amount to \$80, making \$200, and when we got through feeding that four and a half acres of corn, we had after paying \$200 out of it, \$460 of butter money left to pay for the four and a half acres of corn and the labor. I do not say that the results might not have been part of them attributable to the grain, part of it to the hay, and part to the skill in feeding. They were good cows, butter brought a good price, I think thirty-five cents that winter, but it don't alter the fact that I got \$100 an acre for every acre of corn that I fed. I have never gone back on silage since. If I did not get as good results, I claimed it was either my want of skill or the condition of the cows or the state of the market or something else. Now, don't go home and say that Beach fed his silage and got \$100 an

acre for it, for he doesn't say so. I can't tell whether I got it out of the silage or the skill and care in the handling of the cows or the cows themselves. I don't know,—but I got the money

---

### REPORT OF COMMITTEE ON RESOLUTIONS.

The report of the committee on resolutions was received and adopted as follows:

Resolved, That the Wisconsin Dairymen's association has had a grand good time in Neenah; that it is greatly indebted to Messrs. Simon and Aderhold of the local committee of arrangements for countless attentions, to the citizens of Neenah for a splendid hospitality and to the Woman's Relief Corps for one of the best banquets ever given in behalf of our association.

Resolved, That the thanks of the Wisconsin Dairymen's association are hereby tendered the leading railroad companies of the state for their kindly treatment and that this appreciation is manifested, not as a matter of form, but because it is sincerely felt.

Resolved, That the production of filled cheese is a rapidly growing evil in this state; that it demands the active opposition of honest dairymen everywhere and that the committee on legislation be, and is hereby instructed to draft and present to the next legislature such laws as in their judgment shall be most effective in stopping the manufacture and sale of an article which carries a lie upon its face and a fraud in its heart. Every such factory is a shame and disgrace to the state of Wisconsin.

Resolved, That we earnestly ask senators and representatives of Wisconsin at Washington to give an active support to senate bill No. 1376 introduced by Senator Hill of New York, which provides in substance that the states shall have police jurisdiction over the manufacture and sale of all imitation dairy

products. We are confronted by a competition of imitation products, sold under false names, backed by enormous aggregations of capital, that threatens the life of the dairy industry. That industry represents hundreds of millions of capital, gives employment and support to millions of people and is of such a character that it enriches the farms of the nation, educates in business methods the farmers who engage in it and gives to every class indirectly the benefits which go with a prosperous agriculture. Upon this broad ground of public policy, congress would be justified in taxing imitation food products out of existence. We feel that we are asking little enough when we request the representatives of this great dairy state in congress to stand by their own people in a contest with concentrated wealth abundantly able to care for itself in the legitimate avenues of trade. The defenders of imitation food products profess to speak in behalf of poor purchasers. The poor purchasers may be interested in the manufacture of products sold at an enormous profit under false names, but if so they have seldom manifested it unless stirred to action by interested agents of patented imitations of honest products. When the common people rise up in favor of all the cheap things which represent adulteration and fraud, which displace labor and ultimately will result in monopolies in the necessaries of life and consequent enhancement of price, they will stand shoulder with the millionaires who own the butterine factories of Chicago, but until then they will stand where they do now by the interests of labor and upon a platform of simple honesty.

Resolved, That we earnestly request that every man in this state become a member of the National Dairy Union organized to secure wise and efficient state and national dairy legislation, and that we most cordially commend and pledge our support to the Dairy Congress organized at Cleveland, which would swell the dairy associations of nations into one body for the general upbuilding of dairy interests.

Resolved, That the system of cheese instruction adopted by this association has done great good and should be continued, and to this end we ask that the next legislature continue our present appropriations.

Resolved, That we deplore with deepest feeling the death of

W. H. Morrison. The work of this association was close to his heart, its membership was closer still. We shall miss his enthusiasm, his wholesome judgment, his generous friendship. He represented those things in life and character which men will always honor and love. The president of the association is requested to appoint a committee which shall draft an appropriate memorial of Mr. Morrison's life and work and convey to his family those sentiments of sympathy and regret which we all so keenly feel.

Resolved, That while we know that our honored president, W. D. Hoard, our secretary, D. W. Curtis, and our treasurer, H. K. Loomis, know that we appreciate their loyal service, because we have said so before, we want now to renew our declarations of love and respect. They have helped make this association strong and useful. They have helped make this state great and prosperous. We say God speed you as men and we say God bless you as friends.

H. C. Adams, Chairman.

H. C. Thom.

Chester Hazen.

Committee.

The Chairman—The Chair will appoint as that committee on a memorial address the able chairman of the committee on resolutions, the Hon. H. C. Adams, with the request as therein stated to convey in appropriate terms the condolence and regret of this association to the widow and family of our late honored ex-president and associate, William H. Morrison.

The report of the committee on nominations was submitted and is as follows:

Mr. President:—Your committee on nominations beg leave to submit the following names for officers for the Wisconsin Dairymen's association for the ensuing year:

Charles H. Everett—President.

David W. Curtis—Secretary.

Henry K. Loomis.—Treasurer.

Chas. R. Beach.

W. F. Jones.

A. D. Aderhold.

Committee.

On motion of Mr. Faville, the report was accepted and adopted by the election of the gentlemen therein named to the offices named, and these gentlemen were declared elected officers of the association for the ensuing year.

Mr. Faville—As chairman of the committee on dairy implements, I have made a list of the implements on exhibition.

Cornish Curtis & Greene Manufacturing Co., Fort Atkinson—  
Three Styles Babcock Tester; Patent Cheese Rack.

Butter Color, F. B. Fargo & Co., Lake Mills, Wis.

Diamond Crystal Salt, St Clair, Mich.

De Laval Sept. Co., New York City.

A. J. Decker, U. S. Sept. Co., & Babcock Tester, Fond du Lac,  
Wis.

Davis & Rankin Sept. Co., Chicago, Ill.

Grinding Burrs recut, by Neenah Burr Grinding Co., Neenah,  
Wis.

Vacuum Pan Dairy Salt, R. M. Boyd, Racine, Wis.

Detroit Paper Butter Package, Detroit, Mich.

Disbrow Churn and Worker, W. H. Noyes, Owatonna, Minn.

---

## HOW TO BUILD AND FILL A SILO.

---

Prof. F. H. King.

Did I not feel strongly convinced that silage must ultimately take a permanent and very important place in the ration of dairy cows I should not stand here to say how the silo may be built and filled. I am well aware that there are many dairy farmers, if not the majority of them, who are still doubting, and justly too, the wisdom of building a silo. I feel that we do not sufficiently appreciate the great need and the great value of a green juicy food as one component of the daily rations of the dairy cow, which is being carried to her utmost limit during



the seven long months of winter, when she is shut away from the green crops and natural grass. In our own case we regularly lay by for our winter ration, potatoes, cabbage, turnips, beets, onions, pickles and a long line of sweet and sour fruits, not simply to please the palate, nor yet because they are very highly nutritious, but because they contain principles which are of the utmost importance in the influence which they exert over the process of nutrition and assimilation.

Now, our domestic animals, like ourselves, not only relish, but greatly need something of this nature, roots or silage, as a part of a winter ration, and the great problem with us is how can this be most cheaply provided, and the question becomes of imperative and paramount importance to the dairy farmer who is keeping his cows for the purpose of consuming the largest possible amount of food and converting it into the richest milk at the least cost. It is of no less importance to him who aims to breed a perfect milk-producing machine. The more nearly any complicated machine is run to the limits of its capacity, the greater is the need of care to see that it is in perfect balance.

Now, it is one thing to carry an animal through the winter on a simple maintenance, but it is a very different thing to crowd into the cow all she can possibly eat and convert into milk.

I tell you, gentlemen, the German barrel of sauerkraut that is placed in the cellar, is not placed there to meet an imaginary want. Its contents fill a great and aching void. Now, silage is relished by the cattle. While it is much more highly nutritious feed than roots, it contains within it that which largely takes their place, it can be much more cheaply produced than roots, and it can be stored so as to be fed the whole winter through, or even carried over into the next summer. So it seems to me that the dairyman may well consider the best method of building and filling the silo. Coming to the practical construction of a silo we need to understand what are the essential features. First, the silo walls must be as nearly air tight as possible. This is absolutely essential to the preservation of the silage and the reduction of losses. In the second place, the silo must have an adequate depth; that is of the first importance. Again, the silo may be too deep. I speak now for

corn silage put in at a stage when it contains from 68 to 70 per cent. of water. The best returns will be received when the silo has a depth exceeding twenty-four feet. Thirty feet is better than twenty-four. It is better for the influence upon the quality of the silage itself, leaving out of the question the fact that a deep silo is cheaper than a shallow silo. If, however, corn is put into a shallow silo very green, the silage itself may be deep enough so that its own pressure is sufficient to express from it the juices and cause it to leak away from the silo.

Another essential feature in the silo is the rigidity of the walls. The silo must have a wall which is unyielding. The pressure of the silage at the time of filling is very great, after the silage is once settled that pressure becomes smaller, but the wall must be of such a character that it will not spread outward while the silage is settling. If that happens there are

Now, in regard to the form of the silo. Corners are objectionable. There is almost always some loss in the corners of the silo, and it happens necessarily from the way in which the silage settles. We must remember that it is just as important to have our silage press against the sides as it is that it be firmly packed upward, because only in that way can the inevitable air spaces be closed up, so that if a silo can be built without corners, that is the best possible form. A cylindrical form is the best; first, because it is the deepest silo that can be built. Then again, it presents the smallest amount of outside surface for the air to strike the silage. This applies to silos built outside of another building. When your silo is inside the barn, it is not usually recommended, as a circular form does not fit into your space.

Now in regard to the material. It does not matter so much what the outside of the silo is built of. The essential feature is the lining, and there is the point where the greatest care should be taken. If your silo is built of stone, as it may be, then, of course, you have no lining to consider, except the surfacing of the stone, and a stone silo, if it is of proper depth, makes an excellent silo, cemented on the inside with water lime. In most localities it is expensive, however. In building a stone silo care must be taken at the corners that they should

be well rounded, but a stone silo can be more easily built circular than square; that is, it takes less stone to build a silo that contains a given number of cubic feet.

Now, coming to the wooden silo. That is the cheapest that can be built, considering the present price of lumber. A stone foundation is of course required. Those who advocate the placing of the sills upon the ground or upon posts set in the ground, are advocating a structure that must in a very short time give out at the foundation. You must build a good foundation of stone or brick work, some non-rottening material. Upon this stone foundation if you are building a cylindrical form, 2 by 4 studding is all that is required. They should be set about one foot apart and the lining can be made of half inch lumber. This half inch lumber is not usually on the market, but it can be provided by sawing fencing in two. The fencing ought to be sized before it is sawed, because it will lay on then with much less difficulty than if one end of the board is wider than the other. Two layers at least of this material are necessary, with a layer of the best quality of tar paper between, and I feel inclined to say that a third layer will ultimately be found preferable to two layers, though I have not tried applying that third layer, because it may be put on at any time, if it be found that the silage does not keep. Any wood silo must be thoroughly ventilated; the air must be carried through inside of it and along the lining outside. The rotting that has occurred in wood silos so often has been the result of improper construction, so that there should be left a space of about two inches at the top of the plate on the inside, then at the bottom between each studding a series of holes should be bored, which will allow air to enter and pass up along the sides and out into the silo and thence out of the ventilator through the roof. The air passing up on the inside keeps the lining dry on the outside, and the air passing through the silo, above the ensilage, dries the lining. Wood will not rot if it is kept thoroughly saturated with water, nor if it is kept thoroughly dry.

Now, in regard to the painting of the lining. Practical experience seems to show that for the wood lining the paint is more often detrimental than of service. If we could put on a coat of perfectly water tight paint upon which the silage would

not act, that would be a desirable thing to do, but the difficulty comes with the shrinking of the boards opening up cracks; when those cracks are opened the silage juice works in behind the paint and the moisture gets in, and that brings on rot, because the paint holds it there, and it gives a longer time for the germs to grow, and the rotting to take place, so that, unless the paint is of such a material that it tends to kill the germs and act in that way to prevent rotting, it is liable to do more harm than good.

Now, coming to the question of filling the silo. We have had some remarks upon the necessity of tramping the silage. Of course the object gained by that is largely the exclusion of the air that goes into the silo with the silage and thus diminishes the amount of fermentation that will take place.

Now, in regard to tramping the sides as compared with the tramping of the center. In my judgment you cannot tramp either too much but it is more important to tramp the sides than the center for the reason that there is a very strong pressure against the sides which tends to hold the silage up at the sides, it drags on the sides, and that tends to open air spaces, between successive layers of silage, and that leads to the moulding of silage on the sides. The smaller the silo the greater the importance of treading.

Now, in regard to covering the silage after it is put into the silo. Whether it is to be covered or not, depends upon how long it is to stand before it is fed. If you expect to feed all the year around, you may just as well begin to feed the day after the silo is filled, and better than to stop to cover it up. There is no need of waiting for the silage to heat up. Feeding may commence immediately, but if the silo is to be covered then my judgment is that the best thing to do is to trample the surface hard and apply to it a considerable quantity of water, as much as ten pounds to the square foot immediately after filling. The object of the water is to fill all of the pores as full as you can fill it, water-soak it, and that has a tendency to stop fermentation. If it begins to dry out at the end of ten days or so, a similar quantity of water should be again applied and you will find then after that period that there is formed over the surface of the silage a thin layer of completely rotted

material which is wet and it forms an air-tight cover. In our silo at the station we followed this treatment and we found about two inches of this rotten material on top, and then below that a similar amount of mouldy silage, but there was less than six inches of waste material altogether at the top, and then you came to perfectly bright silage. Now, whether you shall put on cut straw, or cut hay or boards or paper depends on the cost of those materials. If a layer of corn is cheaper than a layer of straw or of boards, then the corn is the thing to cover it; if not, cover it with the straw or whatever is cheapest. So far as the weighting is concerned it seems to me that it is far better to depend upon the increased depth for the weight rather than to attempt to load on stone or dirt or brick or anything of that kind.

Very little attention need be paid to the length of time you are in filling your silo. If your corn is of such a character that you can spread a coating every three or four days it is all right to spread it over that length of time. If your help is such that you combine with your neighbors, as you do in threshing, so as to fill in two or three days it is all right to do that. In the latter case, however, you will get less silage into your silo. The nicest way is to have two varieties; one requiring attention later than the other, and you can take your time in cutting and fill your silo without any more haste than other farm work. That is the only objection to filling rapidly.

Brick for a silo is all right if you have a tight lining. The brick itself is very porous, but if it is properly plastered with water lime, it will be all right, laying your brick with mortar one lining brick upon the inside, and plastering. Lathing and plastering does pretty well in a round silo. In a rectangular silo it bulges from the pressure.

---

#### DISCUSSION.

The Chairman—How much more does it cost to build a round silo than a square one?

Prof. King—It doesn't cost as much if you have a good silo in both instances. Of course the labor on a stone silo is what counts up.

Mr. Linse—Eighteen years ago I built a stone silo, the only kind that were built then. Later on I thought it would be better and I lined it up with wood, but no air being provided for, it rotted out in less than two years. We have put up ensilage eighteen years. At first we used to rush it through in two or three days. I found that the lower layers were not near as good as the upper, and I concluded it was because the material was so green that it did not develop heat enough to kill the germs. I think considerable skill wants to be used in putting up ensilage. Of late years I have gone from one extreme to the other. I believe that we should not let our corn get too ripe and that I have had the best ensilage when the corn was cut a little beyond the roasting stage and wilted a little in the field.

Prof. King—The trouble with the early stone silos was that none of them were deep enough and people got the idea that the wooden ones were better because they built them deeper and the results were better.

Mr. Thorpe—If you were going to build a silo for your own use and you could build a wooden one that would hold 100 tons for \$100, or a stone silo that would hold 100 tons for \$200, which would you build?

Prof. King—I would build the wooden silo and line it with brick. I think I would get a better silo at less price. There are some model stone silos in Dodge county, but they are sheathed on the outside with wood; that was found necessary in order to keep out the frost. It has been found practically a good idea to whitewash the layer of cement inside the stone silo every year. One layer of matched lumber would probably be sufficient to put outside of the stone silo. Certainly two would be enough, leaving the air space between the stone and the outside covering.

Mr. Thorpe—Mr. Sherman's silo has been in use twelve or thirteen years and it has no wood covering on the outside. It is full this year with corn silage, and I think it is the best I ever saw.

Prof. King—Where your stone silo has only twenty to twenty-four feet of depth and there are eight or ten of those feet of depth in the ground, then the silage settles so much that

you have but little wall exposed to the frost, and early in the season you cut the silage down below the frost line.

A Member—The cement lining to my stone silo is as perfect as when put on. The first years, when we put our ensilage in a green state, the frost would penetrate through the walls and freeze some on the outside, but of late years it develops a greater heat and the frost has no effect on it.

---

### MY EXPERIENCE WITH THE SILO.

Thomas Convey, Ridgeway, Wis.

After five years' use, I am more fully convinced that silage complies most nearly with the conditions essential in a stock food for the cheap production of beef or butter. The person who now expects to make the largest possible profit must depend on liberal feeding. The food best calculated to produce the desired results must be of good quality, such quality to be as little dependent on atmospheric conditions as possible; must be so well adapted to the climate that there will be the least degree of uncertainty with regard to its growth; must furnish a large amount of food to the acre; should be suitable in condition to feed, and easy to get at and not too expensive for storage; should be palatable, digestible and succulent, capable of being preserved for an indefinite period, put up at a time when other work can be deferred; should leave the land in good condition for the following crop; and the manurial residue should be immediately available as plant food. Such a food is ensilage, and it is prepared with the least labor that would be calculated to bring about the foregoing conditions.

I have fed corn fodder, unhusked, cut and uncut, and still continue feeding several acres in the fall and early winter, and the general results have been nowhere near as satisfactory as has the use of silage. Where fodder is cut early, put in large

shocks, the larger the better, and well tied at the top with tarred twine, and fed unhusked it makes a good quality of food, that gives fairly good results. Experiments seem to show that a good quality of fodder, in a limited feeding experiment, gives about the same results as silage, acre for acre of product, or pound for pound of dry matter. Yet it is a common opinion among dairymen that winter cows will give more milk and give it for a longer period when fed ensilage. It may take more food to produce the better results, but ensilage is highly valued by winter dairymen. When dry fodder is cut up it takes more labor than when cut up green, and dry fodder uncut is hardly fit for stable-feeding, and what is left, and there is usually plenty of it, is difficult to dispose of and represents very little value. If you wish to store it it will cost more per ton for storage than silage, owing to its bulky character. It is more uncertain in quality, and requires more labor to get it before the stock. Should the season be bad it is more than likely to be inferior in quality, and the longer it is exposed the poorer it gets. Prof. Sanborn made experiments to prove the uselessness of silage, and came to the conclusion it was a good thing for a damp or wet climate. It may not pay to put up a good corn crop to feed to dry cows or low grade beef cattle, but it don't pay to feed them anyhow.

In those countries where they have attained the greatest proficiency in feeding, they depend to a large extent on feeding a succulent ration; in many cases, in fact a majority of them, they depend on roots, but silage furnishes the succulence and a large amount of nutriment at the same time; hence it is not necessary to feed so heavily on grain feeds when feeding silage as when feeding roots, although roots are superior to silage to feed to pregnant animals for some time previous to parturition and for a few days afterwards. Heavy feeding of silage to dry cows, the last month prior to calving, is responsible for many hard, unyielding udders and in some cases defective teats and a diminished milk supply, after calving. Roots furnish succulence without causing congestion of the udder. Because those who are using silage are not bothering themselves about other people's affairs, some innocent farmers have come to the conclusion that the use of silage is on the decline. In fact a



farmers' club in the western part of the state resolved that silage was a humbug and wholly unfit to produce a good quality of milk, but on inquiry we found that none of them ever owned a silo or fed a pound of silage, but those are usually the fellows that know all about it, and their experience was quoted all over the state. I have yet to learn of a single unfavorable report where the essential conditions were complied with and the party kept a good quality of stock and was reasonably intelligent. Has any other innovation of modern agriculture as good a record? The more nearly a prepared ration partakes of the character of a grass ration when at its best, the better the results. Robert Miller says sheep should be fed so that they would show the least desire for water. I believe the same is true of other classes of stock where growth or milk is desired, provided sufficient nutriment is contained in the desired bulk. Silage may not be a necessity, but it is a great convenience.

The most of people prefer silage cut up and I depend on cutting. Yet some of the best silage I have ever sampled was uncut. We cut it in the field by hand, load on low down trucks made of the wheels of binder trucks, unload with a team, using a tread power. Can cut a ton in less than 20 minutes, can get along with three men but prefer four, use common dent corn planted at different times, endeavor to put as much grain in as possible for if you don't put in feed of good quality fermenting it will add nothing to nutrition. On the contrary, it destroys considerably. Hence the less heating the better; therefore tramp, pack or weight well, and keep evenly distributed. Use some covering that will not absorb moisture; tar paper and cut straw or hay, well wet down, makes a good covering. Grass would be all right if sufficiently green. We feed silage to horses, but it should be fed sparingly to work horses, but corn silage and clover hay makes excellent food for young horses.

## DISCUSSION.

A Member—Do you think if I should cut my corn when it was just commencing to form on the cob, and dry that to a certain stage, that it would prevent the souring?

Mr. Convey—I think we should allow sufficient maturity to be attained before putting it into the silo, providing it is not so much dried, as to allow the air to get into the silo and cause delay.

The Member—I had an idea that I could put in some dry at the bottom and heat it well and then put the green on top, and that the heat from the lower rows would prevent the acidity. I have found the ripe corn will be sweet, while the immature corn will sour. I believe we get the best results when the corn is beginning to form on the cob.

Mr. Convey—My experience is entirely different from that.

Prof. King—It is important to cut the corn when it is not too green or too ripe, in order to get the full limit of nutritive material. If the corn is put in too ripe some of it will be left and if you put it in too green, there has not yet been matured all that the crop is capable of maturing.

The Chairman—There is a certain point in the growth of the corn plant when the stalk and the ear together contain the greatest possible amount of nutritive elements. Tell us about that, Prof. Woll.

Prof. Woll—Experiments in that line lead us to the belief that we get the largest quantity of digestible matter from the same area at about the roasting stage of the corn after the milk would cease to flow from the kernel if it is crushed.

Prof. King—Practical experience shows that you get the best quality of silage, the least acidity when you cut it a little earlier than you cut it for shocking. It will be past the dough stage and except for the danger of drying out, it might be put in in the condition in which you would call the very best condition for cutting and shocking. The green stalk is naturally full of water and contains no air, but as it dries out, the water is replaced by the air and of course that additional amount of air goes into the silo and results in this tendency to sour. I suppose that is the reason why it is so difficult to put rye or oats in

the silo; their stalks are hollow, and each little space carries with it into the silo that hollow full of air, but the corn stalk is a solid stalk full of solid or liquid material. The clover stalk is solid.

The chairman called for a show of hands by those having silos, and twenty responded.

Mr. Beach—If you had a field of corn, would you think it foolish to cut it a week before you would cut it to put in the shock ?

Prof. King—That is just about right.

Mr. Beach—I have done that for about eight years and I fill the silo as quick as I can, generally inside of two days. When we commenced we took ten days for the same work and the corn was pretty green. We cover ours with wet hay and keep weighting it down and cover it with boards or fence posts or anything that will keep it settling as uniformly as possible.

A Member—At what stage was the corn that you received \$100 an acre on ?

Mr. Beach—We picked out our seed corn in front of the reaper: We cut with a reaper. That wasn't any better than any silage corn, but the butter brought more because the cows were in better condition. The dollars ain't corn that you can put in and pick out with your fingers.

The Chairman—You are not lying now ?

Mr. Beach—About this lying. Let me get that settled. A man takes his pencil and works out a proposition and the figures will lie to him. Now, you talk about getting exact truths. There are no exact truths in economic truths. That man will feed more butter into a cow with a given amount of food than I can, and I can do better than somebody else. A German over there will keep a horse fat on four quarts of oats when it will take me a peck. It is in the man and not in the corn field.

Mr. Goodrich—There are some localities where the conditions spoken of here will not come right. There are some places where corn gets very dry in many years before it even forms in the ears. In those localities there are many empty silos today because the owners said the corn got too dry to put in. Now the question is, Can they put that in so as to preserve in it what little feeding value there is in it? It is a serious question

to these men in years when feed is short. One man told me he thought he would try wetting it, and that he thought that while he did not, of course, add any nutriment to it, he had preserved what there was in it.

Prof. King—I think that is the thing to do in such an emergency as that. You can save in the quality by applying water.

Mr. Widmann—Some of our neighbors are cutting two or three loads of dry corn stalks, corn stover, and putting it into a big heap and pouring on four or five pails of boiling water and some salt, and they claim it is good feed.

A Member—I have tried that, but I think I did not put on enough water to make it good all the way through.

Prof. King—I do not wish to leave a false impression about the filling. I did not mean that you could fill one day and leave it so long that the surface would become moulded and then go on. But that you can fill day after day a little, of course, complying with the necessary conditions.

Prof. Haecker—I want to take Bro. Convey to task for condemning dry fodder corn. I have used it for several years and find very little loss in the feeding box. For two years I fed B. and W. corn, shocked up in the field and I could feed from twenty-five to fifty head of cows that dry cured fodder corn and not have a hat full left in the boxes of the whole herd. The third year I used Dent corn. I put it into large stooks, and after they were cured out I made them into large shocks and left them in the field and drew in as I needed them, and run it through the fodder cutter, and it was eaten up almost entirely. The Minnesota experiment station is located in a locality where there are a great many dairy herds kept and where they raise on an acre of land all the food value they possibly can, and they cut it before there is hardly any ear developed and shock it up and feed it out of the field. I believe those men are answering the question as to how they can raise the most milk feed on an acre of land that is valued at \$1,000 an acre and that is the way they do it. They cut their corn before it even comes into the milk, shock it up and feed it.

Mr. Convey—In what I said I referred more particularly to corn that was not prepared by the cutter, and as usually fed.

Prof. Woll—In some of our experimental work, in extreme

cases, we have found that half the nutritive value is gone by the exposure of corn for two or three months to extreme winter weather.

Mr. Beach—What is the feeding value of this corn that is cut before the ears are fairly developed, compared with what we would grow if it was left until there were well developed ears?

Prof. Woll—I cannot give any figures upon that subject but it is greater at the latter stage.

The Chairman—And isn't it also true that careful experiments at the University station prove that you can get just as much value out of that as out of an acre of ensilage?

Prof. Woll—Yes, but the corn fodder has to be very carefully taken care of.

Prof. Haecker—It is generally known that in our climate we have very little rain, and of course it is not hard upon the corn fodder. The chemist and the cow don't always agree, I find, in these matters.

Prof. King—But this must be said, generally in the most careful experiments where corn fodder was fed against silage the dry corn fodder has come out a little behind. Where it has not, the silage generally has not been as good as it might be, and the losses have been considerable. Of course, when we speak of corn fodder, we speak of it as it is practicable to have it on the farm of the Wisconsin farmer, and in our climate, and I am sure the figures stand decidedly in favor of the silage.

Mr. Bender—We would like to hear from these gentlemen who have silos as to the comparative cost between saving corn in the silo and putting it up in the shock.

Mr. Beach—Four days' work will put in an acre of corn that will yield 100 bushels of corn to the acre.

Mr. Convey—I presume it costs me about a dollar a ton, allowing for everything.

Mr. Bender—I want to say as a silo man, you can clear that acre of corn cheaper than that. You can put it into the silo cheaper than you can put up the same amount of corn fodder.

The convention adjourned at 2 p. m.

---

The convention met at 2 o'clock p. m.

## THE DAIRY AND FOOD COMMISSION AND ITS INTEREST TO THE DAIRYMEN OF WISCONSIN:

D. L. Harkness, Dairy and Food Commissioner, Madison, Wis.

I have been solicited by the honorable secretary of this association to read a paper on the subject of "The Dairy and Food Commission and Its Interest to the Dairymen of Wisconsin," a subject that I think but few of the many dairymen of this state have ever thought of; at least I judge so from the experience I have had when visiting factories in many localities of the state where some of the patrons of the factories did not even know there was such an office, and, financially, a few of them were sorry they ever found it out; but with the honest dairyman I have never found but one that was not glad to have us pay them a visit. He was a healthy looking young man of about two hundred and ten avoirdupois, a good talker and not at all bashful about expressing his sentiments; at least I thought so when he began to talk about pitching me out of the factory just because I had made a neighbor of his take his milk out of the factory and told him it was hardly fit for hog feed. Upon inquiry, I found this factory was being run on the cooperative plan, and all getting the same price for their milk and selling their cheese from a half cent to two cents per pound below the regular market price, and all on account of the filthy condition of some of the milk.

When my two hundred and ten pound friend poured his milk into the weigh can, I examined it pretty closely and found it very clean and sweet, also the cans he brought his milk in. Turning to my friend I said to him, "You have had your talk, now I will speak my little piece. You are bringing first-class milk to this factory but don't look to see what your neighbor is doing, and by mixing such milk as that I just sent home, you have been losing from one half to two cents a pound on your share of the cheese, and every time that man delivered milk here he took so much good, hard-earned money from your pocket book." He began to scratch his cranium and walked around the milk vat, came back, tapped me on the shoulder and

said, "Mr. Commissioner, we would like to have you come and see us about twice a week until you get us cleaned up." I visited that factory the next season and found they were paying for their milk by the Babcock test and getting all first-class milk, and on an average twenty per cent. richer than on my first visit. Many cases of this kind we have had, but will only give you the details of this one case.

We are frequently called upon by patrons of factories to go and test the milk where they pay by the test, some of the patrons thinking they were not getting fair tests and some of them know so little about the business they are engaged in, that it is hard to make them believe there is any difference in milk or that it makes any difference about the condition of it when it gets into the factory; but thanks to the Babcock test and the teachings at the dairy school, there is a great improvement in the dairying interests of the state.

The history of adulteration is the history of commerce, for they are contemporaneous. When each family produced from the soil and from domestic animals the necessities of life for its own consumption, sophistication was little practiced; but when changing conditions render it necessary for one class of people to produce the food supply of another, a very human desire to make the most of everything led to the substitution of inferior substances, and adulteration thus commenced.

Conceive a world made up of nomadic tribes, engaged in perpetual warfare. It is a commerce of killing. If a tribe desired the richer soil or larger possession of another, the method was to exterminate that other; but at last there arises a tribe too weak or too peaceful to exterminate and it prefers to barter; it challenges its neighbors to a contest of arts. They try to get the advantage of each other in bargains; they haggle and cheat; it is not heroic at all, but it is the beginning of commerce and peace.

Co-existent with this history of commerce is the history of food adulteration. Laws framed for its punishment were enacted as early as the thirteenth century; every nation has given it more or less attention, and at the present time there is before congress a bill to regulate by national statute, an evil that has grown too large for the individual states to handle; and it

is clearly the opinion of the writer that this convention should do all in its power to aid the passage of all such legislation.

Before entering upon the discussion of the extent of food adulteration, it may be well to add a word as to its character. The cause of adulteration is a desire for an abnormal profit. Apply this rule to food adulteration and we discover that it has two corollaries whose truth has been demonstrated no less by experience than by common sense. First, the manufacturer or person who adulterates the food endeavors to approximate at a less cost, the article adulterated. Secondly, self-interest prompts him to maintain a certain regard for the bodily health of his customer, the consumer. The first of these propositions is self-evident. The second generally holds good. Instances where harmful adulterations have been used, if sifted thoroughly to the bottom, usually reveal the fact that dense ignorance or gross carelessness are to blame. Newspaper sensationalism also contributes largely to the popular impression that death lurks on every shelf of the grocery or candy store. Broad as the assertion may seem, it is safe to say that in nine instances out of ten, poor cooking is at fault where adulterated food is blamed and ignorance claims a hundred victims where avarice obtains one. The cooking school is a potent factor in correcting existing evils and to the efforts made there, we, of the Wisconsin dairy and food commission, shall feel our work well done if we can perform a creditable second.

To give an idea of the popular misapprehension of the true meaning of food adulteration, a case that occurred last summer in Ohio may be cited: The chemist to the food commission of that state made a public report to the governor. Some enterprising newspaper correspondent telegraphed excerpts therefrom to his newspaper in Cleveland and the "Cleveland World" under startling headlines, published a list of compounds that were calculated to inspire nausea, and among several others, mentioned samples of vinegar that "contained acetic acid and were more than half water." Vinegar may lawfully contain from ninety-four to ninety-six per cent. of water, and as a matter of fact acetic acid is the only ingredient of any hygienic value. So much for sensationalism.



If adulteration is considered from the pecuniary standpoint, startling figures are obtained. The American Grocer, the organ of food dealers and producers, estimates the amount annually expended for food as four and one half billions of dollars, and places the adulteration at two per cent.—a very conservative figure. This gives ninety millions of dollars spent for adulterated food yearly. If we consider that five per cent. of this adulteration is harmful, we have four and one half millions of dollars expended for injurious foods. Many of those engaged in the work of suppressing food adulterations place the percentage of adulteration at fifteen per cent. and this gives a total of six hundred and seventy-five million dollars annually paid for adulterated food, and upon this basis we have a total of thirty-three million seven hundred thousand dollars paid for hurtful foods. It hardly seems probable that these latter figures are correct, for the far greater expenditure of each household is for flour, meat and vegetables, where adulteration is seldom or never practiced. The following list includes the greater part of foods in common use that are subject to adulteration:

Dairy products and their substitutes; baking powders; vinegars—including cider; spices; wines and liquors; sugar and syrups—and allied products including honey; coffee, tea, canned goods and fancy groceries.

The first upon the list is dairy products, an important subject in a state so heavily interested as Wisconsin is. In natural sequence we have milk, butter and cheese. The common adulterant of milk is too well known to require much comment. The time-honored joke of the partnership between the pump and the cow needs no mention, although the partnership exists even up to this time to some extent, as a few dairymen in Wisconsin know to their sorrow.

Another means of adulteration of milk is in the removal of cream, which has not been profitable to some dairymen this commission has had dealings with. Aside from jokes about shingling cows and painting them with waterproof paint, the question is a serious one. All of our population under one year of age subsists entirely upon milk and it is the ideal food of the infant and invalid. The amount of butter fat present, deter-

mines to a large extent the value of the milk as a food. The laws of Wisconsin and many other states fix the minimum amount of butter fat in whole milk at three per cent., and it has been held in supreme court that the vendor of milk containing less than this amount; is guilty of a misdemeanor, although he may be able to prove that the milk has not in any way been tampered with. The assumption is, that the purchaser is damaged quite as much as though the cream had been intentionally removed or diluted with water. The person keeping poor cows or who tends them so poorly as to depreciate their milk-giving qualities, is just as liable to punishment as he who intentionally robs the customer of the cream to which he is entitled. Consequently, it will pay every man to know what kind of milk is given by each and every cow he keeps, to know just how rich her milk is, and if he has no other means of finding it out, let him correspond with our worthy secretary and he will tell him at once to get a Babcock tester.

Cheese, like milk, is adulterated by removing a portion of the butter fat from the milk from which it is manufactured. The casein and other ingredients of the cheese are thus left largely in excess of their normal proportions. Sometimes the butter fat abstracted is replaced by what is called neutral, a species of lard oil, and a cheese is thus produced that is rich in fat but is more indigestible than the normal butter fat.

Butter. Probably no one subject in the way of dairying is attracting more attention at the present time. There is no defense for the sale of oleomargarine as butter, and when so disposed of a great fraud is perpetrated. Those most friendly to the article are scientific men who are thoroughly familiar with the mode of manufacture and the chemical constituents of the finished product.

Briefly, oleomargarine is made as follows: Oleo oil, neutral, milk, and sometimes cotton seed oil are mixed in varying proportions and churned in a centrifugal churn in the same manner as cream is handled in creameries. The oleo oil is made from beef suet by mincing the suet, heating and expressing the oil. Neutral is made from leaf lard in the same manner, practically, except that the stearin—the more solid portion of the lard—is removed, leaving the ingredients that are more fluid.

It is simply a matter of justice to say, that in every stage of the process the utmost care is taken to have everything that comes in contact with the manufacture scrupulously clean, for the reason, that the least contamination would affect the entire mass. The cotton seed oil is added when the goods are to be shipped to a cold climate, or during the winter, to diminish the consistency of the product. A tax of two cents per pound is levied upon all the oleo manufactured and in addition to this, the wholesale and retail dealer each pays a separate tax. With all these imposts, the best grade of oleo sells from eighteen to twenty-five cents per pound at retail. As regards taste and appearance, it can not be distinguished from the commoner grades of butter, but a fair judge of butter would scarcely fail to distinguish between oleo and a high grade of creamery butter, and the reason why so much butterine is sold, is because there is so much miserable, rancid, filthy butter being put on the market to be consumed, and the poorer classes who can not afford to buy creamery butter resort to the use of butterine. The outcome of the whole affair seems to be, that if the sale of butterine is continued under proper restrictions, the quality of butter produced will be of a much better grade and the mixed butters that have been worked over and put upon the market at reduced prices, will disappear from lack of patronage as the merits of both become better known.

As far back as the year 1396, a law was passed in the provost of Paris, forbidding the coloring of butter with soncy flowers or other flowers, herbs or drugs. Old butter, likewise, was not to be mixed with new, but the sale was to be separated under penalty of confiscation and fine. The ancient laws of the merchant butter sellers and fruiterers, confirmed in 1412, reiterated the above and also forbade the sale of butter in the same shop in which fish was sold. The retail or sale of butter by spicers, chandlers, apothecaries and generally by all carrying on offensive trades, was made illegal. A subsequent enactment in 1519 confirmed this law, and still the market is flooded with "boother."

## DISCUSSION.

Mr. Goodrich—What are we going to do about it?

Mr. Harkness—Start in and help get a little legislation. Stop it in some way, if possible.

Mr. Goodrich—What percentage of filled cheese is being manufactured in the state of Wisconsin compared with the whole amount?

Mr. Harkness—I can't tell you that. I can tell you how many factories are making filled cheese. There are in the neighborhood of twenty-five, maybe twenty-seven or eight, making filled cheese.

Mr. Goodrich—How many of them sell it under the mark, "Filled Cheese?"

Mr. Harkness—Not one that I know of. I know some of them were very sorry that they didn't find out before and sell it in that way.

The Chairman—The chair desires to make a little statement. I picked up a paper published in this city, called the Times, which contains some reflections concerning the address of the president of this association. The editor reasoned fairly from his standpoint. He said that the president animadverted against coloring oleo and claimed that the president was inconsistent because of the coloring of butter. Now, there is such a thing as sophistry and such a thing as reason. I heard a man prove once that a cow had three tails, starting out with this proposition that no cow has two tails, and one cow has one more than no cow, and if no cow has two one cow must have three. I think very likely that he repeated it to himself often enough to finally become very much disappointed that the facts did not bear out his theory.

Now, this is to be said: The coloring of good butter is a matter of taste to the consumer. No man is deceived as to the character of the compound by virtue of its having been colored. The quality of the butter is not dependent upon the color, it is dependent upon the flavor and character of the butter. The coloring does not in any sense then make any man believe it to be good butter if it is poor, so that the coloring of butter in no sense adds any value to it, except in the way of taste, the taste

of the mind and the eye. No man ever yet colored butter to make it appear like oleomargarine, but, in the case of oleomargarine, it is colored for the purpose of making men believe that it is something else than oleomargarine, or in other words, that it is butter. Now, we see here that the reasoning applies distinctively and that there is a difference of fact as between the two propositions. I want my stockings colored red. Are my stockings, if they are colored red, taken for breeches? No, they are stockings still. I want them colored red as a matter of taste, but, if my stockings, by virtue of being colored red, deceived the consumer into believing that they were something else than stockings, then it would become at once a matter of commercial deception, and thereby the mind of the purchaser would be deceived and he robbed in pocket, as well as in purpose. Now, the coloring of butter is simply in response to a demand of the market for butter to be colored in butter color, and as a consequence, the men who manufacture butter, put enough of a harmless coloring matter in to suit the demand and the taste of the market. Some markets require a higher and others a lower color. I would prefer very much if every breed, as the Guernsey breed does, actually did their own coloring, but that would be selfishness on my part. So I want you to say when anybody says to you that it is just as wrong to color butter as it is to color oleomargarine, that the effect of the coloring is distinctively different in the mind of buyer. In one case the substitute is colored to deceive; in the other, it is colored to satisfy the taste of the purchaser. It is colored to suit the June taste in color. We could talk very profitably here for an hour on this economical fact. When a farmer shuts his cows up in a dark barn, refuses to put in plenty of windows so that the cows may have all the sunlight they possibly can, he forces that cow to give white butter to a larger extent than she otherwise would. When the London butchers desire to furnish white veal, according to the taste of the market, they require that the calf shall be fattened in a dark room. Men and cabbages grow white under confinement in the dark. Now, sunlight is the source of all color. Green food for the cows to eat is another source of color, so you see there are three principles which are essentially neces-

sary to the production of yellow butter. First, the breed, or the individual characteristics of Guernseys and Jerseys to put more pigment into the color; second, green food, if possible, to which ensilage answers very satisfactorily, and third, a sufficient amount of sunlight to enter the barn. We do not realize the sanitary effect of sunlight. Turn anything you choose upon the ground, and the sun will disinfect it; keep away the sunlight, and the bacteria flourish; baneful germs of disease.

---

#### QUESTION BOX.

Question No. 1. What shall we feed the cows to give perfect flavor to butter?

Mr. Goodrich—We are in the winter answering this question as I understand. I will tell you what I have found makes the best flavored butter for winter feed; clover hay; good sound ensilage, bran, and corn meal. Now, I want to say this idea of ensilage giving a bad flavor to the butter kept me from building a silo for thirteen years. Sometime before I began I wrote to a commission man and asked him if he knew anything about it. He said he didn't know anything about it, but that one man who had been in the habit of sending him good flavored butter right along, all of a sudden in November, his butter had a bad flavor, and he understood that he was feeding ensilage. That scared me out for two years, but I finally built one and I was very careful not to feed any but what was sound and good smelling stuff. When I commenced I was quite anxious to know how it was going to affect my butter, and I had been away from home and when I got back to Ft. Atkinson, I found a letter from my commission man. My hand fairly trembled when I opened it, as I thought that I had put in 200 tons of ensilage and perhaps it was going to spoil my butter, but I opened the letter, and this is what I read:

"Mr. Goodrich,

"Dear Sir: The flavor of your butter is excellent; never so good before at this time of the year."

That came voluntarily, and you can imagine I was happy, and I have never had any fault found with the flavor of my butter in the winter time on account of that feed.

There are other things besides feed that affect flavor of butter. Frequently a cow that has been giving milk for a good many months, will impart a bad flavor to the milk; some cows very much more so than others. The fact is if you want to keep a good flavor in your butter, you have got to watch things. My wife used to make the butter and to watch things very closely. One day she said to me, "That butter that has just been churned isn't right, the flavor is a little off." Well, I thought there might be something wrong about the milk house. But she says, "No, I have examined everything. Everything is all right here. It isn't at this end, it is something about the barn or the cows." Well, I couldn't find anything. Finally my wife told me to bring in the milk of each cow separately, and just as soon as we brought in the milk of one particular cow, she says, "That is wrong; that is part of it." Just then my son came in with milk of another cow, and she says, "That is just like it." Those were two cows that had been giving milk about eight or nine months and were due to come in three or four months from that time. We left out that milk and had no further trouble. The next year about the same time I was away from home, I had forgotten all about this experience and in passing through Chicago I stopped in the commission house. They had just got in some of my butter and the commission man says, "Goodrich, what is the matter with your butter?" He knew I was always anxious to have him tell me if anything was wrong. I told him I didn't know of anything out of the way and he drew out the tryer, and he says, "Smell of that." Well, I smelled and I told him I thought it was very faint, if there was anything wrong, but he says, "It is plain enough to me, though I don't know as an ordinary customer will notice it." Well, I took another smell and it was the same thing it had been the year before. I sat down as quick as I could and wrote a letter and I said, "For Heaven's sake, stop milking Jane and Mary." When I came

back through Chicago I stopped again, and the commission man said my butter was all right. Now, I want you all to make as good butter as you can and perhaps it will help you to know the causes of some of my failures. I tell you I have found out that you have got to watch things terribly close, and then with all the care that you can give once in a while something will go wrong.

Question No. 2—How shall we churn to hold the flavor until the butter is eaten?

Mr. Goodrich—You will have to commence by churning the ripened cream when it is soured so that it is getting thick. At my place we will say that tonight the cream just begins to get a little acid, and if it is held at a temperature of 60 degrees tomorrow morning at eight or nine o'clock we will churn, and it is ripened just right according to my notion. We will churn it at as low a temperature as we can and have it churn in a reasonable time, say, about sixty; sometimes 58 and sometimes 54. After the butter has come into granules not larger than kernels of wheat, we throw in a handful of salt. After throwing in the salt I revolve the churn a few times, draw off the butter milk and then put into this sixty pounds a couple of pails of water at a temperature of about 50 degrees, revolve a few times and draw this water off. Then two pails more and draw that off after revolving, but do not leave the water on a long time. Some folks say, wash it and wash it. I think if you wash it over and over again and draw it off and send it away there isn't much flavor in it, and your customers will be liable to tell you so. I don't ask you to have the water run perfectly clear. Somebody will say, "Oh, that is a buttermilk flavor that is in it." I don't know whether it is or not and I don't care. If the customer wants a little buttermilk flavor in it, I am willing to give it to him, if he wants more I am willing to give it to him. I will give him any flavor he wants, if I can.

Question No. 3—Can clover meadow be made permanent with clover alone? Can seed be sown at the mature time of shedding in the fall, or is it better to sow it in the spring on the snow?

Mr. Goodrich—I have had a clover meadow the last three years,



but it was exceptionally good. I don't think it is desirable to plan to have it last years in succession. I only plan to use it as a meadow one year and plow it up the next. I have sowed on two occasions in the fall with a crop of rye. It was rough seeding, the fore part of September. There was a good catch. I don't think it is the best way to sow clover in the fall, but to sow it in March on the last snows.

The Chairman—The question says, a heavy crop each year and to clean the land at the end of the year is his object.

Mr. Goodrich—His object is good. I should not expect to get there. I have had clover in pasture for a good many years but it was not pastured closely so but what it seeded every year.

The Chairman—Clover is a biennial plant. When once it seeds that root dies. Can't you take advantage of that fact and by cutting the clover before the seeds start maintain it better than if you let it get too ripe. I understand the principle that it is given all plants to reproduce themselves, and that clover reproduces itself, goes to seed the second year and it is ready to die. It may not die.

Mr. Goodrich—Just the same as some old men don't die when they ought to. They live, but they are poor stuff.

A Member—Will new seed make new roots, if you seed it each year?

Mr. Goodrich—Certainly; the seed that is scattered in the fall you will see it come up the next spring.

The Member—Can that be done year after year without plowing?

Mr. Goodrich—I think it can.

The Member—Will it kill Canada thistles?

Mr. Goodrich—I don't know about that.

A Member—I have had two crops of clover, first and second crops, that the thistles couldn't get through at all.

The Chairman—Go over it in the spring with a slanting toothed harrow. They are doing this in many of the eastern states, reseeding old meadows, renewing old pastures in this way. They use a dressing that is sold by the fertilizer companies called grass dressing, and they report excellent results.

Mr. Beach—Have you ever top-dressed your meadows after the first year's mowing?

Mr. Goodrich—I have and that helps it very much. One thing is sure, there gradually works into a clover meadow some other kinds of grass. June grass comes in and that creeps with its roots underground.

Question No. 4.—In what condition is the morality of a state that not only allows but requires that a filled cheese shall be branded, “Cream” or “Skim Cheese?”

Mr. Goodrich—That ain't my question.

The Chairman—“Its eyes are sot.” Sometimes questions of this kind don't need an answer at all, just let it kind of reach down into your moral comprehension and see to it that it don't continue any longer than you can help.

Question No. 5.—We often hear of poisoned cheese. We would like to have Mr. High give his opinion upon its cause. If unclean and rusty cans have an effect in producing the poison, if there is any discernible difference between unpoisoned and poisoned cheese in appearance when it is cut open?

The Chairman — Mr. High is gone and the Chair would like to say a little on this subject. All albuminous substances like oysters, fish, lean meat milk, are subject to certain albuminous putrefactions and when those occur there forms in them an albuminous poison known as ptomaine. There are several of the ptomaines. These are known as toxic poisons and the poison in cheese is known as tyrotoxinon. Now, there are many records kept concerning this poison. A family in England ate ham, the ham was well cooked. Heat destroys the bacteria, but not the toxic affect of the poison and so though the ham was well cooked, out of a family of five, three persons died. Persons have been known to be taken sick from eating ice cream, oysters, etc. Prof. Vaughn of the Michigan University, in his experiments on milk, found that milk is always poisoned by filthy surroundings. He found that if he set milk on the floor in an old dirty place where the floor was full of poison deposits and the milk stood on the floor over night, it took on a toxic character. Therefore, it becomes essentially necessary that if we expect to keep from having poisoned milk that we exercise the utmost scrupulous cleanliness

in cleaning all utensils and in keeping the milk in a perfectly clean place. The cheese factory and creamery take milk in the morning that is drawn at night and placed in cans and in some instances those cans are placed near filthy surroundings. We found that one of our patrons kept his can over night within sixteen feet of a stinking hog pen. It was simply ignorance on his part, but when we spoke to him about it, he added obstinacy to his ignorance. There are some men, you know, of whom there is no hope in this world, except in a funeral. Now, this thing we call milk, my dear friends, is the most wonderful, subtle thing in the world. Cow's milk is not primarily furnished for your benefit nor mine. We take advantage of this function of nature and make food from it, but it was intended for the calf, and if you and I put ourselves in the place of the calf it won't make any difference with the cow. We have to put intelligence into this question. Several factories in Wisconsin have been very badly injured by rumors of poisoned cheese. It is to the interest of every patron to guard well his milk that such misfortune shall not come to him and his factory.

Question No. 6.—When and how shall I decrease the ration of a cow after she comes up to her full ration if she is gradually declining in milk and going dry in ten months?

Mr. Linsey—I generally try to make the food proportional to the flow of milk as near as I can. I am not so very anxious to decrease it too quick but, of course, it doesn't do when I see the cow, instead of giving milk in the pail, will lay on flesh; then it is high time to stop it. I have reference to her grain feed of course. I would rather give her all clover hay and other food that she wants.

A Member—Isn't it advisable to have a cow in fair flesh when she comes in, lay on a little flesh while she is drying?

The Chairman—Yes, if you will look out for the milk fever.

The Member—We don't have many cows good enough in Wisconsin to have milk fever.

## WHY I EXHIBITED CHEESE AT THE WORLD'S FAIR.

N. Simon, Neenah.

Several years ago the reputation of Wisconsin cheese stood high in every market. Later it has been greatly damaged in consequence of the short sighted carelessness of our farmers and cheese makers. Thereby we have lost a great deal from lower prices and smaller sales than would have prevailed had the reputation of our cheese been kept up to its former standard. This loss has fallen upon all, but most severely upon the farmers, who during our recent years of drought, short crops, and hard times, have been the least able to bear it.

The importance of our dairy industries to our welfare is not understood and appreciated as it should be. The estimated value of their product in the year 1893, is over thirty million dollars and at their present rate of increase, they will, in less than ten years, amount to about fifty million dollars per annum.

Several of our American states and Canada, had fine displays of dairy products at the late World's Fair at Chicago. That of Canada was, I think, the best, though a very fine exhibit was made by the state of New York.

Although seventy awards were taken by the cheese exhibit of the three counties of Wisconsin, viz.: Winnebago, Waushara and Outagamie, yet (such was the indifference manifested by the cheese men of most of the other parts of the state,) the display of Wisconsin cheese was inferior to that of either Canada or New York.

Only a few years since the dairy business of Canada was hardly worthy of notice, but now it has pushed itself into the front rank both as to quantity and quality, and, (which is much to our discredit,) its exhibits surpassed the entire dairy exhibit of the United States at the World's Fair.

New York, Illinois and other states expended considerable sums of money on their exhibits to call the attention of the world to the quantity and quality of their cheese. Even had they not done so, it would have been unwise for Wisconsin to neglect this finest opportunity ever offered us; but, under

the circumstances, we were compelled to take part in the competition, and, having done so, it was necessary that we should make a creditable display. Yet had it not been for the three counties above named, our state exhibit would have been a disgrace to us. Such as it was, however, I think it may be safely said, that by it we have done more than years of mere trade could have done to regain our reputation in all markets and to convince dealers every where that we have begun to awaken to the true methods of business and are ready to make an effort to retrieve the lost reputation of our cheese. In hope of making some such impression as this, our cheese exhibits were, at much expense, put into the Columbian Exposition, and if the cheese men of the state will hereafter take care to banish the slovenly methods which have already done us so much injury, a very much better market will soon be ours.

Our farmers are beginning to realize that the delivery of poor milk at the cheese factory is a very costly kind of economy; that the recklessness of some has resulted in the injury of all; that he who allows himself to put upon the market an inferior article, will lose much more than he saves; that thorough, conscientious work always pays the best in the end, and that no effort should be spared to secure the passage and strict enforcement of such laws as will prevent the manufacture in our state of inferior cheese.

---

#### DISCUSSION.

A Member—Can any one give the difference in the nutritive value between alsike and medium red clover?

Mr. Everett—Alsike mixed with red clover makes very fine hay. They will mature at nearly the same time. It should be sown on moist ground. The only use we make of it is on the lower portions of the farm. On our upland we prefer to raise medium red clover for several reasons.

A Member—It is true that alsike will grow under water?

Mr. Everett—I have had it grow by sowing it on land that is washed over in the spring, but we find that we get a better

crop on the tiled portion of this low piece than where it is very wet. It can be so wet that it will not thrive at all. A question is asked about crimson clover. That is a clover which does not flourish north of the middle line of Pennsylvania as a rule. It is grown south of Mason & Dixon's line and they grow it and crop it all within a short time, about ninety days. Mr. Hale, of Connecticut, tells me it is also found in Connecticut.

Dr. Bowen—I believe it is not Mr. Hale's intention to grow it for cropping, but for turning in as a green crop. He says he desires to get the potash and nitrogen and he can get it cheaper in that way than by purchasing.

---

#### THE BABCOCK TEST ON THE FARM.

Mr. Everett—Mr. President, I am unable to estimate the value of the Babcock test on the farm. The value is certainly very great to us as farmers. It determines for us accurately in a short time the value of our cows. It finds the per cent. of butterfat in the milk that they give and that is what we are anxious to know, what we must know if we would be successful dairymen. We have been getting along a great many years,—altogether too long,—ignorant on this point of the butter value of milk, and there is no better way to determine it than by the thorough use of the Babcock test. Men often say to me, "Why not test the cow with the churn? Weigh the milk, churn it and weigh the butter?" That was once a very good way and the only way that we had, although not reliable for the simple reason that we have never known what was in that milk. We can only find out by chemical analysis; for instance, to make it more plain, I have got a cow and I want to know how good she is. I weigh the milk and I churn it and weigh the butter. I get from 100 pounds of milk four pounds of butter. Well, I consider the cow is a fairly good cow, a little better perhaps than the average. Some one comes along and tells me the Bab-

cock test and I go to work and test that cow and I find out that she is giving milk that ought to yield five pounds of butter to the 100 pounds of milk. When I tested it by the churn I was very well satisfied to get my four pounds of butter in that 100 pounds of milk, but the chemical analysis shows that I was losing about a pound of butter in that 100 pounds of milk in the manner of making or something else. Now, apply the test a little further, and I find out where this one pound is gone. It is in the buttermilk, or in the skim milk. I was not getting the cream all out of the milk, or was losing a lot of it in the buttermilk, perhaps a lot of it was going to the hogs. In this way you find out the leaks. You find out how much there is actually in the milk, and you must get it out if you would make a profit in your business. I cannot estimate the value of the Babcock test. I do not hesitate to say that I believe it has been of sufficient value to the farmers of this state to more than pay the expenses of our agricultural institutions—the whole thing. If you farmers should live to pay taxes for 200 years the Babcock test has been worth more to you than all your taxes on the educational institutions at Madison will amount to for all that time.

A Member—Of what value is it to the man who has to dispose of his milk at a factory where they pay by the weight alone.

Mr. Everett—In the first place that system isn't going to stand a great while. It is going fast and it has got to go entirely from our land. It is injustice to the producer, it is injustice to the cow and there is no justice in it from any view. Let me give you an illustration. If you sell to the factory milk that makes four pounds of butter and your neighbor sells milk that makes five pounds of butter, and you are both being paid the same, that other man is giving you half a pound of butter fat in every hundred pounds of milk, which certainly is not a fair thing. He is giving a shilling a day when butter is worth twenty-five cents a pound, and it doesn't belong to you, it belongs to the man that brings it. As soon as a man uses the Babcock test and finds out that his milk figures out a higher per cent., he is not going to work on that plan a great while. He will hunt for a factory that will pay him by the test, and

if there is not such a factory near, he will begin to agitate the matter, and the factories will have to come to it. I have recently been across the Illinois line at a Farmers' Institute, and I found there two factories that had followed the pooling system, but the proprietor of one came into that meeting and reported the success of the Babcock test system in his factory. The farmers owned the factory, the stock was \$2.00 per cow. If a man had fifty cows, he owned \$100 worth of stock. The result had been very satisfactory. The first result shown was in the weeding out of cows; then better intelligence was shown all along the line. I don't remember the figures, but it was wonderful. On the other hand the other factory was paying by the weight of the milk. I labored very earnestly with those farmers to show them that they were doing wrong. The report of the factory was an eye-opener to some of those farmers.

Mr. Goodrich—I want to tell a story to illustrate another evil that has been growing by not using the Babcock test which the Babcock test can correct. This story is absolutely true, but I won't give the names. In a certain place the patron of a certain factory was a man by the name of John Smith. Now Mr. Smith used to take about 600 pounds of milk a day to the factory. They didn't use the Babcock test. Mr. Smith was an old settler there and everybody thought he was an honest man, and I think he was at heart. The men folks had been in the habit of bringing in a little milk every morning to be used in the family. One morning the men forgot it and when Mrs. Smith called for it, he says, "Let Mary Jane go out and get some." Well, Mary Jane was the hired girl, and she went out and got some milk and brought it in. Mrs. Smith says, "This looks like cream." John looked up from his paper and he says, "Which can did you get that out of, Jane?" Jane says, "Out of the oldest can." "Well, that was night's milk. I suppose that is a little richer." Well, Mrs. Smith says, "Jane ought to go and carry it back, oughtn't she?" "Oh, I don't know, I suppose it is a little richer than the rest, but then I know my milk is richer than others in the factory." How many times have you heard that said? Just the minute a man gets over the strict line of right, he begins to smother up his conscience. That satisfied Mrs. Smith. After that they forgot to bring it in every



morning and Jane went out and got it and she got it every time out of that oldest can, and she brought in a little more too, she dipped more carefully, I don't know whether anybody told her to or not, but they finally got so much of this milk on hand and it was so rich that they had to do something with it and they churned it into butter and they had all the butter they wanted to eat, and finally they had a little butter to sell. This might have gone on forever, but Mrs. Smith and Jane got into a spat and Jane went away, and she went right over to Dick Jones and hired out. Now, do you suppose Jane kept that all to herself? She must have been a strange girl if she did. No, she told Mrs. Jones that Smiths folks were skimming the milk and Mrs. Jones fairly danced. She ran to Dick and she says, "Smith's folks are skimming the milk, we can't stand it, its stealing; you just go and tell everybody all around,—I'll tell it." Dick says, "Now, wife, hold on. You know Mr. Smith is an old settler here and he bears a good character and we are newcomers, and if we go round and tell such a story, we shall be called mischiefmakers. Just the same, I know my cows give just as rich milk as Mr. Smith's, and richer too, because I feed them more, and there is no use in our delivering richer milk than he does." So he went out early in the morning and dipped for some himself. This thing kept spreading through that neighborhood and the milk showing up poorer and poorer at the factory. Finally some of the patrons began to demand that they must use the Babcock test. The creamery man said, "No, I can't afford to use it, because it would break up my business." Well, some of them talked it over and they said, "If it breaks up a man's business to do the square thing, let it go," and they finally pressed so hard that they had a meeting, Mr. Smith and Mr. Jones were there and all the rest of them, and some were in favor of it, but Mr. Smith objected, he said it was all nonsense. He said, "If we adopt that test we will be all at the mercy of one man, and he can set it up just as much as he is a mind to, he can give the high test to his uncles and his brothers-in-law." But a man jumped up in the other part of the room and he says, "I had rather be at the mercy of one good, honest, capable man than to be at the mercy of every other patron." I thought he had hit it just on the head exactly.

Well, they finally voted in favor of the test. Mr. Smith was so mad about it that he wouldn't bring his milk. He kept out 600 pounds of milk, and just as true as you live, they made more butter the next day, the records of the factory will show it. Now, Mr. Smith was a nice man, he used to pray every day in his family, I remember part of his prayer was, "Lord, lead us not into temptation," but still he talked in favor of being in temptation and he voted for it, and was as mad as could be because he couldn't have the temptation before him. Now, I say any system that tempts a naturally good, fair, honest man to do such a thing as that, to be such a dishonest man, is leading them down the road that we don't any of us want to go. And that isn't the worst of it. We old, gray-headed fellows will be going out of the world pretty soon—and maybe the world will be better when we are gone, if the next generation doesn't come right up in our footsteps. I tell you our boys, though we think we fool them sometimes, they know what we are. Don't you suppose Dick Jones' boys knew that he got up before daylight and went out and stole some cream from his cans, and the worst of it is they would do the same thing when they got as old as Dick, only they would dip half way through the can.

#### THE BABCOCK TEST IN THE CREAMERY.

The Chairman—There are a large number of creameries in the state which are dividing the milk money by the test and there are a number that are not. There are a number of cheese factories that are doing the same; that is, dividing, and a large large number that are not, most of them are not. Now, I want to give you a few practical facts concerning the experience of the Home Hoard Creamery in Ft. Atkinson, in its adoption of the Babcock test. First, you will hear a large number of creamery men say they cannot afford to buy the sulphuric acid and the machinery and all, and spend the time in taking the test for a lot of patrons that don't appreciate it and who will not allow anything for the expense, and who profit by it, while the creamery man does not profit by it. The creamery man is wrong. The creamery man does profit by it and I will prove it. On the

first of April, 1891, the Hoard Creamery accepted the Babcock test. This creamery had been in existence for four years, and for the four years the average butter fat in that creamery was 3.97, not quite 4 per cent. In less than a week after we adopted the Babcock test the increase of butter was 30 pounds, and in six months' time the average increase of butter fat in that creamery in the same milk, was one third of a pound of butter to every 100 pounds of milk. Now, the creamery got the pay for making one third of a pound of butter more to every hundred pounds of milk which would be 1 1-3 cents, which would pay for the whole expense on a proposition of ten to fifteen or eighteen thousand pounds of milk a day very nicely; therefore, the creamery itself profited by instituting the test. How can we account for this additional one-third of a pound of butter? How was it that the patrons' milk increased in richness? Not altogether on account of dishonesty; they were a lot of patrons naturally good men, whose oaths I would take anywhere, whose word I would take on a general proposition, but the old system had encouraged that, because Tom thought he ought to get even with Dick in this way. It was a vicious, wicked, wrong system, it prompted this demoralization of conscience. The Babcock test has cleaned that entirely out; the moral equation is no longer in the problem, the moral hazard no longer exists. Every man brings honest milk because that man can get no profit from skimming or watering. At once when you confront a patron with the test and you give him an opportunity of seeing how his neighbors test, it comes right before him and it makes a constant stimulus to better effort, because every one of them, A, B and C, knows that if they do better they get their reward for it, and as a consequence, after this thing was started, they began to feed better and take care of the cows better, to house them better and look after them, and all these things tended to the increase of the fat in the milk. As a consequence those patrons that were kicking and were very hard to get into line, are the very ones who could not be persuaded to forsake the Babcock test now, if you should undertake it with a shot gun. Every man is satisfied now that there is justice and fairness and that the business is on a plane that leads to righteousness, because there is a judgment to come. Now, every man is

judged according to the deeds done in the body, and it is a splendid system.

Some of our competitors were foolish enough to believe that the putting in of the test into Hoard's creameries would send a whole lot of discontented patrons over to them and they boasted a little about it, and one of them chuckled and says, "You keep on with your test and we will get your patrons." "No," I says, "that is a shallow judgment. You keep on without your test and we will get your patrons," We finally bought the man out and why? Because without the test the creamery got no credit for any more fat than there was in the milk and when you come to put in an increase of a third of a pound on every hundred pounds of milk the maker gets credit for that and the dividend came up about eight or nine cents a pound. As a consequence our dividends being higher than his made his patrons discontented, and at once a kick arose. The man didn't see clearly to the end of the proposition. My friends, if you are in a cheese factory or in a creamery you will come to this test sooner or later; it will cost you less to come to it sooner. One thing happened that amused us. Some of those patrons refused to go into the test. My son and myself consulted a good deal about the matter. We thought it would be shrewder to work them shrewdly, so we finally said to them, "We are going to have the test anyway. Now, those of you who want to divide your milk by the test, shall go into this vat and it shall be called the test vat. Then those of you that don't want to divide by the test shall go into this other vat. We will make up the butter separately, separate it separately, churn it separately and sell it separately, keep separate accounts entirely. Well, we started in, it continued that way for a week, the fellows that had lean milk went into this vat, the fellows that had rich milk went into that. The fellows that had the lean milk stood it for about a week, they could not trust one another, and you never saw anybody climb out as they did out of that vat. They didn't like the society that they were in, and were anxious to get into the other vat.

Now, mark the difference, my friends, in the value of returns to these men. We publish a report every year and send it to the patrons in the form of a little book. Every patrons' name

is in that little book and the money that was paid to him per hundred pounds is there and at the end of the year the average. Now, see what a difference there is in the profits to individual men. We have one patron to whom we paid last year 89 cents a hundred pounds for his milk, and another patron that we paid \$1.36 and the man that got the \$1.36, his cows gave the most per cow. Now, see what a wide space that is for the reward of brains and energy and intelligent study. The man that got the 136 cents is a student, he reads, studies, thinks, puts brain work into the question of making milk. The other man is a fairly intelligent man but he is not yet convinced that you had better have an ounce of brains than ten pounds of muscle. I pity these men and often talk with them. I asked them, "Why, don't you brace up?" and try to stir them out of their stupidity.

A Member—If bacteria fall into the milk and are the cause of souring, is there any danger of their getting into a person's mouth and souring his disposition, making him cross and disagreeable? And if so, what is the remedy?

The Chairman—I'll bet that is written by a woman.

A Member—I would like to know if dehorning cattle is practiced by dairymen?

Mr. Faville—My nephew raises a dozen heifers each year. He takes a calf when it is about two or three days old and takes a pair of shears and clips the hair close and moistens the skin and rubs it a little with some caustic potash. One application will kill the horn and it will never grow. Two shillings worth of potash will do more than a hundred calves if kept from the light. One man can do it alone, but two can do it better. You want to be careful to put the potash only just where you want it, and also keep it off your hands. It forms a little scab that in four weeks will entirely disappear.

A Member—I have had dehorning done on my cows and they never lost a feed.

A Member—I have had it done, but it knocked me out of five cents on the market in Chicago, but I believe it was not done properly.

Mr. Everett—I have dehorned a good many with the saw. I now follow the practice of using the caustic potash altogether.

I do think this work ought to be done when the animals are calves as it is apt to affect a nervous cow more or less.

A Member—Is there any cow that does not test one per cent.

Mr. Hazen—I know a man that had a cow once that milk wouldn't test over two per cent., and she gave about 65 pounds of milk a day. I want to say that I this last season bought a Babcock test and tested some cows that I had, and I was very much disappointed in my cows when I came to test them. What I supposed were my best cows were really the poorest ones I had. I want to say that I am very glad to see the interest that is manifest in this meeting. I helped organize this association. At that time we had some things in view that we have accomplished. Twenty-two years ago this winter we held our first convention, and we were in a pretty hard row of stumps to find material to fill up our convention, and the audience was pretty lonely. We had to pay our own expenses and I believe Gov. Hoard here run a paper at that time and he published the first report and never got very well paid for it, I guess, at least not directly, but the association has grown and I think we are all pretty well satisfied. I worked here three years as president of this association and I did the best I could. Since then we have got in more able men than I am, but I still like to attend the meetings and look on. I think this has been the best convention we ever had and particularly the banquet.

## GOOD TIMES TOGETHER.

The Chairman—We have had good times together. This sort of making our study and our effort in a neighborhood I think is the height of good civilization. I think when we all get down to understand one another, we all have about the same human heart in our bosoms. We all like neighborliness and sociability and we all like progress, and I believe the Wisconsin Dairymen's Association has shown in this convention and at the banquet last night, that it has not been stricken with old age yet. When one of the oldest vice presidents of the association can get up on to the floor and make a young girl just fairly prance to keep up with him, and Tom Blackstock can get up and dance an Irish jig in the way that is fairly paralyzing to any ordinary individual, and we can have a good supper and such a feast of reason and such a flow of sociability, I want to be able to attend these conventions as long as I live, and then I want to die in the full recollection of them. It is now time to close this convention. My friends, we have had a most excellent convention; I do not think for the quality of its thought, the thoroughness of its discussion, the originality of the experiences here told, the character of the men, the widespread distances from whence they have come and brought their experience, that it has ever been exceeded in interest, if even equaled by any held in the history of this association. We have had men from the far east, men from Canada, we have had a thorough coalescing, a thorough crystallization and focusing of thought and intelligence on these questions. But there is so much more yet to be learned that even those who have spent their lifetime in this study see beyond them fields yet unexplored, and propositions of great profit yet to consider.

I wish to say a word to the young men and that is this: If you are ambitious boys, if you have an idea that some other place outside of the farm will give you an opportunity to exhibit your talent and your brain and your education, let me advise you that on the farm and in these problems you will find a the-

ater broad enough for all the brains that a Webster can bring to bear and here you will find opportunity for intelligence and interesting study. If you have a wealth of thought, here you can bring it to bear; if you have an idea of exploring the mysteries of plant life and animal life, and all to culminate in profit to you, you will find opportunity for the highest research and the highest effort. It is no very great thing, as I have said before sometimes, for a man to be a banker, or a lawyer or a merchant. That man has before him laws, rules of business that were made by the men behind him, the men who preceded him; they laid them down and all he has to do is to turn to the books and read the rules which have been established by men, and so with the banker and so with the merchant. But when you come to these problems, you are dealing with laws that God Almighty established, and I tell you that if you are ambitious to show your intellect in this world that it takes a very much smarter man, a much larger man, a man of keener perceptions and stronger reasoning power to interpret the laws that God has made, than to follow the laws that man has made. Now, you are dealing with all the mysteries of plant life and particularly in the dairy business, with the mysteries of maternal life, and you need here the largest study possible; you need to bring to your aid every opportunity of intelligence on this wonderful animal life. We need to have the co-operation of the mothers and the daughters upon the farm. Oh, I tell you it is a wonderful thing for a boy to have a sympathetic mother. There is no touch on earth that can lift a man like the touch of woman, and the grandest thing to me in all my days—and I feel her hand on my brow this moment,—is the inspiration and the touch of the mother that gave me my first impulse toward the study of this maternal life, and if I have achieved anything at all in this study it is due to the wonderful wisdom and the patience and the loving faith that that old mother, back on the hills of New York, had in her boy who was out here in Wisconsin.

I want to say that the mothers of our farms, the fathers of our farms and the sisters of our farms and all this wonderful farm life can be made of marvelous effect to the advancement of our citizenship and to our country and our commonwealth.



providing we come to it as Christ said to the Jews, "Except ye become as little children ye shall in no wise enter the Kingdom of Heaven." It was a profound thought, "except ye become teachable, ye shall in no wise enter the Kingdom of Heaven, nor the kingdom of science, nor the kingdom of agriculture, nor the kingdom of the farm, nor any other kingdom of human conquest, except ye are men of heart and brain who are willing to be taught."

We need this teachableness, oh so much, and every man I think that comes to mature years finds himself as he goes along saying to himself, "How much have I lost because of my stupidity, because of my unwillingness to be taught." Now, let us as we break up this convention go from it with hearts sweetened, brains cleared and purposes strengthened, aspirations gained in pursuit of knowledge for another year, with the resolution that we will demonstrate to the people of Wisconsin that we will be better farmers for coming here and coming into the associations we have met here. I have no faith in that farmer making a good citizen that is not a good farmer. I never saw a poor farmer yet that was a good citizen. The God of the state has given to him this heritage, disclosed the wealth of the soil; if he wastes it he is wasting the fertility of the state, and so today we need a long broad view covering the whole question.

I have had the honor of presiding over the discussions of this association for three years. I desire to tender to my associates, those with whom I have been connected in this grand organization, and to the good people who have backed me so gallantly and so well, I desire to tender to them my heartfelt thanks. My ambitions, my friends, are not in politics; the only ambition I have is to be of some service in the prosecution and the promotion of the material and moral and political social well being of my people, and I care but little for many things that some men think are of great purpose and necessity to them.

I have an ambition growing stronger every year to see this wonderful dairy industry arise, have a free course and run and be glorified in Wisconsin.

I thank you again and now declare the twenty-second convention of the Wisconsin's Dairymen's Association adjourned sine die.

---

In Memoriam.

---

William Henry Morrison.

---

## WILLIAM HENRY MORRISON

William Henry Morrison, whose death has been so widely mourned in Wisconsin, was born in Yorkville, Oneida county, New York, 1837. He came to this state in 1859, and settled in Walworth county. His education was obtained in the common schools and in Milton College. After leaving school he engaged in the business of farming. He was married September 24, 1862, to Julia M. V. Heath, who is now living with her two children, Howard and Bird Morrison, at Madison. While a resident of Walworth county, Mr. Morrison was elected register of deeds three terms, and was secretary of the Walworth Agricultural Society nine years. He was president of the Wisconsin State Dairymens' Association three years. For several years he was one of the proprietors of the Western Farmer, and was during his life one of the leading members of the State Agricultural Society. Upon the organization of the Wisconsin Farmers' Institutes in 1885, he was made superintendent, a position he held until his death, which occurred at his home in Madison, December 13, 1893. His death, in the prime of life, was the result of a fall upon an icy sidewalk.

Mr. Morrison's public reputation rests mainly upon his work as secretary of the Walworth County Agricultural Society, and in the Farmers' Institutes. He had organizing genius. From an unheard of thing he made the Walworth County Fair known all over the United States in agricultural society circles. Built upon his model, it stands today, the strongest society of its class in the west. He took the Farmers' Institutes when they embodied nothing but a dream and an appropriation, made them popular fountains of fruitful knowledge, handled the appropriation so wisely that the state was glad to more than double it, and made, for his state and himself, a reputation in farm institute work that reached the agricultural mind of every civilized nation. More important than this,—he stirred the farmers of Wisconsin to profitable thought. He made the institutes the places, not for intellectual displays, merely, but for

intellectual trades, where practical ideas were the merchandise, and each man brought away more than he gave. Mr. Morrison loved this work. Heart, mind and soul were absorbed in it. In conversation he could hardly drift away from it. He knew the hardships of farm life. His sympathies were with the men who toiled. In the work of agricultural education he could see a lever lifting farm life to better and happier ways. And so the enthusiasm that filled him was of the best, and was contagious because it was so warm, and so honest.

Mr. Morrison's life and work has been worth millions of dollars to this state. Men may do better things than help enrich their fellow men, but not many. Comfort and crime are not akin. Poverty and sorrow go hand in hand, with ignorance in the lead. The institute work brought a wealth of ideas as well as of dollars. Wm. H. Morrison's monument in this state, and in many other states will be a more profitable agriculture, a broader and deeper farm mind, and a happier farm life.

To his personal friends, his death comes as one of the hardest things of life to bear. He loved his family, his home and his friends with a tenderness and an intensity which brought back to him that which he gave. Gentle in his ways; strong in his affection; rich in a comprehensive charity; singularly free from the poison of malice, and the folly of envy, he represented a rare Christian manhood.

Delicate shades of character, or of feeling, cannot be pictured in right form through the dull machinery of words. The tributes of flowers and of tears are best. But the life of William H. Morrison is worth many tributes, and among the rest shall be the lasting memory and love of those who knew him well.

H. C. Adams.



WISCONSIN RBW7  
DAIRYMEN'S ASSOC. D15  
ANNUAL REPORT 1894  
1894

DOCUMENTS  
COLLECTION

89044338382



b89044338382a