Thirteenth annual meeting of the Wisconsin Cheese Makers' Association held in the Convention Rooms, Republican House, Milwaukee, Wisconsin, Wednesday, Thursday and Friday, January 4, 5 and 6, 1903. 1...

Wisconsin Cheese Makers' Association
Madison, WI: Democrat Printing Co., State Printer, 1905

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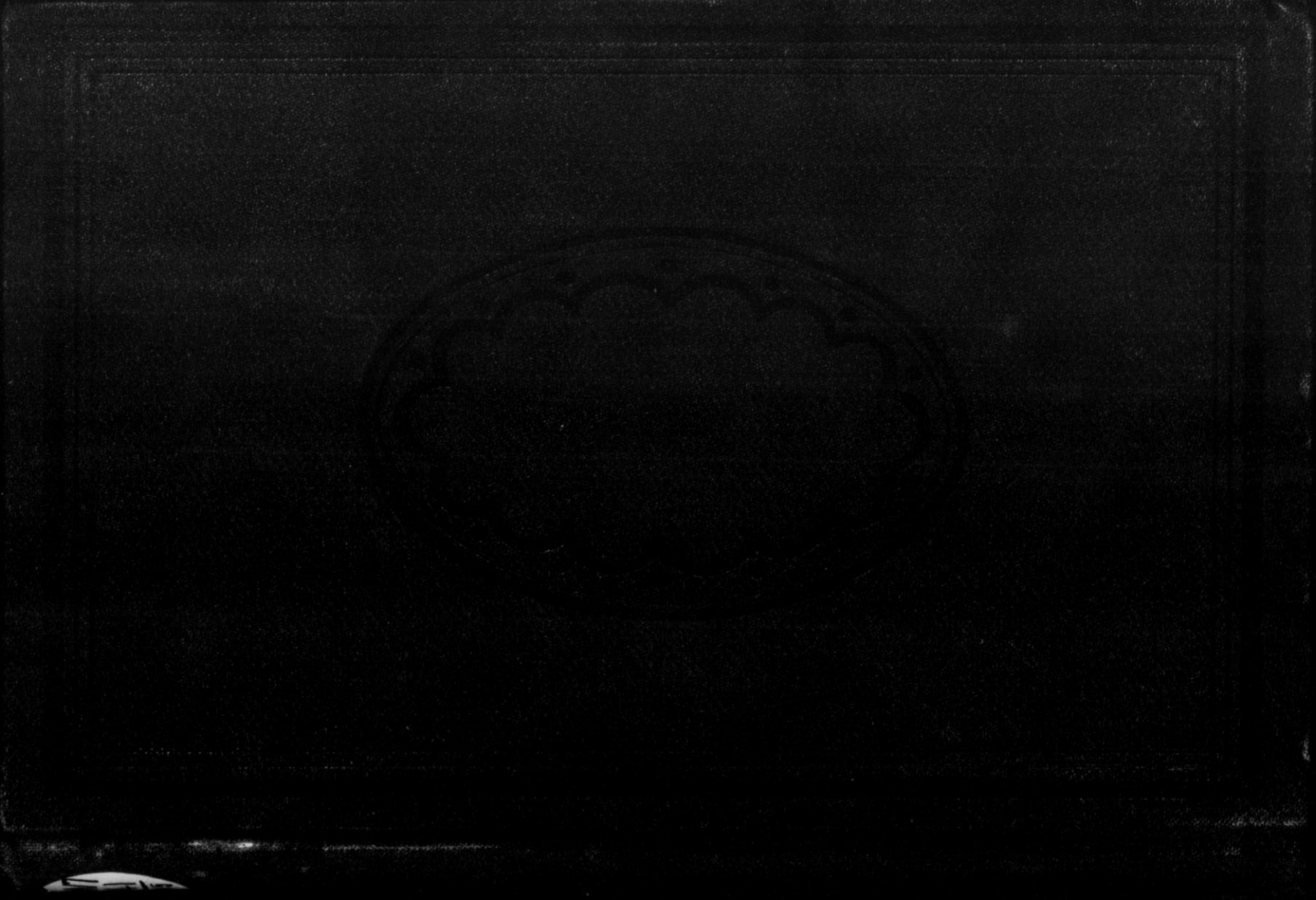

OFFICERS OF THE CHEESE MAKERS' ASSOCIATION.

THIRTEENTH ANNUAL MEETING

OF THE

WISCONSIN

Cheese Makers' Association

HELD IN THE

Convention Rooms, Republican House, Milwaukee, Wisconsin, Wednesday, Thursday and Friday, January 4, 5 and 6, 1905.

REPORT OF THE PROCEEDINGS, ANNUAL ADDRESS OF THE PRESIDENT, AND INTERESTING ESSAYS AND DISCUSSIONS RELATING TO THE CHEESE INTERESTS.

COMPILED BY

U. S. BAER, Secretary.

MRS. A. L. KELLY, Stenographic Reporter.

MADISON, WIS.

DEMOCRAT PRINTING COMPANY, STATE PRINTER.

1905.

LETTER OF TRANSMITTAL.

OFFICE OF THE SECRETARY,
WISCONSIN CHEESE MAKERS' ASSOCIATION,
MADISON, WIS., 1905.

To His Excellency, ROBERT M. LA FOLLETTE,
Governor of the State of Wisconsin:

I have the honor to submit the thirteenth annual report of the Wisconsin Cheese Makers' Association, showing the receipts and disbursements the past year, also containing the papers, addresses and discussions had at the annual convention held at Milwaukee, January 4–6, 1905.

Respectfully submitted,
U. S. BAER,
Secretary.

OFFICERS, 1905.

President:—

E. L. ADERHOLD ..... Neenah, Wis.

Vice President:—

M. MICHELS ..... Garnet, Wis.

Directors:—

Three Years—F. J. KARLEN ..... Monroe, Wis.
Two Years—J. W. CROSS ..... Mauston, Wis.
One Year—J. GROOTEMONT ..... Brillion, Wis.

Treasurer:—

F. MARTY ..... Monroe, Wis.

Secretary:—

U. S. BAER ..... Madison, Wis.

TABLE OF CONTENTS.

ARTICLES OF INCORPORATION

OF THE

Wisconsin Cheese Makers' Association

(Adopted February 2, 1899.)

ARTICLE I.

The undersigned have associated and do hereby associate themselves together for the purpose of forming a corporation under Chapter 86 of the Wisconsin statutes of 1898 and the acts amendatory thereof and supplementary thereto, the business, purpose, and object of which corporation shall be the education of its members for better work in the art of making cheese, the care and management of factories, the sale of their products and the weeding out of incompetency in the business of cheesemaking; the further object of the corporation is to demand a thorough revision and rigid enforcement of such laws as will protect the manufacture of honest dairy products against undue competition from deceitful and dangerous imitations; and to unite the rank and file of its members in instituting a regular crusade against the unjust practice of pooling milk at cheese factories by weight, without regard to the butter fat which it contains.

ARTICLE II.

This corporation shall be known as the "WISCONSIN CHEESE MAKERS' ASSOCIATION," and its principal office and location at Madison, Wisconsin.

ARTICLE III.

The association shall be a corporation without capital stock. Any person who is a practical cheesemaker, and such other persons as are

directly or indirectly interested in the manufacture and sale of unadulterated cheese may become members of this corporation by paying one dollar annually in advance and signing the roll of membership.

ARTICLE IV.

SECTION 1. The general officers of said association shall consist of a president, vice-president, secretary and treasurer, and the board of directors shall consist of three members of the association.

SECTION 2. The term of the officers of the association shall be one year, or until their successors are elected at the next annual meeting following their election, and until such successors qualify. At the first meeting of the members of the association there shall be elected a director for the term of one year, a director for the term of two years, and a director for the term of three years, and thereafter there shall be elected at each annual meeting a director for the term of three years, and each director shall hold his office until his successor is elected and qualifies. The election of officers and directors shall be by ballot, except in case of a single nominee, when election by acclamation may be substituted. A majority of all the votes cast shall decide an election.

ARTICLE V.

SECTION 1. The principal duties of the president shall be to preside at all meetings of the Board of Directors and of the members of the association during his term of office. He shall appoint special committees and sign all orders drawn on the treasurer. He shall appoint a committee on resolutions and a program committee. He shall also provide for suitable medals at the expense of the association.

SECTION 2. The vice president shall assume the duties of the president in the latter's absence.

SECTION 3. The principal duties of the secretary of this association shall be to keep a complete and accurate record of the proceedings of the Board of Directors and of the association and to attend all meetings, keep a correct account of the finances received, pay all moneys into the hands of the treasurer and receive his receipt therefor, and to countersign all orders for money drawn upon the treasurer. He shall keep a record book and suitable blanks for his office. He shall make a full and complete report at each annual meeting of the correct state of the finances and standing of the association. He shall also procure certificates of membership, and every person joining the association shall receive one signed by the president and countersigned by the secretary.

SECTION 4. The principal duties of the treasurer shall be to faithfully care for all moneys entrusted to his keeping, paying out the same only on receipt of an order signed by the president and countersigned by the secretary. He shall file with the secretary of the association all bonds required by the articles of incorporation or the by-laws. He shall make at the annual meeting a detailed statement of the finances of the corporation. He must keep a regular book account, and his books shall be open for inspection at any time by any member of the association.

SECTION 5. The Board of Directors shall be the Executive committee and shall audit the accounts of the secretary and treasurer, and present a report of the same at the annual meeting; Executive committee shall procure a place to hold the meeting and make arrangements for Reception committees, hotel rates, halls, and all necessary preliminary arrangements for each and every meeting.

SECTION 6. The committee on programs shall make all arrangements for the proper working of the conventions, assigning all subjects, arranging for speakers, and make the division of time allowed to the discussion of each topic, to determine upon the time for the election of officers, conducting business meetings, and any other matters that may properly come under this division.

SECTION 7. The committee on resolution shall draw up such resolutions as the exigencies of the time may require and which shall express the sense of the association.

SECTION 8. The said officers shall perform such additional or different duties as shall from time to time be imposed or required by the members of the corporation in annual meeting, or by the Board of Directors, or as may be prescribed from time to time by the by-laws, and any of the duties and powers of the officers may be performed or exercised by such other officers or officer, or such person or committee as the corporation or Board of Directors may authorize.

ARTICLE VI.

The treasurer of this corporation shall give a bond in the sum of one thousand dollars with two sureties, for the faithful performance of his duties.

ARTICLE VII.

These articles may be altered or amended at any regular session of an annual meeting of the members, provided the proposed alterations or amendments shall have been read before the association at least

twenty-four hours previously, and provided also that such alterations or amendments shall receive a two-thirds vote of the members present.

ARTICLE VIII.

The first meeting of this association for the election of officers and directors shall be held on the 3d day of February, 1901, and such corporation shall hold a meeting of its members annually during each calendar year at such time as may be determined by the Board of Directors.

MEMBERSHIP WISCONSIN CHEESE MAKERS' ASSOCIATION, 1905.

A.

Aderhold, E. L.	Neenah	Wisconsin
Auer, G. E.	Soldiers Grove	Wisconsin
Austin, H. E.	Boscobel	Wisconsin
Andregg, Casper	La Crosse	Wisconsin
Appleton, J. W.	Kaukauna	Wisconsin
Ackerman, Jos.	Monroe	Wisconsin
Alexander, C. B.	Providence	Illinois
Austin, W. A.	Kewaunee	Wisconsin
Adams, M. J.	Waukesha	Wisconsin
Anderson, H.	Sheboygan	Wisconsin

B.

Brinkmann, C. F.	Brinkman	Wisconsin
Bremmer, C. A.	Muscoda	Wisconsin
Beller, Christ	Mt. Vernon	Wisconsin
Baer, U. S.	Madison	Wisconsin
Buchen, G. J.	Antigo	Wisconsin
Biddulph, J. R.	Providence	Illinois
Bender, Fred	Boaz	Wisconsin
Boll, E. C.	Sheboygan	Wisconsin
Berg, Julius	Sturgeon Bay	Wisconsin
Bagnall, Joe	Jacksonport	Wisconsin
Buss, A. C.	Marion	Wisconsin
Benishek, Anton	Manitowoc	Wisconsin
Bahr, C. A.	Kiel	Wisconsin
Becker, O. W.	Lynn	Wisconsin
Bachmann, J. F.	Freemont	Wisconsin
Brandt, Aug	Forestville	Wisconsin
Bracy, E. L.	Chicago	Illinois
Bolchen, Christ	Boscobel	Wisconsin

Beeck, Geo.	Sheboygan Falls	Wisconsin
Becker, Henry	Random Lake	Wisconsin
Bagley, F. R.	Chicago	Illinois
Burg, Edgar	St. Anna	Wisconsin
Bruni, Carl	Monroe	Wisconsin
Bamford, H. J.	Plymouth	Wisconsin
Betrand, Theo	Chilton	Wisconsin

C.

Carson, W. J.	Madison	Wisconsin
Carswell, F. J.	Lone Rock	Wisconsin
Cross, J. W.	Mauston	Wisconsin
Clark, L. L.	Greenleaf	Wisconsin
Carty, John	Sawyer	Wisconsin
Curry, C. L.	Readstown	Wisconsin
Conrad, B.	Haven	Wisconsin
Cornish, O. B.	Ft. Atkinson	Wisconsin
Curtin, D. R.	Hilbert	Wisconsin
Casanova, John	Juda	Wisconsin
Cook, G. H.	Chicago	Illinois
Cranston, P. E.	Sabin	Wisconsin
Chlespik, John	Tisch Mills	Wisconsin
Cannon, S. D.	Dale	Wisconsin
Cook, Hon. S. A.	Neenah	Wisconsin
Chaplin, E. W.	Plymouth	Wisconsin
Cannon, J. D.	New London	Wisconsin
Castro, Jose	Concepcion	Chili, S. A.

D.

Douma, M. G.	Cleveland	Wisconsin
De Haan, Matthew	Lineville	Iowa
Duebner, O. C.	Timothy	Wisconsin
Dassow, E. H.	Plymouth	Wisconsin
Durst, J. W.	Dodgeville	Wisconsin
Durst, Henry	Kiesville	Wisconsin
Dedrick, Joseph	Yuba	Wisconsin
Davis, Horace	Chicago	Illinois
Dean, C. J.	Seymour	Wisconsin
Decker, A. J.	Fond du Lac	Wisconsin
Damrow, O. A.	Sheboygan Falls	Wisconsin
De Land, A. D.	Sheboygan	Wisconsin
Deering, W. A.	Boscobel	Wisconsin
Diehl, E. C.	Spring Green	Wisconsin

E.

Elling, W. J.	Dana	Iowa
Elmer, Henry	Belleville	Wisconsin
Emery, Prof. J. Q.	Madison	Wisconsin
Ebstoesyer, Edward	Sheboygan	Wisconsin
Erdman, A. B.	Two Rivers	Wisconsin
Eichinger, J. J.	Sawyer	Wisconsin
Emil, Matti	Mt. Horeb	Wisconsin
Ehrlich, Otto	Sheboygan Falls	Wisconsin

F.

Freimund, Otto	Plymouth	Wisconsin
Feifarek, L. F.	Peshtigo	Wisconsin
Fassbind, M.	Mt. Horeb	Wisconsin
Falck, Louis	Morrison	Wisconsin
Fokett, C. J.	Reedsville	Wisconsin
Fokett, August	Reedsville	Wisconsin
Failey, Owen	Appleton	Wisconsin
Flick, W. J.	Dunville	Wisconsin
Farrington, E. H.	Madison	Wisconsin
Farrington, E. G.	Greenleaf	Wisconsin
Frame, R. L.	Howard's Grove	Wisconsin
Falk, Emil	Waldo	Wisconsin
Fisher, E. H.	Waldo	Wisconsin
Fulmer, F. B.	Ettrick	Wisconsin
Fiefarek, L. F.	Peshtigo	Wisconsin
Flick, W. J.	Dunville	Wisconsin

G.

Ganschow, R. C.	Bonduel	Wisconsin
Gartmann, H. C.	Sheboygan	Wisconsin
Gerlach, Adam	Elkhart	Wisconsin
Gates, C. N.	Madison	Wisconsin
Green, R. C.	Albion	Wisconsin
Griener, P. H.	Little Chute	Wisconsin
Grootemont, John	Brillion	Wisconsin
Glover, A. J.	Ft. Atkinson	Wisconsin
Gerlach, L. H.	Sturgeon Bay	Wisconsin
Gehl, M. C.	Milwaukee	Wisconsin
Gartmann, Chas.	Sheboygan	Wisconsin
Gates, R. L.	Random Lake	Wisconsin

H.

Harder, F. J.	Hilbert	Wisconsin
Henry, A. E.	Sheboygan Falls	Wisconsin
Hadler, Fred	New Holstein	Wisconsin
Held, Fred	Mt. Horeb	Wisconsin
Hoeppner, John	Marion	Wisconsin
Howe, J. H.	Spring Green	Wisconsin
Hatfield, P.	Spring Green	Wisconsin
Helm, A. B.	Milwaukee	Wisconsin
Hansen, E. R.	Wyandotte	Michigan
Harwood, O. E.	Madison	Wisconsin
Heckert, C. H.	Chilton	Wisconsin
Hesselink, G. K.	Oostburg	Wisconsin
Hingiss, H. Y.	Cleveland	Wisconsin
Hargartner, J. J.	Marion	Wisconsin
Hardicker, F. H.	Chicago	Illinois
Horr, Geo. B.	Chicago	Illinois
Hank, Edwin	Saginaw	Michigan
Huse, Geo. H.	Black Creek	Wisconsin
Herman, A. C.	Tonet	Wisconsin

I.

Indermuehle, Chas.	Milladore	Wisconsin

J.

Jordan, H. C.	Chilton	Wisconsin
Jones, W. F.	Lake Mills	Wisconsin
Joslin, H. C.	Richland Center	Wisconsin
Johnston, Robert	St. Thomas	Ontario
Joseph, Frank	La Farge	Wisconsin
Janssen, J. H.	Adell	Wisconsin
Jonely, B.	Brownsville	Wisconsin

K.

Krueger, C. F.	Mattoon	Wisconsin
Karlen, Jake	Monroe	Wisconsin
Kielsmeier, Otto	Manitowoc	Wisconsin
Knappmiller, T. F.	Kewaunee	Wisconsin

Kasper, P. H.	Nicholson	Wisconsin
Kalk, Herbert	Sheboygan	Wisconsin
Kaestner, Albert	Sheboygan Falls	Wisconsin
Kachel, T. A.	Whitewater	Wisconsin
Krueger, A. C.	Adell	Wisconsin
Kaley, M. A.	Spring Green	Wisconsin
Krieser, Ben	Stark	Wisconsin
Koskaup, Herman	Oostburg	Wisconsin
Koehler, A. C.	Plymouth	Wisconsin
Keller, Edward	Grafton	Wisconsin
Keska, James	Avoca	Wisconsin
Karlen, F. J.	Monroe	Wisconsin
Kaumer, Jacob	Darlington	Wisconsin
Kleist, E. L.	Seymour	Wisconsin
Kohl, Chas.	Sheboygan Falls	Wisconsin
Kerscher, Frank	Manitowoc	Wisconsin
Klein, Arthur	Barton	Wisconsin

L.

Lillibridge, C. M.	Chicago	Illinois
Lagrandeur, H. A.	Summerset	Wisconsin
Lindow, Wm.	Plymouth	Wisconsin
Lord, Frank	Twin Bluffs	Wisconsin
Loid, J.	Twin Bluffs	Wisconsin
Lepley, Edgar	West Lima	Wisconsin
Lepley, Fred	Woodstock	Wisconsin
Litzky, Chas.	Milwaukee	Wisconsin
Lemke, M. A.	Kaukauna	Wisconsin
Larson, H. C.	Dodgeville	Wisconsin
Luedke, B. H.	Seymour	Wisconsin
Laabs, F. W.	Madison	Wisconsin
Lange, H. L.	Waldo	Wisconsin
Loomis, H. J.	Sheboygan Falls	Wisconsin
Luchsinger, John	Monroe	Wisconsin
Laurent, J. M.	Algoma	Wisconsin
Larsen, Peter	Pittsfield	Wisconsin
Lawrence, Benjamin	Boscobel	Wisconsin

M.

Mickle, C. S.	Sextonville	Wisconsin
Monrad, J. H.	New York City	N. Y.
Murray, R. A.	Yuba	Wisconsin

Mante, A. L.	Hartford	Wisconsin
McKinnon, M.	Sheboygan Falls	Wisconsin
Mueller, Henry	Sheboygan	Wisconsin
McVay, A. J.	Bonduel	Wisconsin
Matti, John	Mt. Horeb	Wisconsin
Matti, Albert	Mt. Horeb	Wisconsin
Mussbaumer, F.	Plymouth	Wisconsin
Michels, Matt.	Garnet	Wisconsin
Marty, Gottlieb	Juda	Wisconsin
Mullendore, A. M.	Richland Center	Wisconsin
Marty, Fred	Monroe	Wisconsin
Madding, Walter	Woodstock	Wisconsin
McCaig, John	Hubbleton	Wisconsin
Murphy, Morris	Chicago	Illinois
Mahacek, Loddie	Kewaunee	Wisconsin
Miller, Edward	Cream	Wisconsin
Miller, Chas.	Knowles	Wisconsin
Muehlberg, O. E.	Fredonia	Wisconsin
Marty, Jacob	Brodhead	Wisconsin
Mirteli, Aug.	Juda	Wisconsin
Marie, A. W.	Madison	Wisconsin
Mouldenhaur, H. R.	Lebanon	Wisconsin
Maurer, W. H.	Monroe	Wisconsin
Mason, Peter	Manitowoc	Wisconsin
Mulvey, F. J.	Hingam	Wisconsin
McChuskey, J. W.	Clyde	Wisconsin
Moore, J. G.	Madison	Wisconsin
Meyer, R. B.	Unity	Wisconsin
Matznick, G. M.	Collins	Wisconsin

N.

Noyes, H. J.	Muscoda	Wisconsin
Niquette, Raymond	Lena	Wisconsin
Newman, B. W.	Madison	Wisconsin

O.

O'Konski, Paul	Kewaunee	Wisconsin
O'Pichka, Joe	Kewaunee	Wisconsin
Ouradnik, H. J.	Luxemburg	Wisconsin

P.

Piper, C.	Plymouth	Wisconsin
Piper, D.	Plymouth	Wisconsin
Peacock, P. A.	Sheboygan	Wisconsin
Podhola, W. M.	Manitowoc	Wisconsin
Priebe, H.	Logansville	Wisconsin
Pingel, E. C.	Elkhart	Wisconsin
Pool & Son	Darlington	Wisconsin
Pipal, V. W.	Blue River	Wisconsin
Petri, John	Wayne	Wisconsin
Pheatt, H. D.	Milwaukee	Wisconsin
Perren, C. F.	Fond du Lac	Wisconsin

R.

Radel, B. W.	Richland Center	Wisconsin
Regez, August	Dodgeville	Wisconsin
Regez, Jacob	Monroe	Wisconsin
Roemer, Joseph	So. Kaukauna	Wisconsin
Reid, J. J.	Oconomowoc	Wisconsin
Roll, Emil	Ketoskie	Wisconsin
Rohde, Anton	Timothy	Wisconsin
Reinhart, F. C.	Allenville	Wisconsin
Radloff, Max P. E.	Hustisford	Wisconsin
Ruetten, Peter	Twin Bluffs	Wisconsin
Reineking, F. C.	Plymouth	Wisconsin
Regez, August	Dodgeville	Wisconsin
Reed, C. E.	Mishicott	Wisconsin
Roloff, J. H.	Appleton	Wisconsin
Roloff, H. A.	Little Chute	Wisconsin
Roth, C.	Monroe	Wisconsin
Reinhold & Meyer	Plymouth	Wisconsin
Raeder, Miss M. A.	Kiel	Wisconsin
Rashleger, James	Antigo	Wisconsin
Rusch, Charles	Barton	Wisconsin
Riess, H. W.	Elkhart Lake	Wisconsin
Rankin, G. W.	Whitewater	Wisconsin

S.

Schuldes, F. J.	Appleton	Wisconsin
Schoenman, Mrs. A.	Plain	Wisconsin
Schanen, N. J.	Belgium	Wisconsin

Sawyer, L. H.	Neptune	Wisconsin
Sixel, Herman	Cleveland	Wisconsin
Schaller, Alex	Mt. Horeb	Wisconsin
Staltzmann, O. H.	Elkhart	Wisconsin
Schauf, A. J.	Neptune	Wisconsin
Simmons, D. S.	Viola	Wisconsin
Seid, Adolph	Manitowoc	Wisconsin
Schmidt, W. F.	Bird's Creek	Wisconsin
Sands, Walter	Muscoda	Wisconsin
Sticker, F. C.	Dale	Wisconsin
Schiffler, Fred	Avoca	Wisconsin
Steinhart, G. J.	Kewaunee	Wisconsin
Sweeting, C. W.	Manitowoc	Wisconsin
Stacker, Jacob	Sheboygan Falls	Wisconsin
Schafer, P. G.	Chicago	Illinois
Scott, H. M.	Sheboygan Falls	Wisconsin
Schneider, Henry	Stark	Wisconsin
Schaeffer, Herman	Blanchardville	Wisconsin
Sebel, Mike	Grimms	Wisconsin
Skinner, D. P.	Milwaukee	Wisconsin
Solie, H. H.	Osseo	Wisconsin
Stemper, Joseph	Leapolis	Wisconsin
Shulte, Arthur	Unity	Wisconsin
Schwingel, F. P.	Avoca	Wisconsin
Sieger, P. F.	Bangor	Wisconsin
Schenk, Christ	Stitzer	Wisconsin

T.

Tesch, Herman	Rubicon	Wisconsin
Thynn, Otto	Manchester	Wisconsin
Thompson, F. M.	Boscobel	Wisconsin
Trester, H. A.	Rushford	Minnesota
Thoni, Mike	Hollandale	Wisconsin
Thomas, W. J.	Sheboygan Falls	Wisconsin
Turck, Edward	Beaver Dam	Wisconsin
Thor, Joseph	Norman	Wisconsin
Trester, H. G.	Winona	Minnesota

U.

Urben, Alfred	Mt. Horeb	Wisconsin

V.

Vogt, John	Freemont	Wisconsin

W.

Wuethrick, Fred	Mayville	Wisconsin
Waddell, W. N.	Hub City	Wisconsin
Westphal, A. F.	Neosha	Wisconsin
Wunch, Edward	Haven	Wisconsin
Wilde, F. J.	Manitowoc	Wisconsin
Williams, C. H.	Chicago	Illinois
Ward, J. E.	Sandusky	Wisconsin
Welsch, W. F.	Bright	Wisconsin
Wagner, M. J.	Tuscubia	Wisconsin
Winkler, John	North Lake	Wisconsin
Waterstreet, Wm.	Spring Green	Wisconsin
Waterstreet, Frank	Kewaunee	Wisconsin
Wuerger, W. J.	Greenleaf	Wisconsin
Wetor, John	Random Lake	Wisconsin
Walker, C. L.	Northport	Wisconsin
Weber, Emil	New Holstein	Wisconsin
Waite, E. L.	Oshkosh	Wisconsin
Wyss, William	Medford	Wisconsin
Wilkowski, H. A. F.	Mishicot	Wisconsin

Z.

Zlab, Wensel	Two Rivers	Wisconsin
Zimmerman, Wm.	Elkhart	Wisconsin
Zingg, John	Mt. Horeb	Wisconsin
Zahorik, F. J.	Cato	Wisconsin
Zumkehr, Peter	Monticello	Wisconsin

THIRTEENTH ANNUAL CONVENTION

OF THE

Wisconsin Cheese Makers' Association,

HELD IN THE

CONVENTION ROOMS, REPUBLICAN HOUSE,

MILWAUKEE, WISCONSIN,

Wednesday, Thursday and Friday, January 4, 5 and 6, 1905.

PROGRAM.

INTRODUCTORY SESSION.

Wednesday, 10 A. M.

Address of Welcome .....
R. B. Watrous, Milwaukee, Wis., Sec'y Citizens' Business League.
Response .....M. McKinnon, Sheboygan Falls, Wis.
General Greetings.
President's Annual Address.....
.....E. L. Aderhold, Vice-President, Neenah, Wis.
"Some of the Difficulties Met with in Cheese Making".....
.....J. R. Biddulph, Providence, Ill.
Appointment of Committees.
Inspection of Cheese Exhibit.

SECOND SESSION.

Wednesday, 2 P. M.

"Our Cheese Industry as It Is, and as It Should Be".....
Prof. W. J. Carson, Assistant Dairy Husbandman, Wisconsin Dairy School, Madison, Wis.

"Swiss Cheese Making" .....
Fred Marty, Instructor in Cheese Making, Wisconsin Dairy School, Madison, Wis.

"Brick Cheese Making".....Christ Schenk, Stitzer, Wis.

"Limburger Cheese Making".....Henry Elmer, Belleville, Wis.

"Cheese from Pasteurized Milk".....
J. H. Monrad, Editorial Staff, New York Produce Review and American Creamery, New York City, N. Y.

THIRD SESSION.

Thursday, 9 A. M.

"How to Interest Our Patrons in the Production of Milk at a Profit" .....
.....Henry Van Leeuwen, Topeka, Kansas

"Care of Steam Boilers and Engines".....
G. H. Benkendorf, Agricultural Experiment Station, Madison, Wis.

"The Licensing of Factories and Makers and the Value of Competitive Contests" .....
J. G. Moore, President Wisconsin Butter Makers' Association, Madison, Wis.

Discussion .....
G. W. Rankin, Editor Cheese and Dairy Journal, Whitewater, Wis.

FOURTH SESSION.

Thursday, 2 P. M.

Address—"Co-operation" .....
J. H. Monrad, Editorial Staff New York Produce Review and American Creamery, New York City, N. Y.

Address—"What Must Wisconsin Cheese Factories Do to Improve the Quality of Their Cheese".....
Prof. J. Q. Emery, State Dairy and Food Commr., Madison, Wis.
Educational Cheese Contest.
Reading of the Cheese Scores by Chairman of the Committee on Cheese Judging.
Awarding of Medals and Diplomas.
All Medals and Diplomas will positively be properly engraved, signed and awarded at this session.
Short Statements from Prize Winners, "How Cheese Was Made."
Cutting of the Prize Cheese.
General Discussion—"What is a Good Cheese."

FIFTH SESSION.

Thursday, 7:30 P. M.

Report of Secretary .....U. S. Baer, Madison, Wis.
Report of Board of Directors .....F. J. Karlen, Monroe, Wis.
Report of Treasurer .....M. Michels, Garnet, Wis.
Reports of Committees.
Election of Officers and Business Meeting of the Association.

SIXTH SESSION.

Friday, 9 A. M.

"The Acidimeter and Its Application to Cheesemaking".....
.....Prof. W. J. Carson, Wisconsin Dairy School, Madison, Wis.
"Manufacture of Domestic Cheese".....
Prof. John Michels, Author of Creamery Butter Making, Madison, Wis.
"How to Get Better Milk for the Cheese Factories".....
Prof. A. J. Glover, With Hoard's Dairyman, Ft. Atkinson, Wis.
Address.....Mrs. Adda F. Howie, Sunny Peak Farm, Elm Grove, Wis

SEVENTH SESSION.

Friday, 2 P. M.

Address—"The Common Interests of the Cheese Maker and Patron" .....

Hon. John Luchsinger, President Southwestern Wisconsin Cheese Makers' Association, Monroe, Wis.

Address—"Pressing, Bandaging and Boxing Cheese".....

.....Hon. A. D. DeLand, Sheboygan, Wis.

"Management of Factories and Marketing the Cheese from a Proprietor's Standpoint" .....

.....J. H. Hoeppner, Marion, Wis.

"My Experience With Automatic Curd Agitators".....

.....H. C. Alves, Sheboygan Falls, Wis.

PREMIUMS.

CHEESE EXHIBIT.

Medals.

The Association offers handsome gold, silver and bronze medals, artistically engraved, and of beautiful design, to those exhibitors securing the first, second and third highest scores on cheese in the *American* or *Cheddar* class.

Gold, silver and bronze medals will be awarded to those exhibitors securing the first, second and third highest scores in the *Swiss* cheese class.

Gold, silver and bronze medals will be awarded to those exhibitors securing the first, second and third highest scores in the *Brick* cheese class.

Gold, silver and bronze medals will be awarded to those exhibitors securing the first, second and third highest scores in the *Limburger* cheese class.

All the medals offered in the above classes are of one make and design. Each medal will be properly engraved, giving the score of the cheese and the name of the winner.

Every exhibitor whose cheese scores above 90 points, will receive a diploma signed by the judges and verified by the President and Secretary, setting forth the score of the cheese, the highest score, the lowest score, and the average score of all cheese exhibited at the meeting.

$100 Educational Contest.

Cheddars, Flats, Daisies, Specials, Picnics, Longhorns, Young Americas, Swiss, Brick, Limburger, Edam, Gouda, Pine Apple, Print, Etc.

The above cash premium will be awarded on the excess pro-rata plan to all entries scoring above 90 points. Exhibitors will be limited to one entry only in each class, and entries from the same factory under different names or by different exhibitors, are prohibited.

On all premiums amounting to $5.00 or over, fifty per cent. will be deducted if the exhibitor does not attend the convention. Makers exhibiting cheese, and not attending the meeting in person, will in no instance be awarded a medal.

This educational contest is open to the world. Mr. J. D. Cannon and Mr. Fred Marty have been engaged to follow the judges in their work of scoring and take notes of the points criticised by them. From the data thus secured in connection with the method of manufacture, as reported in the entry blanks, they will point out, in person to the exhibitor (who it is hoped will attend the meeting and be present at the time of the judging of his cheese) the faults and defects if there be any and offer suggestions and instructions whereby such defects may be overcome and avoided in the future.

Superintendent:

J. W. Cross, Mauston, Wis.

Judges:

John Kirkpatrick, Richland Center, Wis.
S. E. Knickerbocker, Wyoming, Wis.
Joseph Ackerman, Monroe, Wis.
Christ Bontley, Monticello, Wis.

Rules.

Each cheese factory represented in this Association has the privilege of entering the competition for medals and the pro-rata fund, either by owner or maker, one or more full cream cheese, the exhibit not to weigh less than thirty pounds, made at any time, unbored and properly vouched for in writing by the owner, maker and one disinterested party, giving the full data required by the entry blank.

Entry blanks will be furnished by the Secretary, U. S. Baer, 450 to 452 W. Gilman St., Madison, Wis. Order entry blanks in due time to avoid delays.

Any person not a paid up member wishing to exhibit cheese, should send $1.00 membership fee to the Secretary.

Cheese should be shipped by express (*charges prepaid*) to the Secretary, at Republican Hotel, Milwaukee, Wis.

All cheese must be in the city on the Monday before the convention.

Exhibitors will be limited to one entry only, in each class.

The tag upon the box shall contain the name and address of the exhibitor, a duplicate of which shall be pinned on the cheese inside the box. This will prevent mistakes should the outside tag be destroyed in transit.

Swiss cheese may be entered in either drum or block shapes. *Exhibitors of Drum Swiss Cheese are entitled to one trier test to each cheese.*

It is earnestly requested that Brick and Limburger cheese be exhibited in full cases. In no instance will an exhibit of less than twenty pounds be permitted to enter in competition for medals and the prorata premium fund. Cheese weighing less than twenty pounds singly, should be exhibited two or more in a box. Daisies, Young Americas, Prints, etc., should be exhibited in lots equivalent to twenty pounds.

Upon receipt of cheese at the exhibition hall, all tags, cards and markings will be removed by the Superintendent, and will be substituted by entry cards of the Association, designating number of entry.

The Superintendent of this department shall have the right to call for proof as to owner or maker of an exhibit; *any fraudulent entry shall be barred from competition..*

No cheese (except Drum Swiss) previously tested with a trier will be considered as an exhibit for premium. Such cheese will be entitled to a complimentary score only.

The cheese scoring the highest number of points in the gold medal classes will be retained as the property of the Association to be cut up and distributed to those present, except in those instances where the premium cheese is of the large Swiss Drum type, in which case the Association will not retain more than one-fourth of the cheese. The Judges will address the meeting on the qualities of fine cheese in the discussion "What Is a Good Cheese."

Scale of Points for Judging.

Scale of points for judging American cheese:

Flavor	45
Texture	30
Color	15
Make-up	10
Total	100

Swiss and Block cheese will be scored on a scale of 100 as follows:

Flavor	35
Appearance on trier (holes)	30
Texture	20
Salt	10
Style	5
Total	100

Brick and Limburger cheese will be scored on a scale of 100 as follows:

Flavor	40
Texture	40
Color	10
Salt	5
Style	5
Total	100

LIST OF CONTRIBUTORS.

Diamond Crystal Salt Co.
The DeLaval Separator Co.
Republican House.
M. H. Fairchild & Bro.
Monarch Refrigerating Co.
Wisconsin Dairy Supply Co.
A. H. Barber Creamery Supply Co.
Francis D. Moulton & Co.
A. J. Decker & Co.
M. McKinnon & Son.
A. H. Barber & Co.
Sharples Separator Co.
Crosby & Meyers.
E. A. Roser & Co.
Lumsden Bandage Co.
The J. B. Ford Co.
Colonial Salt Co.
Creamery Package Mfg. Co.
Chr. Hansen's Laboratory.
Sturges & Burn Mfg. Co.
Davir Muir & Whte.
Kimble Glass Co. (formerly Louis F. Nafis & Co.).
The Preservaline Mfg. Co.
Cornish, Curtis & Greene Mfg. Co.

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WISCONSIN CHEESE MAKERS IN CONVENTION.

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Cheese Makers' Association

Thirteenth Annual Meeting, 1905.

The meeting was called to order at 10 a. m., January 4th, by Vice-President E. L. Aderhold.

The Chairman: The convention will be in order. First on the program is an address of welcome by Mr. R. B. Watrous, secretary of the Citizens' Business League of Milwaukee.

ADDRESS OF WELCOME.

R. B. WATROUS, Milwaukee, Wis.

Mr. Chairman and Gentlemen of the Wisconsin Cheese Makers' Association: It affords me particular pleasure to welcome to Milwaukee on this 4th day of January, 1905, the Wisconsin Cheese Makers' Association, for in so doing I am welcoming here the largest Association of its kind in America, if not in the world, to the finest convention city in America, if not in the world.

I say, it affords me particular pleasure to welcome to Milwaukee this Association, because this is one of the pet associations of myself and of our organization, for I remember with a great deal of pleasure the first conference that I had with your directors, Mr. President, some few years ago when you decided that you would make the venture and hold an annual convention in this city, and I was at that convention when you had the largest attendance you had ever recorded and received the largest receipts from new memberships, and you have met with us since that three times and each time there has been an increase in your membership, an increase in your treasurer's receipts and a corresponding increase in the value and importance of your programs, and of course a benefit to the cheesemaking industry throughout the entire state.

It is also a particular pleasure to welcome to Milwaukee an association which represents to such a marked degree a distinctive industry as does your association, because there are only a few states in the United States which have enough of a cheesemaking industry, enough cheesemakers to muster a cheesemakers' association, and while there may be conventions meeting in January of a great many other trades, a great many other industries and a great many other adjuncts of agriculture in all the states of the nation, in only a few states are there conventions of cheesemakers' associations. I say, therefore, it is a pleasure to welcome to our city you as representing a distinct industry in our great state, an industry which I am told will during the coming year produce an output of 100,000,000 pounds of cheese, valued this year at $10,000,000.

Just a little about Milwaukee. You have been coming here, and I trust in your coming here the first few years, there has been impressed upon you more than ever before the fact that Milwaukee is glad to welcome you to its midst and is anxious that you know she considers your interest her best interests. We want you to know that what is for the benefit of the great commonwealth of the state of Wisconsin is nearest the heart and nearest the interests of the city of Milwaukee. We want our relations to be reciprocal to the highest possible extent. We trust that you will do your buying in Milwaukee, other things being equal. If we cannot deliver the goods that you can get in other cities at the same price, then we are not talking to you, but everything being equal, we feel that it ought to be a matter of pride with you to deal with the manufacturers, with the job-

bers, with the retailers and wholesalers of the cities of our own state.

We take particular pride in the development of our great manufacturing industries. We are now recognized as one of the leading manufacturing cities in the United States. During the past year by federal statistics we have been advanced in point of population from the fourteenth city in the United States to the twelfth, jumping over New Orleans and Detroit, which, according to the census figures of 1900, had a larger population than we. I want to read you just a few facts concerning the development of our manufacturing industries. During the past year we produced manufactured products valued in 1904 at $265,439,494, an increase of 5.41 per cent over the preceding year. And I want to say that, as you all know, last year was not a good year for manufacturing, particularly in the metals, in any city in the United States, so that it is very creditable that any city has a gain.

Now, something about how that manufacturing is developed, for another thing in which we take particular pride is the value of our products: in all the metal working industries, it was $88,000,000 in round numbers; wearing apparel, $34,000,000; leather producing and leather working, $29,000,000; all brewery products, $22,000,000; all meat producing concerns, $21,000,000; which shows that the manufacturing industries which lead in importance and excel are about one-fourth of the iron and steel industry. We like to have you put that in your hat and keep it, because it is not advertised quite as much as some other industries. Our wholesale trade has also increased at a stupendous rate, aggregating last year the sum of $384,500,164.

One change that you may notice and appreciate, which just took effect the first of this year, is the introduction of the four-cent fare on our street cars, which, however, involves your buying either twenty-five cents or a dollar's worth of tickets. That is a distinct feature for Milwaukee, over against the fares charged in a great many other cities in the United States. A four-cent fare for such service as we have is certainly a thing worth regarding at this time.

In conclusion, I want to say, Mr. President, that we trust that your sessions at this time will be the most pleasaant and the most profitable that you have ever had. We recognize the fact that you come here not for pleasure alone, but to consider topics of vital importance to the industry which you represent, and we are confident that in coming to Milwaukee you have found a

center which is easily reached by all of you, that you find conditions here which make it convenient and pleasant for you to conduct your business sessions and we trust that in your leisure hours you will take time to call upon our merchants, that you will take time to see some things we have in our city. We wish that all of you, every time you come to Milwaukee, would visit our public library and museum on Grand Avenue. That museum is the finest museum owned by a municipality in the United States, and you will find a great deal there of pleasure and profit to you. We want you to keep on coming to Milwaukee every year of this century.

I thank you again, Mr. President and gentlemen, for the privilege of appearing before you to extend this welcome.

RESPONSE.

M. McKINNON, Sheboygan Falls, Wis.

Mr. President, Ladies and Gentlemen: We have assembled together once more in this great city of Milwaukee in the interests of that important industry in which we are engaged. We meet as an organization known as the Wisconsin Cheese Makers' Association to discuss the various questions, talk over and recount our varied experiences during the past season. We believe that in this way and only by such intercourse can we be fully up-to-date cheesemakers, for here the best brain currents in this line of business converge. Not only are the best cheesemakers in the state to be found here, but wise men from the east and the west, educated and scientific men whose names are already written on the scroll of fame, names that will gather volume as they flow down the tide of years are also here to impart to us knowledge that will tend to improve and elevate our calling.

Yet some people come to these meetings and fail to derive the benefit from them that they should; and in hope to justify themselves, will be inclined to find fault; to say that these meetings are doing no good.

They may find fault with the program or with the speakers; but do not be discouraged thereby, for it is today as it was nearly 2,000 years ago, when a certain husbandman went forth to sow and it chanced that some seed fell by the wayside and the fowls of the air devoured it; some fell among thorns and the thorns

sprang up with it and destroyed it, some fell among stones and straight way it sprang up, but when the sun shown upon it, because it had no depth of soil, it withered away. But some of the seed fell upon good ground and brought forth abundantly, some thirty, some sixty, and some a hundred-fold. And so it will be with the seed sown and words spoken at this convention.

Mr. President, there are some still left with us who were not only pioneers in the cheese business, but they were pioneers in the true sense of the word. They came to this great Badger state at a time when that poet who longed for a lodge in some vast wilderness could have had his longings abundantly satisfied; for stretching from Lake Michigan on the east to the Mississippi on the west, was one vast contiguity of shade that must needs be hewn down, cut up, piled and burned away before the pioneers could determine the character of the soil upon which they had located. But those pioneers belonged to that class of people who were willing to labor and to wait. They built their little log cabins, endured the hardships and privations incident to pioneer life in the fullest sense of the word, and they have been the eye witnesses of great results. They have seen the forests vanish, the humble log cabin transformed into a mansion, the little log stables into magnificent barns and cows are now feeding upon a thousand hills, supplying milk to more than a thousand cheese factories. These are the unmistakable evidences of our wealth and prosperity.

But, in this great Badger state there has and is today, one class of labor that has not been duly requited or appreciated. I refer to those who toil over the cheese vat, those who in years gone by have been working fully up to their strength, seven days in the week, thirty or thirty-one days in each month, nine, ten, twelve or thirteen months for each year. The cheese makers of this state have worked hard for the small pay they have received, but we believe there is a brighter and better future for the cheesemaker. We believe that knowledge is power; that a cheesemaker who knows his business, practically and scientifically, and who reads the cheese literature of the day can do his work much easier than one who is not up-to-date in all the new developments of this industry.

Each season new conditions and difficulties confront the cheesemaker. To be forwarned is to be equipped to combat these difficulties. I believe that machinery and power is coming into general use in the making of cheese and that these improved methods will greatly lessen the labor of the cheesemaker. Then

there will be more time for him to think and compose his mind and he will therefore be better equipped to perform his duty well. If what one of the speakers said in this hall one year ago, be true, that "a tired or weary body makes a dull brain," then cheesemakers, let us resolve that we will know all there is to be known about the industry in which we are engaged. Three days spent at these conventions once a year, is a "short course in cheesemaking" that all should try to attend.

The old saying, "all work and no play makes Jack a dull boy," undoubtedly also holds true when applied to the cheesemaker. Then come out to these annual meetings, combine business with pleasure. You are entitled to at least three holidays each year and now that we are holding our meetings in this great city of Milwaukee, this metropolis of the state, this ideal place above all others in which we cheesemakers can convene either for business or pleasure, it is well to come here at least once a year and take note of city life. We feel proud of this great city, proud of her magnitude, proud of her moral and business standing, this city that indeed stands upon a hill; and, lastly but not least, we are proud of the cordial reception that we have received from the good people of Milwaukee.

The Chairman: We have a half hour's time for a sort of informal session on general greetings. You know that most of us do not get a chance to see one another except when we are here, and it is a very nice thing to have a little time set apart for general greetings. I was much impressed with some of the things that Mr. McKinnon said, especially in regard to sociability; I think it shortens the year's work, makes it less onerous, if we can get together like this, have a sort of holiday and a good time. It is not only that, but it is beneficial, it is not all folly, and as long as we can get the benefit of the good things that we hear at the convention, we will not be found in the position of a certain man by the name of Owen Moore. It is a very short story and it is told in verse.

Owen Moore left town one day
Owin' more than he could pay
Owen Moore came back one day
Owin' more.

Now, I should like to hear from some of the gentlemen that are here.

The chairman called on Mr. Marty and Mr. Carswell, who expressed their pleasure at being present and stated they had no further remarks to make.

Prof. J. Q. Emery being called upon, expressed his gratification at being present, and said:

This Association is maintainng a great educational movement in this state, and I find it a source of pride to be associated with a convention representing the cheese industry of the state, which is in fact the greatest institution in this country, and I believe in the world. The Wisconsin cheese industry is a very great industry. You know very well that in point of volume it is only second to one state in the Union, that of New York, and our only real competitors in the cheese industry, as I understand it, are New York as a state, and Canada, our neighboring commonwealth. Now, we have the pleasure and the satisfaction of knowing that in quality of cheese product, Wisconsin stood first at the World's Exposition at St. Louis, and we ought to feel proud of this; we ought to exploit this fact, and we ought to be greatly pleased by it.

In coming to a convention like this, we ought to come not simply with the spirit of being patted on the back and feeling that we are good fellows and we are doing about the best that is possible, but we ought to come determined to receive instruction and to benefit by that instruction. Now, I happen to be one of those men that Mr. McKinnon referred to that has seen the development of Wisconsin in all its industries from the time it was a territory until the present time, and to rejoice in its growth and prosperity, and yet when I turn to this program of the Wisconsin Cheese Makers' Association I am every time surprised at the quality that is provided in that program. Men are brought here to instruct you who are qualified to instruct, and who come here to give the very best that this country or our neighboring countries outside of the United States can give to us, and I wish more than I can possibly tell you that every cheesemaker in the state of Wisconsin would come here every year and attend this convention, and attend every session of it and take part in it and thoroughly resolve to weigh and consider what is said here and go back to his factory determined to make improvement. In my judgment, the future prosperity of the cheese industry of the state rests more with the cheesemakers than with any other factors. We need men in the

cheese factories of Wisconsin who are well trained in the work, who are skilled in the technical art, who are broad minded, who are energetic, who are enthusiastic, who can be leaders in this cause in their community, who are strong and progressive men. If we are to keep up with the times we have to exert ourselves; we have to do something in these times of progress. These men of science employed by the government and state are devoting their energies in various lines of science, in bacteriology and other lines, to bring new knowledge to light, that the people engaged in the various industries might lay hold of this knowledge and turn it to money-making uses, and I am constantly surprised that in the presence of this abundance of knowledge that has been brought to light by our own splended Agricultural Experiment Station, that so many forget these things, or never knew them, and allow them to go unused. You men who come here must carry forward this new knowledge of the cheese industry of the state, and you must be the leaven that will leaven this great lump of cheesemakers of the state, leading them onward, in the way of progress.

Mr. J. H Monrad was called upon and said: I am not a good speaker, as all know that have heard me before, but I do claim to take an honest and an intense interest in cheesemaking. It is true, I came here from New Zealand to learn how to make cheese—I had learned in New Zealand how not to make cheese. I started in making cheese from a few cows on my own farm, having only Arnold's book on dairying to lead me, and that was a little too high for my intelligence at that time. We did not know anything about starters or bacteriology then, and it was a mystery to a great extent even to Mr. Arnold.

I want to express my pleasure at coming back west. I came back to the west to learn something. I have been away east for three years, and while it is true that I have not attended more than one convention in those three years, I honestly believe that we could not have scared up more than ten cheesemakers at any meeting east, and so do not expect to get very much from the east. They say that they make better cheese in the east; I have not seen it; I do not deny that there are good cheesemakers in the east, but I know one thing, that they make just as good cheese in Wisconsin as they do in New York. The fact is, you can make just as good cheese as New York or any other state; you have the soil, you have the climate, you have

everything, but what we lack is co-operation; I am going to talk a little later on that.

I want to say another thing, comparing New York with Wisconsin.,—the New York cheesemakers have an easier job in one way, because the farmers there are accustomed to change there from shipping milk to New York to making cheese, and it is just like in the Elgin district. Why is it that they make better butter in the Elgin district? Because the milk producers have been trained by the milk condensing factory and the milk shipping business to take care of the milk, so I think the New York cheesemakers ought to have a little better cheese than you have, because there is nothing that will educate a milk producer more easily than shipping milk to the city, when he knows that he will get the milk shipped back if it turns sour, he gets punished by a fine of paying the freight both ways on that sour milk, so you see that it is an influence in helping him to get good milk.

I want to thank the Association for wanting me out here; I know I shall enjoy myself a great deal, and thank you.

Brief words of greeting were also spoken by Mr. Kirkpatrick of Wisconsin, Mr. Biddulph of Illinois, the acting President and the Secretary.

ANNUAL ADDRESS.

Vice President E. L. Aderhold, Neenah, Wis.

A dozen years ago there existed a society called The National Butter and Cheese Makers Association which, in the winter of 1893, held a convention at Dubuque, Iowa. It was well attended. Only one session was given to cheese topics and most of the buttermakers were absent during that session.

It occurred to the handful of cheesemakers who were there (H. J. Noyes, U. S. Baer, J. K. Powell, myself and a few others) that the idea of a joint association was wrong and that we had in Wisconsin a sufficient number of cheesemakers, also the requisite amount of enthusiasm to form and maintain a cheesemakers association. Following out that idea we arranged to

meet several weeks later at the Dairymen's Convention at Waupaca and make out a program for a cheesemakers' convention to be held at Madison the following month.

The plan was carried out and resulted in a very successful meeting. On that occasion the North Western Cheese Makers Association was organized, which name was several years later changed to Wisconsin Cheese Makers' Association. Since that beginning a convention has been held every winter. The first nine meetings were held at Madison with the exception of one, which was held at Fond du Lac. Since the year 1901 the conventions have been held at Milwaukee.

All of our meetings have been enthusiastic and entirely harmonious. Our printed reports are valuable and sought for far and wide. Our membership has grown steadily and if we are wise enough to elect Mr. Baer, Secretary for life, the time will come when our membership will only be limited by the number of cheesemakers in existence.

By the aid of the association rapid strides have been made in educating the cheesemakers of this state and inducing them to adopt more skillful and more uniform methods of manufacture. The improvements in machinery and curing rooms are noteworthy and a very large portion of our factory men are now dividing milk money on the basis of the fat content.

While there is much to satisfy and nothing to regret our greatest task is ahead of us—one that will tax our best energies. I refer to the crying need of better sanitation in our milk supply and also in some of our factories.

We still have too many cheap factories, with faulty drainage, putrid surroundings and contaminated water supply, and the majority of our makers, from mercenary motives, continue to accept unclean milk, which injures the whole product of their factories.

These conditions do not permit the development of excellence in quality and it is a fact that but a very small proportion of our cheese has a clean flavor when cured.

During the month of June of the past season, when weather and food conditions were apparently perfect, I visited a number of the biggest cheese houses. I was shown cheese from a large number of factories and I found but one lot that had a true flavor.

It is not my intention to draw a gloomy picture of the situation. I simply desire to show up our inefficiency. Boasting about our past accomplishments will not improve the flavor of

our cheese. The only way we can improve is to stop making mistakes. As acting President of this convention I consider it my duty to point out our worst mistakes.

It is true Wisconsin cheese carried off the honors at St. Louis and that may help our trade. But, inasmuch as our New York and Canadian brethren practically did not compete with us these laurels are not high prized. It was a horse race where every horse but one failed to appear.

Wisconsin butter was not alone in the race and came out badly worsted. It did not happen to result that way. Minnesota butter has taken the honors in recent years and probably will take them a while longer.

There was an oportunity to outclass Wisconsin on butter and Minnesota improved it.

So long as clean flavored cheese are the exception with us is there not the same opportunity for any state in the cheese belt of that product? Can we afford to be passive on this question?

When we found our reputation ruined by filled cheese we pocketed our losses and learned our lesson- Yet year after year we pocket the enormous losses (direct and indirect) caused by abnormal milk and we have become so accustomed to it that we don't seem to learn the lesson implied.

Wisconsin is destined to remain a great cheese producing state and so long as the bulk of the product must seek a market outside of her borders, reputation will mean everything to us. We need not fear Ohio skim cheese, nor the whey loaded Michigan and Minnesota cheese that "cures quick and rots quick," but we can illy afford to have Wisconsin cheese stand for anything but *first* in the market.

Lastly I have a word of encouragement to offer. Our agricultural college, our farm institutes and our state societies are constantly educating the masses and moulding a public sentiment that will demand better things. Our Dairy and Food Commissioner is wise in counsel and earnest in his efforts to assist in raising the standard of Wisconsin dairy products. Our last legislature placed laws upon our statute books that were a necessary precedent to the reforms we hope to institute. Last, but not least, we now have in the official organ of this Association a means of constant discussion. *The Cheese and Dairy Journal,* while assisting in the dissemination of knowledge, will become a potent factor in intensifyng unity between those cheesemakers who stand for *progress.*

SOME OF THE DIFFICULTIES MET WITH IN CHEESE MAKING.

J. R. BIDDULPH, Providence, Ill.

I think the "Difficulties of a Cheesemaker" is a subject that it would take sometime to discuss.

I will begin my paper by saying at the present day the boys are looking for light work and big pay, and think they will find it in a cheese factory; but after they have worked there two or three months they find out that there is considerable work in a cheese factory, if they do the work as it should be done.

I think the first thing that a young man wants to find out when he starts out to be a cheesemaker is to see if he likes the business, for, if he doesn't, he will never make a successful cheesemaker, for I think there are some men that could work in a factory all their lives and then not make a successful cheesemaker. Some will ask "Why?" I will say because they are not adapted to that kind of business and they had better try something that is more suited to them.

The next thing for a cheesemaker to look after is a factory where there is good drainage, for there are some of his patrons who will not take their share of whey and then it is left in the whey-tank to get sour. Then the tank will get full and it is very apt to run back to the factory, and he will soon have a bad mess of it; then the patrons will say "What a bad smell there is around the factory," but they are the ones to blame for it, and they should not blame the cheesemaker, but take their whey home as it belongs to them, even if they have to pour it on the ground after they get home.

The cheesemaker should keep his factory in good clean condition at all times, so that the patrons and their ladies may come in at any time and not have to hold their noses and want to get out of there as soon as possible.

Now I want to say a few words about the taking in of the milk. The cheesemaker must be very particular about it and then he will get in some that is not just right, for I claim that a cheesemaker can take in milk that is affected and he cannot detect it until he gets it heated up the last time, and then it begins to show what it is and he has to do the best he can with it. He will find that he has some gassy milk, and he is expected to make good cheese out of it because he took it in.

A great many patrons think that if a cheesemaker takes in his milk that it is all right, when he knows that he has not done his part to have it in good condition to make good cheese; and if the cheesemaker says "Mr. Johnson, your milk has not had proper care, it is a little sour this morning," he will tell you that Mr. B. or Mr. C. doesn't take care of his milk, they don't even strain it or set the cans in water. That is the way it is continually thrown at the cheesemaker. Now there is not much use for the cheesemaker to say much. My idea is that these patrons, instead of following some other man's example, should say to him, "Now, Mr. C. we want to have good cheese made down at our factory and we must take care of our milk." I think it is the duty of the patron to look after such men and it would have more effect upon them than it would for the cheesemaker to talk to them, as I think some men would talk two hours instead of spending ten minutes time taking care of their milk.

I think that if every patron would look after his own milk and take care of it as it should be taken care of, and if he found a neighbor not doing right to talk to him, we would get better milk, and the cheesemaker could make a great deal better cheese. A great many people think that any kind of milk will make cheese, but they think they must take very good care of their milk to make butter. There is where they make a great mistake. They should take better care of their milk to make a good cheese. At the creamery the buttermaker takes in the milk and runs it through a separator soon after he takes it in, so that he has only three to four pounds to contend with out of a hundred pounds of milk; while the cheesemaker has the whole hundred pounds to contend with for three or four hours. Therefore the patrons should take better care of their milk, if they expect the cheesmaker to make good cheese, so I will not tire you longer.

DISCUSSION.

Mr. Biddulph: I will have to do as Mr. Tripp did when he read a paper at Madison; after he got through reading he said, "Now, boys, if you want to ask any questions, come over into the corner and I will answer them."

Mr. Monrad: I want to protest against that remark. We do not want to have any corner talk such as you have in Wisconsin

at your cheese boards; instead of sitting openly on the board, the buyers gather around in the corner. What I was going to say is that I would like to see a little life in you cheesemakers; get up and have your say; tell us your troubles.

Mr. McKinnon: I am reminded by what Mr. Monrad says, of the fact that Mr. Monrad has not been in the state of Wisconsin, as he says, for two or three years, as he speaks about the old style of selling cheese. Mr. Monrad used to be with us very frequently up at Sheboygan Falls and attend our board of trade, and he is speaking about conditions as they used to be, about the cheesemakers standing around at the corner, and the cheese buyers doing the same thing, but I want to tell Mr. Monrad that that condition of affairs no longer exists, up in our section of the country; we sell our cheese upon a call board, and there is no congregation of patrons or buyers, as far as I know of at the present time.

I was reminded of the fact when I heard the last paper read, about the taking care of milk and all that sort of thing, I believe that there is no way that the man that takes in milk at the weighing stand can determine the quality of the milk at all times. Now, there may be putrid germs in that milk when it is delivered at the factory that as soon as the milk is heated up will develop and before the cheese product is suitably pressed it is incorporated and it will have an injurious effect there. Now, I believe that it is not only necessary that we exert all our faculties to determine the character of the milk as we receive it, but it is also necessary at times to go around and see how the patrons are taking care of their milk and to labor with them, and I would be glad if this convention could put power in the hands of the cheese makers whereby they can say to the patron, "You shall do thus and so; you shall produce good milk, and then we will be responsible that it shall be made up into good cheese."

Now, I am not in the cheese business any more; that may be new to some of you gentlemen; I sold my factory last week, and perhaps can talk a little bit plainer than some of you gentlemen who are still owning factories. You remember that I spoke about how to take care of milk here; I advanced rather a new theory about taking care of milk here a few years ago and got into a controversy, but survived it and am not taking it back at the present time, but still I had difficulty with some of my patrons. I had a patron that insisted on keeping his milk in the cow stable, and of carrying and keeping the milk together. He

had a very fine stable as far as capacity was concerned, and he kept his milk in this stable until he had the cows all milked, having about thirty cows. After he got through milking, he would take out the milk and put it into the can and allow it to cool. He not only had his thirty cows in that stable, but he had a number of horses in that stable, and right adjoining the stable, where the air came from the west and swept through the open window he had a very filthy hog pen; and I went to ask him to take his milk out of the stable as soon as the milk was drawn from the cows and take it out and cool it off, but he gave me to understand right plainly that he had been in the dairy business a good while and he did not propose to be dictated to in regard to how he should take care of his milk, but I insisted on carrying my point with him, and he gave me to understand that if I did not want his milk he would take it to some other factory. Now, we have a rule on our board of trade in Sheboygan Falls that where a cheesemaker has difficulty with a patron in regard to taking care of his milk, or skimming his milk, or anything of that kind, he shall first settle that difficulty at that factory before any other factory-man shall take in his milk, and no cheesemaker that violates that rule is allowed to sell his cheese upon that board of trade, and when I recounted that rule to him, he submitted gracefully. But I will say this, that it is pretty hard after all to revolutionize such a character as that, you cannot do it.

Prof. Emery: I want to speak for a few moments on this matter of milk supply to cheese factories. You know that I make no claim whatever to being a technical cheesemaker, I am not. I have, however, studied this dairy problem and the cheese making problem, the conditions of successful operation. You remember that the theory that Mr. McKinnon gave two years ago was substantially that the milk should be cooled quickly, and it was more important that it be cooled quickly than to aerate it. Is that correct?

Mr. McKinnon: That is correct.

Prof. Emery: There is no question but he is right in that, and science has demonstrated that fact conclusively. The two things essential to good milk are cleanliness and quick cooling, and when those things are provided, you will have an excellent quality of milk. Now, what I wanted to speak about is the means within the hands of our cheesemakers at their factories of determining with as much accuracy the quality of milk delivered as to its cleanliness and proper care, as the Babcock

test will determine the amount of butter fat contained in the milk, and while you cannot determine it in time for any one supply of milk, as for instance in the morning or evening, the habits of the patron can be determined as to its care and general cleanliness. I refer to the Wisconsin Curd Test, and I wish that that curd test could be used habitually in every cheese factory and every creamery in Wisconsin, and if it were to be used there and used discreetly, I know of no one thing that would have the tendency and the power to promote good quality of milk delivered to those factories as that will. I am not going to undertake to describe that test in detail; you can find that in the reports of the Wisconsin Agricultural Experiment Station. The modes of procedure have also been published in the Dairy and Food Commissioner's report, I think in 1897. It requires about six to eight hours to successfully demonstrate it, so that this curd will be developed in such form that you can know with certainty the quality of the milk. Now, it would not be fair or wise to condemn a patron's milk on one test, and I am now quoting from Dr. Russell, who is an authority on this subject, but where repeated tests for a week or longer show this kind of curd to be developed, that then the milk should be rejected. A good clean milk, when treated by this curd test, gives a kind of curd that you cheesemakers are of course familiar with, it gives clean, velvety, close matted curd, and has a good clean flavor, that is developed within six or eight hours after treatment in ordinary weather. Now, if the milk is unclean, if it contains those bacteria that are in manure, then the gases develop and the bad odor, and if it is very foul, that gives to cheesemakers I believe what is called the floating curd, and you can determine this by the extremely foul odor. Now, there are those three particular curds that can be determined. My point is this,—when the cheesemaker puts his judgment alone against that of the patron and says to the patron, "Your milk is not good," the patron in nine cases out of ten is likely to be offended, and say, "I have just as good milk as the other fellow," but if the cheesemaker will habitually take these samples and develop these curds and then show them to the patron, "Here is the curd from your milk, here is the curd from patron B's milk, here is the curd from patron C's milk." He can show him that. Now, what is lacking,—here is this gassy curd, he can see that, he can be convinced without being angry; you can develop this curd in his presence, he can come and see it and see the kind of curd that is developed by his milk, and the kind of curd that is

developed by his neighbor's milk, and this may lead to the cheesemakers going to the farm. He ought to go to inspect the conditions there and point out how he can change those conditions. I believe that this agency wisely and discreetly used by the cheesemaker is the key to solving this problem of clean, good milk in our cheese factories. I want to repeat the one thought that is paramount and that is this, when this patron sees his own milk developed and when he smells it and turns away his nose from it in disgust, he cannot help being convinced, and when he sees right beside that the clean milk developing a smooth, velvety curd, firm, with good flavor, he recognizes that that milk is better than his and he says, "I will improve the quality of milk, I will change the conditions."

The Chairman: Mr. Monrad wants to know how many makers present are using the curd test. Those that do, hold up your hands until counted. Twenty-three are counted, Mr. Monrad.

Mr. Carswell: I want to add just a word in regard to the conditions that you find in factories as stated in the paper and the duties devolving upon cheesemakers. Now, it seems that a great many cheesemakers do not realize that they are called upon not only to manufacture goods, but in one sense of the word, they are teachers and educators. They should stand in the same relation to their patrons that a school teacher does to the children. You all know what the result is in the school room when the children run the school and you will find the same conditions in the cheese factory when the cheesemaker allows the patrons to run the factory. They should have a certain amount of discipline in controlling their patrons. For instance, in the paper the gentleman speaks of the whey tank and the bad conditions that will result from the whey not being taken away by a patron. Now, many cheesemakers pay but little attention to that. We have a great many others that are up in dairy education who take pains to see that their whey tanks are well kept, but I find in traveling through the country that there are a great many that imagine that all they have to do is to make the cheese, the whey can be run out into any old receptacle and carried home in the cans, and if any bad conditions come back to them from it as a result, that is none of their business, that is the patron's business. Well, now, they should be educated in that line, they should keep conditions good around their factory, keep good whey tanks, good clean conditions and then

they stand in a position where they can educate their patrons to bring good milk, but it is poor policy for them to try to educate and tell their patrons that they must bring good milk, when the conditions around their factory are such as to be no encouragement for the patron to bring good milk.

Mr. Monrad: Mr. Carswell spoke as though the cheesemakers should be teachers; that is right, but before they become teachers they ought to know something themselves, and I am not here to give you "taffy," I always try to speak straight out at meeting, and I want to say that there are a good many cheesemakers yet, even in Wisconsin, that are not fit to be teachers, they are not doing what Mr. Carswell said, they do not keep the factory in clean condition, and if a man does not keep his factory in a clean condition, he would look very nice on the platform talking cleanliness to his patrons. That is the first thing, to have the factory in good, clean condition.

I want to say a word about what my friend, Biddulph said about the whey tank. If I were running a factory, I would say, "Gentlemen, I am going to clean my whey tank every day, if you do not take your whey home, I shall use it as a fertilizer, but I shall clean my whey tank. I am not going to keep your whey from day to day, I am going to clean my whey tank anyhow every day."

The Secretary made an announcement reagrding the educational cheese contest, as outlined on page 21 of the official program, and stated that he hoped the exhibitors would be present at the time the scoring was done.

The chairman announced the following committees:

On Resolutions:
M. Michels, Garnet, Wis.
J. D. Cannon, New London, Wis.
F. Marty, Madison, Wis.

On Legislation:
Prof. A. J. Glover, Ft. Atkinson, Wis
Hon. A. D. DeLand, Sheboygan, Wis.
Hon. D. R. Curtin, Hilbert, Wis.
Carl Marty, Brodhead, Wis.
Bert Austin, Boscobel, Wis.
J. F. Bachmann, Metz, Wis.

AFTERNOON SESSION.

The convention met at 2 o'clock, Wednesday, January 4th, 1905.

Vice-President Aderhold in the chair.

OUR CHEESE INDUSTRY AS IT IS AND AS IT SHOULD BE.

PROF. W. J. CARSON, Madison, Wis.

At one time a large proportion of the cheese made in this state was exported and sold upon the British market, but as time has advanced our home consumption has become almost equal to the supply, therefore we no longer cater to the markets of Great Britain so far as our cheese is concerned. Cheese intended for export must be of the same quality throughout; it matters not whether the cheese is going to Liverpool, Bristol, Dublin or Glasgow, the quality demanded is the same. But there seems to be more variation in the quality of the cheese intended for home consumption. I happened to have an opportunity of visiting a dozen or more of the best warehouses in Chicago, during the past summer, most of whom handle cheese from the state. Among other questions I asked to be shown a cheese that was considered to be of No. 1 quality, and exactly suited for the home market. I was very much surprised to find such a difference of opinion. While one buyer wanted a cheese clean in flavor, firm and close in body, and smooth in texture, others told me they cared not how open the cheese was so long as the flavor was clean, while others wanted cheese decidedly acidy, claiming that that kind of cheese would sell faster in certain cities than would cheese of No. 1 quality. This is a regrettable fact, for so long as we lack uniformity among our buyers, so long will we have lack of uniformity among our makers, and until remedied, this will prove a serious hindrance to an improvement in quality. Cheese intended for home consumption do not require to be so firm in body as those for export, but in endeavoring to make a soft cheese some of our makers have overdone things and are trying to sell water for cheese. They therefore have gone to the other extreme. Many of our makers seem

to be under the impression that in order to make cheese soft in body the milk must be ripened low and the curd left soft at the time of dipping, the result being that the curd is not sufficiently cooked. By allowing an excess of whey to remain in the curd the maker gets a cheese which, when partly broken down, becomes acidy and mealy in texture and decidedly open. To make a soft body cheese as much time is required, if not more, than for a firm cheese, because a greater amount of care is required in order to get rid of the whey and prevent danger of the cheese becoming acidy after being placed on the shelf. No matter what market the cheese is intended for, it should have that characteristic smoothness of texture, and this can be got only by proper cooking and allowing sufficient time in the whey. In order to make a cheese of first-class quality, at least eight hours are required from the time of putting in the rennet until the cheese are dressed, yet it is a common occurrence to see our makers leaving the factory at 12 and 1 o'clock, having finished work for the day. To do this he must over ripen his milk which means a loss of quantity as well as the quality of the cheese so made.

I understand our makers are not held responsible for the quality of the goods they turn out, therefore they do not take the same interest in the work as they would were they held responsible for the quality of their work. I do not mean to say that the maker should be held responsible for the flavor of the cheese, but texture, and body, uniformity of color, and the general makeup of the cheese are things that are within his control; therefore he should be held responsible for them. A good maker, in selecting good milk, and being careful about his work, need have no fear of giving a guarantee, while the poor maker would soon be driven out of business, and the sooner the better.

The one to ten pound system, so common in this state, which compels the maker to give one pound of cheese to ten pounds of milk, has been indirectly the cause of a great deal of inferior cheese. The maker knows that that amount of cheese during May, June and July is not in the milk, and to save himself as much as possible, he uses an excessive amount of rennet and makes a soft cheese. The warm weather comes on, and using the term of one of the most prominent buyers, "he has a lot of soft, open Swissy, unmerchantable goods, that are rejected by buyers and bought at a low price."

EXISTING AND SANITARY CONDITIONS.

The existing conditions at many factories demand that much and careful attention be given to this important subject, for there is no place where sanitary conditions are more essential than the place in which cheese is manufactured. Many of our factories are so situated that it is almost impossible to get proper drainage, having to depend upon the natural drainage of the soil around them. Some of the worst conditions may be described as follows:

Water impure, and unfit for use.
Gutters, whey spouts and tanks leaking and filthy.
Floors rotten, leaking and dirty.
Dirty water barrels from which the water is used.
Walls and ceilings dingy, dirty, and hanging with cobwebs.
Leaking vats and unclean utensils.
Surroundings untidy and the building without any provisions for the exclusion of flies.
Untidy makers and dirty clothes.
Lack of modern machinery.
Poorly built and ventilated curing rooms.

We have too many such factories operating in direct opposition to one another, and as a result the profits are so small that one-half of them cannot afford to pay a good maker decent wages. It would be a grand thing for the cheese industry if one-half of these small unsanitary factories were destroyed. The factories then remaining would be sufficiently patronized to enable them to provide proper machinery, curing rooms, etc., and employ a maker who could turn out goods that would be a credit to himself and the state. Running a factory is like feeding a cow; it requires so much for keeping expenses over and above which is profit. With a fair milk supply, say 10,000 lbs. daily, our manufacturers could well afford to make cheese for less than is now charged, thus adding considerable to the profits of the patron.

BRANDING OUR CHEESE.

It seems to me that our makers should adopt a suitable brand which should be attached to both the cheese and the box. By branding each day's make, the maker who made a first-class article would get credit for his work, and the man who made

an inferior article would get only the credit to which he is entitled. Under present conditions a good maker has no chance to work up his own product, therefore, his reputation, so far as the public is concerned, extends no farther than the factory door.

NEED OF A REFEREE.

Our manufacturers are entirely at the mercy of the buyers. I do not mean to say that our buyers are dishonest, but I know they will protect their own interests before they will those of the manufacturer. The manufacturers' interests could be protected if we had a referee, an expert who could be called in and report on the quality of the cheese that are in dispute. It is an easy matter to find fault with a lot of cheese, especially in a declining market and under the present state of conditions, who is to be the judge?

OUR INDUSTRY LACKS CO-OPERATION.

Too many of our factory men are in the business solely for their own benefit. Where self-interest is the only bond between the manufacturer and the producer, there is no co-operation, and the business is not a success. Co-operation is as old as the human race. The first co-operation we read about was when Adam, Eve and his Satanic majesty went into the fruit business. And we are told they did not succeed very well. Co-operation requires the efforts of two or more persons, but in the cheese industry there are four classes who should co-operate, namely: the producer of milk, the manufacturer, the carrier, and the distributor. The latter two are hard to approach, but if we can bring about the co-operation between the first two, we will have made a long step towards success. Co-operation has an educational influence in itself, as it teaches a man a knowledge of the business, broadens his mind, and helps make men more neighborly, courteous and sociable. In order to promote co-operation the manufacturer must gain the confidence of his patrons. He must deal honestly and fairly with them, treat them politely, and show them that he is interested in their work as well as his own.

These are only a few of the different lines along which we should endeavor to improve, but the question now is, what can we do, or how best may these changes be brought about? Some

have advocated licensing the factory owners and operators. To do this we must have a law passed by legislature compelling these parties to live up to certain requirements. This would have a tendency to bring about a marked improvement in the condition of our factories and creameries, but when we undertake to drive people by force of law, we do not induce co-operation, and this is something we must not lose sight of. In my opinion, the law should be the last resort, and only when everything else has failed. To bring about any marked improvement, we must begin farther back than at the factory or maker; the producer of the milk is the man we must reach. I believe that two- thirds of our cheese is spoiled before it ever reaches the factory. Teach the patron how to produce first-class raw material and our cheese will soon show a marked improvement. Most of our makers can make good cheese out of good milk, but there are few of them who can make good cheese out of milk in bad condition. How often we see the poorest goods coming from the cleanest factories simply because the raw material was not right. If we have to license the factory and operator, why not license the patron as well? We would not be establishing a precedent in this respect, for it is not long since that I read of a patron in one of the foreign dairy countries having paid a fine for allowing his milk to stand too close to the barnyard.

SYNDICATING FACTORIES.

I am strongly in favor of the syndicating system of instruction similar to that adopted by Ontario and Quebec. In these provinces the factories are grouped in twenty-five and thirty each, and a competent instructor is placed in charge of each group. The instructor visits the factory each day and makes it a point to be at the factory in the morning in time to receive the milk, so that he can examine each sample of milk as it arrives. Each instructor carries his own outfit which includes a curd test, an acidimeter, a standard thermometer, etc. He makes a curd test of each sample of milk of which the quality is doubtful, and also assists the maker provided he should need instruction. During the afternoon or after the work in the factory is pretty well advanced, the instructor visits some of the patrons, especially those who have not been sending the milk in proper condition. Usually meetings of the patrons are held at the factories in the evenings. Over all the instructors is one chief instructor who travels from district to district to

see that the instructors are doing their work properly. These instructors have no power any more than to suggest any improvements that are necessary. They fill out a report of the condition of the milk, the building and surroundings, the quality of the cheese, and the work of the maker, a copy of which is hung in the factory each visit and a duplicate sent to the government. These instructors are given a course in the dairy school in the winter, therefore they all go out preaching the same gospel. To defray the expenses of these instructors each factory contributes $15 which is sent to the government, who in turn pay the instructors salary. By contributing this $15 the patrons or manufacturers, as the case may be, are taught to help themselves.

During the season of 1903 Ontario had 22 instructors of which I happened to be one, and in looking over the report of the work done that season, I find that 576 factories received in all 3,600 visits, or an average of over 6 visits for each factory. There were 2,200 patrons visited and 12,000 curd tests made. The total attendance of patrons at the meetings held was 5,000, and there was $50,000 expended for improvements on the 576 factories visited. To carry on this work, the cost to the government was $8,000.

This system has been in force in Ontario two seasons, and I believe that the quality of their cheese has improved more during these two seasons than it has in any 15 years previous. What can be accomplished in Ontario, can be done here, for I cannot believe that our farmers or manufacturers are any less energetic or slower to help their own interests than are those of Ontario.

Our legislature does not usually grant money until it can see sufficient returns for the same. To prove what can be done, two districts of say 25 factories each, could be selected and a competent instructor placed in charge of each. If the work was properly handled I venture to say that sufficient improvement in quality and uniformity in the cheese could be brought about before the end of the season to warrant some of our buyers in offering a premium of ¼ to ½ a cent for all the cheese from these districts. This would serve as a test case and a starting point; from that we could branch out to something larger.

REGISTRATION OF FACTORIES.

With a view of encouraging and assisting improvement in the condition of our cheese factories and creameries, I think we might profitably copy the Irish system of registration of factories. In Ireland the Department of Agriculture hold themselves prepared to consider application for the registration of creameries from managers who desire to have the creameries and management recognized by the department as efficient. The conditions under which the registration is granted are:

"That the manager is capable.

That strict cleanliness and order are manifest everywhere, around the creamery, in the creamery, and in the persons of the manager, employees and pupils.

That apprentices and pupils receive efficient training and instruction.

That there is a proper system of bookkeeping and business methods.

That the equipment is sufficient.

That the premises and methods are at all times open to inspection of the department.

That defects indicated by the department's inspector be remedied.

That the creamery is entered for the department's surprise butter competition."

This system, if adopted, could be modified to suit local conditions. For instance, on complying with the requirements of registration and paying a fee of $10 or $15, which could be used for instructional purposes, the factory could be given a suitable brand which, when attached to the cheese, would serve as a public guarantee as to the condition of their manufacture. Such a system would tend to discourage the establishment of small and poorly equipped factories, also overcrowding of factories, both of which is a positive curse to the cheese industry. Competent makers would then be given a proper standing and it would serve as security and encouragement to proprietors to erect larger and better equipped factories.

In order that we may improve this great industry we must have five things; the most important, and the one that should be first and foremost in every mind, is education,—not coercion, not law. If we can get our patrons and manufacturers to take hold of this work without invoking the power of the law, we will be much farther ahead and in a better position to ad-

vance continuously. There is no reason why Wisconsin should not produce the best cheese in the world and I know it is only a matter of time until she will, but to do this we must have more instructional work; our patrons must have more teaching along the line of economy in the production of milk, the proper method of caring for and handling milk, and in the details in the management of our cheese factories and creameries.

The second thing that is needed is unity. Our Dairyman's Association, Dairy and Food Commission, Cheese and Butter Makers' Associations, and the Dairy School should work in perfect harmony. An annual conference between the officials of these various organizations should be productive of much good. Our bacteriologists and chemists should be brought more in touch with these associations as these branches of science are very closely allied to the dairy industry. Unity between our associations and those of sister states, unity between our patrons, manufacturers, transportation companies and buyers, and unity between sister factories and makers. Our makers should visit each other oftener and compare notes.

The third thing we need is diligence. Each officer and member of this Association should have a part to do and he should aim to do it well. This does not mean only working, but working all the time. Some of these makers who get through making cheese at 12 o'clock each day and who do not even take time to clean up things before they leave the factory are not doing the part which has been given them to do.

The fourth point is perseverance; that is, continually keeping at it. Wisconsin cheese is rapidly coming to the front and it is only by the constant work of the members who take an interest in this industry.

The fifth thing is enthusiasm. We must get the farmers roused for unless he is reached things will hang fire. We should have more dairy meetings with good live subjects,—something that will interest the farmers and get them out. It seems to me that one evening meeting of this Association could be very profitably devoted to the benefit of the city people. They are to a large extent the consumers of our cheese and we must have their co-operation too if we are to make a success of this great industry.

DISCUSSION.

The Chairman: I would like to ask Professor Carson whether he thinks that all cheesemakers and patrons of cheesemakers can be persuaded by education?

Prof. Carson: From my experience on the Canada side, I believe they can. Before we adopted the syndicating of factories we had inspectors going around, testing milk, and I happened to be the first man that went on the road as a syndicate instructor, and I found in my experience that the first three months of my time were spent in gaining the confidence of my patrons. I have seen them ducking around the barn, I have even had men come out with pitchforks in their hands and forbid my coming on the land. Now, by talking with that patron, asking how many cows he had, how he fed them, working around, talking to them kindly, I finally was invited in to see his barns and one thing and another, and the men that will act in that way at first will turn out to be your best friends, and will be the men that will introduce you to the neighbors. I believe by taking the proper manner and going about it kindly, that you will get any man to work for his own interests.

The Chairman: Wasn't there something behind, in case a farmer would not be educated and continued to bring unclean milk? For instance, it would be rejected, would it not?

Prof. Carson: Well, the makers on the Canada side make a rule that if one man rejects it, the other man rejects it.

The Chairman: That was behind that education, that is a pretty good club. Could you educate them without that?

Prof. Carson: It is not a law, it is a common law among them.

Prof. Emery: It has all the force of law.

The Chairman: I think we may do a great deal more in the way of education through cheesemakers if we do not accept dirty milk. They would have to bring clean milk, whether they wanted to or not, but the suggestion is good.

Mr. Marty: I would like to ask Prof. Carson whether this method of education of patrons has brought about any better conditions among factory plants? I know in our section that a great deal of our cheese is spoiled directly through poorly equipped factories, where factories are not sufficiently equipped so that the maker can apply his skillful methods for the manufacturing process, more so than with any poor milk that we

receive. Therefore, the poorly constructed buildings are the first thing that we must get after in our section to see whether that method would bring about better conditions in the way of improvement of factories.

Prof. Carson: The first year I went out on the road I was sent to the worst district in the whole Province of Ontario, and by pointing out the defects and holding meetings and explaining enabled in many instances to induce those patrons to tear down the old factory and build a new one and we had no law behind us, I had no more power than to suggest, and by gradually working up a sentiment we were enabled to do that.

Prof. Emery: I feel quite sure that Professor Carson has given us some most excellent thoughts in urging more education. I believe perfectly in the potency of ideas, they are what give us progress and we cannot have too much of it if we get the right kind, but I feel quite as sure upon the other hand that Mr. Carson minimizes in this state the benefits and the force of law. Now, we have some experience here, as well as our Canadian brethren. For many years the Wisconsin Dairyman's Association employed instructors to go into the field and instruct in the matter of cheese making and no doubt that high quality of our cheese as compared with the quality of our butter today is due to the instruction that has been given by these men during these many years. But a few years ago a law was enacted authorizing the Dairy and Food Commissioner to appoint one or more persons as his agents, clothing them with the same power that he possesses to go into a creamery or cheese factory. He appointed Mr. Aderhold, Mr. Marty and others. Mr. J. G. Moore was the first man appointed as creamery inspector under that plan. Now, it is the uniform testimony of these men of experience that when they themselves have power given them by the law of Wisconsin, that their efficiency was thereby greatly increased, that, good as their work was, that they could do before, they could do distinctly better and stronger work, when they were clothed with the police power of the state. Now, I had engaged these men, I tried to frame a policy of procedure to go not upon a theory in the air, but to go down to things that were to be worked out and definite conclusions reached. Mr. Aderhold will remember the interviews I had with him on this point, Mr. Moore will remember the same, and Mr. Baer, who was, I believe, the first man employed by the Wisconsin Dairyman's Association as traveling chief instructor is emphatic in his statement, when comparing his previous expe-

rience with the experience he has now as Assistant Dairy and Food Commissioner, when he has the right arm of the law to back him up, that he can do infinitely more work and more satisfactory work than he could simply as instructor. He goes as both now, in the capacity of instructor and inspector, with the right to go, and the right to ask, and the right to instruct. We have had an example given of what can be done by instruction and by law together, an example of my own experience; rather an exceptional example, possibly, but it was very clearly an object lesson in this matter. In one of the counties where cheese is being made an instructor who had been to the place had been roundly abused by the owner of the factory, a man worth $100,000 or $200,000, a man who was manufacturing cheese to put upon the public's table in a factory that was absolutely in a worse condition than the hog pen only a few yards away, a factory where the inspector had to take an axe and chop down through the dung on the floor in order to reach down to find out what the character of the floor was, and this man, when appealed to to clean up his factory, simply scoffed and attempted to drive the men from the premises. But when Mr. in that factory, I will prosecute you," that had the desired effect, for he had the law behind him. We have factories in Wisconsin that are clean, that are wholesome, that are a source of pride to the cheesemakers, but we have factories in Wisconsin that are indecent and it will take the strong force of law to compel these people to put upon the public's table decent and cleanly food.

Mr. Marty: I wish to say that in the section that I have inspected for the last two years, that we have districts there where I can assure you that a man going in there without the right of the state to inspect, that he would never reach the building, he would not be allowed to enter upon the premises. We have down there such ignorant men from way back that if a man were to stop and make his compliments, take off his hat, by that time he would land somewhere else.

SWISS CHEESE MAKING.

FRED MARTY, Madison, Wis.

Instructor in Wisconsin Dairy School.

Swiss cheese making is the title of the subject assigned to me by your worthy Secretary. A book, perhaps, could be written if we were to go into every particular detail of the manufacturing process of Swiss cheese. I am, however, only going to touch upon some of the effective *wants* and *needs* which we are today contemplating, and how these may be overcome.

Let us first consider of what value this foreign cheese industry is to our state. It means that southwestern Wisconsin is chiefly depending upon this industry; its yearly production consists of over $20,000,000 or $2,000,000 worth of foreign cheese. Our cheese finds a constant market, and an Ideal Drum Swiss cheese is desired by the dealers and shows evidence that we are in need of a Fancy Swiss cheese, since there are annually over 85,000 cwt. Fancy Swiss cheese imported.

This cheese is of a fancy brand, but if we were to trace it back to its manufacturing point, we would find a cheese factory with a valuation of from $10,000 to $15,000, equipped with all the modern improvements. It is evident that many of our best cheese makers cannot manage their work in a satisfactory manner, due to the ineffective and poorly constructed buildings. Two years of study and inspection of the foreign cheese section, convinces me of the lack of equipment, and the necessity of putting forth every energy to improve conditions in this line of our industry. It is my desire to impress upon your minds this particular branch of cheesemaking.

The foreign cheese, including Swiss, block, brick and limburger, is known as a sweet curd cheese, entirely depending upon the condition of the milk. The milk for a Swiss cheese dares not exceed over 12 per cent. acidity in order not to destroy that characteristic nature of developing the eye or holes in a Swiss cheese due to breaking down of milk sugar. The milk for brick and limburger cheese may contain a higher per cent. of lactic ferment, but if over ripe milk is used for either Swiss brick or limburger, it will cause, when cured, a pin hole cheese in Swiss, and a sour cheese in brick and limburger, due to the large amount of moisture contained. A gasy milk is be-

yond control for either kind in our present method of manufacturing, yet many of the faults of our cheese may be traced back to poorly equipped factories and factory equipment.

It will be seen, therefore, that the lack of a Fancy Swiss cheese lies greatly in our poorly constructed factories. It has been shown that in the modern constructed factories where skillful methods can be employed, a very rare fancy quality is manufactured.

However, many faults I have observed are due to the maker who has not yet become master of the art. The manufacturer of Swiss cheese requires skill, judgment, yes, years of practical experience, for an ideal Swiss cheese has many details, and is made up very defective under different temperatures in the curing process,—I mean to say it is so under our present conditions; we have no guide to go by as you cheddar cheese makers have. Many of these defects could be overcome by the use of the rennet and acid tests, to determine the ripeness of the milk, thus doing away with the home made rennet which is so uniform in its strength. The application of these tests would aid us in making a more uniform cheese, and if we can determine the point to which our milk should be ripened, a commercial rennet extract can be used.

This particular point of getting ways and means of controlling the ripeness of the milk and strength of the rennet at the time of setting the milk, would undoubtedly be a great aid to us.

The application of scientific tests along these lines has, in the manufacture of cheddar cheese, worked wonders, and I am at a loss to see why the results would not be the same in our branch of manufacturing. But I think I am safe to say that it is evident that the question of ripening the milk for Swiss cheese will, in time, belong to the past. It is evident that we are depending upon lactic ferment; the skilled judgment which is the secret of our makers, to obtain a uniform quality of cheese, will then be overcome. This would be a guide to the beginner and would not require years of practical experience to become master of this particular point. I do not mean that the milk for a Swiss cheese must be ripened to a comparative point as the milk for a cheddar cheese, but it is evident that a large per cent of the Swiss cheese which is made in this state is classed as No. 2 cheese for the very reason that the milk from which these particular cheeses were made did not contain sufficient lactic ferment to produce the proper fermentation necessary to de-

velop the eye, or hole. The milk for a Swiss cheese is hauled two miles, and immediately after drawn from the cows. This will not allow the lactic fermentation to develop to a high point; but it is evident that the ripeness of the milk in a period of six months will be influenced by the temperature of the atmosphere. I earnestly trust that this particular point will be considered by the authority of our station, and an experiment carried out in the regular factory plants, say one factory and location on high land, and one in low lands, where a record of each making should be carried out by the aid of a rennet test and acidity test, whereby each cheese could be compared by the record of manufacturing, and its final results.

I am much pleased to state that the condition of our factories are much improved, and strong efforts are being made to overcome that architectural plan of a Swiss cheese factory which was constructed so extravagantly of four posts and a roof. Let it be understood that we are not living in the time of our grandfathers; our circumstances today demands us to keep step with the times. The financial standing of our patrons today are not such that they cannot comply with the state laws in maintaining a sanitary factory that would assure them higher returns for their products.

The map, showing the distribution of creameries and cheese factories will serve to show you that the cheese factories in our section have not only been drilled in one way, but sowed down in full measure. These types of cheese factories are, with a few exceptions, of the poorest construction. It is evident that a critical period is at hand, and in order to bring our conditions up to the State Dairy and Food Laws, the force of the Dairy and Food Commission must be enlarged sufficiently that every factory may be thoroughly inspected by a number of inspectors who are competent to bring modern scientific and practical knowledge to the many who are contrary to our motto "Forward." These inspectors should be clothed with suitable police power should instruction fail to bring about wholesome sanitary conditions. This would undoubtedly improve the condition of our poorly constructed factories and, in general, would secure to all cheese and buttermakers a more suitable establishment. Then we could trust to hope that the advanced methods which are yearly taught to our large dairy class may be accomplished.

DISCUSSION.

Prof. Carson: Mr. Marty states in his paper that there is a marked improvement in the condition of the factories. I would like to know how that improvement was brought about.

Mr. Marty: This improvement was brought about by holding meetings, and where mere suggestions for general improvements failed, they were compelled to do so and it was a case of necessity and it was shown this last season in our cheese section that the closing of a few factories has done wonders down there; it has improved the condition very much and the general opinion today is that the patrons down there, or those interested in dairying, before they go to construct or to rebuild a factory, they apply for plans, and I am getting letters day after day inquiring for plans for new factories.

The Chairman: You find then that just a little enforcement of law now and then is a wonderful aid to education?

Mr. Marty: It certainly is.

Mr. Jones: I would like to ask Mr. Marty what his plan for a curing room for a Swiss cheese factory is.

Mr. Marty: The plan for a curing room for a Swiss cheese factory is a very interesting point, and very often there are mistakes made, as to the curing room for this particular reason, that precautions must be taken that the curing room for a Swiss cheese factory is not laid too deep in the ground in order to get too moist for the cheese. An ideal curing room for a Swiss cheese factory should be about three feet above the level of the ground; that would secure sufficient draught and in case that your curing room should get too dry, with the modern appliances that we have nowadays in the way of steam outfits, we can get steam into the curing room and get moisture as we desire it.

The Chairman: How deep would you run that below the surface of the ground?

Mr. Marty: That should be at least nine or ten feet, that is, the whole depth of the whole cellar..

Mr. Jones: I would like to ask him further at what temperature he found his cheese did the best?

Mr. Marty: That is a point that is pretty hard to answer, except in a general way. The temperature in curing Swiss cheese depends greatly upon the condition of the cheese. If

the milk has been such that it would hasten the fermentation process (and the fermentation process of the Swiss cheese is for the developing of the holes) a lower temperature would be preferable. The curing room should consist of at least three departments; one department for what we call the curing process, where we aim to hold the temperature rather high if it is needed, all the way from 70° F. to 80° F. Then we have a second room—we do not have it, however, but we should have—there should be a second room so that when a cheese is far enough advanced in its fermentation process it could be taken in there and if that cheese should still go on in its fermentation process, put it way back where there is no heating whatever, at a lower temperature, that will check the fermentation process and this is something that we must have. I think I see a number of foreign cheesemakers in the audience and I would like to get their opinion of this thought that a curing room should consist of three rooms instead of two, or, as many of us have, only one. That the curing process of a Swiss cheese requires skill and much attention must be relied upon.

Mr. Berg: I would like to ask Mr. Marty if by getting moisture into the curing room with the steam outfit that will have a tendency to warm up the curing room?

Mr. Marty: It certainly has, that is what we apply steam for. But as I have previously stated, it would only have a tendency to heat up that certain room that we want the steam and heat in. When that cheese is beyond that fermentation we sometimes, as I have mentioned in this paper, find that the condition of the cheese is such that an unskillful manufacturer of Swiss cheese cannot tell what the ripeness of the milk was for this reason, we have no appliance, no test whatever, it is only his judgment that the fast working of the curd will indicate to a maker that it is apparent by his work that his milk has been somewhat overripe. This will also hasten the fermentation process. Now, that cheese could perhaps, if the milk was overripe, be cured at the lower temperature and be cured to a good cheese, but we have occasionally had the difficulty that at the time of the setting there was not enough fermentation in the milk, that is what I want to get over, and that cheese will fall short in a curing process, it will not develop unless we can force it, we have to force that cheese with high temperature. Now, if we were to apply high, dry heat, it would certainly have a tendency to check the rind of the cheese, there-

fore, we must have steam to moisten the atmosphere of the room.

The Chairman: The only time you need to apply steam is when the air is warm, because that is the only time it is too dry, is it not?

Mr. Marty: Yes.

Mr. Torney: I would like to ask how you could ripen that milk to prevent glass cheese?

Mr. Marty: We mean by "glass" cheese a cheese similar to a cheddar cheese. There are checks in a cheddar cheese, or, in other words, seams; instead of the cheese going into fermentation, there are seams going through the body of the cheese instead of holes. Now, it is my belief, as I have stated, that we are much dependent upon lactic ferment. That is a point I want to bring out, and I wish it would be thoroughly discussed; if any of you think differently, I wish you would come out with your ideas, but it has been the general belief that in the manufacture of Swiss cheese there is no starter used, it is today the general belief of many of the makers that there is no starter used in the manufacture of Swiss cheese, and I say there is; the home made rennet which we use and have been using contains a large per cent of lactic acid. Now, if I were to say to a cheesemaker, "I would not use home made rennet, I would use commercial rennet extract," he would tell me, "I cannot get that fermentation in my cheese by using commercial rennet extract, I have got to have something in my milk to start it." So I say it is a starter and I think a "glass" cheese is largely due to the lack of lactic ferment, that the milk has not become sufficiently ripe to produce the proper fermentation necessary. I would like to get some opinions of the others here as to whether you think that the cheese will go into fermentation, and the cheese being made of such a sweet—I cannot explain the nature of the milk any other way—the milk being so sweet that the cheese will become very tender and very soft in texture and in body, a weak body, causing that cheese to remain blind, that is, closebodied for about three or four weeks; and if the cheese maker will go to work and force that cheese in the fermentation process, when it is in normal condition, he is going to hurt that cheese, he will force the fermentation in that cheese, he will warm the texture of the cheese; that will have a tendency to check that cheese in body and therefore, instead of forming the holes, it will crack and form into seams.

Mr. Monrad: I would like to ask Mr. Marty, if you had

just the Swiss cheese how much acid would you have in your milk?

Mr. Marty: That is a very difficult problem for me to answer, for this reason. I was trying to make experiments on behalf of the state for the last three or four years, but I have not been able to receive any milk at that establishment with less than .12 of acidity, therefore it was already beyond the point of producing those eyes, so I was not able to determine what degree of ripeness it should be, although I know it should not exceed .12 per cent.

Mr. Carson: I understand you to say that Swiss cheese making depends largely upon the lactic fermentation?

Mr. Marty: Yes.

Mr. Carson: You have also used commercial rennet?

Mr. Marty: Yes.

Mr. Carson: I understand there are some rennets that contain as high as 14 per cent, while others contain only 10 per cent. Now, would your results that you got be due to the acidity of the rennet, or was it due to something else?

Mr. Marty: That is a pretty hard point to determine, but I can explain in this way that we have obtained good results at the factory by using commercial rennet extract; however, no test was ever made as to the per cent of acidity in the rennets. Now, this is a point which would certainly have to be taken into consideration, yet I dare to say this much, that the small amount of rennet which would be applied to a large amount of milk would not have the tendency to materially hasten that fermentation in the milk.

Prof. Emery: Well, when that acid is not lactic acid, it is hydrochloric acid, and some other element, and I understand hydrochloric acid has the same effect in cheesemaking as lactic acid.

Mr. Marty: Yes. Now, do you believe that by using—perhaps at the rate at which we would use, under normal conditions, we would use a higher quantity of rennet for the manufacture of our cheese,—now, do you believe by using, I would not say at the rate of four ounces per thousand, but if we had 2,000 pounds of milk, that eight ounces per thousand would have any great influence upon the ripeness of the milk?

Mr. Carson: Well, I am not clear on that point, and I am seeking information, understand. Dr. Babcock has done some experimental work in using diluted acids instead of rennets and can produce a first class cheese from that. Now, then, the

question is, whether the acid that is in the rennet has any effect on the cheesmaking, that is what I am trying to get at.

Mr. Marty: It certainly has.

The Chairman: That would not be a ferment.

Mr. Marty: But the point I want to get at is, I want to ripen the milk, by means of the commercial starter instead of getting the fermentation in the rennet, I want to ripen the milk; that is the point that I want to get at.

Mr. Carswell: I would like to ask Mr. Marty if he considers it absolutely necessary to have a copper kettle for the manufacture of Swiss cheese? Or can it be manufactured in tin vats, if the vats are properly constructed for the dipping of the curd. It used to be thought that a Swiss cheese could not be made unless a copper kettle was used.

Mr. Marty: That is a very interesting point, and it is a point that has been experimented upon at the state dairy school by Dr. Babcock and myself, but as I have previously mentioned, we were not able to keep track of the results of the cheese as to fermentation or developing between the eyes or the holes, but I believe as to the block cheese, it could be manufactured in the vat if the lump of curd could be dipped at one time. I think if we were to dip the curd by the methods which are applied in dipping curds from a vat as in brick cheese dipping, that is dipping the curd from the vat over into the molds, it would lower the temperature of the curd, which would certainly cause an uneven distribution of the development of the eyes, or else they would not form to the large sizes which are wanted, they would be more numerous and small.

Mr. Monrad: Could not you dip it in the square vat just the same way, by changing the band? Now, you use a steel band that you bend in the shape of the round kettle; supposing you had a steel band bent to fit exactly the square vat and that two men with that ran along on either side, just as you do now, don't you think you could dip out of the square vat in lump just as well as out of the round one?

Mr. Marty: I think we could, but this difficult problem would have to be overcome then,—you understand that in the manufacturing of block or Swiss cheese the curd is not left to ferment at all, it is kept in continual motion and every curd particle is supposed to be free for itself, therefore it is necessary for us that we get a curd agitator that will assure us that we can keep those curd particles separate under a high forming temperature.

Mr. Monrad: Is not the round vat more important on account of the advantage in enabling you to keep up that stir?

Mr. Marty: Yes.

Mr. Monrad: Keeping it stirred while it is being heated, and after it is heated, keep that up for nearly an hour on an average.

Mr. Marty: Yes.

Mr. Monrad: Well, now, then and there is the trouble, that it is pretty hard to keep it moving in a square vat, to keep it stirred as well as in a round kettle. I always thought that was why the Swiss people stuck to the round kettle so persistently.

The Chairman: Mr. McKinnon, do you think there is any way of keeping that in motion in a square vat?

Mr. McKinnon: We who are interested in agitators believe that an agitator can assist in any make of cheese, that is about all the information I can give you today. It is not a question that we have taken under consideration, but we have found this, and I believe there are many men right in this hall that will bear me out in asserting that an agitator can stir the curd far better than two or three men can stir the curd in a vat. It stirs every particle of the vat. If the fans are not rightly constructed at the present time for stirring the curd that you want to make into a Swiss cheese, why, that undoubtedly can be altered. I apprehend that there will be no difficulty in that direction, that it can be overcome by mechanical power just as well as many other difficulties are being overcome by mechanical power at the present day.

BRICK CHEESE MAKING.

CHRIST SCHENK, Stitzer, Wis.

Brick cheese making is a subject which has perhaps never been discussed very much, but I really believe that the manufacturing of brick cheese requires attention at several particular points and very often it is manufactured with altogether too much moisture remaining in the cheese.

For the manufacturing of brick cheese it is necessary to have sweet milk perfectly free from all bad odors. The making of this cheese is very similar to the manufacturing of limburger.

After the milk is all received it is warmed up to 88-90 degrees F., a quantity of rennet usually from 4-5 ounces per 1,000 pounds of milk is then added. I am very sorry to state that the rennet tests are not applied to determine the ripeness of the milk and this is largely responsible for the uneven quality of cheese put on the market.

The time of curdling varies between 20 and 25 minutes. The proper time when the curd is ready to cut can be compared with the curd of the American cheese, it is then cut with a perpendicular curd knife first lengthwise and then crosswise, half laping, then loosing all the curd from the sides of the vat. I usually let the curd remain in this condition for about 5 minutes depending much upon the condition of the curd.

This mass is then slowly put into motion by means of a curd scoop and is kept up for about three minutes. The same knife is used to cut it lengthwise again, this is usually sufficient cutting to place the curd in proper shape. A rake is then used to stir the curd evenly and slowly for about 5 or 10 minutes depending somewhat upon the time of the season.

Steam is now applied under continued stirring until it has reached the required temperature which is from 105 to 115 degrees F. This temperature should be reached within a period of about 35 minutes. The curd is still held in motion until the maker finds it firm enough to dip. The firmness of the curd is tested by taking a hand full of curd, pressing same lightly, then releasing it and if the curd is ready to be dipped the granules will readily fall apart again.

A suction pipe made out of tin and strainer of the same material is used to draw off the whey, leaving sufficient whey to mix the curd thoroughly before transferring it over into the molds which is done best and easiest by means of a flat sided curd pail. After dipping, each cheese is covered with a board, known as a follower, and is pressed by the weight of a common building brick.

This cheese is to be turned in about 30 minutes after it is dipped and so on every 2 or 3 hours thereafter. The time required for pressing is 24 hours; it is taken out of the molds and carried into the cellar and placed on a table where the salting takes place.

Each cheese is handled separately. Dry salt is applied. Much precaution must be observed in the work of salting. The practical cheesemaker has a certain way of telling whether the cheese has enough salt or not. This however, cannot be ex-

plained in a few words and can be learned only by experience.

After lying in the salt for about 3 days, the first days make should be taken out and put on the curing shelf. This cheese is washed every day with clean pure water by means of a brush or sponge and more salt can be added if necessary.

In a period of some 3 or 4 weeks the cheese is generally ready for market. Each cheese is then neatly wrapped into parchment and heavy manilla cheese paper with a finish of tin foil giving the cheese a very neat appearance.

This will briefly describe to you the ordinary methods which are applied in practical brick cheese work. The many different details connected with this branch of cheese manufacturing, I am unable to describe at length to you at this time.

I am at present a student at the Wisconsin Dairy School and have observed many new and good points in the making of the brick cheese, which I know will be of great aid to me in my work upon my return to my own factory.

DISCUSSION.

Mr. Marty: I would, like to ask Mr. Schenk why he holds his curd fifteen minutes after setting, depending upon the time of the year, what is the reason?

Mr. Schenk: Well, in the spring the milk is good, the milk is not overripe and the curd can be worked more slowly than in the summer time when the milk is ripe enough or overripe, the maker has to overcome the gasses. He has to work the curd as fast as he possibly can.

Mr. Marty: You mean that this is the only thing that will indicate to you the ripeness of the milk that you work?

Mr. Schenk: Yes, it will.

Mr. Michels: I would like to ask the gentleman what he means by "overripe" milk.

Mr. Schenk: Overripe milk is milk that is held too long after it is drawn from the cows, and has too high a percentage of lactic acid.

Mr. Michels: What degree of acidity does it contain?

Mr. Schenk: Well, milk should not contain over two tenths of one per cent of acidity for the purpose of cheesemaking.

Mr. Michels: You consider it all right at two tenths of one per cent?

Mr. Schenk: Yes.

Mr. Marty: I would like to say that I do not agree that milk should contain two tenths of one per cent acidity, or .20 for the manufacture of brick cheese, I think it is an excess when milk contains 1.8 for the manufacture of brick cheese, and I think there is a certain method that must be applied to overcome the developing acid upon a curd when milk has that content of acidity. Do you work the curd any differently, Mr. Schenk, when you have such milk on hand?

Mr. Schenk: Yes, I would, I would cook the curd longer, and make it firmer in case of overripe milk.

Mr. Jones: About what per cent of cheese do you lose by having overripe milk?

Mr. Schenk: This point I would like to refer to Mr. Marty, I am not posted on it.

Mr. Marty: I do not know as I am quite able to answer this question. Have you reference to the percentage of fat?

Mr. Jones: Yes, the weight of the wasted cheese.

Mr. Marty: That is, the per cent of fat which would perhaps be lost, if we may call it a loss, but as a rule in our district the method of manufacturing butter is applied to the manufacture of brick cheese, and the loss may come to about .8 of one per cent, if the milk is very sour.

The Chairman: I think we would better take up the next subject and then we can discuss them both together.

Mr. Schaller: I want to ask what is the reason Dodge county can make better brick cheese once a day than we in Dane county can in making twice a day?

Mr. Schenk: I would like to know myself. Last summer I made cheese but once a day all summer. I have made brick cheese, and I think I have had better cheese than I had the summer before making twice a day. I live in Grant county.

The Chairman: Could it be that your milk was too sweet when you made it twice a day?

Mr. Schaller: I guess that is what is the matter,

Mr. Marty: This is a question I have touched upon in my subject, that milk for limburger cheese could contain a higher per cent of acidity than in the manufacture of Swiss cheese. but it cannot come to an excess of .2 of one per cent or over; but I think if you can keep the milk for brick cheese in good condition, free from all bad odors, it will form a higher per cent of acidity, that will make a very nice texture in a brick cheese and it seems as though it has the peculiar quality that we want in the manufacture of brick cheese.

LIMBURGER CHEESE MAKING.

HENRY ELMER, Belleville, Wis.

Through the courtesy of Mr. Baer, I was requested, as a Limburger cheese maker, to write a paper on Limburger cheese making, for this convention. As I am no orator, I hated to do so, but thought to please Mr. Baer to do the best I could, and hope the audience will excuse me for all the blunders that I make.

As all the cheesemakers present will tell you, it is a hard matter to tell just how to make any kind of cheese ahead of season. As I know, we cheese makers in this country have three great factors to work against. First, very changeable weather. Second, cleanliness by patrons of factories, and last but not least, factory buildings in and outside. I have seen and made cheese from childhood, and after a careful sizeing up of affairs, came to the conclusion that these three points as stated above, was what any cheesmaker in southern Wisconsin has to fight.

A bad factor is the hauling of whey in milk cans. I have seen through my travels model cheese factories where they have a well cemented cistern, with pump, to hold the whey. Each patron carries a barrel for hauling whey and is charged so much per barrel, and at the end of the season, is equalized among all the patrons. It does not matter how often barrels arewashed they are sour, and full of injurying bacteria.

Another bad thing is, the companies will build a cheese factory where it suits them best to haul; they do not look for the formation of the ground which the factory is to built upon,—be it gravel, limestone, sand, or what it may, and as a general thing, build in sand where it is easy digging. But the fact is such cellars are not fit to keep cheese in, as the cheese dries too soon and does not keep moist enough "to keep" until next attending.

First of all is to get good, clean, sound milk, as we all know. After the milk is all delivered and ready for business, comes the rennet. The real cheesemaker, and w at our factory and others, always test the strength of the same before using, according to what the milk and the season requires. In the fall I prefer for limburger cheese extracts or tablets to curd. The temperature of the milk I could not say how high or low, as

it differs and depends on locality of factory and weather. If cold we set rennet at 96 to 100 degrees.

Regarding limburger cheese making, I will say that it takes more careful care and more labor to make an A No. 1 product than any other kind of cheese. Although very few believe it, I claim the same to be true, and I am ready to prove it.

To make a fine No. 1 limburger it takes lots of patience. First to get the curd right and well enough advanced to cut same and make cheese of it in the vat (which fact many a cheese-maker does not understand, as I know by experience), and it also takes the very strictest care while the making process goes on as limburger well cared for while made always turns out to be the best.

As said before, the main thing to, my notion, in making limburger or any other class of cheese is patience to let the curd get ripe, and same curd should be worked according to acidity of the milk but always carefully and slowly. I have noticed fellows make cheese by the clock which is altogether wrong. Use patience and go as fast or as slow as the curd requires. I think this to be the best policy.

One point must be remembered in making, and especially in dipping the curd out of the vat into the moulds, so as to get the cakes or stones as even as possible as the market requires 1½, 1¾, to 2 pound cakes as per season. The cakes should not weigh over 2 pounds. The southern market requires cakes of as small size as possible; central market can use larger cakes, and I think they are right as the larger the cakes the less the waste is, but we have to make limburger as the market requires it in size, cut and texture. We limburger cheese makers have to try to study out the out-come of the season's market, hit or miss, and make cheese according to the best of our knowledge and belief. My habit is to make limburger cheese to suit the demand, but it is always a sure policy to make cheese solid enough to stand the season. This applies especially to April, May, June, July, August, and September which are the hardest months for the limburger chees maker.

After the cheese is made in the vat and put in the cellar, be sure it has the right temperature to drain, as near as circumstances will allow. After well drained which is must be, the cheese comes into what we call "salt-tables" and has to go three or four days through that process. This is another factor which requires very close care as in the spring and fall of the year much less salt is used than during the summer

months, when grass is good and soft. Therefore, very close care should be taken in salting, as I have seen thuosands of dollars lost by over-salting. My idea is to give cheese as little as possible salt in tables, as the old saying is, "you can always give salt to cheese, but you can not take any away," and the salting process must be watched closely.

Next is to put the cheese on the shelves. This is another important factor, as when limburger cheese is "green" we can give it a smooth appearance, which we cannot give after it gets older. We use an extra table to rub the outside smooth before putting on the shelves, and there it must be regularly attended to, if possible every day, as limburger does not cure right dry no matter how it is made. I think other special brands of cheese will cure better damp, to a certain degree. We at our factory never let cheese get dry if we can help it; we dampen with a cloth what we cannot handle the same day. Sure enough, the cellars are not all alike, but every cheesemaker, no matter what kind of cheese he makes, should use a hygrometer to ascertain the moisture in his cellar.

Now this cheese must be handled, as said before, until cured, from 18 to 25 days as circumstances and time of the season requires, sometimes 30 days, at any rate until honestly fit to be packed for market. This is, again, a point where many cheesemakers spoil a well made cheese,—by packing too soon. I have noticed in my experience of late around home as soon as cheese is sold, they are packed, whether cured or not. I think some of the local buyers are a little to blame for that as they agree to accept goods and pay C. O. D. for them before they know, themselves, when it will be ready for market. This excuses the cheesemaker. I bought some limburger cheese this fall, and had cheese delivered when it was not near cured—snow white—and think some other buyers have had the same experience in times past. I think by proper care, temperature and moisture, regulated a well as possible, limburger cheese can be packed in from 18 to 25 days after being put on the shelves, as limburger cheese will keep and cure best in boxes.

Care should be taken by cheesemakers not to pack the cheese too close, always according to cheese. I have seen some pound it in the boxes with hammers but have never done so myself as I think it is not right. I have seen boxes delivered that weighed over 150 pounds gross, We have not had any over 142 pounds an dstill outdone all competitors when monthly payments came in; it simply took more lumber, and the cheese

maker that hires out to furnish all material (which is the case around here) have more or less expense, but it will not make the goods No. 1 by pounding the cheese into the box. This is another point any honest limburger cheese maker should consider but I am sorry to say many of them don't consider, all they look to is to put as much as possible in the box and make the boxes weigh heavy. This is wrong, especially in the fall of the year, and really, all through the season.

DISCUSSION.

The Chairman: That is one of the best papers I have ever heard on limburger cheese making.

Mr. Marty: I would like to ask Mr. Elmer what indications he has that would teli him when a limubrger has sufficient salt and when it has not.

Mr. Elmer: You are an instructor of the Dairy School and my knowledge I got by experience, therefore you can tell that better than I. My ways are common and yours are more scientific.

The Chairman: Your experience is worth just as much as anybody's science and we want you to tell us about it.

Mr. Marty: There must be some way if telling.

Mr. Elmer: Just by the looks of the rind, formation of the rind.

Mr. Marty: What is the nature of the rind?

Mr. Elmer: Why, when it becomes to get a little yellow, when it begins to ripen, it should turn a trifle yellow. When you have cheese that has too much salt, you go over it with your finger and you see it is snow white.

Mr. Marty: Did you ever notice a cheese that has not sufficient salt will have a tendency to turn to a pinkish color?

Mr. Elmer: Yes, I have noticed that; that is a fact.

Mr. Marty: Are there any precautions that you have in salting your limbuger cheese, what precaution do you observe? As I understand, the object is to get a uniform quantity of salt upon the cheese; what is the precaution you observe?

Mr. Elmer: I told you just what we do; we salt the cheese sometimes only twice and sometimes we salt it three times and we look at the time of the second salting and then we can see whether it looks as if it needs some more salt and we give ac-

cordingly the third salting, if necessary. Sometimes it is all through the summer months, but in the fall or spring it generally is not, it only needs two saltings.

Mr. Marty: Has the moisture of the cheese anything to do with the test when you salt the cheese whether it will dissolve more slowly or readily from the cheese?

Mr. Elmer: I cannot exactly tell you, I have not made special experiments.

Mr. Marty: You would believe though that if a cheese was very moist the salt would have a tendency to melt much quicker from the cheese?

Mr. Elmer: Well, I tell you, there is reason in all things. I believe just as I stated, limburger cheese especially must be damp and it naturally would be damp as long as the salting process goes on to a certain degree, but you can tell with limburger cheese if you have had lots of practice making it, you can tell very easily whether you have enough salt or not.

Mr. Jones: How long after the first salting before you salt it the second time?

Mr. Elmer: We salt three days, once a day, sometimes only two days.

Mr. Marty: I would like to ask Mr. Elmer whether the size of the individual cakes of limburger has any influence upon the variation of the weight of the boxes.

Mr. Elmer: Well, I don't know as it does; I believe this, that the big cakes, if they are packed in too solidly, as I said they ought not to be, and then take small cakes and pack them in solidly, that is where it comes in.

Mr. Marty: If there were small cakes in the box, there would be more open space than in the case of large cakes.

Mr. Elmer: Yes, I think so.

A Member: What is your idea in preferring a clay soil for a curing room?

Mr. Emery: Because it regulates the temperature, it keeps the cellar room so that we can regulate the degree of temperature.

The Chairman: Does it keep it more moist, do you think?

Mr. Elmer: No, sir, I do not think so unless it should be in a case I have seen like this where there were rocks, they were dug in pretty deep.

The Member: Would it make any difference, if the cellar was cemented or bricked, would it make any difference whether the soil was clear gravel or sand, would it make any difference what kind of soil it is?

Mr. Elmer: It will. Now, take our place where I am you can take out sand, the lime is cemented well up, but when it rains the water runs in, and when it is dry, it is all dried up.

Mr. Schaller: I want to ask if it is better to make limburger cheese in a vat than in a kettle?

Mr. Elmer: I have never had enough experience, because I have always made limburger cheese in a vat and therefore I could not say, but the dealers all over the United States do not want kettle cheese made, they claim it has a more bluish color on that account, they want it as white a color as possible. I have heard some cheesemakers claim that they can make just as nice colored limburger cheese in a kettle as they can in a vat, but that I cannot tell, I have not had the experience.

Mr. Marty: With reference to that question, I would say that fairly good limburger cheese can be made in a copper kettle if the proper precaution is taken in scouring the copper kettle, only applying hot water for the washing of the kettle, whereas, in the manufacturing process of the Swiss cheese the kettle is scoured, and in that scouring the texture of the copper ekttle has the tendency to give the curd of the limburger a bluish color at the low temperature of cooking employed. Of course I would not recommend manufacturing limburger cheese in a copper kettle.

Mr. Carswell: I would like to ask the gentleman that read the paper on brick cheese the question, which he would consider the best cheese, and which would bring the best price upon the market, one that had the close, smooth body, the soft texture, or one that has a soft texture with some or quite a number of small holes running through the cheese?

Mr. Schenk: I think that the cheese that is a little solid and has a number of small holes brings a better price than the cheese with the soft texture. A soft texture cheese contains a lot of moisture and cannot be stored.

Mr. Carswell: The gentleman does not understand my question,—it is a question as to whether it shall have a close texture or whether more or less open: whether it should be porous or more nearly close like a cheddar cheese, only soft, as required for the brick.

Mr. Schenk: I think lots of people like very close cheese, but I think the fermentation goes on in the cheese as it gets older and it grows firmer as it gets older.

The Chairman: You mean when it is in its prime, it should have some holes?

Mr. Schenk: It should have some, but I think it is a good thing to have it pretty close, not too close.

Mr. Craswell: I believe it has been demonstrated at our dairy school that cows fed on clover will produce gassy milk. Now, can you make a first class brick cheese from milk from cows fed on clover, can you get that close texture?

Mr. Schenk: I think a man can. I used a starter last summer very successfully, the same as the American cheesemakers do, and I had a very close cheese from gassy milk.

The Chairman: What was this starter made from,—pasteurized milk?

Mr. Schenk: Well, I have pasteurized the milk as well as I could, I did not have any machinery to do it, but I did it as well as I could, in a common can.

The Chairman: You did not use the raw milk for a starter?

Mr. Schenk: I have used the raw milk, yes, I heat the milk up to 140 degrees F.

The Chairman: Well, that is pastuerized milk, that is what I want to bring out. Now, here is Mr. Radloff, he is a cheesemaker from Dodge county, and he knows all about these things. What do you know about the starter in brick cheese making and how close should the texture be when the cheese is in its prime?

Mr. Radloff: Of late years they want a close cheese.

The Chairman: Without any pores at all?

Mr. Radloff: They do not want to be as close as the American cheese, but they want a very close cheese, but yet they do not want it too firm, for in cold storage it gets firmer still and they do not want that. Now, Mr. Elmer talked about using only a perpendicular knife. Now that was the process that was advertised a great deal, but I do not see why they should not use the horizontal knife just as well as in American cheese making.

The Chairman: How often do you take in milk in the summer time?

Mr. Radloff: Twice a day.

The Chairman: That is in Dodge county; now, you consider it necessary to do that?

Mr. Radloff: Yes. They cannot well make the finest cheese in Dodge county when they take in milk once a day.

Mr. Marty: The question was brought up why the cheese in Dodge county was so much better than the cheese in the southern counties, Green and surrounding counties. I think it

is very much due to the fact that cheese in Dodge county is made on a more firm basis than in Green county. The milk or the cheese curd is worked more and it is cooked higher, much higher, I dare say there is a difference of ten degrees in the firming temperature employed in Dodge county than in the surrounding counties. The brick cheese made down in the southern part of the state is manufactured on too low a scale of moisture, therefore they are in trouble with their brick cheese. There is no reason why that district cannot manufacture a cheese equal to the Dodge county product.

The Chairman: That probably answers that question all right. Are there any more questions on either subject?

Mr. Monrad: I would like to know the degree of temperature required for a limburger cellar.

Mr. Elmer: From 70 to 72 degrees in the limburger curing room, some claim it should be 68 to 70 degrees.

The Chairman: Mr. Radloff, do you use a starter in making brick cheese.

Mr. Radloff: No, sir. In some of the factories where we have gassy milk we went back to the old methods, they use calf stomachs; we made our own rennet, because I find that in my work, in making one of these commercial starters, every cheesemaker cannot make them right, and I thought that was the best way out of it.

Mr. Monrad: I would like to ask whether there are any cheesemakers here that have had any experience in the line of using a starter for the manufacture of brick cheese and what results they had if they used any.

The Chairman: Mr. Radloff has used them in his own factory.

Mr. Radloff: I have not used any commercial starter.

The Chairman: I believe Mr. Schenk says he has used a commercial starter.

Mr. Carswell: I had experience several years ago when we were making brick cheese in using a starter, but it was with pasteurized milk; we had trouble with gassy milk and we pasteurized the whole milk and used the starter and we got very good results; in fact, it was the only way we could handle it.

Mr. Monrad: I would like to ask Mr. Carswell whether by pasteurizing the milk there was not a certain peculiar taste detected in the cheese?

Mr. Carswell: No, sir, I do not think there was anything detrimental at all, and it certainly gave very good satisfaction

and the cheese made from that kind of milk took the first prize at the World's Fair in Chicago, and our friend, Mr. Monrad, here was one of the judges.

Mr. Monrad: Oh, no, I have never been a cheese judge in my life.

Mr. Carswell: Well, you were there when they were judging. But it certainly had a very clean nice flavor, made a very good texture, close, smooth and silky. In the first place we tried making it without using a starter, and we had difficulty in curing it, it took too long, it seemed we had to keep it from 40 to 60 days before it began to show any signs of breaking down, and then we commenced using the starter and we had good results.

The Chairman: Do you know how much starter you used, what percentage?

Mr. Carswell: I don't remember exactly, but we did not use a large amount and did not aim to get it very sour, only slightly acid, and by the way, we tried to get our starter from milk that was not pasteurized, take new milk from the dairy and cool it and set it by itself and used starter from milk not pasteurized.

Mr. Marty: As I understand, the milk used to manufacture brick cheese in Dodge county is only one make to the day; that is, the night's milk is kept over until the morning. That makes me believe that the milk must undoubtedly contain a large amount of lactic acid, and as the results are so much better in Dodge county than anywhere else, it leads me to believe that a pure culture can be used in the manufacture of brick cheese.

Mr. Schaller: I have had about fifteen years' experience in the making of brick cheese and I have found that I could make the best brick cheese when the milk was delivered but once every twenty-four hours providing the patron took proper care of it.

The Chairman: That would be necessary, that the milk should be well cooled and the cans should be clean if you make once a day in the summer.

Mr. Carswell: Before this discussion is closed, I would like to say that in one of the finest brick cheese factories that I visited this summer and in the making of some of the finest brick cheese I have seen anywhere, the maker required the patrons to cool all the morning's milk as well as the night's milk, and all milk came to the factory cooled below 60 degrees, and

in taking samples, I did not get any milk above 60, and he was getting a very fine article of cheese.

The Chairman: Where is that factory?

Mr. Carswell: In Marathon county. It was near Marathon City.

The Chairman: The farther you go up in the woods of northern Wisconsin, the better they do things in cheese factories, the better factories they have there, they are newer, on the average.

CHEESE FROM PASTEURIZED MILK.

J. H. Monrad, New York City, N. Y.

Editorial Staff, New York Produce Review and American Creamery.

Mr. President and Fellow Members: It is hardly necessary for me to say that I am pleased to be with you again. "Fools rush in where angels fear to tread" and hence I have ventured on a path, which is as yet unformed and where the quagmire of ignorance may provide pitfalls for the unwary.

We have with us Professor Carson who can tell us of his personal experience and I shall therefore only give a short review of my second hand knowledge of making cheese from pasteurized milk.

If I am not mistaken, the first practical attempts in making cheese from pasteurized milk, were made by D. H. Burrell of Little Falls, N. Y., in 1890. The milk was boiled in order to coagulate the albumen before adding the rennet, but it was found that even a double quantity of rennet would not coagulate the milk. To overcome this difficulty Mr. J. D. Frederiksen of The Hansen Laboratory suggested the adding of a starter to the boiled milk in order to restore its coagulability and I understand that a process along this line has been patented in 1902.

While the scientists notably Professors Dudaux, Frendenreich, Weigman, Adametz, Russell, and others have for years been studying the action of bacteria in cheese ripening, it was not until after Dr. Storch had practically demonstrated the

value of pure cultures in ripening cream that had been pasteurized, that the question of making cheese from pasteurized milk, ripened with a pure culture, was taken up and practical experiments made, and it was not until about 1896 or thereabouts, that D. J. Olsen first announced as practical the making of cheese from pasteurized milk with special pure cultures, for the various kinds of cheese, and suggested the establishing of laboratories for their preparation.

Meanwhile experiments were also made in Germany by Professors Hamilton, Tiemann, Klein, and others and experiments reported from Prosken in 1897 indicated that the addition of chlor calcium was desirable to get highest yield. Dr. Klein recommended for every 200 lbs. of milk the use of 125 cc. chlor calcium solution of a strength so that 100 cc. contained 40 gramm Ca Cl_2 with a specific gravity of 1.3 at 15° C. This experience covered "Brick" cheese from separator skim milk and "Rernondon" cheese from whole milk and he claimed an increased yield of 30% ripened cheese!

In 1902 the Chr. Hansen's Laboratory of Copenhagen, Denmark and Little Falls, N. Y., introduced the Olsen cheese yeasts and process into Denmark where experiments on a large scale were made at a great expense, and on my recent visit to that country I found that the Hansen's Laboratory had turned over the further experimentation to the government experiment laboratory and Prof. Storch informed me that buttermilk had proven to give fully as good results as the Olsen yeasts. This was confirmed on my visit to the Gisleo creamery, where I found the work to be as follows. The skim milk is heated to 189 dgs. F. and cooled to 93 dgs. F. and enriched by the addition of 3% pasteurized cream (which corresponds to 24% new milk). To this is added 5% buttermilk from culture ripened pasteurized cream.

Six and a half ounces Hansen's Rennet Extract per 100 lbs. was added and the milk coagulated in 30 minutes. It was cut with a wide, horizontal curdknife (with wires instead of knives), and then with a vertical one, first lengthwise and then crosswise. It was then left for 10 minutes when 50 lbs. of whey was dipped off, heated to about 180 degrees and returned to the vat while stirring, and this slow process of heating was repeated seven times until, after 1½ hours, the curd had been heated to 104 degrees F. when the whey was drawn off. The curd seemed normal in every way and of the right springiness, rather finer but more than usually uniform in size. Twenty minutes later

the curd was salted and put to press, where it remained about 18 hours and was then put in a brine bath for 24 hours.

There is an upper and lower curing room. In the upper the temperature is about 61 degrees and in the lower about 54 degrees. The cheese remain in the upper room about 2 months and are turned and washed every day. In the cellar they are only attended to once a week. The moisture is aimed to be held at about 90%.

When, later, I sampled the cheese from some comparative experiments, I found those from pasteurized milk a little cleaner flavored and with an apparently better keeping quality, though the difference was but small. I got no figures as to the increased yield, but may quote Mr. Frederickson as claiming an increase of 10% for whole milk and 5% for skimmed milk. If even an increase of five per cent (not water) can be obtained, it ought to pay for the expense of pasteurization which should not be so very great if the regenerative system is used; and the increased uniformity and keeping quality in the product should be of some value.* Finally I must refer to the Canadian experiments made at St. Hyacinthe Dairy School in 1898 where the cheese turned out good and those reported by Prof. Hean of Guelph in 1900 proving the value of chloride of lime in making the cheese normal yet he did not commit himself to an endorsement of the system for factory use on account of its complication and labor and time. Take it all in all, I have modified my views somewhat and believe in the possible future of the system and hence I hope to see our Experiment Stations arrange for practical tests on a large scale in some cheese factories. Meanwhile I trust Profs. Carson and Baer will let us hear from them on the subject.

DISCUSSION.

Mr. Carson: It seems to me that Mr. Monrad has pretty nearly "let the cat out of the bag." We have been doing some experimental work along the line of pasteurizing milk, and I was in hopes we would be able to spring a bulletin on you before very long on this line of work. However, it is all right

*The Danish Creamery Operators' Association has engaged a special instructor in the making of cheese from pasteurized milk.

and I will give you in outline the work we have been doing in investigating this matter.

Now, we use a continuous pasteurizer; the milk is exposed for about four or five minutes in that pasteurizer to a temperature --whatever temperature you like,--I have tried 140, 150, 160 and 170 degrees. The milk is cooled down again almost immediately, cooled down to about the temperature of 86 degrees or below. As soon as we get it below setting temperature we are satisfied. You understand when milk is pasteurized you destroy the lactic acid germs as well as the other germs, therefore you must add a starter, or else your whey will remain on too long and you cannot get first class cheese; therefore, I was compelled to use a starter. In some cases I had to use as high as five per cent.; in other cases as high as ten per cent starter in order to get the same amount of acid on the milk as there was before it was pasteurized. Now, you understand I had a vat of milk unpasteurized and a vat of milk that was pasteurized, and the two were made up exactly alike. There was one thing in connection with the setting that I wish to mention and that was that the milk that was pasteurized and then starter added to it, would coagulate in half the time that the milk that was not pasteurized would, having the same amount of acid, as determined by the acidimeter, and I was sure that I had the same amount of acidity because my whey stayed on the same length of time, so there was no mistake in that respect. Now, cheese was made up and then scored two or three times. Part of them are now in Mr. Barber's hands, and we have not received the score from him yet, but the other scores have been as follows: Cheese made from pasteurized milk in some cases shows a score of 5 points over the cheese made from milk that was not pasteurized, so that is sufficiently encouraging to say that we should adopt pasteurization. Now, I want you to remember that while this is the result of our experiments, I do not want this to go out as official, because we intend to repeat this experiment, and we want to make sure of what we are doing before I make any official statements. But this has been shown so far. I might also add that in some cases I selected the very worst milk I could get hold of, I selected milk that before it was pasteurized you could smell it all over the building. When this milk went through and was pasteurized, the cheese from that pasteurized milk scored 3 or 4 points higher than that from milk that was not pasteurized, and the score has been all the way from 92 to 98 points.

Mr. Helm: Have you had any experience in leeky flavor in pasteurizing, have you done any pasteurizing in connection with that?

Mr. Carson: No, I have not, I did not happen to get hold of any.

Mr. Monrad: As to leeky milk, pasteurization for buttermaking has helped it, did not cure it. A little leeky flavor can be eliminated by pasteurization; but it is so very strong that you cannot eliminate it entirely. I want to ask Mr. Carson whether he approves of my suggestion, whether according to the experiments that you have made you do not agree with me that it would be well to carry out this experiment on a larger scale in a cheese factory under usual conditions?

Mr. Carson: I certainly do approve of your statements and I believe that we get the conditions right at the creamery as nearly as you find them in any factory, because we were getting milk from 130 patrons and I think we get the average from what is taken in at the factory. There is another thing I want to add. I believe pasteurization can be applied to sour milk and milk that really tastes sour can be brought back to the condition in which you can make very good cheese out of it and I am quite enthusiastic over this pasteurization and I believe the time will some when every factory will apply it to cheesemaking as well as buttermaking.

Mr. Carswell: What kind of cheese?

Mr. Carson: All makes of cheese.

Mr. Carswell: I want to say in regard to pasteurizing sour milk that we had a little experience, while we were pasteurizing for brick cheese, we found that a milk that was overripe we had to be very careful with at the start; that being at a temperature of 120 or 130 or 135, we had to rush the heat very fast if the milk was pretty ripe, that we would have to rush it very fast, for in one case we lost a vat of milk, it thickened on us before we reached the temperature of 150.

Mr. Monrad: You heated it in a common vat?

Mr. Carswell: Yes, to be sure, to pasteurize it, we had to use the vats we had. We heated the milk in a common vat and cooled it with spring water; it took until three o'clock in the afternoon to get it cooled back, but it was a case where we had to do that or lose the milk. We were making brick cheese and it was very gassy and the cheese were practically unsalable, they were so extremely gassy. But that corrected the trouble. Mr. Marty asked me a question as to whether it left any flavor.

Now, you all know that brick cheese has such a beautiful aroma that it would naturally cover perhaps any such flavor. We had no experience with cheddar cheese, it was on brick cheese alone.

Mr. Monrad: We have now pasteurizers that will pasteurize 10,000 pounds of milk an hour, so that there is nothing to prevent it practically from being carried out. And I want to make another statement. I had the pleasure of a visit from Dr. Weigmann, from Germany just a few weeks ago, and we discussed this question, and I rather chaffed him a little bit about the bacteriologists pretending to be able to get these species of bacteria for each kind of cheese, referring to Olsen, and he said, "Well, never mind, Monrad, I believe surely the time will come when we will have laboratories where we will present you with bacteria for Swiss cheese, bacteria for limburger cheese, and for all the kinds of cheese in the market." I just throw it out as a bacteriologist's prediction. Personally, I think that the best bacteriologists we have will not get really good milk and use sour lap; the other is all good for manufacture, but is pasteurized to make sure, but if we have good milk we cannot improve on it in the laboratory. It is not as uniform, I grant that.

Mr. Noyes: I would like to ask what the difference was in the curing of the cheese made from pasteurized milk and the other, which cured the best, and if they were cured both in the same room and at the same temperature?

Mr. Carson: There was no difference whatever; everything was carried on under the same conditions as to the curing, but we found that the cheese from the pasteurized milk tended to grow pasty after they were made up, when they were cured at a low temperature. I think we can overcome that by heating to a higher temperature.

Mr. Michels: What effect has pasteurization upon the yield of the cheese, if any?

Mr. Carson: I believe that pasteurization will tend to decrease the yield while we are pasteurizing the milk. Pasteurizing has a tendency to knock out a certain amount of the fat, and I found that in many cases, so that if the milk was very ripe, I would find a lot of fat wasted. Now then, after the milk is pasteurized, you will get a better yield from pasteurized milk than from the unpasteurized milk, but I have not determined yet whether the gain in quantity after pasteurizing will overcome the loss in fat or not.

Mr. Monrad: That question of yield comes up in my paper, and there I have given the experiment by Mr. Burrill in boiling this milk, and the experience was that it increased the yield considerably. At the time they made the failure that was the trouble, they got too much moisture and could not get rid of it. Now, in Germany they have on brick cheese increased the yield 30 per cent according to report, using this chlor calcium, but the last experiments made by the Hansen laboratory, I think Mr. Patterson told me that the increase could be figured at from 5 to 10 per cent, and not in water you understand, but in albumen, which is working the same thing as casein, by incorporating the whole albumen. Of course more moisture comes in in proportion, but the increase certainly is enough to pay for the expense; that 5 per cent will pay for the cost of heating the milk and cooling it.

Mr. Marty: What are the appliances for pasteurizing milk for manufacturing brick cheese? Do you think it will have any tendency to destroy the granule in developing holes in the Swiss cheese?

Mr. Monrad: I do not remember seeing anything about Swiss cheese; besides, you get mighty near pasteurizing it anyhow in your manufacture when you cook to 140 you are mighty near there; but I have never heard of any experiments in that line.

Mr. Noyes: I am glad Mr. Monrad brought out the happy thought that he preferred milk just as it comes from the cow if it can be so obtained and manufactured without all this great machinery, without all this special work. It seems to me if we could begin right at the root and have pure milk, keep it there and manufacture it there, there is where it ought to be, it would save all this great machinery and racking of brains of professors all over the world, if we could only just get pure milk right from the cow.

Mr. Monrad: I don't know whether Friend Noyes was at Sparta, where I read a paper on pasteurization. After I was done, Prof. Farrington got up and made virtually the same remark as Friend Noyes, and my reply was this, as it is now, that I agree with Friend Noyes, that when the time comes that all patrons are angels, then absolutely it is better not to pasteurize, but pending that time, I believe that pasteurization will do for cheese making what it has done for butter making. But do not misunderstand me, we must be sure not to rely on pasteurization as a doctor for all evils, because if we do that we will justify the remark that was made in our Minnesota meeting

when it was said that pasteurization was the doctor, somebody said that the cream that they got in the Iowa Centralized Creamery did not need a doctor, they needed an undertaker.

A Member: It was stated that the cheese from pasteurized milk scored several points higher than that from unpasteurized milk, I refer to this syndicating milk; I would like to ask whether the unpasteurized milk was the same quality as the pasteurized.

Mr. Carson: Yes, the milk was all put in a large vat first and was thoroughly mixed, then there was sufficient for that not to be pasteurized taken out, and then the remainder was pasteurized.

The Chairman: How about salting?

Mr. Carson: We have to use a little bit more salt in the pasteurized milk, because pasteurization tends to make a softer cheese, and tends to make more yield, and that is why we got pasty cheese, or tended to get pasty cheese, because there was more moisture, and therefore we had to use salt to take up that moisture, but by bringing it up to a high temperature we can overcome that fault.

Mr. Carswell: I would like to ask whether the cheese that was made from the unpasteurized milk was considered an average cheese?

Mr. Carson: Some of it was considered average and some of it was considered a great deal worse. Some of it was milk that never should be taken into a factory or a creamery at all.

Mr. Michels: I would like to ask Prof. Carson what the effect would be, or what rennet test you used, what acidity did you give to the milk? Did you make any difference in the acidity of the pasteurized or unpasteurized?

Mr. Carson: I used the acidimeter; I did not use the rennet test; the acidimeter showed exactly the same amount of acidity—it shows the per cent of acidity. I used sufficient starter to bring them exactly to the same amount of acidity, so that the whey remained on exactly the same time, three hours in both cases, so that there was the same amount of acidity in both.

Mr. Radloff: You said you used about 5 or 10 per cent starter; was that new milk starter? Did you figure that starter in when you got more yield? I mean, did not your starter make cheese too?

Mr. Carson: I had to figure that point to get pretty nearly the exact amount of starter to use, and I was able to use sufficient starter to bring it to an acid.

Mr. Monrad: Would you figure in the starter milk in the amount of milk that you used for cheese?

Mr. Carson: Oh, yes.

Mr. Monrad: You added that to your gross weight?

Mr. Carson: You have to figure that in, certainly.

Mr. Michels: Did you use any starter in the unpasteurized milk?

Mr. Carson: No, in very few cases I used starter in the unpasteurized, because the milk was generally overripe before I started, but I have a couple of experiments where the starter was used in the unpasteurized also, but that would be in the case of very good milk, you know.

Mr. Johnston: I would like to know, if he would be able to use a starter in unpasteurized milk, what result would he expect to have? Would he have any better results in scoring the cheese?

Mr. Carson: The purpose of using a starter is to overcome some undesirable fermentation that you have in the milk and a bad flavor. If the whey would stay on three hours, I would use probably no other additions, if the flavor were all right; if, on the other hand, it had so much acidity that the whey would not stay on more than two hours, and I had a very bad flavor, I would put in from one to two per cent starter, and I believe a good starter will overcome very many bad flavors, but you want to make sure it is a good starter.

Mr. Johnston: If you used a starter for your pasteurized milk and none for your unpasteurized milk you used no starter at all, do you think that was a fair test? Don't you think you should have your milk so that you could use a certain per cent of starter, say, 50 per cent?

Mr. Carson: No, I do not think so.

The Chairman: Did you have any difficulty in getting sweet milk delivered?

Mr. Carson: Yes, we do.

The Chairman: You are right close to the Dairy and Food Commission there.

Prof. Emery: The Dairy and Food Commissioner is willing to co-operate with the dairy school in that matter.

The Chairman: Haven't you any men in the dairy school that are able to instruct those patrons?

Mr. Carson: We should have, and I have made a practice this summer to go out and visit the patrons and instruct them. I went out this fall just before the dairy school started; I

wanted to get something pretty good before the students came in, and I found out of ninety patrons that I visited there were only ten of them that dumped their milk out before three o'clock.

Prof. Emery: I want to say one thing, that during the summer the Dairy and Food Commission undertook to make an examination of city milk supplies in a number of cities in the state and we intended to make that very thorough, which we did, the report to be publshed is now in the state printer's hands. We began at Madison; it was said that it was the hottest day in the year that we made these tests. We had the chemist who supervised the laboratory prepare for the various forms of preservatives, we kept it for the public vat here for watering and skimming, and then we used the Wisconsin curd test to determine the quality of the milk, and as a rule the results were excellent, but Madison, as a city stood at the foot of the ladder in the quality of milks furnished as determined by that examination.

Mr. Carson: Before leaving, I would like to announce that any cheesemaker who is willing to co-operate with me, in working out this question of pasteurization I shall be glad to have them speak to me or send their names in, because it is something that we want to bring out, and if they will co-operate with me, I will give them my assistance and go to their factory and do the work with them, as well as carry on the work at the experiment station.

Mr. Helm: If you use a smaller amount of starter and give it time to ripen before setting, would that overcome the tendency to pasty cheese made from pasteurized milk?

Mr. Carson: No, you understand all the whey was on three hours, I would not like the whey on longer than that, because the longer you hold it on, the more tendency there is for the curd to become pasty. My object in the experiment was to get the same amount of acidity. There was another question in connection with it, and that is the fact that pasteurized milk will coagulate in half the time with the same amount of rennet as will unpasteurized milk.

Mr. Helm: But by holding the curd longer in the whey, as you say I believe it would tend to firm the curd more and tend to overcome that pastiness.

Mr. Carson: You mean so as to ripen it? So that you could still run the whey off in two and one half or three hours after setting, ripen it before setting?

Mr. Helm: Well, you can do that all right, but if your whey is not on more than two and one half hours, there is not sufficient

time to get the curd sufficiently cooked and your cheese may get pasty.

Mr. Radloff: I would like to ask Mr. Monrad if the Madison laboratory could not get out a starter that would be large enough so that any cheesemaker or buttermaker would not have to work it or make a larger starter of it; just have a commercial starter, say that large (indicating). You put that in the milk and then go ahead with your work, is not that practical?

The Chairman: Have it boiled down, you mean?

Mr. Radloff: Yes.

Mr. Monrad: I do not think that is practical until we cooperate a little more and the state owns the railroads and express companies; then we might have a chance of sending a full amount of starter ready for use. Until then I think the expense will be so large that the express companies would get the whole profits.

Mr. Radloff: I mean, could not they make it stronger in smaller quantities?

Mr. Monrad: No, I do not believe so, I am not a bacteriologist, so I will not answer that, but I do not believe they will stand much boiling down.

Mr. Carswell: I would like to ask Professor Carson if he infers that in all cases he is not able to get a "cook" without leaving the whey on three hours?

Mr. Carson: No, I do not believe you could get a curd properly cooked through and through, leaving the whey on less than three hours, unless you adopt a much higher cooking temperature. If you do that, you will either have to cool your curd down again, or else your curd is going to be hard.

Mr. Carswell: What temperature do you cook at?

Mr. Carson: I cook according to the percentage of fat. If my milk is about 3.5 fat I cook 97 to 98; if 4.5, 101 to 103.

Mr. Carswell: You do not believe in a higher temperature?

Mr. Carson: I have never adopted a higher temperature than 103 or 104, except in case I had sour milk that I had to make cheese out of, then I employed a higher temperature.

Mr. Carswell: I know that a great many cheesemakers in the state, some of whom are having the best success, are adopting the system of cooking high, cooking at 105 or 106, and that is why I asked these questions.

The Chairman: We are getting a little off the subject.

Mr. Carson: They are bound to ripen the milk down lower, that is their only remedy, to cook higher.

Mr. Michels: Does pasteurized milk not coagulate without a starter?

Mr. Carson: It certainly will coagulate without a starter, but you understand the fermentation of the milk is due to lactic acid germs. If you pasteurize the milk you destroy the lactic acid germs. If you did not put in the starter, you would have to wait until the next day.

Mr. Michels: Why does buttermilk not coagulate readily, heating it up to 150 degrees?

Mr. Carson: Well, milk will coagulate all right when it is run through the continuous pasteurizer. The reason that pasteurization has not been carried out before this is because they thought the lime salts in the milk were destroyed by pasteurization.

Mr. Michels: To investigate that subject at the state fair I made a test for a week and I happened to get hold of a can of pasteurized milk and I could not coagulate it. I put in four ounces of rennet per 1,000 and it would not coagulate, I put in four more and the last time put in ten more and let it stand hours and hours and it was still in about the same condition.

Mr. Carson: If you heat your milk up to 200 it will not coagulate. Probably you had used an intermittent pasteurizer?

Mr. Michels: I could not say as to that. The pasteurized milk was shipped in.

Mr. Carson: It all depends on how that milk was pasteurized. You understand, the milk is not exposed long enough in the continuous pasteurizer to destroy the lime salts, but in the intermittent, where it is held for twenty minutes, it will not coagulate.

Mr. Michels: I think the milk was pasteurized at the dairy school.

Mr. Carson: Well, the continuous pasteurizer does not pasteurize sufficiently to destroy the lime salts, but it destroys the flavor.

Mr. Monrad: Do you use more rennet?

Mr. Carson: No, it does not require the use of any more rennet.

Mr. Monrad: The experiments in Denmark showed conclusively that the best result was obtained by using nearly double the amount of rennet.

The Chairman: Mr. Carson contends it will coagulate in half the time that the raw milk did with the same amount of rennet. There is a difference in pasteurization, evidently in

the length of time that it was exposed to the high temperature.

Mr. Monrad: We use 185° F.

The Chairman: In what length of time?

Mr. Monrad: Oh, in a continuous pasteurizer, but I do not think you used as high a temperature as 185° F.

Mr. Carson: No, I did not dare to go to 185° F., because I was afraid the milk would not coagulate.

Mr. Marty: What was the ripeness of the milk when set?

Mr. Carson: Two tenths per cent of acid.

Mr. Marty: What was Mr. Monrad's?

Mr. Monrad: I could not tell you.

Mr. Marty: There may be a variation there.

Mr. Carswell: When we were making brick cheese from pasteurized milk we never had any trouble from coagulation, only that it required more rennet. We pasteurized at 155° F.

Mr. Carson: This point I brought up about milk coagulating in half the time, it is contrary to nature, and I have asked Dr. Russell and Dr. Babcock the reason for it and they are unable to explain it, but it has happened with me in every case that I have made up pasteurized milk, that it coagulated in half the time with the same amount of rennet.

Mr. Berg: I would like to ask Mr. Carson if the acid developed as fast in the pasteurized curd after it is dipped as it did in the unpasteurized.

Mr. Carson: There was one thing I noticed, that the acid did not seem to come out in the pasteurized milk so quickly at first, but once it did start to come on, it came on very rapidly, but it would have the same amount of acid, provided it had the same amount of acid at setting.

Mr. Chairman: He speaks of after dipping.

Mr. Carson: Oh, after dipping, it seemed to come on just about the same, providing I stir my curds, but there is a danger after you pasteurize your milk, you cannot get the curd to stir, and there may be more moisture left on it.

The Chairman: Mr. Monrad knows a great deal more, and you can get it out of him by asking questions.

Mr. Monrad: No, it is all secondhand goods I am giving you. But I want to say, I think we have had a profitable discussion and I think we have aroused an interest in this question. I am glad to see that Professor Carson offers to co-operate. We need more co-operation and we need co-operation not only between the cheesemaker and the patrons, but also between the schools and factories. I believe if there is any one in this audi-

ence that would like to experiment, that some of these manufacturers will be willing to loan the apparatus so that it would not cost you a cent, because it would be to their interest individually. If we were making pasteurizing machinery, I would be glad to lend a machine in order to get the chance of selling several hundred machines, so that if the experiment can be carried out without any great expense, I believe even possibly the state might be induced in some way to pay a guarantee against any special loss by the experiment. It would be well if that could be done, but if not, I know there are cheesemakers here that will be willing to lose a little money in order to have experiments made.

The Chairman: We have had a very lively and interesting session, and that is the way it is going to be throughout the rest of the convention. They have been talking about educating farmers and making angels of them, now tomorrow morning we are going to discuss the question of how to nail wings on the shoulderblades of those farmers that we could not make angels of by education. We are adjourned until nine o'clock tomorrow morning.

THURSDAY, JANUARY 5TH, 1905, 9 A. M.

Convention met pursuant to adjournment.

Vice-President Aderhold in the chair.

The Chairman read several letters from members who were unable to be present.

The Secretary read a letter from Mr. Van Leeuwen, stating that he was unable to be present.

HOW TO INTEREST OUR PATRONS IN THE PRODUCTION OF MILK AT A PROFIT.

HENRY VAN LEEUWEN, Topeka, Kas.

That this subject is one of vital importance to the manufacturer of butter and cheese, as well as to the producer of milk, goes without questioning, and it is one that cannot receive too much careful thought, study and attention.

We may be successful cheesemakers and buttermakers, but if the farmer is not producing his milk at a profit we cannot very long have a successful and profitable cheese factory or creamery. This is a fact, and we must admit it. Therefore, I say, *We* must study the *profitable production* of milk, and make a determined effort to interest our patrons on the subject. We must keep persistently at it; we must make the best of every opportunity that presents itself to keep this subject before our patrons. We know we will not, nor can we, very long handle any business at a loss, nor can we expect to hold a patron from year to year who is milking his cows at a loss.

I hear some one say, let the farmer do as the manufacturer, the merchant, or the cheesemaker does under such circumstances; Study and figure carefully, and locate the cause for such losses, and remove them and thus put the business on a paying basis. This requires a great deal of time, and sometimes an apparently unnecessary expense in the keeping of records and accounts with different departments; but it has proven to

be a profitable expenditure, for the cause is located and removed. Yes, I will admit the farmer should follow the same course, but you and I know that in so many cases, in so very many cases, this is not done nor even thought of. How to get them to take the same interest in their business, that the successful business man takes in his business, is a difficult problem; but the object of this paper shall be to try to throw out some hints, and we do hope we shall receive some suggestions and information in the discussion that will help us.

A great many of our farmers have milked cows for years, and have not figured very closely, nor thought a great deal about the question of profits, as prices have been very good, and even if not economically produced has seemed to be profitable; but in the past year of lower price I think we have all heard something of the unprofitable production of milk. The business man and manufacturer keeps abreast of the times, adopts the new and up-to-date methods and machinery, studies the cost of production, and produces the finished product at a profit. This should be done by the farmer, but during the low prices of last summer I heard scores of farmers abuse the factory owners and declare they were going to quit the business. In nearly every case the factory-man was not to blame. He was paying all the milk was worth, and if properly produced and cared for, would have, even at the low prices, showed a fair profit.

How should the patron who finds his dairy herd is unprofitable proceed?

First:—I am willing that he jumps on to the factory or creamery and investigates them, and finds out if prices and tests are what they should be. Of course the small plant may not be able to pay the prices that some of the large and well supported neighbors are; but if he finds that he is being treated squarely and honestly it is then up to him to help get the quantity of milk, and thus cut down the cost of production. No matter on what basis the factory is run, we should co-operate together at all times. Our interests are mutual. Let us bear this in mind and talk it more to our patrons and get them to work with us, not only in increasing our milk supply, but when we find a patron who is producing us a clean, sweet milk, and making a good profit, let us urge him to encourage others pointing out to him the direct profit that he derives out of the increased run at our factory. Touch your patron's pocket book in your talks with him as much as possible.

Second:—Having satisfied himself that he is being treated

squarely by the factory-man, his second step will be to find out if he is feeding such feeds and in such quantities as to make the production profitable. It is all right to condemn the factory man first, but having found out that he is doing the fair thing, don't jump on to the old cow and condemn her before giving her a fair trial. Too many of us are always willing to find fault with others, to lay the blame on, and condemn others, and cannot see the faults and short-comings in ourselves. This is wrong in our dealings with our fellow man, but we are doubly wrong in condemning our poor, good, faithful old cow, for she cannot defend herself. Let us look at ourselves carefully first, and see if we are not to blame, at least let us give the cow an honest, fair trial first.

How can we do this, you ask. Let us study the question of milk production. We must if we would produce our milk at a profit. I believe we have enough dollars invested in cows; I believe we are feeding enough dollars worth of feeds to our cows, but we do not give the question enough thought to find out if we are feeding the right kinds of feeds or not. We must study the composition of milk, and learn what kind of feeds it takes to make it. A farmer wishes to make a slop for his hogs, using 100 lbs. skim milk or whey, with 40 lbs. grain feeds, using ¼ bran, ¼ shorts, and ½ corn chop. He runs out of shorts and knows he cannot make up any more of this slop. Now, the cow takes the water and grains we feed her and makes milk. She can no more make the milk without the necessary feeds than can the farmer continue to make his desired slop for his hogs without the proportion of feeds required to make the mixture. Therefore, before we condemn the cow, let us learn what it takes to make the milk she should produce in one day, and feed it to her. There should be good, clean, pure water in abundance, for there is between 86 lbs. and 87 lbs. of water in every 100 lbs. of milk. Our barns should be warm, dry, well ventilated, and clean and sweet. Now, if our cow is being thus treated, and we have found our factory-man or creamery-man is giving us honest treatment and our cow is losing us money, we have a right to condemn the cow, fatten her, and get rid of her as soon as possible.

How are we as creamery and factory men going to assist or help our patrons in this?

First, by kindly inviting and urging them to investigate us and our method of handling their business. Get them to watch the market on dairy products, and thus learn that we are pay-

ing all we can afford for this milk. Get them to study the test, and have them test with us, and they will soon find that the test is reliable. Now, if they have looked up our end of the business and are convinced that we are treating them honestly --and by our interest in them we should have shown them by this time that we are really, truly and honestly interested and anxious for their success—we should be able to now turn to them and inquire into their methods of feeding and care of their cows, the kind of feeds they are feeding. Explain to them that they may have good enough cows, and may be feeding enough feeds, but that the cows must have the proper feeds or they cannot produce the milk profitably.

We should not do this in such a way as to make them feel that we are trying to dictate to them, or trying to run their business. This requires tact, but we must get our patrons to understand that cows can be handled at a good profit.

Let us induce our patrons to keep a record of each cow, and thus locate and weed out the poor ones. Don't encourage the occasional bringing in of a sample of one cow's milk for one day, but recommend a systematic test.

Of course, we cannot expect to get many patrons to keep such records as our experiment stations keep, nor do I think it advisable, but I have a record that I have found very satisfactory and that is a ten days' test three or four times during the period of lactation. If the farmer is at all interested you can get him to weigh his milk night and morning, and take samples for ten days at a time, three or four times during the year and from this one can get a very close estimate of the actual dollars worth of milk produced by each cow during the year. Too many of our patrons determine the value of their cow by the test, while some base their value on the quantity of milk given while the actual value depends upon both and both must be considered. Too much cannot be said on this subject, but as we would like to hear from others, will conclude by saying, keep the question continually before your patrons by private talks, by good dairy papers, by good patrons' meetings, and get the patrons to take charge of the meetings as much as possible.

DISCUSSION.

The Chairman: Mr. Van Leeuwen is not here and I understand cannot be with us this year and we have a man with us who has had experience along this very line, and has been very successful at it and I will call upon him to tell us a little of his experience and then we will discuss the subject. I will call upon Mr. Michels.

Mr. Michels: Mr. Chairman and Gentlemen: This comes rather unexpectedly to me and while there are a great many things that I would like to say I really do not know just where to begin. All I can do is to tell you what I have been doing for years, I have been trying, for one thing to show my patrons the difference in the profit, or the difference in what a cow will produce and can produce when feeding a balance ration and feeding in the ordinary way, especially in the spring and fall. For the summer it does not matter so much, but in the spring and fall and even in the summer when the dry season comes, we must have something to feed besides the dry pasture grass to do the best, and it makes a great difference.

I will just give you one illustration to start with. One of my patrons some years ago got about $19 per cow from the factory, and he was a good feeder, but he did not have the right kind of cows. In the first place, they were beefy animals and of course he was disgusted with that $19, what money he got from the factory, was not enough to pay for the keeping of the cows, and he came up to me and said, "This is all I got." I said, "Look your books over, see that I am right; what is the matter, something must be wrong." And I went over with him as carefully as I could, went over everything and tried to persuade him to do differently, and he went and got rid of some of the cows. We tested the cows and he weighed the milk and made records of the weight of the milk for six months. Within that time he read some of the dairy papers and had seen it advised that everybody should know how much milk each cow should give, and we figured on the tests of the milk for six months, with the test that we had at that time on the individual and there was a great difference in those cows for that length of time, so he got rid of some of them and bought others and began to feed differently and the following year he got $63 for each cow from the factory. Now, this is an exceptional case, I admit that, but I think he did as well as anybody could do the second year and probably as poorly as anybody could do the first year.

What I am doing now is this, and what I think will do more than any other one thing,—it means a lot of work for me, but I think it will have its effect, I am doing the figuring for them and am doing all the testing for them free of charge, for anybody that wants his cows tested, provided he weighs the milk three times a month and brings samples to me and I do the rest. In that way I can tell everybody how much of the money that he got from the factory can be credited to each cow. But it is a lot of work at the present time and I have a whole lot of testing to do at the end of the month, but it seems as though in the course of time it ought to do quite a little good. Of course, there are a great many other things that come in, in what a person can do and might do and one trouble I think with a lot of the farmers, especially where they just figure on the cheese factory, is towards fall when pastures are poor, they do not try to keep up the flow if milk, and a little later the cheese prices are high and they would like to milk their cows, but they dry up soon, where if they fed them a little to start with, they will keep up the flow and they will get more during the time of high priced cheese in the fall. There is a whole lot to be said in this line, and as I am only to start the discussion, it seems to me this ought to be sufficient for a start, and I think we can get much more out of a good discussion than we can out of a little talk.

Mr. Monrad: I would like to hear a little more from Mr. Michels on the question of this test, whether he is getting up special blanks for the patrons and how many times do you test the milk

Mr. Michels: No, I have no special blanks for them. I have intended to get them, they simply make out their own sheets, they weigh the milk three times a month.

Prof. Emery: What milk do they weigh three times?

Mr. Michels: From each cow at a milking, two milkings each, about the 20th and about the last of the month.

Prof. Emery: Do they take samples to deliver to the factory at that time?

Mr. Michels: No, they take a composite test and I test once a month. They take samples of each milking and I test it at the end of the month and they simply put down the weight of the milk mornings so many pounds and evenings so many pounds and they keep that on sheets until the end of the month and send that along with the test jars and I test once a month a composite test of the six milkings.

Prof. Emery: Do they take that in proportion, do they take adequate samples?

Mr. Michels: No, we have just the different cows; we do not want to go into those things too fine to start with; I do not think it is advisable to go too far. I know what you have in mind.

Prof. Emery: Do you provide perservatives for the samples?

Mr. Michels: Yes, I put corrosive sublimate into the jars and send them back to the farmers.

Prof. Emery: Is the composite test taken every day, sampled every day?

Mr. Michels: Only these three milkings, these three days, six different milkings. I have an idea that gives a good average, that is, good enough for all practical purposes.

Prof. Emery: Do you make any recommendations to them in regard to their manner of feeding?

Mr. Michels: Yes.

Prof. Emery: You spoke about the flow and the holding up of the flow of milk.

Mr. Michels: Yes. In the summer there is always a time coming when it is so dry, with us at least, and the flies are so bad at that time that it shrinks the cows very much in the milk flow.

Prof. Emery: Then these cows have shrunken so that they cannot regain their flow?

Mr. Michels: No, they cannot regain it, that is the point I tried to make clear to them and have them keep the flow up at that time so that they will not shrink so much. They can get so much more milk from them and keep the flow up much longer and I think on the whole it makes quite a difference.

Mr. Monrad: Are you not afraid, Mr. Michels, of the ambition or the vanity of the individual patrons trying to make a big record?

Mr. Michels: No, I am not a bit afraid of that to start with the first year or two, that would come a little later, I think.

Prof. Emery: It seems to me, Mr. President, that this work is extremely valuable work, and there has been less said in regard to the feeding than in regard to the testing. Some of our very best makers are testing but twice a month, taking a sample twice a month; you will get nearer an approximation by three times, but the two times a month gives a very close approximation to accuracy. But, in regard to the feeding. I

am fully persuaded that we ought to make a great deal of improvement along this line, notwithstanding all the work that has been done by our Agricultural Experiment Station and Farmers' Institutes, we ought to make more progress along this line, and there is great opportunity for cheesemakers and buttermakers to help along in the way of instructing on proper methods of feeding.

Now, it is a well established fact in the feeding of dairy cows that the cow must be brought to her highest flow within about four or five weeks after freshening, and she needs scientific handling to bring her to the highest flow then. Then the problem is to hold the cow up to that highest flow. If she is allowed to decrease in the quantity of milk, it is well nigh impossible to bring her back to that high flow. That is the problem that people handling dairy cows have to solve. What Mr. Michels said in regard to the summer feeding of cows is absolutely true and in my own experience with my herd I am coming to feel that the handling of the cows in the summer is a much more difficult thing than to handle them in the winter. Dairymen furnishing milk for creameries and cheese factories must realize that they must feed their cows in the summer. The dairymen in Wisconsin who are making the most profits off their herds are feeding their cows daily throughout the year and they are feeding them on succulent food, and I think we shall find that there is no food that we can produce upon farms that will be produced so cheaply and will furnish the requisite food for summer as silage. When the pastures begin to dry out, the grass will go down, the cows have no more power of making something out of nothing than man has, or any other power has, for that matter. They must be fed, their business is to transmute that food product into milk. Now, if they begin to go down and as the pastures dry more and more, they continue to go down in flow. There is the loss, because we cannot bring them back to a high flow of milk again.

Mr. Reed: I believe in summer feeding when the pastures begin to fail. I have found that it pays on my farm.

Mr. Luchsinger: Mr. Chairman, I fully agree with what has been said by the gentlemen who have expressed themselves on this question. I assume from the title on the program that the question is, "How to Interest Our Patrons in the Production of Milk at a Profit." I assume that in a new dairy district the question would be very much more pertinent than it is in the older districts. I think the matter of competition,

if you may call it so, in an older dairy district, does the work, —the competition of one patron who is able to produce two or three dollars a month more, or five dollars a month more from his cows than another. I do not mean that much, of course, net, but relatively, one who is able to produce twice as much from his cows per month as another, naturally the others will try to find out how he does it, they will ask him questions and he will tell them, or they notice what he does, they are not going to be left behind, no man is going to be double distanced by his neighbors if he can help it, in the production of milk. Those things regulate themselves in the older dairy districts. It has been so in our section of the state. I know men who, when they first began delivering milk to cheese factories were content in wintering their cows at the straw piles, feeding them nothing but the wild hay that grew in those days, and then try to make those cows produce good results next summer. They naturally were in the condition of the gentleman that Mr Michels cited, getting about $19 to $20 per cow per season. They soon found out that that would not pay. Some of the more progressive neighbors would do better, they would build a good warm barn, they would feed tame hay and after awhile would feed some ground feed. Their results taught the others the best way to produce milk at a profit.

As to summer feeding, it is an open question with our dairymen whether it is profitable to feed much grain in the summer time. Where the pastures are not overstocked, the natural tame pastures are thought to be sufficient, or thought, at least, to be the most profitable way of producing milk in the summer. To be sure, there ought to be some protection against flies; cows should have plenty of water at all times, there should not be any foul ponds or mudholes. Some of our dairymen even have gone so far as to stable their cows in the middle of the day in order to protect them from flies, in a measure. Those who keep only a few cows help them somewhat by putting blankets on them, or gunnysack. The matter of the fly plague is a very much more serious one than most dairymen imagine that it is. You can scrape a handful of those flies off from a cow in the middle of the day when she is at rest and sometimes the blankets are covered with them; when you smash them you will find your hands are full of blood, showing that every one of those flies has abstracted a portion of the blood from the cow, and the abstracting of blood means, of course, the abstracting of that which gives milk and the milk gives the butter and

cheese. I think you can keep up the production of your milk perhaps very much more cheaply by something to protect the cows from the loss of blood than you can to expose them to all the flies and jeopardies around her and to take her in and feed her. Perhaps I may not have the right idea about it, but the question is how to interest your patrons to produce milk at a profit. Now, if you advise to feed too much, you do not produce much profit. Perhaps it may be accomplished in some other way.

Mr. Michels: I agree with what Mr. Luchsinger has said except when he is afraid to fed cows because it costs something. Now, we can never get something for nothing, and we cannot expect it from the cow, and I do not think there is any time of the year where we can get as much for the little feed that we feed, as we do in the summer time, right after the dry seasons which we have every year in our section of the country. It makes an awful difference between those that do it and those that do not; in the course of a few weeks there will be a difference of 50 per cent in the milk sometimes, and I think that the cost of the feed is small compared with the benefit that we get.

Mr. Luchsinger: Of course, I had in mind the ground feed, the mill feed that the dairyman usually is compelled to buy. Now, I think what you produce on the farm in the way of alfalfa, or in sweet corn, or in some juicy crop of that kind to help your cow along, all that is profitable, but when you go into the market and buy this mercantile feed for the purpose of feeding cows in the summer to keep up their flow of mlik, and at the same time expose them to the heat and to the flies, I do not see where the profit comes in. But I believe in feeding the cow all she can stand of the green feed that you produce on your farm.

Now, I do not know to what extent the dairymen here have gone into the production of alfalfa, I have tried it and I find it is the most profitable crop that you can grow to feed to milk cows during the summer time. You can mow it and mow it and keep on mowing it, and it seems to keep on growing faster than you can use it. It may be that the ground after awhile will become tired of it, as it becomes tired of clover when there is such a constant drain on it, but my experience is that that is one of the best things to feed a cow in the summer when the pastures are apt to become dry.

Mr. Clark: I think this refers to the operators of factories, how to interest our patrons in the production of milk at a pro-

fit. I think there are four things essential to a successful operator: First, information; second, ability; third, interest; fourth, tact. First, he must have the information, second the ability, third, he must show his patrons that he is interested in them, fourth, he must have tact to handle each patron. What will interest one patron will not interest another, and when you come to talking about feeding, you must feed to keep the flow of milk up, if you do not you cannot bring it up to that point, you will let it go down. You may have to struggle hard to climb a tree, after you have got up there you have got to hold on or you will fall, and if you fall half way down and catch with one hand on a limb, you have got to use your strength to hold yourself there, and you have got to use more strength to get up again. The same with feeding; if you allow a cow to drop, then you have got to feed to hold her to that point, and you have got to feed her more to bring her up, and it is not always you can bring her up to that flow, and I think it is necessary for factory operators to show your patrons that it is not entirely the money that you are after, but it is their interest, and if you are making but so much per pound, and some patron says, "He is working for his own pocket," show him that when you are getting one cent he is getting two, and you have got him.

The Chairman: This is a very important subject. Mr. Clark brought out some very good points and I would like to hear from some others.

Mr. Monrad: I would like to ask Mr. Luchsinger when he said that competition was enough in his district, whether it is the custom of the factories to keep track and publish annually the average return per cow of the patrons. If that is not done, it seems to me that at least I would strike my head and never open my mouth if my average was very low. But competition is aroused if the cheese factory took the trouble to ascertain how many cows each farmer had, and then from the books of the factory publish the statement that John Johnson had averaged 19, Peter Peterson so much, and so on. Such a publication, I think, would be a practical way of stirring up competition, and I want to know whether that is customary or not.

Mr. Luchsinger: In answer to Mr. Monrad's question I would say that in every dairy district that I know of or have any acquaintance with, those things are published, they cannot be hidden. Even if the cheese factory does not publish them officially, the farmer who has made the best showing is so proud

of it, as a rule, that he tells of it, and every one of his neighbors know how many cows he has, and they can easily by a process of multiplication ascertain what his success has been and compare it with their own figures and see if they have been failures. The average dairy district or cheese factory district in southern Wisconsin is not so large but what every patron knows every other patron, knows what sort of a farm he has got, knows how he feeds, knows how many cows he has, and he knows how much he is getting for his milk.

Mr. Clark: Speaking about that it does not pay for a farmer to buy grain,—now, I am speaking from a farmer's standpoint —I can raise certain kinds of grain; I take and sell some of that grain and buy feed. Say I raise corn, I am in a corn district; if I am in a peach district, I raise peaches, I sell those and buy bran. I am not losing anything. I feed my cows bran and sell my corn, and in that way the expense is not so much as it would be if we tried to raise these feeds for our cow.

Another thing is the fly protector that I make myself, and I have given it to all my neighbors that want it, and any factory operator that wants it can have it. It is a mixture of one quart of oil tar, one pint of kerosene and an ounce of carbolic acid. It costs me about 50 cents a year for about six head of cattle.

Prof. Emery: Does that tar make the cow dirty?

Mr. Clark: No, sir; I put it on with a common potato sprayer. A white cow it would of course a little brown, but people in the neighborhood where I live this summer have used it on their horses. One quart of oil tar, you can get the refined or very cheapest, one pint of kerosene or coal oil, one ounce of carbolic acid.

The Chairman: Do you boil that?

Mr. Clark: No, sir, that is the proportion; you can take two quarts and double the rest, that is the formula. Now, I can get this up myself; I got it out of a dairy paper. I believe in taking dairy papers, that one receipt alone is worth ten years' subscription to that one paper, I believe I made that much off my cows in one year, while my neighbors' cows stand and whisk off the flies; and they say to me, "Your cows, when they get through eating lie down and chew their cuds, my cows stand and whisk flies off their backs; what do you do?" I do so and so," I tell them, and they came to me and I gave the formula to them, and I give it to any body that I see whose cows are fighting flies. I stopped once along the road, and told a man whose cows were being pestered with flies what he should do

for them, and I think it is a good thing for an operator to know these things and to give them out to your patrons. It will not hurt if you put in a little more carbolic acid, but do not spray it in the cow's eyes, because the carbolic acid, if you want to know how nice it feels in the cow's eyes, try it on.

Prof. Emery: How often do you spray the cows?

Mr. Clark: If it does not rain, once a day. I put it on in the morning, because there are not so many flies at night, the flies are more troublesome in the morning, but it does not hurt if you spray it twice.

Mr. Monrad: I want to put in a word for the work that Mr. Michels has been doing, that is really what the farmers need, is this testing the individual cow. While averages are all right in case of a preliminary lesson, averages, on the other hand, Mr. Chairman, are a curse; the average man, the average horse, the average everything, is a curse, because of we are satisfied with belonging to the average, we will never make any improvement, and for that reason I want the cheesemakers, in spite of the enormous work it implies, I want them to follow the footsteps of Mr. Michels.

Mr. Clark: There is just one difficulty that I found along that line, it may be because I did not have tact, but the trouble I found was this, that it creates a very little dissatisfaction along the line, some patrons think that you are showing certain patrons partiality, and while it is a good thing, and it will be a good deal better after people are educated up to it, the question is, Has the average operator tact enough to do this without creating the feeling that you are showing partiality to some one of your patrons; if you do that, then you have lost a certain amount of interest in that patron, and they do not do as well as they otherwise would. Now, I had evening meetings for my patrons and at first got them interested, and how it would have come out I do not know, I was taken sick and had to give up my work and moved away from my place, but when I left there was a great deal of interest taken. The year before we had had trouble with the tests; that at one time of testing a man's test would be a certain test, we will say that it was 3–4, and the next time that he had his test it might be 3, or 3–2, and he said he had done the same right straight along. I took the course at the dairy school a year ago this winter, and I found that there could be a variation in the calibration of the test bottles, and I tried the test bottles, tested them, and I found that there was a variation in the calibration of the test bottles.

Now, when we find that there is a difference, if we will see that the same man's test is taken in the same test bottle each time you test, you do away with that variation. If you cannot calibrate your bottles and dispose of those that are not calibrated right, you can take and use the same bottle for the same man each test, and you do away with the difference you find on the scale of the test bottle.

Mr. Michels: I think in the first place every operator of a factory ought to know how to test his glass fairly and can do it, there is no question about that. And another thing, if the people have so little confidence in the operators as to mistrust that he can show partiality, why it is bad enough to begin with; I do not think the man belongs there anyway, because we have to test for every patron anyway. It is left entirely in our own hands, and we must have the confidence of the people that far, or else we cannot do anything for them.

Mr. Clark: That is all right, I admit. Now Mr. Michels and I may go to a stranger, he may have more faith in that stranger than I have, it is human nature, we cannot overcome it; you cannot pick ten men out of this assembly today and have them read to us an article in a book and get the same idea from that, and we have got to allow for these things. There is where the tact comes, we have got to allow our patrons not to have the confidence in us when they first commence, if they are true men, then they will have afterwards, and it is human nature you cannot overcome human nature, and you become arbitrary when you tell your patron that he has got to take what you say to be so until you prove it to him and he becomes acquainted with you, and there is where tact comes in. We may know that we are right, we have got to prove it to this man before he knows that we are right. That is why I say the operator must have insight, have tact, ability and information.

Prof. Emery: The gentleman has spoken in regard to creating dissatisfaction. Now, isn't it true that that is just one of the things that we need today, to create dissatisfaction with present unsatisfactory conditions? I take it Mr. Aderhold has been going over the state of Wisconsin cheese factories for six, seven or eight years trying to create dissatisfaction in the minds of some cheesemakers and patrons as to the conditions in those factories and I am glad he succeeded. I tell you, to stir up some righteous dissatisfaction is essetnial and necessary as a condition for progress. When we are completely satisfied with present conditions we never make progress, we need

to create dissatisfaction with present conditions. Let us stir up some dissatisfaction among our patrons with their mode of management, with their mode of feeding cows, with their mode of stabling, and try, when we have stirred up dissatisfaction with present conditions, to supply them with something better that shall improve them.

Mr. Clark: I want to ask Prof. Emery if there are not two kinds of dissatisfaction?

Prof. Emery: Oh yes, but we want the right kind.

Mr. Clark: Now let us know what kind of dissatisfaction you mean. I believe in convincing a man that he can better himself, but I do not believe in going up to a man and slapping him in the face, and then say, "I am your friend." You cannot do it.

Mr. Ward: Mr. Luchsinger, we would like to know something more about starting a crop of alfalfa. I understand it is pretty difficult to get alfalfa started in this country to have it succeed.

The Chairman: That is a little bit off our line, but if he will be brief we will let him tell us.

Mr. Luchsinger: I will be as brief as possible. I heard the same thing about alfalfa before I tried to grow any of it, that it was hard to grow in Wisconsin, that it is more adapted for Nebraska or Kansas on the dry plains, but I got some of the seed and without asking very much about it, because very few people in our neighborhood grew alfalfa at that time. I prepared the ground as I should for any other small grain and sowed it in April, about the 15th or 20th of April. I sowed the alfalfa with a crop of barley, not so large an amount of seed to the acre of barley as I would if I wanted barley alone for the crop, but about two-thirds as much, sowed about a bushel and a peck to the acre of barley. After the barley was sowed I dragged the ground very finely and then sowed the alfalfa and planked it, went over it with a plank, every farmer knows what that is. Of course, it smooths the ground very smooth and crushes the small lumps, and to my utter surprise the alfalfa showed up very nearly as quickly as the barley did, and it grew very nicely right along the very first year, and after the barley was cut it made a growth of about 8 to 10 inches long the same fall, very thick. The winter following, there was not much snow, just a little, and it started early in the spring, and before any clover was ready to cut at all, there was a large crop of alfalfa ready for the mower, long and mat-

ted, just as we used to have clover when the land was new thirty or forty years ago matted on the ground. We mowed it and took care of it and in less than six weeks there was another crop; mowed that for the cows; just at that time the cows needed something green, and we kept up hauling it to the barn and feeding it to the cows at night with the very best results, kept the milk up better than ever I knew them to keep it up at that time of the year before, and I supposed of course that was the end of it, but it kept on growing and when fall came, there was fully as large a crop as we usually get of clover for the second crop on good land. I do not think there is any difficulty at all in starting alfalfa to grow if you prepare the land right, and have, of course, fairly good land. My land had originally been prairie land, the subsoil was limestone and it was black prairie soil.

Prof. Emery: During the past three sessions of the Wisconsin Dairyman's Association, the subject of raising alfalfa has been treated elaborately. Former Governor Hoard was the man in Wisconsin who has experimented with this and made a very great success and by applying to Secretary Burchard of Fort Atkinson, Wisconsin, for any one of the last three reports of the Wisconsin Dairyman's Association, you will get reports that will give you elaborate treatment on the raising of alfalfa, or by addressing the Secretary of Agriculture, Washington, D. C., requesting a copy of the Bulletin on Alfalfa Raising, you will find a most valuable document there and it is worth all of the expense.

Mr. Ward: I have read a great deal in those myself, but I thought it would be very beneficial to the assembly to have it brought out here for some of those who have not read it. I am quite interested in alfalfa, I have not tried it myself, but I think it will be a fine thing. I would like to ask whether he allowed his April crop to mature, to ripen before it was cut?

Mr. Luchsinger: I did.

CO-OPERATION.

J. H. MONRAD, New York City.

Editorial Staff New York Produce Review and American Creamery.

Mr. Monrad: Mr. President, I received the Secretary's invitation to address you, and you all know that we like to ride our hobbies and since I was home in Denmark and saw the wonderful progress that had been made in Co-operation amongst the farmers, I took hold of that hobby and I was glad to have a chance to ride it. I wrote an article that has twelve pages and I am not going to inflict that on you, but will have it printed, so the Secretary says. I am just going to give you a synopsis of it, and the reason why I am pleased to speak to the cheesemakers is this, that I believe that they are the missionaries to whom we must look for spreading the gospel of true co-operation. Cheesemakers and buttermakers have a far better chance to spread that gospel than any other person. Co-operation started really when Adam and Eve got together, they co-operated, they spread, it has spread in different ways. This Association is a fine example of co-operation; we started with a few members, they increased and they ought to increase to five times the number that you are now; no doubt they will. Co-operation, —we can see examples of co-operation even in nature. If you sow grass, a single seed of grass has a mighty poor chance; you sow a whole handful, they stand a better chance; you sow a whole field, they stand a still better chance to live and grow. Trees cannot grow singly, they must co-operate in order to grow. That is just a little example to show you the fundamental necessity of co-operation in everything.

CO-OPERATIVE DENMARK

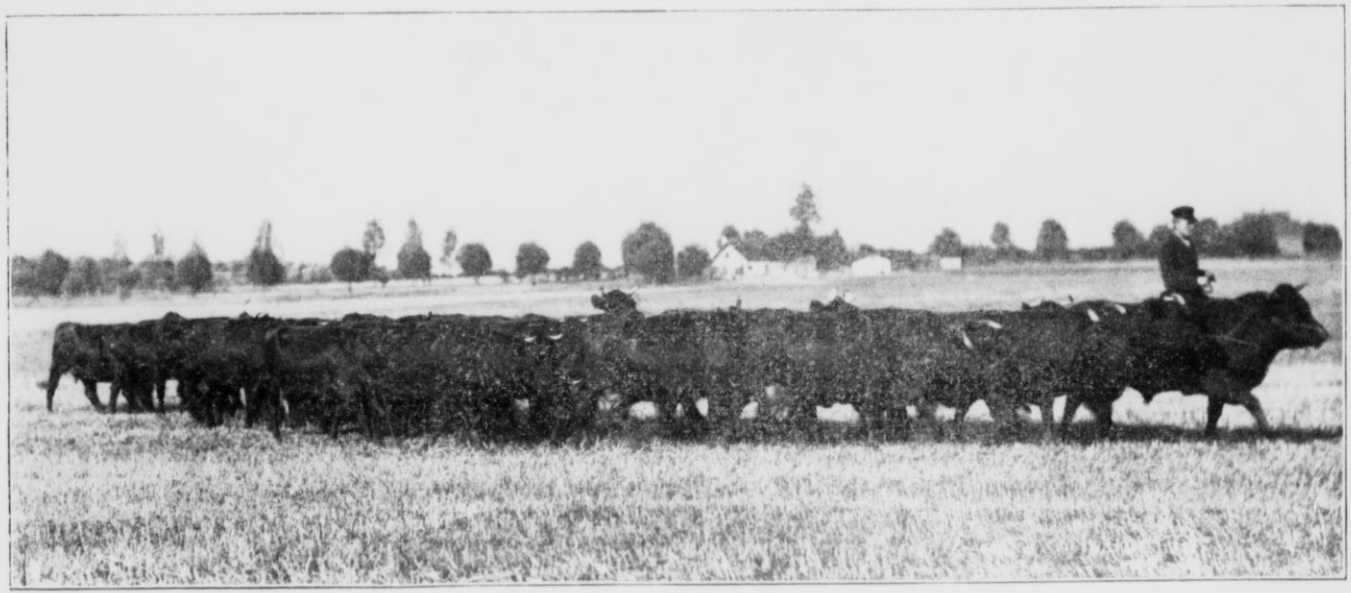
BY J.H.MONRAD

When a traveler leaves our Western prairies, with their impressive vastness and monotony, and when the only land he sees after crossing the Atlantic before landing in Denmark are the rocky coasts of Northern Scotland and Southern Norway, then, indeed, does the soft contour of the Danish coast, with its undulating hills, its cosy villages, its grain covered fields and its mellow-toned beech forest greet him with a tempting invitation to rest and peace.

As we draw near Copenhagen, the cottages coyly hiding among the trees become more numerous and form virtually a continuous suburb to Copenhagen. This trip down the sound is a great treat to those travelers who choose the slower but comfortable direct line to the Scandinavian countries and get the benefit of landing directly at their destination.

I may as well now state the object of my taking up this subject. In my twenty years experience in the Central Western States, I have been impressed with the fact that the farmers, on whose success the prosperity of the country after all rests, are handicapped by the heavy tribute which they pay right and left to dealers and manufacturers.

I have also been impressed with the fact that our farmers, --both West and East—in spite of the richer and cheaper land, in spite of the higher home market (at least for butter and cheese), in spite of the greater energy displayed, the better implements used, do not seem to do so very much better than their



TAKING THE HERD HOME FROM PASTURE.

A unique but not common way in which one herdsman solved the problem of taking home the whole herd from the pastures riding the bull!

Danish competitors. It is true labor is higher, it is true the standard of living is higher, but that does not account for it all by any means, and on investigation I believe myself justified in claiming that the success of the Danish farmers depends chiefly on the thorough manner in which they have made co-operation their hand-maiden.

It is true we have many successful co-operative creameries, notably in Minnesota (where the Danes do abound), and also some here and there in the East and West; it is true we also have co-operative stores (on the Rochedale system), elevators, insurance companies, etc., etc., but after all, I regret to say that they are more or less isolated in their success and the co-operative spirit is far from permeating our country communities, as it does Denmark. Hence the title of my paper and hence my request for your indulgence as I, of a necessity, must burden it with some statistical figures in order to illustrate the extent of co-operation, and set it up as a beacon towards which our farmers may strive.

The main parts of the Kingdom of Denmark are the Peninsula Jutland, the islands of Funen, Zeeland, Laaland and Falster, Lange and Bornholm, and some smaller islands.

The richest land is found on the Islands of Laaland and Falster, Langeland, Funen, Zeeland, and the East coast of Jutland, in the order named. On the West coast of Jutland especially, heather covered moors have for years been a joy to painters, poets, and hunters, and a despair to national economists and farmers. In 1866 a society, now counting 4696 members, was formed for the reclamation of these tracts, and patriotic enthusiasm and co-operation backed by state aid, has now planted some 225,000 acres, partly state property.

The total area of Denmark is only 14,789 English square miles, or 9,419,217 acres. Of this 6,966,381 acres or nearly 74% are under plough. The human population is 2,449,540, of which 882,336 are engaged in agriculture. Of cattle there are 1,744,797 heads, and of these 1,067,265 are milch cows. The number of swine are placed at 1,168,493, and fowls at 8,766,882.

In order to understand the wonderful development, mental, social and financial, of the Danish farmers, I must refer back to the abject condition under which the "peasants" were brought during the reign of Frederick the Second (1542–1588), when the king handed over to the nobility a nearly absolute power over the farmers, so that they became virtually serfs, through "villenage." It was only in 1764, when Count Bern-

storff started to relieve his own peasants that they saw the dawn of freedom which culminated in the laws of 1850 and 1855, whereby nearly all villange disappeared. Laws were also passed which promoted that ownership of small farms which now forms the backbone of Denmark, as it does of France.

There are in Denmark 2,017 estates of more than 288 acres;

3,881	farms of	192	to	288 acres
24,065	farms of	96	to	192 acres
23,672	farms of	48	to	96 acres
21,582	farms of	24	to	48 acres

In all 73,200 Farms.

67,657	"houses"	with	6 to 24	acres
93,884	"houses"	with	less than 6	acres

In all 161,541 houses and lots.

The above acreage is not altogether correct, but is based on the average of 18 "Tönder" (about 24 acres) to one "Tônde Hartkorn," a peculiar system of valuation, whereby land is ranged from 1 to 24 points, according to quality, and it takes 5 1/7 "Tönder" of land of the best quality (24) to make a "Tönde Hartkorn."

"Housemen" is a term used to designate farm laborers owning or renting cottages with from ¼ acres up to 24 acres and who, as a rule, figure on working at least part of the time for neighboring farmers. Farm laborers will be the term by which I shall designate this class.

As the farm laborers and small farmers aggregate some 234,741, of which presumably, the large majority have a vote, and as the total number of voters is placed at 311,337, it is evident that they are able to "rule the roost," if they work in harmony, and indeed the Agrarian party does rule as, by the way, it also might here.

This strong position has not been obtained without a hard struggle and only by a hearty co-operation have the farmers been able to secure it.

When in 1848 the Constitutional government was established, at the ascension of King Frederick VII, the need of better education was felt most strongly, though even before that, Bishop Grundtvig, the historian, poet and patriot, had urged the establishing of a higher popular education and suggested the

MILKING SCENE ON A DANISH PASTURE WHERE THE COWS ARE TETHERED.

NOTE.—The milking overalls and caps worn are not used on all farms.

erection of a Danish popular high school with teachers, of which at least one "should be master of the mother's language, not only as found in books, but also as it lives among people; one who should know and love the history of the Fatherland, and who could tell it; one who knew the Folksongs and could sing them; one who was versed in the practical crafts, and one who knew the laws of the country."*

This idea was realized in 1844, when the first popular high school was opened by Christian Flor in Rödding, in Sleswig, a school which L. Schröder took hold of in 1862, but had to give up during the fatal war in 1864 with Germany, which deprived Denmark of Sleswig and Holstein. The Germans having prevented it starting up again, Mr. Schröder opened the school at Askov in 1865, just north of the new boundary, and though several similar schools were started, the one at Askov has remained the leading one, where a Christian and patriotic spirit has been fostered.

In 1903 there were 72 such schools, with 3,429 students, and the reason why I discuss them here, even in this superficial manner, is that they must of a necessity be mentioned as *the foundation of the co-operative success in Denmark.*

Indeed, while all these schools have been started by individuals who invested their all in them, nearly all of them have been backed financially by hundreds of farmers; so that they might even be classed as co-operative schools. Twenty-eight of these schools give agricultural instruction, and in addition to these there are 12 special agricultural high schools, also private enterprises backed financially by the local farmers, and the owner of one of these even bragged to me of the fact that he had 800 creditors.

The more I investigated the matter the more I became convinced that it is the work done by these popular schools which has developed the patriotic and humane spirit and thus enabled the individual farmers to set aside their personal—shall I say it?—greed, in order to promote the common weal. The greatest barrier to co-operation has been and always will be, selfishness and bickerings, and these two defects have to a great extent been eliminated, or at least modified by the sojourn at these schools. It would take too much space here to go into a description of them in detail, but suffice it to say that they are all the more appreciated, as they are owned by the people,

*See "Letter from L. Schröder to an English Teacher."

and the government only gives them a comparative small aid, in all $102,000.00, including free scholarship.

I find that I cannot leave this subject without referring to the latest school erected, especially for farm laborers, near Ringsted, on the Island of Zeeland. Here the instruction is given with a view of teaching the management of small plots of land (4 to 10 acres), and stress is laid on various side lines, such as beekeeping, poultry raising, basket making, bookbinding, etc., and last, but not least, domestic economy.

In connection with this I must also mention the new law whereby farm laborers are enabled to secure a house and from 6 to 10 acres as soon as they have saved one-tenth its value, the balance being given as a government loan at 3 per cent. It is hoped that this will stay the rush of laborers from the country to the cities, and also make the people more contented and happy. In many cases this may be so, but I got the impression that it might be a drawback to many laborers to be tied to a certain place and saddled with a heavy debt, even if it is at a low interest. The experiment is certainly worth watching and possibly imitating.

CO-OPERATIVE CREAMERIES.

I now come to the co-operative movement which has swept the country like wildfire. The beginning was made in 1882, with the co-operative creameries, which were made possible by the invention of the centrifugal cream separators. The quality of the Danish butter has been improved greatly since 1866 through the efforts of the late Profs. N. C. Fjord, and Segelcke, but the improvement has been mostly apparent on the large estates, and the bulk of the farmers, not to speak of the farm laborers' milk was made into inferior butter, until the co-operative creameries took hold.

These are mostly organized on a strictly co-operative basis; every member became responsible for the money borrowed to build the factory and had to agree to deliver milk and conform to certain rules; and thus the enterprises were started, so to say, without a cent capital, and the banks are now only too glad to advance the money (some $6,000.00 to $10,000.00) needed on the notes (secured by the farmers), which are paid off with a certain percentage of the milk money. The buildings are of brick, with cement or flagstone floors, and as a rule, arranged for the making of skimmilk cheese, as well as butter.

At the commencement of this year there were 1,057 co-operative creameries, with about 149,900 shareholders, and the amount of milk handled the last year was about 4,310 million Danish pounds. Added to this there are 188 creameries owned by individuals, and 63 "estate" creameries, making a total of 1,308, and the net export of butter for 1903 amounted to 158,000,000 lbs., valued at about $42,000,000.00.

In order to show how intensely the co-operative spirit has been developed, I mention that out of 1,042 co-operative creameries which have reported to the Royal Danish Agricultural Society, 643 are members of the local creamery associations; 999 are members of the Danish Butter Trade Mark Association; 459 (for buying supplies, etc.); 997 are members of the Creamery Accidents Insurance Company; 191 are members of some butter export or sales association; 815 take part in the continuous educational butter test carried on at the Royal Experiment Laboratory in Copenhagen; 939 take part in the local butter exhibits; 130 take part in the co-operative cheesemaking experiments; 508 assist in the publishing of the creamery statistics, and 597 assist in getting up the butter price statistics.

Here let me draw special attention to two of these co-operations of co-operative creameries. The Trademark Association, which provides its members with firkin staves in which are branded the registered trademark, thereby preventing Siberian and other foreign butter from being sold as Danish; ninety per cent of all creameries in Denmark are members.

The second is the publishing of the creamery statistics. Here are given all the facts from each creamery (designated by a number only) so that the managers may compare results and locate the trouble if he is not doing as well as the others. Every detail is given, such as expense of oil, coal, salt, etc., per 1,000 lbs. of milk.

The above shows part of the creamery extension of co-operation, but of far greater importance is the co-operative dairy work started by the milk producers. I refer to the 772 cattle improvement associations, with 19,554 members, and the 308 cow-testing associations, with 6,754 members, where the members co-operate in securing pure bred sires, and in testing each individual cow so as to enable the farmers to get rid of those that do not pay. I may here be allowed to remark that the first test association was started in 1895, and in nine years they have increased to 308, and I know of no more philanthropic work than that of encouraging similar associations among our farmers.

Of other agricultural associations, I mention the Royal Danish Agricultural Society, with 782 members; 107 local agricultural associations, with 65,382 members: 120 agricultural laborers' associations, with 6,000 members; 238 horsebreeders' associations, with 20,637 members; 82 swine breeders' associations, with 1,792 members, and 13 horticultural associations, with 1,627 members.

CO-OPERATIVE SLAUGHTERHOUSES.

The co-operative creameries having proved successful, it lay very near indeed to think of establishing co-operative slaughterhouses, and this was tried as early as 1888, and now their number is 30, with 67,200 shareholders, but only 27 were in operation during 1903, when 928,850 hogs and 17,131 head of cattle were killed. The one at Odense, on the Island of Funen, slaughtered 56,816 hogs, and 1,637 head of cattle, and with it is connected a public slaughterhouse, where local butchers may get animals killed on payment of a fee. The meat is inspected and condemned if unfit for human food, but if it is only slightly tuberculous it is rendered harmless by being steam cooked and sold cheap to any one who likes to buy.

The race of swine used is Yorkshire crossed with the natives, and the association buys boars and helps the local swine breeders' associations. The hogs are paid by net weight, but nearly full value is paid on delivery, when they are graded into four classes, for which the price varies from 1/3 to 1/6 cent between each class.

I illustrate a "model" batch just arrived and draw special attention to the sign "Slaa ikke Svinene," that is, "Don't beat the hogs," which short sentence contains the key to successful hog raising.

At the end of the year the shareholders receive a dividend of so much per pound of pork delivered, sometimes ¾ cent or so. In 1903 they exported bacon to the value of $21,000,000.00.

CO-OPERATIVE EGG COLLECTING AND EXPORTING.

Most of the slaughterhouses also handle eggs on the co-operative plan, in all they aggregated 3,400,000 dozen in 1903. But far more imposing are the figures of Danish Co-operative Egg Export Association, established in 1895, with its 475 local branches, and packing houses in the large cities. The associa-

SAMPLE LOT OF GOOD DANISH BACON HOGS IN THE PEN OF A CO-OPE RATIVE SLAUGHTER-HOUSE.

NOTE.—The sign on the wall *"Slaa ikke Svinene"* or *"Do not beat the hogs"* is significant.

tion counts about 33,000 members and the eggs are stamped so as to trace their origin. If bad eggs are found the member delivering them is fined on first and second offence and expelled on the third. This and other egg associations also handle poultry and comprises in all 65,000 members.

The total export of eggs for 1903 being estimated at 38,741,400 dozen to a value of about $7,500,000.00.

The total export of butter, bacon and eggs for 1903, aggregated about 100 million dollars worth and 57 per cent was handled on the co-operative plan, the small lot owner with one or two cows and five or six hogs thus realizing as much for his products as the largest "estate" owner, and no undue profits have been given to middlemen, speculative or otherwise.

CO-OPERATIVE BUYING.

Hitherto we have only discussed co-operative manufacturing and selling, but remains yet to review the co-operative buying (stores). The first "consumers' association" was started in 1866 by a clergyman, Sonne, who had read about the 28 poor weavers in England who, in 1843, started the first co-operative store, and now Denmark has about 850 co-operative stores, which are joined together in a grand association, with a capital of $113,000.00, a reserve fund of about $200,000.00, and a yearly circulation of about $5,300,000.00 Besides this, there are about 150 other co-operative stores, counting in all 200,000 members, with a total circulation of $10,000,000.00.

But this is not the limit of co-operative work. Among the many associations listed I find one for the "Legal Destruction of Rats," counting 2,000 members, with the purpose of enlightening people as to the damage done by rats and the best way to destroy them eventually by legal steps for their universal destruction at the same time all over the country. I owe special thanks to Mr. M. P. Blem, member of the Diet and President of the Joint Association of all co-operative enterprises, for his kind welcome and his assistance in securing facts as regards this interesting subject. In a paper read last September before the International Co-operative Alliance in Budapest he estimates the number of members in the Danish Co-operative stores, creameries, slaughterhouses, and egg export associations, as being 482,000, and in a lecture in 1893 he showed that Denmark had sold 42.9 per cent of all the butter imported to England in 1902, but received 45.3 per cent of the money paid; she

had sold 24.7 per cent of the bacon imported but received 27.9 per cent of the money, and finally, she had sold 18.6 per cent of the eggs imported and received 21.7 per cent of the money. These figures are indeed significant and may well be pointed to with pride.

While, of course, the government does not back up any of the financial co-operative enterprises directly, it does so indirectly by paying part of the salary of instructors and experimenters working for the various associations, and it may not be out of place to show how the Danish government helps those who help themselves. This can best be done by condensing from the appropriation 1903–1904 for the Department of Agriculture, giving sufficient details to indicate the various ways in which the government co-operates with the co-operative people.

SUMMARY OF APPROPRIATION 1903–1904.

Administration expenses	$ 28,740
Royal veterinary and agricultural school	105,713
The Royal Agricultural society	2,170
The associated agricultural associations	6,133
Part salary of instructor* in creamery boiler firing	267
Salary and part salary of other instructors*	14,960
Lectures for agricultural societies	1,599
Aid to agricultural travelers	1,333
Aid to dairymen's and maids' education	5,330
Training teachers in domestic economy	800
Aid to farm laborers' education	6,400
Agricultural history and museum	933
Premiums at stock shows and subsidies to test and breeders' associations	218,000
Promotion of agriculture in general	2,130
Promotion of bee culture	800
Promotion of poultry raising	2,400
Aid to farm laborer's associations	3,731
Part salary of instructors* for slaughter houses	533
Promotion of the art of milking	3,731
Educational cheese tests	533
Educational butter tests	10,666
Local butter shows	1,066
Collecting creamery statistics	2,399

*Expert councillors who may be called on for aid and advice.

Plant experiments and instructors*	29,131
Seed control	1,800
Premiums for cultivation of small plots and travels for farm laborers	23,466
Tests of agricultural machinery	800
Promotion of horticulture	10,130
Supervision of tuberculosis	26,666
Veterinarian control	50,000
Abating Maybugs	2,933
Controlling sale of oleomargarine and butter	8,875
Subsidy for transportation of marl	9,333
Providing plots for farm laborers	8,693
Moor plantation associations	76,702
Subsidies to refrigerator steamers	74,666
	743,562
Add to this the appropriation for the popular high and agricultural schools and aid to students	106,000
and the grand total used for agriculture is	$849,562

Saving banks and private pension associations, fire insurance, accident insurance, hail damage insurance, and live stock insurance, all help to swell the number of co-operative enterprises in Denmark, and co-operative sanitariums for consumptives are even now being discussed.

Finally, let me express the hope that our own farmers may eventually learn that by co-operation only will they be able to receive their just share of the result of their own labors. I do not refer to private co-operation only, but also to the large public ones, such as postoffice saving banks, parcel post, telegraph and telephone, railroads, and street cars, water works, and gas works, coal mines and oil wells, as well as other natural resources, which all ought to belong to the people instead of enriching a few individuals.

Not that I believe in the immediate realization of this, but that I want to see an early attempt at laying a solid foundation, and that can only be done by practical education, at first with small enterprises, such as creameries, test associations and egg collecting associations, etc.

Libraries are established in our cities, schools and universities are endowed with millions of dollars which go to the edu-

*Expert councillors who may be called on for aid and advice.

cation of ministers, teachers, doctors, lawyers, artists and engineers, while the farmers are virtually left to struggle for themselves. Let us therefore hope that our city people, recognizing the fact that their prosperity depends on that of the farmer, will awaken to the necessity of encouraging co-operation among the farmers along *educational*, productive and manufacturing lines, be it through private philanthropy or public appropriations.

DISCUSSION.

A Member: I would like to ask what kind of inspection they have there and who controls it.

Mr. Monrad: As regards enforcement of the pasteurization law, they utilize the police, the police are simply taking samples, sending them in to the royal laboratory. They have a certain test whereby you can take whey and you can take butter and by the serum in the butter you can test by that test and find out whether the cream has been heated to 185.

The Member: I mean as to the quality of the goods.

Mr. Monrad: There is no inspector. The association pays part and the government pays part of the instructors. There is no inspection, they do not have it.

Mr. Michels: I would like to have Mr. Monrad give us a plan of how to co-operate in the line of handling cheese, what he thinks about the best way to go at it and co-operate in curing cheese and selling cheese?

Mr. Monrad: Well, is not that rather a long thing to tackle?

Mr. Michels: We would like to get a suggestion.

Mr. Monrad: Well, I will start out with what I think is the best now, and that is, in Canada, as I understand it, the Canadians now are syndicated in some twenty to thirty factories, and they hire an instructor to give them that uniformity. Now, if these twenty to thirty factories should be from the same station, it seems to me it would be a simple thing for those factories to join together and build a good cold storage building near the station and deliver the cheese there. Possibly even, what our Canadian friends are trying to argue, the central curing room idea. By the way, I think it was Professor Russell that first recommended it before the Canadians.

Prof. Emery: Yes.

Mr. Monrad: I think he did that at Madison some years ago. It seems to me there we would have a natural co-operation for the sale. If we then would put a man in charge of that curing station, or that cold storage place and sell the cheese, that would do away with all this trouble when a buyer comes out, looks over the cheese and says: "I will take that cheese at so much," and sends it on to Chicago and then the market drops and the cheese develops wonderful defects. Now, that has happened. I do not say that all the cheese dealers are trading that way, but it has been done. And another thing is this,—I would have that the farmers could borrow money on their cheese if the price went down below a certain point. I do not believe in speculating for the farmers, but I do not believe in farmers selling their cheese for six or seven cents a pound every year and then see it go up to ten or eleven cents in the winter. It seems to me if they get a credit arrangement with the bank, one for all and all for one, they can borrow all the money they want. The Danes do not put up a cent when they build a $10,000 factory, they do not put up a cent of cash, they sign the notes and the banks now are tickled to death to loan the farmers money on their notes, and take up so much per hundred pounds of milk delivered. In the same way I am sure if they joined together twenty factories and have the cheese stored, it will be an easy matter to arrange for borrowing money at a reasonable amount. I would advise that movement to be conservative, very conservative, as for instance, if the cheese dealers offer six cents, I would not take it. I would not speculate, you understand, but yet you should speculate to that extent, that if the market conditions are such, if the speculators do not feel good, as they did not do this spring after the last year's experience, they did not feel quite chipper, then it seems to me that the farmers ought to store their cheese and hold it until they can get ten cents.

Now, that is about all I can say. I know it will take you a long time to get the different factories. The beauty of this system is this, that you virtually get what you get with a license. That is to say, it does away with all competition in the syndicate, they are not going to take milk at one factory that has been refused at another, so I like the Canadian idea if only we can get it worked out and then it seems to me if that is secured, then you would be able to go a little farther and sell it, as I say. I think that is about the way.

Mr. Luchsinger: I would like to ask Mr. Monrad another

question, I don't know but what he has made it clear already. After the farmers or the dairymen have co-operated, have succeeded in getting uniform quality and getting instructors and getting inspection as it were, and getting a profit that is guaranteed by a stamp, or something of that kind, who disposes of that product? Is there an executive officer of some kind? or executive board?

Mr. Monrad: You refer to the Danish butter trade?

Mr. Luchsinger: Yes.

Mr. Monrad: In the Danish butter trade there is one corporation, a number of makers that join together, an export association, I do not know how many, some two or three hundred. Now, they ship their butter in to Scotland and England. The bacon factories are all joined in an export association, and consign their bacon to England but the great majority of the butter is bought by merchants in Copenhagen chiefly and in Aalborg a few of them buy and sell it, and now they struggle with that overprice, one cent above, they struggle with that there, and they are trying to do away with it by gathering creamery price statistics, that is to say, they have formed an association which binds every creamery to report the actual price paid and in that way get at the true price. They are just experimenting on it, and I do not know how it will come out.

Mr. Luchsinger: But that product even after it has been made uniform by co-operation and all that, has to go to the market through the usual course of the wholesale merchant, has it not?

Mr. Monrad: Or by the export association, as I told you, of course they have to stick to the usual market in England, but they take their chances. I am not against middlemen, because that is another form, but I am against the middlemen taking the cream and the maker taking the skim milk. You must have middlemen. Take some of the creameries in Wisconsin, they have done away with the middlemen. What do they do? They have to maintain an expensive office in New York; is not that a middleman as well as the commission man? The question is if the commission man does not take more than it costs to sell it and a reasonable profit according to his ability, why, he is perfectly justified. I am not here to speak against the middlemen, but I do say the middlemen should not take more than their share.

Mr. Luchsinger: I had the impression, Mr. Monrad, when you spoke of co-operation that those who co-operated in produc-

tion also took the place of the wholesale merchant in placing the product on the market.

Mr. Monrad: They do with the eggs, for instance, the egg exporters' association does its exporting itself, there is actually no middleman except their own employes, the central office in Copenhagen does that, and of course that costs some money, but whatever profit there is, is divided among the local associations according to the number of eggs sent in. By the way, I forgot in speaking about co-operation, I left out altogether the buying association. There is hardly a farmer buys anything but what it is done through the co-operative stores. They have special associations for buying fertilizers, seeds, everything you can think of they buy in co-operative stores.

Mr. Moore: I believe Mr. Monrad, in his paper, covered the point very nicely so far as conditions in Denmark are concerned, and I agree with him in regard to co-operation as the thing to be desired. I believe, however, that the maker, both in the cheese factory and in the creamery, will have to be the mainspring behind a movement of this kind. I think, too, that the factory and the creamery must be the keystone to hold a fabric of this kind together in order to obtain the best results. Mr. Monrad mentioned just now about the buying association in Denmark. I would like to cite a case in point in Wisconsin. In a creamery in Dane county the factory had been in the habit of buying for a number of years the binding twine used in that locality by its patrons every year. One of the agents of the Trust came around and quoted them prices on binding twine the same as they did to the retailer. We purchased this twine at wholesale rates and gave the farmers the advantage. We are, in fact, using his money that would otherwise lie in the bank without bringing any interest; he just gets the advantage of the wholesale rate in buying in small quantity. They go farther than that in buying the mill feed. Before the Trust got hold of them, they bought the hard coal and also furnished the soft coal for keeping people's water tanks in proper condition in winter and in other lines of comfort this creamery has made a success of holding the patrons together by trying to get into closer relation with them and making the factory a center from which they expected to derive a great many different kinds of benefit, not only in the direction of making the milk up into dairy products but in making their purchases for them.

Mr. Monrad: I do not quite understand Mr. Moore's proposition on that. I have spoken to no purpose if I have not

impressed upon my hearers that my idea is that the cheesemakers and the buttermakers should be missionaries and be those that should lead in this movement, but of course I do not believe that the creameries or the cheese factories can manage the whole business, because we have got to develop each branch by itself, I believe, or else we will get mixed up too much. As, for instance, I believe it is possible to have a co-operative laundry, but I do not want to have it in my creamery directly, I want to have a special building, I do not want to do washing and churning in the same building. If we want to have washing and churning done, the creamery man must be the missionary to work along that line. That is what I wanted to impress. They tried the same thing in Denmark and the manufacturers and big dealers in Denmark wanted to stop it, said they would not sell to these co-operative concerns. What did they do? A single co-operative concern could not have done anything, but the co-operative concerns co-operating together, some five or six thousand concerns or more, they just said, "If you will not sell us, we will start a factory," and they did, they have several factories of different kinds. So you see if you get a large number of co-operative stores, get them all to co-operate together with the true spirit, they can say, "If you will not sell us and sell us at reasonable rates, we will start a factory."

Mr. Carswell: I would like to ask Mr. Monrad how the factories can co-operate to keep the factories in good condition. I agree with Mr. Moore that the maker should be the keystone of that kind of work, but I will give Mr. Monrad the conditions that we find in some parts of this state. In some sections we have co-operative factories, associations of farmers that own the building, or they rent the building, sometimes the manager employs a cheesemaker, the inspector comes along and finds bad conditions. He reports to the cheesemaker, the cheesemaker says, "I have nothing to do with this, this is a co-operative association, you will have to go to the manager, I cannot fix this whey tank or this sewer, or this thing or that." And he goes to the manager, and the manager says, "I rented this building, and you have got to go to the association, the co-operative association." He goes to the co-operative association and they say, "We have rented this to the manager and it is the manager's duty to look after this." Now what will you do? There is plenty of co-operation among those people to avoid responsibility.

Mr. Monrad: I think you should keep this in mind for this afternoon's discussion, it will come in handy.

The Chairman: In regard to one of the societies Mr. Monrad spoke of, I would like to ask what they do in case one of the members disregards the rules that are laid down, for instance, in regard to the killing of a rat, do they fine him?

Mr. Monrad: I do not know, I have not read the constitution of the association; as I understand, it is preliminary work, it is lately started; the rats are a real plague, and the idea is to devise some plan, designate a certain time a certain day a week in which all those co-operating will agree to kill all the rats they can and in that way exterminate them. You see that will prevent them from escaping.

WHAT MUST WISCONSIN CHEESE FACTORIES DO TO IMPROVE THE QUALITY OF THEIR CHEESE.

PROF. J. Q. EMERY, Madison, Wis., State Dairy and Food Commissioner.

1. The first thing necessary to be done by Wisconsin cheese factories to improve the quality of their product is to recognize the need of improvement. When every cheese factory in the state shall recognize that there is a distinct need for improvement, a very important step in the way of progress will have been taken. First, then, I say, let every factory recognize that there is need that it improve the quality of its cheese; not that it recognize that some other factory should make improvement, but that it should itself improve the quality of its own output.

2. Let the owners of factories which have survived their usefulness and are no longer fit to be used as a place to manufacture a food product for the public's table, tear those factories down, and in their stead, construct, on suitable sites, new and up-to-date factories. In the construction of all new cheese factories, let only such sites be chosen as furnish opportunity for suitable drainage and other sanitary conditions. Let every cheese factory that can not be removed a reasonable distance from pig-sties, barn-yards or other nuisances, be torn down.

The business of cheesemaking in Wisconsin is sufficiently important and renumerative to afford a suitable, up-to-date plant.

3. Let cheese factory owners see to it that their factories are equipped with such appliances as will enable the cheesemaker to keep the factory in a thoroughly clean and sanitary condition, and to manufacture a cheese to meet the highest demands of the best markets. Then let them employ only such makers as can fulfill the above conditions, and then demand that those conditions be met. Let them pay such competent cheesemakers a reasonable compensation for their services, and enable them to maintain a decent and respectable standard of living; and let them furnish them wholesome living rooms outside of the factories. No principle of economics is more fully established than that the standard of living affects materially the quality of service rendered.

4. Let the cheesemakers see to it that they themselves, and that all the factories in the state are, at all times, kept in a scrupulously clean condition, and thus furnish an example of neatness to patrons. Let them obey the letter and the spirit of section 4, of chapter 67, laws of 1903, which is as follows: "Any person, firm or corporation who operates a creamery or cheese factory shall maintain his premises and utensils in a clean and sanitary condition."

5. Let every cheesemaker obey section 3, of chapter 67, laws of 1903, which reads as follows: "No person, firm or corporation shall knowingly manufacture for sale any article of food from unclean or unsanitary milk, or cream from the same." Let them use persistently the Wisconsin Curd Test to determine the quality of the milk offered by patrons. By means of this test, the clean character of the milk offered, can be as unerringly determined as can the butter fat content of milk be ascertained by the Babcock Test. Let them use this test as an education for their patrons and be thereby enabled to secure from them choice, clean milk for manufacture.

6. Let the managers of cheese factories, at all times, deal fairly and justly with their patrons. Let them compensate their patrons according, not to the quantity of milk furnished, but according to its quality as well. Let every patron, at all times, receive from the factory his just dues. In return he is likely to furnish an improved quality of milk.

7. Let every cheesemaker use the very best commercial starter, and all the up-to-date means for securing and determining the proper acidity of the milk to be used in the manufacture of

cheese. This is a matter of the highest importance in cheesemaking, if it is true as I am informed that of all the processes carried on within the cheese factory, none other affects the quality of the product for good as much as does the proper ripening of the milk.

8. Let cheese factory proprietors provide some means whereby the cold-curing of their product can be secured. It has been amply demonstrated that the cold-curing of cheese improves its quality. Cheese producers should avail themselves of the benefits and profits of this modern discovery.

9. Let us learn a valuable lesson from the Minnesota creamery industry and exploit our cheesemakers as they do their buttermakers. Of all the many factors in the production of high quality cheese, the cheesemaker is the most important. Let us recognize this fact, and award him accordingly. Let us ever award to him the due mead of praise, wherever and whenever cheese of high quality is produced; and let us hold him responsible if unfortunately the cheese is of poor quality. But let us not do the mean act of holding him responsible for the poor make of cheese, and then refuse to give him the credit for the good make. Let us encourage him in every way possible to broaden his horizon, and become more efficient in his calling.

Let Wisconsin cheese producers refuse to become "incrusted in the knowledge of yesterday;" but instead become imbued with the 20th century spirit of progress, and use for their own benefit modern scientific dairy knowledge.

Let Wisconsin cheese factories do these things, and not only will there be great improvement in the quality of Wisconsin cheese, but there will be a corresponding increase of the profits as well.

DISCUSSION.

Mr. Noyes: I think Prof. Emery's paper, while it is short, that it is nearer to the point and should interest this audience as much, if not more than any other paper that has come up, and in opening this discussion I would like to ask Prof. Emery if he ever managed a cheese factory?

Prof. Emery: No sir, I want to say right here now that I am not an expert cheesemaker, I do not pretend to be, but I have studied the conditions I think necessary to cheesemaking.

Mr. Noyes: We have all done that. I will say at the start that I sanction everything Prof. Emery has said, if we can only accomplish that. One point that is brought out in this paper that any factory wherever located through Wisconsin could build a good factory, put a good maker in it, have everything up to date, I think that that point is quite impossible at the present time. We have scores and scores of factories in Wisconsin that are not receiving milk enough to support that factory and a good cheesemaker. Now, what are you going to do with this point, and they are going up every year, every farmer wants a cheese factory at his corner and he wants you to make that cheese at a cent and a quarter a pound,—what are you going to do about those board cheese factories going up? You cannot compete with those things. A great many of those factories are stuck up and the cheese is sold in competition and brings just the same price as that made in factories which cost $4,000 and $5,000, with all the modern improvements, what are you going to do? Not only that, we have instances where the factories are dirty, the cheesemakers are dirty themselves, their factories dirty from top to bottom and their cheeses are poor, they are condemned and in some instances inspectors go out and do what they can and they accomplish worse than nothing, that has been done; in that case they have simply been called by the cheesemakers sometimes, sometimes they have been called by the patrons and he will go out and talk with all the patrons, take in what the patrons tell him and make his decisions on that ground. He makes one visit, not long enough to form a good judgment. In other cases the cheesemakers go over and clean up the factory; like enough the week before that the presses and hoops perhaps were not washed but twice a week and the men on the road, drinking whiskey; he comes in and finds that that factory is cleaned up, he sees the cheese—and then it has been a nuisance to the patrons, it has been a menace to the men that bought it, everybody around there, and they go in perhaps sometimes and put that cheesemaker out, that cheesemaker ought to be somewhere besides making cheese, and there ought to be some way of stopping that cheesemaker. That cheesemaker goes right ahead, if he is dismissed, draws his salary, puts up a big bluff as a good number one cheesemaker and steps in somewhere else.

Now, we are attacking a broad subject, we are tackling a very hard subject. I have handled cheese factories quite a number of years, and I tell you it is a large question to handle,

and if it is handled right, it is a question that takes more than I have been able to accomplish and see through. It is a hard question. Now, Prof. Emery has brought this question up, and when we talk about co-operation among cheesemakers, there is no co-operation today among cheesemakers, you cannot find it, gentlemen, and I dare say there are men in this convention today that are scheming to run their factories and to make lower prices than all the others in order to get in some corner to run a cheese factory next year. That is the kind of co-operation we meet in the handling of cheese factories. Gentlemen, this is the bare truth, and when the cheesemakers get together and try to have things better, will work together, why, we may have things done by the farmers around the factory; on every corner they want their cheese made for the old price, or lower than the old price, and everything that we use in the cheese factory is 25 per cent higher than it was ten years ago. Now, what are you going to do?

Prof. Emery: If we let these factories go on and say nothing against this idea of a factory on every corner, if we raise no voice against that system and if we raise no voice against the unclean conditions of factories, what is to be the future of the Wisconsin cheese industry?

Mr. Noyes: I believe in saying something against it; I believe in that.

The Chairman: I can answer one of your questions and give an answer that will apply nearly all around. We will have those conditions just as long as the cheesemakers are cheap skates enough to accept that kind of a position. You will find factories that have not been cleaned for years, that have no provisions for keeping them clean, where there is a bad stench all around, over and under it and the water supply is bad, nothing to keep the flies out, no prospects of any improvement at all, and still they will step in and take those positions year after year.

Mr. Monrad: People generally think that I look on the dark sides of life, but I want to protest against Friend Noyes that cheesemakers cannot and do not co-operate. This assembly here is a proof that they can co-operate to a certain extent anyhow.

Mr. Noyes: But they do not go half far enough.

Mr. Monrad: Well, when you see in the spring the little green sprout out of the ground, does not that give you hope? This is a pretty good green sprig coming out of the ground, and I have good hopes yet that they will come closer together still.

Mr. Noyes: This is a goodly assembly, I like to see it, I was one of the charter members of this Association, and I believe in getting together and talking over matters, but I do not believe in going back and doing the same thing over and over again, year after year. Now lots of them come and do that, listen to these good talks, take this all in, they go right straight back home and do the same thing, they did it last year, and they are going to do it this year. Now, how are you going to get around it. I am in for co-operation, I am in for better things and better factories and for up-to-date improvements, but, gentlemen, we have got to have some show. We cannot take 2,000 pounds of milk a day and run a cheese factory and have these factories put up with these modern plans; we have got to get together and do something. We can come down here and spend three dollars and have a good time and shake hands and visit and see each other and talk over all these matters and all these discussions are good, I believe in them, I believe in keeping up with the times and I do it as near as possible, but you cannot do it alone, you have to have co-operation.

Mr. Michels: Mr. Noyes tells us a lot of things that do not amount to anything unless he gives us a remedy. It is easy enough to find fault, but it is better to find the right remedy.

Mr. Noyes: We have got to have something behind us to do it with. Now, for instance, supposing you, Mr. Michels, started in with a factory five years ago with 10,000 pounds of milk, your own farmers started up cheese factories around you until today you have not more than 2,500 pounds of milk, and you are making your product in a factory that cost $500 or $600 besides the machinery, the machinery probably costing $300; they are setting up beside you and getting the same price that you are, they have not any modern appliances, they simply have two thicknesses of board between them and the weather to cure the cheese.

Mr. Michels: I simply would not be there any more; that is the trouble, lots of these good factories are likely to be forced out of business.

Mr. Monrad: The poor factory is likely to go out of business.

Mr. Michels: If I did not get more than 2,500 pounds of milk, I would not be there any more.

Mr. Noyes: That is the way; lots of these good factories and makers are not there any more, they are closed.

Mr. Carswell: I think the blame should come more upon the

factory managers; as a rule we find where they have good factories and good buildings the maker is keeping the factory in good shape, but when we find a poor, crazy shack, there is not much incentive for a cheesemaker to keep the things in condition and he is not so much to blame as the manager, where he is getting in some cases 10,000 to 17,000 pounds of milk and putting the cheesemaker in that old shack, I do not blame the cheesemaker so much as I do the manager.

The Chairman: I blame the cheesemaker for accepting the job.

Mr. Carswell: Yes, I think he ought to quit, but many times he has made a bargain with a man that has promised to fix things up and will continue from week to week and the season is half over, if he quits his job he cannot get another job, it is his livelihood and it is a pretty hard matter for him to keep things in shape. Now I tell you the place to begin at is at the factory, to see that we have good factories, and to put a stop to putting up these cheap skate factories.

The Chairman: I can answer Mr. Noyes' question to a certain extent. I have had considerable success in improving factories by holding meetings and pointing out to the farmers just what they were losing because their factory was not up to date. Of course that was mostly in factories where the proprietor was the cheesemaker, but I showed the farmers that they have got to pay for all the mistakes that are made in some way or other, directly or indirectly, all the mistakes that are made in the cheese business come back on the milk producer, and I show it to him and I show him that there are two things, two points they should figure on, one the cost of making, and the other, what kind of a job they were getting for their money, and that was just as important as what they paid for the making, and I show them that if they could, by paying a quarter of a cent more for the making, make half a cent by it, that it was to their advantage to do so, and in a great many instances, I should say about two-thirds—no, I won't say that, but about half the factories where I held those annual meetings, I got the patrons to raise the prices on condition that the cheesemakers would make certain improvements. Now, you cannot get those improvements that you speak of unless you can get the farmer to demand them, you cannot get them any other way. The only way you can get them to demand them is to show them that it is to his profit to do so. It touches his pocketbook, showing him what it is costing him to run the poor factories that they have got.

Mr. Monrad: Mr. Aderhold, don't you think that I am right in this claim, that we cannot expect a private individual to put his good money into such a permanent good building at the risk that there is? Is it not more reasonable to do as they do in creameries, have farmers put up a good substantial building on the co-operative plan, then if they do not want to run it, by hiring a cheesemaker they can run it at so much a pound through the year. I am willing to be philanthropic, but I will be hanged if I would put $5,000 into an individual plant and rely on the farmers bringing the milk. I would not do it.

The Chairman: You asked me that question,—I believe I agree with you, I do not want any of my money tied up in a cheese factory, I have had it there, but not for the last ten years or so, not a dollar; I would not take a mortgage on a cheese factory since I have got my money out of the cheese business; it is poor property, it is not salable property, that is a running factory, some of them are good, there are a few that are good factories, they are good property and will continue to be good property, but if you let the farmers build the factories, they have got to have the same education in order to get good factories as they need where they are owned by private individuals; in both instances they have got to understand the necessity of a good factory and demand that it shall be so and so. Now, the co-operative factories that we have in the state on the average are not as well managed as those that are owned by private individuals, for the reason that they are not built right to start with, they are not equipped right, when they have to buy a piece of machinery somebody buys it that does not know what part to buy, the cheesemaker has not any voice in the buying of machinery, they have a different maker every year or two, and he does not take much interest in the factory. The idea is all right of the farmers owning the factory, I believe in that, but they have got to have the same education in what the factory should be, otherwise it will not be a success.

Mr. Carson: You said a while ago that by educating the farmers and showing them what they were losing, that you were able to bring about an improvement in the condition of the building,—now don't you think if we had our factories grouped in 25 or 30 and put an instructor over each group, that they woud get pretty well instructed so that they could be relied upon to bring about improvements?

The Chairman: Yes, I believe in grouping factories, I believe in effective meetings very much; I have had great success

at those factory meetings; they talk about some cheesemaker and they say you cannot get the farmers to pay any more for the price of making, well, it is often the case that they cannot if they just rely on themselves, some people can, some people are so situated that they can reason with their patrons and others cannot, or the patrons are down on them. There are a great many communities where the object of the patrons seems to be to prevent the cheesemaker from getting rich, no matter what they are getting for their milk, that does not cut any figure, if they are getting a dollar a hundred for their milk, if the cheesemaker is making any money they are kicking; if they get 50 cents and the cheesemaker is not making anything, they are satisfied. In that kind of a community a cheesemaker cannot do anything in the line of raising the prices; they cannot very well persuade the farmers to pay it, but they can get an outsider, a disinterested person who has made the thing a study and they will listen to him and they will be guided to a considerable extent. Now, I am just going to bring up one instance where I attended an annual meeting at a factory. The man was making small cheese, daisies and long horns for a cent and a quarter a pound and he was not able to pay for his supplies and live besides; he was owing the cheese box man, that is usually the man that has to wait for his pay the longest, and I told him, I said before the meeting, "I want you to ask a cent and three-quarters." Of course I did not expect he could get it, it was too big a raise, "and of course you can come down if we cannot get it, come down a little lower, but ask 1¾ cents after I am through talking." I made my speech and showed them how much better they would be off if they had a new whey tank and if that was kept clean and if they had a colder curing room, and if they had improved machinery in other respects; I showed them that that was worth at least 5 cents for every 100 pounds of milk to them if they had those improvements, and they believed me, they would not have believed the cheesemaker if he had told them the same thing. After I got through, one of them asked the cheesemaker himself, "What have you got to say, what do you want?" and he did not have the gall to ask a cent and three-quarters he said, "I will be well satisfied with a cent and a half," and one of the farmers said, "If you make those improvements that this man speaks of, I would just as soon pay you a cent and three-quarters." Another fellow says, "Will you improve the factory as fast as you can stand it?" The cheesemaker promised and he made a motion then to pay a

cent and five-eighths for the making, and it was passed unanimously; they gave him an eighth cent more than he had the face to ask, and he would have got a cent and three-quarters if he had only asked it. Now, that is what an outsider can do in some factories where the owner himself cannot do it.

Prof. E. H. Farrington, in charge of the Wisconsin Dairy School, extended an invitation to the convention to meet at Madison next year, tendering the curing rooms of the dairy school for the exhibit of cheeses, and offering to be of assistance in making the meeting a success. He also spoke of the prospect of a cheese scoring contest, stating that the dairy school is heartily in favor of doing everything possible to promote such a contest, and that if an appropriation can be provided, the work can easily be accommodated and carried on at the dairy school.

Mr. Luchsinger: I understood the Chairman to say there were a few minutes more on the discussion of the question brought up by Prof. Emery. I merely want to say that perhaps Prof. Emery has used stronger language than perhaps he intended in saying that a very defective and badly situated factory should be destroyed or burned; perhaps he did not intend to be quite as strong as that.

Prof. Emery: I said if it were lawful I would like, if it were lawful, to destroy them.

Mr. Luchsinger: I believe in the force of persuasion, in the use of argument; men are not made to be forced into any line, even if they are somewhat wrong. I do not think law ever made any man good, law itself, nor removed the evil itself, so I should say that before proceeding to any extreme measures—

Prof. Emery: Mr. Luchsinger, you do not understand me as advocating anything that would force a man to burn his factory; I said expressly that this was for factories that were in bad shape, it would be a good thing if they were burned down.

Mr. Luchsinger: I accept your explanation, but I do say that before any extreme measures are resorted to, either by the state or any authority, either closing up a factory as unwholesome, or destroying or fining, there should be persuasion used first, there should be warning given, defects should be pointed out; if there are no changes, if men will not listen to reason, or managers of factories will not pay any attention to reason, I should say it is within the power of the state to close that factory. Very many cheap factories were built by reason of the necessity, because the people were poor, people did not know

anything about the dairy business when they began to build, it was an experiment with them, they did not feel like raising very much money and they built as cheaply as possible. Afterwards they may have made improvements, they may put in cement floors, cement gutters and drains and yet the outside may have been the same old shack it was when it was first built. I would say only after thorough examination should such a place be condemned and after warning given. The statement was made that some of these factories bordered on a barnyard, as though that were sufficient to condemn it. I think there is such a thing as a clean barnyard, I think every farmer sees that his barnyard is clear, I do not think that is the worst location that can be had. We very frequently find slaughter houses from whence you get your meat in the cities, or bakers that bake the bread you eat, very close to something very much more offensive than a clean barnyard. So I would say, go slow with extreme measures, try persuasion first, try argument, try reason.

Mr. Monrad: I would like to stand behind my friend Emery; it is just exactly fifteen years ago when I virtually made that same remark out in Minnesota, it was at a banquet and I told them that it would be a blessing to Minnesota if nine out of ten factories were burnt up, provided another good one was built, and I was pleased to see on my visit last year that there was, I do not believe, a single factory of the kind that I criticized. They have beautiful co-operative brick buildings and cement floors. Now, I hope it will not take fifteen years for Wisconsin to get the cheese factories into the same shape. I want, however, to criticize Commissioner Emery on one thing, he is not familiar with the sweet smell of the limburger or even of the brick cheese and hence I think he is a little too hard, and I think that a man not accustomed to brick cheese, Swiss cheese and limburger cheese is liable to be a little too hard in inspecting a factory when he meets those fragrant odors that prevail there.

Prof. Emery: I want to endorse all that Mr. Luchsinger has said, only I want to protest that it was not germane to my paper, for at the outset I said distinctly that it is what the cheese factories can do for themselves I was going to talk about first. What I did talk about, I did not say one word as to what the state should do, or the use of law, there is not one word in that paper that refers to it, it all relates to what the cheese factories should do for themselves, and my suggestion is that it

would be to the interest of the cheese industry of this state if the owners of a large number of these factories would tear them down and the best way of renovating them is to burn them up, and what Mr. Monrad has said here is true and I tell you the cheesemakers and cheese factories and creameries of Wisconsin, if they want to keep pace with our neighbors over in Minnesota and in Iowa and in Canada, have got to get out of the attitude of saying, if they do not say that black is white, that they will not say, "Well, black is not so very black, nor white so very white." They have got to get out of that spirit and they have to recognize black as black and white as white. Now, do not understand me as undertaking to walk under any false colors, I never made a cheese in my life, but I have studied conditions for the successful work of cheese and buttermaker as a state enterprise and as a large enterprise, and one of the first conditions of successful work in cheese is a good, wholesome, decent plant, and the old shacks of Wisconsin have done great service, they have put thousands and millions of dollars into the owners' pockets and they do not owe their owners anything today, and I say, we have to recognize this cheese industry as a great industry, as a mighty industry, to be treated with respect and with large vision, it will pay us in dollars and cents, it will pay Wisconsin in my judgment in dollars and cents if a large number of these old shacks, if the owners—now, understand me again, I am not saying the state shall tear them down, and I refuse to let anybody put words of that character in my mouth --if these owners would see their own best interests they would tear them down and put the match to them, and in place put up some wholesome factories. Again, I say, we have a large number of good factories, well managed, and those should be the ideals, and I think this is the one thing that we need, to get ourselves permeated with in Wisconsin, that we need in our cheese factory and our creamery interests a great cleaning up process, we need clean factories, we need factories up to date. Mr. Monrad has told us about Minnesota, I have been over in Minnesota, I want to know what our neighbors are doing, they are getting ahead of us in the creamery business, and they will get ahead if us in our other business if we content ourselves with these conditions that are not up to date. We need, first and foremost, to have our own ideals, otherwise, we shall never reach our ideals, they always go before, like that cloud that went before the Israelites, but we shall never accomplish anything very great unless we enlarge our ideals and do what

we can to reach them, and I again repeat that this cheese industry is a great industry, and we ought to house it in a decent way, we ought to recognize that we are ten years in these houses, ten years marks great progress in various industries, we ought to keep pace with those, and if we are contented, if we say things are about as good as they can be, we shall not improve, we have to get the spirit of progress in doing the best work.

Mr. Noyes: Just one word more. I brought up this discussion in a sharp manner, and as I stated before, I am in sympathy with Prof. Emery's ideas, in getting better things and better factories, and not only that, but I will say this to the cheese boys, and if you study it before many meetings in Wisconsin that the cheesemakers have got together, they have attended the dairy schools, they have educated themselves, they have done all their part, and perhaps more than their part, as far as the practical work is concerned, the cheese boys of Wisconsin are at the top and we are recognized and we do not bow our heads to Minnesota either when we come to cheese; we all recognize Minnesota as a butter state, but when we come to cheese they are not in it with Wisconsin, I don't care what kind of factories they are working in, and all I hope and all I want is some method in which we can have better factories, we can have more co-operation of cheesemakers, and when we can have that, then we are ready to take the next step forward.

Prof. Emery: Don't you think what Mr. Aderhold has suggested in regard to instruction, if people go out and get instructions and go out and influence the patrons, that we can make great progress?

Mr. Noyes: Yes, in some places you can, in some places you cannot, because what will do in one community will not do in another community, and in co-operative communities those factories that are built by the farmers are some of the poorest factories that we actually have and I am in sympathy with anybody that will make the cheese of Wisconsin better and make our factories better and that we can get better pay for them; we have not pay enough at the present time to accomplish that which is a necessity. The manufacturers I think will say yes, the managers of factories will say yes to this proposition, that we have not pay enough to do that.

Mr. Luchsinger: I am sorry Professor Emery has taken what I said as he did, I did not object to what he said in his paper.

Prof. Emery: That is all right, this is an open discussion.

Mr. Luchsinger: Then I am glad that what I did say aroused him to express himself in the forcible and strong and convincing language, but I will say for the cheese factories this, that in the older established dairy districts of the state where dairying has proved to be a success and has come to stay, that every new factory that has been put up, whether co-operative or by private individuals, has been an improvement over the last one that was built. You will find very few new factories that are built nowadays but what the building is adapted for its purposes, not put up simply as a makeshift for something that will do for a year or two, and then may be torn down or left to rot, that thing does not pay. The people have confidence in the cheese business, have come to the belief that it has come to stay, therefore they are putting up buildings accordingly. There are cheese factories in some of the townships in the cheese districts, that from having been the worst buildings in the district as formerly, have come to be the best. I think that is the reason, that they have simply been forced to the conviction that it pays to have the best.

Prof. Emery: Is not that largely due to the work that those inspectors have been doing around among them, educational work?

Mr. Luchsinger: Certainly, the force of having meetings, as Mr. Aderhold has said, meetings with the patrons, talking to them in a reasonable way, showing the disadvantages of having poor factories and bad tools to work with is a strong one and they will always believe some one who comes from some where else, an inspector or instructor, the patrons will always take more stock in what he says than to what the cheesemaker would say in the same words.

Mr. Johnston: I am very much pleased with the remarks Professor Emery made, I do not think he said anything out of the way at all, and I might say ina regard to our Canadian Dairymen's Association, that we have found that co-operation is all right, yet I must say that co-operation in building factories is largely done away with nowadays, in fact, nearly all our co-operative factories in the west are changed into private hands, simply because the farmers could not make it pay, they could not run their factories as economically as a private individual could. But in regard to our co-operation in regard to our instruction work, I might say that we hold regular conventions there, say, district conventions. We get cheesemakers

together for each district which is presided over by our instructors and they talk matters over there, they break down that sort of jealousy between one and another, and they make unwritten laws, that are not put upon paper at all, whereas they co-operate one with another. For instance, if a man has sent bad milk to your factory and you reject it---every man who is employed to make cheese at a factory is boss there and if a man brings bad milk to a cheese factory and it is sent home for that cause, and he takes it to a neighboring factory, the neighboring factory sends it back, "If it is not good enough for the other factory, we do not want your milk." And that result has come with co-operation within the last four or five years, simply through co-operation of the cheesemakers and factory owners, and I might say in regard to our other work of improvement in our buildings, that we spent more money in the last ten years in factories than was spent twenty years before. We found that we must have good buildings, the little places were going out of business in the west, we have not very many of them, we have not in my section six factories that make less than twenty-five to one hundred tons and some make as high as two hundred and sixty to two hundred and eighty tons of cheese. They can afford to make good cheese, they get the best prices. They find out that the factory that is a poor miserable dirty factory is a by-word for the rest of the district, the manufacturer gets ashamed of himself, he has to go to work and clean up his place. The inspector goes to his place once a month, he leaves it tacked up where every patron that comes in can see it, if he is dirty it is right there in print; he sends another copy of the report to the chief instructor and if he finds things very bad, the chief instructor goes down there; it is all persuasion it is law to some extent, but we are advocating a license system, we feel the need, if a factory is not all right, the building is not in good shape and we want the manufacturer to correct a thing and if he does not do it, that we may close it up. In regard to our renumeration, I believe your cheese man has a great deal to do with getting good results, you can not get the right kind of a man unless you pay him, it pays you every time to pay a man what his labor is worth, he will do more among your patrons in keeping them together and getting improvements in the factory than any legislation will do, but you must start somewhere, and I say myself that a factory manager or a factory owner that will not improve his place, the law should come along and shut it up.

AFTERNOON SESSION.

The convention met at 2 o'clock, Thursday, January 5, 1905. Vice President Aderhold in the chair.

THE LICENSING OF FACTORIES AND MAKERS.

J. G. MOORE, Madison, Wis., President Wisconsin Butter Makers' Association.

The dairy business like every other business, has a great many problems demanding a solution if the best interests of those interested in it are to be conserved. We all know there is a vast amount of poor quality of dairy products made and put upon the market to the detriment of everybody connected with the business. The price received for the best grade is necessarily affected by the amount of poor, off-grades offered.

How to eliminate this undesirable factor becomes an important matter. It must be largely a matter of education and the forces now at work trying to uplift the dairy business to a higher plane, while doing good work, seem to be inadequate to stop or lessen the evils complained of. Among other things that have been suggested to bring about a better condition of affairs, is the license system, applied to factories and makers.

The power to issue a license, carries with it the power to revoke the license, to make, and enforce necessary regulations in order that the objects sought may be accomplished. In order to make a license system constitutional, it would have to be a part of the police regulations of the state enforcing the sanitary production of foods in order to conserve the public health, or public morals, and escape coming in conflict with the provisions of the constitution, providing that taxes levied must be uniform. It was first suggested to license the makers only, but it would be manifestly unfair to ask a maker for certain qualifications and expect him to produce the best results among unsanitary surroundings, or from unclean, unsanitary milk. To accomplish the results sought more must be asked of the factory or maker than the mere payment of a fee, as in the case with the barbers of Wisconsin, as it is reported that any one having

one dollar can obtain the necessary license. In the case of factories, it should be required of them that they be so located that efficient drainage can be provided, or where natural conditions do not permit, compel the installation of the septic tank and sub-sewage system of drainage. That the buildings be kept in a clean, sanitary condition, and the equipment be of such a character that it can properly do the work required of it.

Especially is this so in the case of testers and glassware, numbers of which are antiquated, not being provided with any means for ascertaining if the necessary speed is being maintained; glassware not correctly calibrated and acids lacking strength.

Under such conditions, it is obvious that justice, as between patron and patron, or patron and factory, could not be done. Buildings, it is thought, could be compelled to be provided with adequate facilities for ventilation, too often neglected and the importance of which is not appreciated; reports of work done, rendered monthly, so that it could be seen whether patrons were receiving their just dues, and makers reporting tests correctly. The building of new factories in neighborhoods already well provided for, could be discouraged; and the quality of milk supplied raised to a higher standard.

On the other hand it may be contended that it could raise the standard of qualification among makers, if proper examinations were given before issuing the license to the applicant. I take it, that in order to obtain the best results a division into grades, similar to school teachers' certificates would have to be made. Professor John Michaels has already made this suggestion and given an outline of the qualifications to be possessed and amount of work or time served.

He says an examining board should consist, let us say, of three of the leading butter or cheese experts in the state. The requirements for the different grades should be as follows:

For Third Grade Certificate.

1. Theory and art of butter making.
2. Testing.
3. Bacteriology.
4. Arithmetic.
5. Composition of milk and its products.
6. One year's experience (no official inspection).

For Second Grade,—Average standing 70.

1, 2, 3, 4, 5, and 6, as for the third grade, with average of 85.
7. Bookkeeping.
8. Judging cheese, butter and starters.
9. Two years' experience (official factory inspection).

For First Grade.

1, 2, 3, 4, 5, 6, 7, 8, and 9, as for second grade.
10. Feeding and breeding of dairy cattle.
11. Veterinary science.

The above was not submitted as an inflexible cast iron scheme. It was offered simply as a starter.

By following this plan, or something along similar lines, it would be entirely possible, it is argued, to eliminate the poor makers by refusing them licenses. It would be necessary for the successful applicant to possess a knowledge of up-to-date methods in handling starters, acid tests, milk testing, refrigeration, sanitation and the hundred and one other things that go to make up the successful maker. It is also obvious that some men could readily pass an examination of the character proposed who might fall down when it came to the practical application of the principles involved. Vice versa, the practical man might not be able to shine in a written examination, so that in order to do justice to all a combination of the two must be had. I take it that the results of a license system, as herein contained, might be satisfactory to the many, but the largest part of the problem, is yet to be discussed, and that is, the administration of the necessary rules and regulations.

South Dakota has a license system for its factories and makers; Michigan has a system of registration that is not compulsory; Maine requires the licensing of all operators of the Babcock test. However, these states have a very small number of factories as compared with Wisconsin, and it necessarily follows, the larger the number the greater the difficulty in enforcing the laws. It is estimated that Wisconsin has about 1,200 creameries and about 1,800 cheese factories. Every one of these factories would have to be inspected once, yes, twice and even three times would be better. As Prof. Emery, I believe, has estimated that a man can not properly inspect more than four factories per week; with fifty working weeks, it follows that the outside figure

for one man, one visit to each factory, would be 200 factories. This is believed to be an outside figure; but even taken as a basis, it would necessitate the employment of fifteen men to do this, and if visited twice, it would take thirty men; if we allowed fifty factories to one inspector, which would be a more reasonable number, then not less than sixty inspectors would be required; this constitutes quite a number.

Necessarily, in whatever department of state these inspectors are placed, a number of clerks would have to be employed, also, in order to properly take care of the office work. Now, suppose a factory man should refuse to take out a license, it would necessarily take the inspectors time to visit the factory, swear out complaints, attend court, and no one who had not had the experience with them can properly appreciate the amount of time consumed. Or, suppose a license has been issued and upon visitation the factory was declared unsanitary, or for some other reason it was deemed advisable to revoke the license, naturally this action would precipitate a conflict into court, which would entail an expense to the state and a waste of the inspector's time.

The makers who are now at work, might refuse to take out licenses and it is doubtful if they could be compelled to quit the business on that account.

So far, I have treated the subject in a general way. I will now summarize, in part, what I have already said and will treat the subject more specifically. We are face to face with the question, "Shall Wisconsin cheese factories and creameries embark upon a new, radical and revolutionary policy of requiring the licensing of factories and makers?"

The first question that confronts us is: What is the purpose of such a license? What end is to be accomplished? Let us first consider the licensing of factories. In the licensing of factories, so far as I can see, there are only two definite ends to be accomplished: 1. To fix a standard in the character of the factory or building itself, and in its entire equipment, including its sanitary conditions and surroundings and mode of operating, that must be maintained in order that a license be granted and allowed to continue in force.

If this is to be considered the purpose to be accomplished it does not require a sage to foresee innumerable intricacies and hindrances in the way of its fulfillment. Who is to prescribe the conditions that must be fulfilled before a license will be issued? If these specified conditions are to be insisted upon,

then it seems inevitable that each one of our 3,000 creameries and cheese factories must be inspected before the license is granted.

This would require a large number of inspectors and as the license, in each case, would be dependent upon the judgment of each man, it does not require a prophet to forecast an enormous amount of irritation and friction at the very outset. The meaning of this is, that a vast effort and expense would be incurred in operating this very big piece of machinery. Should we accomplish anything more than merely run the big machine?

But if it is said that licenses should be granted to all cheese factories and creameries upon application and then revoke the license unless the specified conditions are fulfilled, the reply must be made, that this would involve more difficulties than the former proposition.

It is a well settled principle of law that no one that is to be deprived of his property without the process of law. No one, under the provision of the constitution of our state, can be clothed with the arbitrary power of revoking a license in such a case without the right being reserved to the person who holds such a license to appeal to the courts to sustain him in his right to continue business. This would open the way to endless litigation.

Would such a system be premature? Would such a policy at this time serve to promote the best interests of our cheese factories and creameries? May not our competition in neighboring states be wishing, with a wink of the eye, to see us set out in such an undertaking? Will endless irritation and litigation be promotive of the best interest of our cheese factory and creamery interests. It is a wise people who before going out to war, sit down and count the cost.

2. The second definite end proposed to be accomplished by such a license system is the securing of a fund to provide adequate inspection. Probably this latter purpose has had more to do in arousing interest and discussion in this question than the one heretofore stated. If factory owners pay a license, they will expect in return frequent inspection by competent inspectors. Unless this is given, endless friction is inevitable.

If the number of factories to be inspected by each inspector is limited to fifty, so that frequent inspections can be made, sixty inspectors must be employed. To be effective, these men must be thoroughly competent. If inspection is made by incompetent inspectors, no improvement is to be expected. Im-

provement through inspection can come only when the inspectors are thoroughly competent. If the blind lead the blind both shall fall in the ditch.

But to secure and retain competent inspectors, they must be paid a reasonable salary. Estimate the yearly salary and expense of each inspector at $1,800 nd the total cost to provide sixty inspectors makes the sum of $108,000. To secure this fund from licenses would necessitate the annual payment by each factory and maker combined $36.00. This calculation leads us into such figures as to make the most enthusiastic and courageous advocate pause and consider.

In discussing this question, this one proposition must never for a moment be lost sight of, that a licensing system *that fails to provide ample and competent inspection, must prove disastrous.*

3. Let us next consider the licensing of makers.

The ends to be accomplished by licensing the makers must be either (a) The increasing of their efficiency; or (b) The raising of a fund to secure adequate inspection.

Let us consider the last named object first. When I consider the long days, the unhygienic conditions under which most of the makers work, the many masters whom they are required to please, and most of all the very inadequate pay which most of them now receive and when I recall my own experience as maker, I find that I rebel against standing here and advocating that we should add to the present unequal burdens of the makers, by compelling them out of their meager stipends, to pay an annual license fee to enhance the quality of the product and thereby enhance the income of producers.

Let us now consider the licensing of makers for the purpose of increasing their efficiency.

There are 3,000 of them. If licenses are to be granted only upon examination, the problem of administering such a law at once confronts us. Power to do this must be granted some person or board. To conduct these examinations involves a large amount of work and expense. Then, too, the 3,000 makers must be put to large expense by loss of time and expense of travel in attending these examinations.

Then if they neglect or refuse to attend these examinations prosecutions with their expense and irritating troubles must follow, and can they be compelled to take out a license? Will the possible good that could be accomplished by this system

more than counterbalance the harm it would do? Is it sure to do even that?

But if we are to grant licenses to all makers at present employed, what improvement in efficiency is to be thereby secured? To revoke a license when once issued, would involve us in the same difficulties mentioned in revoking a license to factory.

In short, is not this whole license question one of those theories that sounds well when first talked about, but which when carefully considered in all its relations and effect fails to commend itself to our more deliberate judgment as a workable plan?

Instead of directing our efforts along the line of this licensing system, whose radical and revolutionary character is such and whose objectionable features appear so many and so great, that the practical hope of securing such legislation is infinitesimal and the prospect of making any substantial progress under it, if the legislation could be secured which seems not very probable, is so small, shall we not, at this time be more wisely acting the part of practical business men by directing our efforts to securing a substantial increase to the number of inspectors now employed by the state—a plan that is evolutionary rather than revolutionary, a conspicuous success of which plan is afforded by the state of Minnesota.

The prospect of securing by direct appropriation by the legislature, of a substantial number of thouroughly competent inspectors at reasonable pay, was never before as good as now for Wisconsin.

The governor of the state is on record as saying in public addresses that he is in favor of increasing the present force of the Dairy and Food Commission by such a number of competent inspectors as will afford adequate inspection to all the cheese factories and creameries of the state, and place Wisconsin in a position in this respect second to none of her neighbors. There can be no doubt that he will make such a recommendation in his forthcoming message to the legislature. The prospect seems very hopeful that legislation can be secured this winter to a very substantial increase in the number of thoroughly competent inspectors to the dairy and food commission.

It is known that the governor is in favor of a law defining the qualifications of such inspectors and requiring that inspectors shall be practical cheesemakers or buttermakers, skilled in the technical work of cheese factories and creameries, compe-

tent judges of cheese factories and creamery products and versed in modern scientific and practical dairy knowledge. A bill of this character will in all probability be introduced into the legislature.

Does not co-operative efforts along this line give greater promise at this time of achieving the great ends for which we are striving, to-wit, adequate and competent inspection of our cheese factories and creameries than does directing our efforts to the establishment of a radically new and untried system.

DISCUSSION.

The Chairman: Now, we have the whole afternoon for this subject if we need it, and before we begin on the discussion I wish to announce that ex-Governor W. D. Hoard has arrived, also Mr. H. K. Loomis, who has had charge of the Wisconsin dairy exhibit at the St. Louis world's fair, and also Mr. H. C. Everett, one of the prominent dairymen of Wisconsin, and I am just going to call on them for a few remarks before we take up this discussion.

Mr. Monrad: Let them talk on that.

The Chairman: I will call on Ex-Governor Hoard first.

Ex-Gov. Hoard: Mr. President and Gentlemen of the Convention: It is related of an Irishman who was crossing the ocean, that he got tight and fell overboard with the conceit that he could swallow all he saw in sight, but it is also related that after a very exhaustive trial he concluded that he was mistaken, there was more water there than any one Irishman could swallow. It is also related of an old farmer that he sat down in the middle of a very large barnyard to milk a heifer in fly time and that she kept switching her tail in his face, and that he was a great deal annoyed, as a man has a right to be, at such unseemly disregard of the proprieties of the occasion. Thinking he would put a stop to this matter, he tied her tail to his bootstrap. He records his subsequent experience by saying that he had not been going round that barnyard one end first and then the other, more than a dozen times, before he "seed where he had made a mistake."

Now, the first story may well be taken as an indication of the size of this proposition which is before you and me, the second story may be taken as an admonition not to sieze hold of every

remedy which is presented for the difficulties of the case, for sometimes it will result like the tying of a heifer's tail to your bootstraps.

Wisconsin creamery and cheese factory interests have grown beyond the adequate administration of the men who are interested. Now that is true. They have grown beyond the adequate administration. I may sit down in my little sanctum in Fort Atkinson and strive to comprehend the situation. I think maybe by virtue of long familiarity with the growth of the state in this particular, that I know about as much concerning it as most men, but I only have to think on the proposition about five minutes to find that I cannot adequately comprehend it. It cannot be comprehended from any one man's standpoint. Shall we do anything, or shall we go along and do nothing? Shall we trust to luck and keep our powder dry, and pray God for the direction of our shot, or shall we do something to correct some of the evils, and largely the evils of ignorance?

I have been very much interested in the whole presentation of this question. On the surface I have been rather inclined to the idea of licensing cheese factories and creameries, and I will tell you why. Not so much for what it would do to the cheese factory and creamery, as what it would do to the man who makes the milk. Something is needed all the time to lift that man up so he can see himself as others see him. See himself as he stands in relation to the enterprise and to the market conditions and all that; see himself as he stands as an important factor in the outcome of this problem, something all the time is needed. The majority of the men who make the milk in Wisconsin are ignorant men, a great majority are ignorant men concerning the principles of dairy husbandry, they are ignorant men concerning cows. I do not care if they were born in a cowstable and swaddled in a cowstable and brought up with cows, those men could know a vast deal more than they do know to their great profit. Those men are ignorant concerning the environment of a cow, according to the best judgment of their day and age. If you do not believe it, look into the cowstables of nine out of ten men, smell them and see what they are like. Look at the cows, see how they are smeared with their own filth, see the unsanitary condition, see the work that these men do, and men should be judged by their works, not by what they say, so I am right when I indict the intelligence of a large majority of men who make the milk of this state.

But what are you going to do about it? So far there has been but one avenue of approach to their intelligence and that is by the spirit of persuasion. What the law can do I do not know. It never did very much for me. It never educated me but very little; I never got very far into its clutch; I do not know what it might have done for me if it had sent me to school at Waupun for a series of years, it might have done me some good, but as a rule, punitive measures do not appeal to the education of men.

Now, what can we do? What have we done? Where are we today as compared with where we were in 1870, when we first commenced this work? Far and ahead along the road of progress, yet I think we are a great deal more dissatisfied today with the situation than we were then, because we know more. Now, I think that we can do something along the suggestions that have been made by Mr. Moore. We must remember that every inspector that is appointed must go out into his field as an educational force, like a schoolmaster. That he must have tact, that he must have the power of conciliation and friendship in him; that he must convince people and that he must feel that he stands there as a missionary dealing with men who see not the truth. Now, such a man as that cannot fail to do a large amount of good. I am decidedly in favor of legislation in this state which shall increase by a score, if necessary the inspectors and instructors among the dairymen of the state factories and creameries of the state; I am decidedly in favor of that, I can see that ground and see what we can get out of it. Further than that I can not see, until I get a little further along so that I can look.

I want to congratulate you cheesemakers on the very successful outcome of our representation and exhibition at St. Louis. I do not know whether you cheesemakers are to blame or not, or whether the factories that you represent are to blame,—hardly a man of you ought to have one penny's worth of credit, not one penny's worth of credit. Do you know why? Because you compelled the commission of the state of Wisconsin very largely to purchase cheese that should represent Wisconsin. All of the cheese that was to represent the first exhibition had to be purchased, the last year's make; you did not take any stock in us, you did not trust us a cheese's worth on the proposition, hardly. Some of you did come forward, but the cheeses were entered in your name, and the commission stood there as a vicarious offering, Christ-like, in your behalf. Now, is that

enterprising, boys? Is that the right spirit? No, you know it is not. You know when a commission comes forward composed of men such as that commission was composed of, who wanted to put the dairy interests of the state way on to the final betterment of every one of you, you know that that commission ought to be met with a generous and hearty response on your part. I do not think that you looked at this thing hardly in its true light. I don't indict you for being opposed to your own interest, not that, but I just want to scold you just enough so that you may think that I am not dead in love with your past record entirely.

It is to me a source of wonderful gratification that we took the position we did in regard to our cheese in St. Louis. It was to me a source of great humiliation that other states were enabled to distance us in regard to our butter. I do not like to accept the proposition that Minnesota is a smarter butter state than we are, and do you know you can correct that? Every man of you when you go home go to work among the people in his respective neighborhood and begin to operate on the members of your legislature and say to them, "Put Wisconsin in as good a position as any state in the union with regard to this matter," it lies with the legislature to do it. Think of it, Minnesota appropriating $18,000 a year,—why, it is a bagatelle when you think of what Minnesota gets back. It is a bagatelle. It is really $30,000 Mr. Emery says. I guess I was dating several years ago.

It is easy to be penny wise and pound foolish, and you cheesemakers have got to the point of vantage, you stand where you can affect public sentiment, if you will do something yourselves. You can take hold of the voters in each of your respective localities, and go to these men and work yourselves upon the legislators, it is wonderful what a little activity will do. Just think waht we did in fighting that oleomargarine question. We collected in driblets about $30,000. We were up against $50,000,000 with the $150,000 pool in Washington, and do you know how with that little money that we had we became so powerful with congress? We snowed Washington under with postal cards. It is astonishing, when the voters reach out, drop a postal card to their members of the legislature and to congress, what influence it has, and that was the reason that we were enabled to take that proposition through congress, and finally the president signed it and it became a law. You know the power of public sentiment, that is what is behind movements

of this character, it is the power of public sentiment that moves everything of a public character, and the creamery buttermakers and the cheesemakers have it in their hands, the power of public sentiment for the betterment of this industry, if they will use it.

Gentlemen, I congratulate you upon the auspicious character of our industry today, and the future which lies before it. We are going to become a great cheese state when this great northern wilderness shall have been changed over and shall blossom like the rose. I went up the other day and invested in 160 acres of that land in anticipation of what it is to be; I suppose it will get there in about seventy-five years, and I will see it. I am very much pleased once more to have met you face to face, and to tell you of the hope that is within me, which is still unabated, and I hope will continue so long as I am in the field.

Mr. Everett: I am interested in this Association, as in all kindred associations in this state. I believe in Wisconsin as a state; I believe in Wisconsin climate and Wisconsin grass and water, perhaps more that I believe in Wisconsin farmers, the producers of milk. I believe in them as good men, as honest men, as men trying to do right, but from this discussion I am satisfied that not all of them are doing just right, not all of them are furnishing to you good milk, and we all know that you cannot make good cheese from poor milk. I believe in education, that we would rather educate the farmer to do the right thing, how to feed and care for his cows, how to take care of the milk and deliver it to the factory in proper shape, then to force him to do it. But I am in favor of some means whereby you may receive better milk, and if it cannot be done otherwise, then I should favor a law that will compel him, and I am in favor of licensing factories, and I am in favor of licensing the cheesemaker, I believe it is right; I believe it is coming to that, I believe that it is necessary to the dairy interests and to the cheese interests of our state. You are doing good work, you can do better, you should do better, it is up to you very largely to educate the farmer, to educate the patrons of your factory. You must become larger intellectually; there will be no time in your career when you can sit down, when you can stop and declare yourself sufficiently educated as a cheesemaker. There will always be an opportunity for you to broaden out, for you to widen out. I want you to be sincere in your work, I want all of you to be honest men above everything else, and to do by others as you would that others should do unto you.

Mr. H. K. Loomis: I had no thought of saying anything to you here at this meeting, but I am glad of an opportunity to say a few words. You must recollect that in the first place we only had 16x8 feet exhibit for our cheese at St. Louis. I bought cheese for the June exhibit made in 1903; we were obliged to do that, as you all know that cheese made early in the season is not so good. I have no facts and figures with me, because I did not expect to say anything and will have to give you in a general way my recollection of the exhibit. In buying this cheese, I bought from dealers. I tried to have them send in one box from a factory, but when they came in there were probably two or three of the same kind, as high as six boxes from the same factory, and I could only enter one of those cheese, so in June we probably had in the neighborhood of fifteen or twenty exhibits. This was much larger than any other state had and our scores through the season were far ahead of any other state. In July, about half of our cheeses were sent in from factories, not enough to fill the shelves, I had to buy, I was fortunate in finding cheese in Wisconsin to fill those shelves and we had a creditable exhibit. There was one man, and the only man from this state, who in June sent in his cheese, the rest of them were all taken from the dealers. In September we had in the neighborhood of twenty-five exhibits; nearly all of those cheeses were sent in by factorymen, a few I had to buy. Our scores were remarkably good in September. In October all of the cheeses were sent in by the factory and the highest scores that I have ever known at any exhibit, I do not think there were more than one or two that scored under 90, from that up to 99½. I spoke of the one man who sent in his cheese in June, that man was the only man that sent at each exhibit, each of the four tests. There was a mistake or misunderstanding in regard to men sending in cheese to the exhibit; the rules did not mention the fact that each exhibitor must exhibit at each of the tests and I was not aware that this was the case until after the June exhibit. There was a decision by Mr. Taylor, chief of the department; that cut us out, not only us, but all other states from getting medals or awards, and this one man I speak of who sent in his cheese in June, sent to each of these tests and received a remarkably high score at each test. This was Mr. P. H. Kaspar of this state. He is the only man that I know of that received a gold medal in the United States. Our scores, as I say, in October, were very high indeed, and I think Wisconsin is to be congratulated.

The Chairman: If there is nothing more, we will take up the subject introduced by Mr. Moore. We have all kinds of material here for the liveliest discussion we ever had, it is the live subject in the state today, the licensing of factories, or getting at some way of doing away with the use of unsanitary milk in factories and with unsanitary factories, and we have some good live men who believe in licensing and some that do not believe in it. I want you all to take part in the discussion; do not be afraid to tell what you think. I am going to call on Mr. Robert Johnston, of Ontario, if he is present. I would like to get your idea of the system that you think is best. Mr. Johnston is a brother of our deceased President Johnston, you all knew him.

Mr. Johnston: Mr. President, I must say that we have not had the license system in vogue in Ontario. It has been debated for the last four or five years, but there is a paper to come up at our convention on the subject of licensing factories; it is a pretty broad subject to deal with, and I think Mr. Moore who has given you that paper has set the whys and wherefores before you in very simple language, and I think that a radical change in regard to licensing your factories, with the number of factories that you have in your state, would probably create a great deal of confusion. With us, especially in Western Ontario,—our factories are largely in Western Ontario—they are controlled or superintended by the Dairymen's Association and we average about one hundred tons of cheese, so you see we would have less difficulty in putting the license through, and I think the majority of our cheesemakers would raise no particular objections to licensing factories. But the principal objection was this. Our system of instruction as I outlined to you this morning in a short talk is on the syndicate principle; that is, we have our factories grouped, say, twenty-five to thirty factories in a group; we cover practically the whole cheese district in Western Ontario. There are a few outside factories, but our cheese factory district, is, as I may say, in groups; that is a certain section of our country where the cheese is made. Outside of that we have no scattered cheese factories at all. You take it through the southern part of our country, along Lake Erie and through the townships of Oxford and Norfolk, where they make more cheese, I suppose, on the same area, than any other part in the world; where we have eighteen factories in a township, where they average 125 to 150 tons to a factory, where every man is a dairyman and outside of those districts

we have no factories of any consequence. If there are any, they are small factories. I attended an annual meeting about two weeks ago in a district right outside of our cheese district, where a factory had been in operation for twenty-eight years and its output was about 50 tons of cheese, they had not grown a bit, they were not in it. Now, take it in our factory districts where all the money that is made on the farm is made out of the calf, they do not pretend to run a cow farm, and still in the concentrated cheese district, the money that is made out of the farm is made out of milk, and farmers do not sell anything off the farm; in fact, they buy the feed. It is up to our factories this year; we had the proposition; we called our meetings in each district or each syndicate covered by the instructors, and we get the boys together; we say, "Here, we want so much money off you this year." We have been taking $10 and they all readily paid it. Our minister of agriculture said to us when a deputation went down last spring to see him, he said, "You will have to get more money, you will have to pay $15, your eastern friends in the eastern association pay $15 and you are just as good people and you will have to get it." So we got the boys together and said, "You have to pay $15, you may have to pay $25, but we want $15 from you this year." There was not in all our meetings a man that made any objections.

Now, the proposition is this, whether you pay $15 in a license, or $15 the way we are doing, we do not care which, only there is this point, that if the maker pays it in a license he comes under government control, it gives the instructors the power of the sanitary inspector, and he can use a little more pressure in making a man, if he has a factory with unsanitary conditions, he can put a little more pressure to bear, he brings a certain amount of law with him and say, "Here, you have got to do this, or we will shut you up." We are getting rid of that kind of factory, it has got to be a by-word with us, if a man has a factory in bad shape, "Why don't you burn it down?" You cannot get a buyer, he is the last man to sell his cheese, in fact, good makers will not make for him. We have a factory at North London, about eight or ten miles from there, and I went out there to inspect a lot of cheese, September and October cheese, and he had a pretty decent lot of cheese made up, but the factory was in bad condition, and when the last day of November came, the cheesemaker picked up his things and went away. I said to the owner, "Why did you not keep him?" and he said, "He did not want to stay." I said, "No wonder, why

don't you burn your factory down, or get it in right shape?"

Now, we are weeding out those unsanitary conditions. Before our going to work most of our factories are owned by private individuals; they were all started on the co-operative plan, I suppose, nine-tenths of them, and they all got into private hands, and even with the bad year that we have had this year, low prices, lower prices than you have here,—we cater to the export trade, you have 80,000,000 consumers in this country, we have only 6,000,000 in our country and our consumption is small per capita— but even with our low prices,—and the cost of producing a pound of cheese, and putting it in shape for the market is getting higher with us every year, labor is getting higher, material is getting higher, even with that we spent $125,000 in improvements this year. A factory that is built nowadays is equipped with neat curing rooms where we can keep the temperature at 40 degrees if we want to; they are built up today with cement floors, either cement or brick walls, factories that will cost $5,000 to $8,000. You see you cannot afford that, you cannot with your small patronage where you have so many factories. We had a lot of factories at one time, but where there were five factories then, there is only one now. I understand some of the difficulties you have in the northern part of the state where your country is rough and it is hard to get around and your roads are bad. I must say I have seen the worst roads in Wisconsin that I ever saw in my life. I thought we had some bad ones in our country, but I had not any realization of what a bad road is until I had experience with some of the roads in northern Wisconsin. I understand the difficulty you have and what we are trying to do in our cheese district is, where a man keeps one cow, he can keep two, and where he has two, he can keep three.

Mr. Moore: Won't you tell us what influences were brought to bear to bring about that consolidation?

Mr. Johnston: It was simply education; we started out years ago.

Prof. Emery: You did not stop and say, "We are all good enough as we are?"

Mr. Johnston: We do not say that now, we only think we have just started, we think we have got onto the right plan now of education.

A Member: What was the method you pursued in consolidation?

Mr. Johnston: In the first place, we put our instructors on

the road; we had seen the need of education, that is, to try to get the farmer to understand that he could make more money if he sent good milk, and if the milk were all sent to one factory instead of half a dozen that he would only be paying for keeping up one establishment and that the maker could make his cheese for less money.

Mr. Moore: Is this $15 paid by the maker or by the factory?

Mr. Johnston: As a rule that is paid at the annual meeting; in some cases the maker pays half and the patrons pay half; in most cases the factoryman pays the whole thing.

Mr. Moore: It seems to me that is the way it should be.

Mr. Johnston: Certainly, we put it to him in this shape,—if the value of your cheese product for a year is raised by having the use of this instructor one quarter of a cent a pound, who gets the benefit? You pay your maker so much, a cent a pound, that is the average price for the making.

Prof. Emery: What success would you have had in introducing a license system if you had not had the force of instructors in the field so many years?

Mr. Johnston: I do not think we could have done it at all, I believe you have to educate your people; it is education we have been after all the time.

Prof. Emery: Now, what are the laws in your country,—and when this license is issued, is there some one man who can be clothed with the power that when he says, "You cannot have the license," that that ends the matter, or will those people have the right to appeal to the courts?

Mr. Johnston: They would certainly have the right to appeal to the court, they certainly would, but still where the laws would give a power to close up a place if they considered it was unsanitary, not a fit place to make an article of food in, it would have its effect.

Prof. Emery: We have laws, we can prosecute men now.

Mr. Johnston: But you do not enforce them.

Prof. Emery: May I state one word? I resent that remark. We do not enforce it in all cases, because we have not a sufficient force to do it; but we have prosecuted men for that very thing and very recently we have done so, and we are criticised for being arbitrary and one case was cited this morning where one of my assistants went into a factory where he had to cut down through the dung to get at the floor, and where he said to the man, "If you manufacture cheese there another day, we will prosecute you," and he has not manufactured another

particle of cheese. He went to another factory and did the same thing and half a dozen we have prosecuted. Not long ago we prosecuted a man and he came before a justice of the peace who was a relative of his and this relative found him not guilty, but he had to go out of business just the same. But with 3,000 cheese factories and creameries and with only three inspectors to look after them, you will see where the trouble is.

Mr. Johnston: I understand you are in bad shape that way. I will tell you another thing, that you must have the co-operation of the cheese people when you enforce any law; if you are going to license your factories you must have the co-operation of every license holder, and his assurance that he will co-operate with you and see that the law is enforced. If you do not, it will be a dead letter.

Prof. Emery: We have to have a public sentiment.

The Chairman: The Chair wishes to make an apology. I overlooked the fact that we have a man who was to handle the discussion and push it along, that is the editor of the *Cheese and Dairy Journal*, which every cheesemaker ought to read. I do not tell you that you should subscribe for it, I am just telling you that you ought to read it. Mr. G. W. Rankin is here, and I am going to call on him to continue this discussion.

Mr. Rankin: Mr. President and Gentlemen of the Convention: I want to say first of all that I have been intensely interested in listening to the discussions that have taken place at this convention, and it is with more or less trepidation that I venture to offer any opinion, coming to you as youthful as I am in experience along the line of cheesemaking, but after what has been said upon the question of licensing cheese factories and coming from men who have made an eminent study of it and a thorough study of it, their judgment is certainly the judgment to be followed by a body of manufacturers such as you represent here. What little thought I have been able to put onto this question leads me to think that better ends could be obtained in the state of Wisconsin by a license system. Whether that is to be true or not only practical experience can determine, and as Mr. Johnston has well said, they are far ahead of us in Canada, and he has made the statement that he believes that a license system could not have been put into practical operation there until the people had been educated up to it by the method which they have employed, that is, it has not been compulsory as yet. Possibly that is the better system for

us to pursue, but be that as it may, I believe that the conditions as they exist in Wisconsin today are at the parting of the ways, that we have either got to go farther from where we are at the present time, or we will begin to go backward. Our competitors to the north and to the east are bound to obstruct us unless we do something.

Now the evils that exist in the creameries and cheese factories have been discussed in these meetings and dairymen's meetings for years, and what has been the result? There has never been any concerted action taken. It is eminently true that our excellent dairy school, with the co-operation of the Dairymen's Association and kindred associations has done excellent work with the facilities at hand, but under the very best conditions their work is insufficient and unsatisfactory. Three thousand creameries and cheese factories to be inspected by three men, as Superintendent Emery has just said. The maker who is ambitions may receive a visit from an inspector—

A Member: If he will wait long enough.

Mr. Rankin: Yes, if he does not, he has got to fight it out the best he can.. Now, suppose a commission is created embodying thirty or forty or fifty inspectors, I believe the results that we are looking for will not be attained until this matter is put under the control of the state. It is the salvation of our ignorant cheesemakers, patrons and buttermakers that we are after, and as long as they are left to themselves they will continue in their pernicious practices. But as soon as you can frame up certain measures requiring certain standards and make them mandatory, then you are accomplishing your results.

Now, the best way to get at that,--I do not pretend to analyze, but I do believe thoroughly in requiring certain standards, the same as required in any other branch of scientific work or education. In Canada, as Mr. Johnston has said, the tendency is towards licensing factories, and, if I recollect rightly, that was embodied in aresolution at the last Dairymen's Association at Ontario. Whether they will evolve that question or not, remains to be seen, but under our own conditions, what are we going to do about the matter? Are we going to continue to come here year after year and discuss the evil conditions that exist, and go home and do the same thing over and over again? How are you going to accomplish that end unless you do bring in the strong arm of the law, and when I say that I know I am opposing a great many opinions here, but I am doing it just for the sake of discussion. Suppose that we create a system

and require every operator and a cheese factory or creamery to pass a certain standard examination, is there anything wrong about it? Does not a teacher, a doctor or a lawyer have to pass an examination? If he cannot pass it, is he in a position to make a standard food for the people? Put that man into a factory, is there anything unjust? Why, if the owners or operators of that factory do not equip it and keep it in a sanitary condition, they do not permit them to operate unless they comply with those two given conditions, we will manufacture a food in this state that will be above that of any competitor or anywhere in the country. In my correspondence with cheesemakers all over this state, I have a universal expression favoring the license system: I have but one adverse opinion. Now, why cannot we go one step farther? Suppose we have our inspectors, and right here, I believe the inspector must be an instructor, he goes through the factory and inspects conditions, he must follow that inspection immediately by instruction to be of any or much value, and naturally, in dealing with extreme cases, if he has not the police power of the state to say thus and so, he is going to fail in his attempt and that is proved by our present condition. There is not a cheese man in this audience that has not had trouble with the sale of his cheese, he has been dissatisfied with the grading which his cheese has received. Why could not we extend this one step farther, if we have men appointed as inspectors and instructors who are thoroughly qualified for their positions, who are appointed without any political pull anywhere, why not give these men the power to grade this cheese? Will not this eventually work into such a system that in every locality that is a cheese producing locality, that warehouses will spring up through co-operation?

We will suppose this cheese is concentrated here at given times of the week; we have an inspector for a certain number of factories whose business it is to look after those factories throughout the season. If he were to pass judgment upon that cheese and grade it up and put upon it the stamp of the state, official stamp, the same as many other products are inspected, would that be a helpful thing in the sale of this cheese? I simply offer that as a suggestion. I believe thoroughly that this thing will be worked out some way. I have great faith in the future of the dairying interests in this state, but when we consider that all around us,—when Canada is so far ahead of us, when our sister state of Minnesota and in many other states the users of the Babcock test are required to pass a rigid ex-

amination, when right in our own state the man who shaves you or cuts your hair has got to display a sign testifying to the sanitary condition of his shop— is the cheese and butter product of this state of less consideration than the heads of men? I believe we should go forward with zeal and judgment in this matter and work out something along the line of increasing the efficiency of the dairy forces of our state and I think it is for this Association before they have reached their final session to thrash out this thing and offer some kind of a resolution expressing the sense of the majority upon this very important question for reference for our coming legislature.

Ex-Gov. Hoard: I just want to offer a suggestion right there. The remarks of Mr. Rankin are eminently proper, and in the spirit of a prophetic optimism which is useful always, and which must underlie all progress, but now for a practical suggestion. Friend Johnston speaks of Canada; I know something about Canada, because I have done lecture work in Canada for twenty-five years and I know something of the progress of Canada and how she has come up, and may it not be due to the fact that they have taken hold of the proposition of organization? He tells us that they are organized into syndicates of twenty-five factories. We have never attempted any organization here, we have never had any inspectors to put over an organization if we had one, and I do not know as we would know an organization if we met it in the middle of the road. Now, we are just like a rope of sand, but Canada has gone on step by step, taking the most obvious thing, the next step, the next step, and is there any better road for us to follow? I think not. Is it not a fact that what we lack today is this one simple thing, organization, that when once we have this organization, supposing we organize into syndicates, then may it not be possible that our license system would then come as a logical sequence, as Canada hopes to effect. Canada has no license system yet, it is entirely a matter of projection; do not misunderstand me, I look forward finally to a license system, but the first step must be taken first.

Mr. Clark: I can best express my position in this case by telling a story about a boy with some kittens. He went to a Congregational minister and told him he wanted to raise some money for a good purpose, and all he had was these kittens to raise it on, and he told the minister that they were Congregational kittens. The preacher had no use for the kittens, but he gave the boy some money. A short time afterwards this

minister was visiting a friend who was a Presbyterian, and the same boy came there with the kittens and told him he wanted to raise some money on these kittens and he told this Presbyterian minister that they were Presbyterians. Well, the other minister stepped forward and said, "I thought you told me they were Congregationalists." "Well," the boy said, "they have their eyes open now." That is the way with me. At first I thought this license business was all right, but the object is to improve the milk that is brought to the factory, as I understand it. Now, by licensing your operator, does that improve your milk, will it improve your milk? If you get these instructors and they tell me, a cheesemaker, how to make cheese out of poor milk. I think not. A polluted spring never will give good water, you must go to the source and clean the spring out. Now, we have laws making it a misdemeanor for a patron to deliver milk at a factory that is unsanitary. Is that any good? Where it has been enforced it is. I think that if we tried that law which gets after the farmer, that we will not need to license the operator or the factory.

Mr. Johnston: In regard to our system of instruction,—we used to have a system of inspection, that is where we have a few inspectors going around once a year visiting a factory, and he would test the milk to find whether it was whole milk or skim and if there was found to be any skim milk, to prosecute the patrons for doing that kind of work, and they were called inspectors and instructors. So, one spring we went down to our minister of agriculture, and told him we wanted so much money; he said, "You cannot get any more money for inspectors, if you want to do that kind of work, we do not want that; instruction is needed far worse than inspection." We have cut the inspection business out altogether, thus, if a patron will want his milk tested, the instructor will go through the milk with his lactometer and test it. That is in the factoryman's hands, we are devoting more time to the farmer. We take cases, sample bottles to make the whole test, we are getting the factorymen to put in galvanized iron fittings for the shed; they go and heat these curd tests to the required temperature, take a sample of each patron's milk, all the poor samples, find out who has sent bad milk and they go to the farmer and tell him his milk is making bad cheese; it is money in his pocket to raise the standard in his milk. In that way our instructors have done a great deal of good, but we have not half enough; what

we are tryng to do is to get one instructor for every ten or twelve factories.

Prof. Emery: May I say a word in regard to those words "instructor" and "inspector?" I have been a teacher most of my life, sometimes my mind goes along pedagogical lines, but to my way of thinking, instruction as applied to cheese factories and creameries involves, first, inspection. As a teacher, when I bring my class out to be instructed, I must make inquiry, I must test this class to ascertain their present knowledge, and when I find out where their knowledge ends, there my instruction must begin. This is inquiry, this inspection if you please. When I go into a cheese factory or creamery, my first duty is not to give instruction in the abstract way, or shooting off at random, but I am to go as an intelligent expert and I am to know that factory from beginning to end, I am to know every pump, every pipe, every vat, everything connected with making a good product of cheese or butter, and I am to observe this critically, and if it is not up to the highest possible standard, I am then and there to call that maker who is responsible for it, to my presence and point out to him the error and the wrong condition of things. Now, I say that instruction involves first close, careful inspection, and a good instruction cannot be given without that inspection. So, too, inspection involves instruction. If I go into this factory and look around and satisfy myself that things are not in good condition and go off and leave it, what do I accomplish? It is a waste of time and money. If I know my business, I go for the purpose of finding out where improvement is necessary and point out that to the maker. Now, when, after this has been done and done repeatedly, if you please, say a few times at least, and if the factory man then, or the maker, fails to respond, then I hold it to be the duty of the state to come there with the right arm of the law and to say to him, "You have no business to put a product of that kind upon the public's table, and the state says to you, 'You must cease to do that.'" I think the matter of inspection or instruction is indifferent, if we find out the meaning of the word, find out what is involved in this act.

The Chairman: I would like to hear from Hon. D. R. Curtin. Mr. Curtin is a Calumet man and has been connected with cheese factories.

Mr. Curtin: It is almost impossible for me to say anything to you here this afternoon, that would be of any great benefit

to you after those learned gentlemen in the profession have gone over it and thrashed it all over. I will go back to Mr. Moore's article and it started out very favorably and came along to the place where it went into figures, mathematical problems, what is the cost, etc., speaking now as an advocate of licensing cheesemakers or factories, just as you put it at this moment, and we find that he runs it up into hundreds of thousands; we want about forty or fifty inspectors. I will agree with Professor Emery that we do not care what you call those men, inspectors or instructors or policemen, as long as they are qualified to do the business and do it right. We do not care what department they work under, or who is at the head, so that the people of the state of Wisconsin and the factorymen and the consumer are all benefited along that line.

I wish to say this now, I refer to your paper in the way of figures, they go on and show that it will take a corps of thirty or more inspectors under the present system. They must be provided for in the way of payment also, there was not any estimate made of the cost of that number. And I go back to this gentleman's statement this morning, when he said you must have co-operation and he tells us that in little Denmark that the people themselves help themselves and then the government comes in and helps them there. You have been speaking of Canada, I spent five years over there. Now, the object of you gentlemen is to benefit your business right here, all you men that are right before me, benefit yourselves, benefit your patrons all along the line of improvement. Now, I want to ask you men here that have made cheese for ten or fifteen or twenty-five years, do you expect to get something for nothing? Are not you willing to go right down into your purse and contribute your portion and have the state contribute its portion. I could say more along that same line, gentlemen, but if you are capable of making a good cheese and you are qualified to go out and tell Mr. Farmer, "I know my business, I know that your milk is poor, and if you do not improve I will not take your milk, and no other cheesemaker will take your milk," do you know what that will do? It will put us in position to syndicate, because it will put those men, those dirty fellows, out of business.

Ex-Gov. Hoard: Make a syndicate out of them?

Mr. Curtin: Out of the dirty men, yes, turn them out of the business, that is the idea you advocate, Mr. Moore; at least you spoke in that direction. There is where we will get larger factories and better factories.

Ex-Gov. Hoard: You are all right.

Mr. Curtin: Yes, I think so, the state of Wisconsin will do its duty. Now, that is the condition, whether the factoryman contributes his portion, or the state pays the whole thing, it comes out of about the same coffers, doesn't it? The taxpayer has to furnish it, yes, it comes out of the people, you cannot get away from that question, it comes out of the people, whether it comes directly or indirectly; we have to produce the means to furnish those payments and pay those men. Now, gentlemen, what you ought to do is to get together, both cheesemakers and factory inspectors and factorymen, all get into line and do something, and if you want to get a good corps of instructors and inspectors, men that are capable men, men that are qualified, men that can say to your buyers in the state of Wisconsin, "Mr. Buyer, I know that is a good cheese, I know that we put the No. 1 brand of Wisconsin on that cheese, then we will not have that a little later, that which is likely to come up about every ten days, 'two cheeses off on color, one cheese off on texture, another cheese off on something,' " that is the idea, gentlemen. It will finally work on to where we will concentrate and have our markets and we will get closer together all the way through. Now, gentlemen, do not think that I am in favor of getting into your pockets, or trying to injure you in any way, but I will say that if you will attempt to help yourselves, the public will try to help you also, and it is an old saying, "God helps those who help themselves," if you are not afraid to help yourselves, why, then you are all right. If the people of Denmark are not afraid, I do not see why the great number of butter and cheesemakers of Wisconsin should be afraid to contribute their mite towards the expense of maintaining a corps of competent men in the field. Gentlemen, I am not a public speaker and I am not prepared to talk very much, so I thank you for your kind attention. I don't know whether it is a misfortune or good luck, but I am going to be at Madison this winter, and I will do all that I possibly can for your interests.

The Chairman: Now the question has come up, as it usually does, what will the expense of this thing be, if we carry out anything of this kind, and I notice you are figuring something like a good many farmers do when they figure on an improvement, that is, they will figure, "What will this thing cost?" then they stop figuring. They do not stop to figure what the thing is worth, and that is equally as important. Now, we know that our dairy products in Wisconsin are worth something like

fifty million dollars, and we know that our losses on account of abnormal milk and on account of imperfect work in factories are enormous; some of them come directly, and probably the biggest ones indirectly. Now the question is, if we had a system, say for instance a license system in force that need not require an examination perhaps, just simply as an aid to enforce the law on sanitation that we have got, to create co-operation to a certain extent; then if we reject dirty milk, a farmer cannot get rid of it in any other factory. Then we would be co-operating, which we never have been able to do. Then we would get a great deal better class of milk in nearly every vat every day in nearly every factory in Wisconsin, if we could reject that dirty milk, simply have that license as an aid to enforce the laws, to prevent mistake from taking dirty milk and to prevent people from making cheese and butter in dirty factories. In that way, in a few years' time we would have a great deal better average quality of cheese and butter. There would not be the direct loss, there would be a better reputation, there would be a greater consumption and demand and higher prices. Now, the question is, how much would it enhance the profit of our dairy products if we had those things in force, what would it be worth?

Mr. Curtin: Millions of dollars in the course of years.

The Chairman: It would be worth a million dollars in one year.

Mr. Bachmann: It seems there has been a great deal of interest manifested through the press during the last season on this qustion. Now, of course the ideas of our learned men and the views of the practical men who have to work in those factories every day are somewhat different. It seems to me that our learned men take it for granted that the farmers and also the wayback cheesemakers, as you might call them, will do these things when they get instruction. Now, I do believe that the instructors in the field now know very well that they can go and hold meetings and maybe three or four farmers will be benefited by their talk and the rest of them, while they are all right that evening and agree with them that evening, after he is gone, they will say, "Oh, that don't amount to much that we knew twelve years ago, we have brought milk to the factory fifteen to twenty years, now, you are the first one to kick." That is why this question of licensing makers and applying a little law to some farmers and makers has come up. Now, I believe in instruction thoroughly, do not understand me that

I believe in using force when anything can be accomplished by instruction, but I tell you a little bit of law goes a mighty long way, sometimes without being applied at all, just a little fear, or you might call it in plain language a "bluff."

The Chairman: Let us try to get at what this will be worth to us a year.

Mr. Mason: I should think it would be policy to go to work now and discuss the way of getting at this inspection, whether the inspecton can be made with the police force or whether it cannot, whether that would be policy for us. There is no doubt but what the inspection is worth every dollar that it has cost the state, but whether it would be practical to start it or not, that is another question. It seems to me we are talking at random, I cannot catch it. Some seem to favor police force, some seem not. Now, which is better?

The Chairman: Professor A. J. Glover has had wide experience in Minnesota and Illinois, and has now come to Wisconsin, he has his eyes open now, he must be a Presbyterian, and we will hear from him.

Prof. Glover: No matter what my religious belief may be I am desirous of seeing the cheese factories of Wisconsin get better milk. When we meet an old farmer that has been bringing milk for twenty years to the factory and when we try to correct some of his shortcomings and he replies to us that he was delivering milk many years before we were born, reminds me of an incident of a lady attending a cooking school. The instructor was pointing out to this lady something about the cooking of food so that it would be more easily digested. She was quite indignant when she was told she did not cook her food properly, and she said, "Don't I know how to cook? Haven't I had ten children born to me and haven't I buried ten of them?" Now, the conditions of many men's minds that are delivering milk to our cheese factories are a great deal like this woman, they are not able to comprehend their duties toward the cheese factory, and toward the cheese industry, they must be taught, and in order to teach intelligently we must inspect. You cannot tell a man how to do a thing and where he is at fault unless you look into his fault and into the way that he is doing the things upon his farm. We may stand at the creamery and talk as cheesemakers, we may use every persuasion possible, that possibly we may hold up our cheese half a cent above what we are getting if we can only get a better milk, but that will influence only a few. There is a great number of our people who are

absolutely indifferent to progress and they will not listen, and in order to reach that majority, or that number, if you please, we must have laws and we must have men of intelligence to enforce these laws. Not haphazard laws, not rudely applied, nor oppressively, but after every persuasion, and every honorable method has been used, to get these men into the right way of doing things and they still persist in their old ways, then is the time to apply the law. I have been an inspector, have served in Minnesota, and the very fact that I had the power of enforcing these things was quite enough many times to straighten out a factory that was receiving very poor milk. I have gone into communities where they were rejecting milk, I have had them go into the back part of the creamery and hold a meeting and come to me after they had discussed it, where I had rejected the milk and they said they would take the milk to the next factory if I did not take the milk that I had rejected. I said, "Gentlemen, if you take that milk to the factory tomorrow morning, I shall see that that milk is rejected and see that each one is fined." They said, "Do you go to other places?" and I said, "Yes, that is my business, the state of Minnesota has sent me here to try to get a better milk for this factory, and to teach you the right method of caring for your product." It changed the situation, they began to see that they must clean up or keep their milk at home, and that, as I understand it, is what the cheesemakers and people are interested in. What the cheese industries are trying to do now is to get a better grade of milk to your cheese factories, so that you can make a higher grade article of cheese. Now, the men that go forth must be endowed with police power and must be capable of instructing in cheesemaking before we can accomplish what we are trying to do.

The Chairman: So far the consensus of opinion is that we need considerably more inspection, we are all agreed on that, inspection, instruction and some law to go with it. We are somewhat divided on whether to have a license or not. I tried to find out, to get somebody to put an estimate on the benefits of this improvement, when we get it. If we place the value of our dairy poducts at $50,000,000 a year and if we enhance the value of it, directly or indirectly, only five per cent, that would be two and a half million dollars a year, but it would be probably as much as ten per cent; that would mean $5,000,000 a year. I am certain it would enhance it more than five per cent, I do not know how much more, but we could afford to spend

considerable money in order to arrive at those conditions, figuring from the standpoint of profit.

Mr. Clark: I would like some advocate of this license business to state how licensing a factory and operator is going to improve the quality of the milk. When they do that, then I am in favor of license.

The Chairman: We have a law that if you are operating a factory, it is against the law for you to take dirty milk and make it up into food products. Now, then, my idea in regard to licensing was not to require an examination to start with, because we would have to let everybody make cheese anyhow, because we have not hardly as many cheesemakers as we have factories, counting in the scrubs, so we need those that we have got, but simply license them as they need to enforce the laws on sanitation.

Mr. Clark: In licensing them, you give them police power?

The Chairman: No.

Mr. Clark: How are you going to prevent them from bringing dirty milk?

The Chairman: There is no danger in the bringing of the milk at all, the danger is in accepting it and making it into an article of food and if you continue to accept it, we revoke the license.

Mr. Clark: You would be as liable to do that today as you would be then?

The Chairman: But it puts the burden on the state, where, if you revoke the license, it puts the burden on you.

Mr. Clark: Now, to illustrate, I hire out to you as a hack-driver, you put on a balky horse, would my license drive that horse?

The Chairman: I never was in the hack business.

Mr. Curtin: I will say to satisfy the gentleman there is not much of a comparison between a hack driver and a qualified cheesemaker who is capable and should understand chemicals and machinery and the different compositions and how to manufacture a cheese.

Mr. Moore: He is making the comparison between the balky horse and the patron.

Mr. Curtin: There I agree, it is all right.

Mr. Clark: I may be a first class hack driver, but I could not drive a balky horse if he did not want to go.

The Chairman: But the license would remove the balky horse.

Mr. Curtin: If you appeal to the owner of this balky horse to kill him, you would get a chance to get a good team to drive.

Mr. Clark: If you license him, some man has to watch him. I may break that license a thousand times a year and you not know about it, just the same as I can accept milk and you not know about it. I just want to answer you in one thing, and that was, I wanted to ask you if I was working for you, you owned a factory, I am running that factory for you, you are paying me so much a month, milk comes to your factory that I reject, he is a friend of yours who brought that milk, he appeals to you and I lose my job,—I have known of instances where good cheesemakers have lost their jobs because they have refused milk of men that were friends of the owners of the factory.

Mr. Scott: The idea as it stands now is, we all admit that we need more instruction, I think that is the general feeling, we all need instruction.

Mr. Clark: In what?

Mr. Scott: In cheesemaking and care of milk, farmers need instruction in the care of milk, cheesemaking includes the care of milk. The idea,—we have now three instructors, and the state cannot afford under the appropriation now to furnish any more. If we want to have more instructors, we will have to raise more money. Now, we know humanity generally, if we do not have to do it, we will not go out and hire as many instructors as we have, but if we pass a law that every factory shall be licensed, then every factory pays its share of this instruction, then we raise the money for more instruction. Now, as it is carried on as Mr. Glover says, he goes around and inspects the milk in one factory and he rejects the milk there and as he said if those fellows say, "Well, if you won't take it, they will at the next factory," and says, "I go on to the next factory and inspect the milk there, too," I don't see why that is not all right. Then we would have instructors enough to go around, now we have not, and we have not money enough to pay for them. It appears the very idea of this license business is to raise some money so as to pay for this instruction.

Mr. Moore: Make the business pay for its own instruction.

Mr. Everett: It seems evident that we do not all understand what a license is for, and just how it will work. It is a fact that we have inspectors now to inspect and they have a right to prosecute for a lack of duty if after prosecution the man continues in business as a cheesemaker or as a dairyman or as a

proprietor of a factory, as the case may be, but suppose that I own a factory and that I have invested in that factory all the wealth that I possess in the world, perhaps a great deal of money involved, an inspector come around and finds that I am not living up to the law, he revokes my license and I am out of business and my factory is out for all time in the state of Wisconsin, that is the benefit of a license, it drives out of business the incompetent factory owner and keeps him out of business.

Prof. Emery: Now, if you had your money invested in that factory and an inspector came around and revoked your license, would you stop there, or would you take that matter into court and see whether that inspector had the right to throw you out of business?

Mr. Everett: Personally, I would sell out and get out of the business.

Prof. Emery: You are knocked out; the question is whether that revoking of the license stops there. We have got to face the practical administration of this license system, there is nothing which runs itself and you cannot clothe any man with authority to revoke a license and have it end there. Let me tell you a little experience we had in Mlwaukee on the enforcing of law in justice courts or other courts. We had information that a druggist was mixing wood alcohol with certain tinctures and my assistant, Mr. Baer, went there to purchase some of this mixture for analysis with a view to prosecuting him for selling adulterated drugs, and he began to make inquiries and had a little suspicion and finally it developed that Mr. Baer was from the Dairy and Food Commission and then he refused to sell him that drug. Now, if he had sold him the drug, Mr. Baer could have sealed that in his presence and brought it to the chemist under seal. The law provides that if a man should refuse to sell to a representative of the Dairy and Food Commission a drug or any kind of food, he is liable to prosecution, but he refused and we had to resort to sharp practice to get some of the substance and Mr. Moore went down and got a prescription from a doctor and got a boy to go in and get it. We had learned from inside information of the establishment that when some poor Polish woman came in she got some of this tincture with wood alcohol in it, but other persons would get the good drug, and he sent the boy in and he succeeded in getting it and brought it out, Mr. Moore got it, but he had to go away in order to seal this, could not seal it in his presence,

but our official chemist analyzed it and found it contained wood alcohol. We prosecuted the druggist, it was a plain case, we had no doubt whatever on the subject, not a particle, but this man takes some tincture and he comes into court and swears that this is the same tincture and he gets a chemist to analyze it, this chemist analyzes it and says there is no wood alcohol in it and the court dismisses the case. Now, that is this matter of administering this thing in court, and when we get this license business and expect to use the arbitrary power, we have a misconception of this thing in the matter of administering the law.

Our laws seek to protect everybody in his property and individual rights and will not clothe any man with the arbitrary power of going and saying, "You are knocked out of business." He comes into court and the law says, "You cannot deprive him of property without due process of law," and the question is, is Wisconsin ready to start out on a policy that requires endless litigation; shall we accomplish more by spending our energies in lawsuits than in other directions? That is a question that we have seriously to consider. Now, we are up to a proposition and I at first recommended a license system. Two years ago when I first came before this Association I had seen very clearly the necessity of an increased force to administer the laws as laid upon the Dairy and Food Commission, and I suggested to this Association, and during the same winter I suggested to the buttermakers at their convention, the need of increasing the force. I did the same thing here last winter and I referred to the practice of our Canadian brethren in this syndicate commission, and I then suggested that probably Wisconsin might get commissions for inspection and guidance to somewhat improve conditons. I did the same thing at the buttermaker's and dairyman's convention. Now, it occurred to me that possibly we might adopt the license system as a means of utilizing that idea and I suggested that in private conversation to different gentlemen, but not in public and that was with a view to acquiring the funds whereby we could get a larger number of inspectors; but since then I have given it a broader consideration, as we all ought to do, taking a scientific view, I have investigated, I have considered, I have obtained facts and I have tried to reason from these facts and there comes in this question of administration.

Now, the question of the administration of the license system as I see it from the standpoint of the administrator is a broad,

large problem. If we had only five or six hundred factories, it would be a different thing and then I would not see anything in the mere fact of a license that is going to promote this matter. I think Mr. Moore's paper set this forth clearly, that the purpose of the license must be one of two, either to establish improved conditions as a basis for granting a continuance of a license, or else to secure money for increased inspection. Now, up to two years ago there had been a string around the Dairy and Food Commission from the time it had been established under Governor Hoard's administration, it had never expanded one particle, every department of the state had grown, had expanded, but the Wisconsin Dairy and Food Commission in its growth had not kept pace with the growth of other departments of the state, nor with the expanding necessities and purposes of Wisconsin. Two years ago, with the most persistent and insistent—I do not know whether it was always consistent or not, but it was in season and out of season, if necessary, there was work put forth to get some expansion of that commission and we came out with an increase of two men for the whole state and an assistant chemist, and these two men are given three dollars a day. It is a meagre pittance for the services that those men are rendering and I could get only $50 a month for the chemist. The sentiment was not strong enough for us, and it was discouraging to think that the state would not come to our relief and make an appropriation to which the commission is entitled, to which these great interests are entitled, to which the public is entitled to have its daily food taken care of as it is in neighboring states, and in my point of view I was looking for some means whereby the money could be found to provide for this inspection, and I thought I saw it in the license business. Now, I think public sentiment is changed. The governor of the state said to me, "I will stand back of any proposition that seeks to get by direct legislation a good and adequate inspection ofthe cheese factories in this state to put them so that they shall be second to none of any of the neighboring states," and I have his word and he keeps his word, he keeps his word always; but we will take that recommendation to the legislature this coming winter.

Now, I say, the question is up to us as a practical question, in view of the public sentiment toward a direct appropriation to increase the number of inspectors we already have in the Dairy and Food Commission. Shall we work along that line, or shall we now stop on that line and give our efforts in the direction of a license which is—I am not using it in an offensive

sense, but you will see the force of it—which is creating another large piece of machinery to be manipulated, to be carried forward and will take a large amount of the force needed, clothed with the power to do it, to carry on that machinery itself.

Now, I have studied this diligently and I have reached the conclusion—my conclusion may not be the same as yours, but when we are in discussion we ought to be frank, open and candid, we ought to tell our convictions as the results of our investigation,—and it seems to me that coupling this proposition with that of Professor Carson's yesterday, a point that has escaped the attention of this convention, I think, more than it has attracted the attention it should have received. He made this suggestion, that if we could have an effort to try this matter of the syndicate system as in Ontario county, in say, one or two districts to try the experiment and see how it will work, that he thought it might be the means of improving our conditions, and I believe he is right in it, but we have not the force now. If we could increase this force of inspectors, and they must be competent, I want to remind you of the sentence that Mr. Moore made, that any license system that fails to recognize two things will bring disaster; we must face this now, when we are embarking on a system, any license system that fails to provide two things will prove disastrous,—first, ample inspection; and, second, competent inspection.

Inspection must be ample. If these men put their money into the license system, they are going to demand that those factories are inspected frequently, they are going to demand that that inspection shall be competent. Now, to do that at the outset when you demand the license from every factory and every maker it will require not less than sixty men, and you cannot and you ought not to get those men, you ought not to get competent men to do that work for their salary and their expenses, for less than $1,800 a year, and that means money. Now, all large enterprises do not jump into existence in a minute; our greatest enterprises are those that begin with a little mustard seed planted in the ground, but they grow and expand and become a great tree. Our great institutions in the state, our great dairy interests, have been a matter of growth, and if we could increase the number of inspectors in the Dairy and Food Commission by ten, twelve or fifteen competent men this coming year, we should make a splendid showing, we would make splendid progress, added to those we already have, then I believe that the Dairy

and Food Commissioner, under those conditions, would have a law back of him that he would be authorized to detail two of those men to work along the line Mr. Carson has suggested and say to them, "Go out into the most favored districts in the different parts of the state and find there twenty-five or thirty factories and work among them and see if you can build up this idea of a syndicate system and try to experiment in that way and suggest a line of policy to those men and that holds out to me a greater prospect of advancement than any other line of effort that I can see. I believe that the sentiment is strond today, will be found to be strong in the state, to make a direct appropriation to provide inspection for our creameries and cheese factories. We are not treating this question simply from the basis of the cheese manufacturer or dairy producer, this is the question that concerns the public; it is the public's food, you are placing it upon the public's table and they have a right to know that there does not lurk in their food the germs of disease or the germs of death, it is their concern, it is the business of the public in these matters to protect the public health and we all know that whenever there is filth in human food there is danger, and I think we ought to put this matter upon a broad basis as serving not only the dairy interests, but serving the public interests. That is the way it lies in my mind today. Now, say, have I modified my views? Yes, I confess I have modified my views. I would not be a man of progress if I did not, if I got one notion in my head and held it, I would not be a man of progress, I would be a man of one idea. This is the light in which I see it today, and I believe that line of policy gives promise of greater success to the dairy interests of Wisconsin.

Mr. Luchsinger: I have been very much interested in this discussion and in the remarks by Professor Emery and the other gentlemen. I would not, however, want it to go out from the tenor of the remarks made, that the conditions complained of are general in the state of Wisconsin. I think we are proud to say and believe that those bad conditions are exceptions, and it is the exceptions only which we are called upon to deal with. Were these conditions general that we are trying to remedy by license or by inspection, where would our right to the honors that we have attained as being next to the greatest dairy state in the Union come from? Where would these high scores be deserved; where would the medals and the honorable mention at the St. Louis Exposition and at other expositions for the last twenty-five years, where would the deserving of those things

come from if these conditions were general? I think you will all agree with me that they are exceptional, that the great majority of milk producers, the majority of factories in the state of Wisconsin are very nearly as they should be. We never can get anything perfect, the majority must be good, or we would not have the reputation that we have had, or the successes we have had.

Now, as to license. I am not sure that I am in favor of licensing factories, it may be one of the means of obtaining a better grade of cheesemakers and compelling the building of a better grade of factories, but I hardly think it will result in improving the milk supply. I agree with this gentleman here, the milk supply is the first thing to be considered, a wholesome milk supply,—I will tell you why I think so. Aside from cheese factories and creameries, there are also milk condensers in the state of Wisconsin, they have in my opinion got into the right ideas; when we go into one of those institutions it is clean as clean can be from top to bottom, the neatest housewife in Wisconsin does not keep her house in cleaner condition than the milk condensing factory is kept, and they understand the business from A to Z. Now, the only inspection that they have is the inspection of their milk supply, our milk condensing factory at our city of Monroe has a man who goes among the farmers who supply milk to that institution and he inspects,—inspects not only the barns, the stables and the cows, but the water which they drink, the tanks in which the water is gathered, the pastures on which they feed, the food which is fed to them in the winter, everything is inspected, and just as soon as any man brings any milk to the milk condensing factory that is off in flavor, off in smell—and it is detected mostly by the smell—it is sent back and there is no appeal, that is one of the conditions on which they receive the milk, and pay the price for the milk. In doing that they are absolutely sure of getting good milk every day of the year. They have no favorites, they are not afraid of losing their jobs by sending any one back that has poor milk, and as a consequence they have a reputation for their milk. Everybody has heard of the Borden milk factory and that its goods are good from one year's end to the other, and their reputation is as it should be. Now, I think if the same principles were applied to the cheese factories and to the patrons who bring milk to those factories, let the inspector or the instructor make it his chief business to see that the milk

supply is pure, I think the trouble will largely cease. It is merely incidental after all, this supplying of bad milk to the factory; it does not occur every day in the year, nor every season, once in awhile some accident may have happened on the farm, accidents may have happened to the grass or the watering of the cows, which may have resulted in the production of a bad mess of milk for two or three days. Those things are accidental and the milk supply in the factories of the state is not dirty every day, the farmers are not all dirty and do not always bring dirty milk, therefore I think that we deal with exceptions and this thing should not go out as if the whole state of Wisconsin needs this warning, I do not want that impression to go out of this convention at all. I agree with Professor Emery perfectly that whoever is appointed instructor, whether you have a dozen or fifteen, should be perfectly competent, neither politics nor religion nor any other reason than absolute competency should enter into the appointment of inspectors or instructors. Then let him do his duty without fear or favor, but let it be his first instruction, his first inspection of the milk of the farmer, let him produce a pure supply of milk and then three-fourths of the trouble will be done away with.

Mr. Wolfinger: I fully approve of Professor Emery's views in regard to having more inspectors. I have had this experience,—some years ago we received some very poor milk and I could not get an inspector, I sent for him time and time again and it was impossible for him to come around, so I got a friend of mine, who was an entire stranger to the factory, and told some of the fellows that there was a state inspector from Madison, an assistant inspector, and he went around and told them what to do, and told them how to keep their cans clean and if he found anything in bad condition, he told them that if he found such bad conditions again, they would be liable to be fined, and the very next day our average testing vat showed a little over .3 per cent higher, and the cans were shined up in a great deal better condition than before and we never had hardly any trouble after that, and I gave that man five dollars, and I am sure at the end of the term I had made one hundred dollars out of that five dollars, and the farmers also made money, because afterwards we had very little trouble with poor cheese. That puts me in mind that a little after that, we started an association in that county, which was a great benefit to every cheesemaker that joined at that time, and I think some of those who were in it will bear me out in that statement. But as we were

weak and did not have funds enough and we needed outside help and we were not recognized at headquarters at Madison, it simply went to sleep, it is not dead yet, but it is asleep. I think for every fifty factories there ought to be an instructor and it would be a great benefit to the makers and to the farmers.

Prof. Glover: I was somewhat moved by what Mr. Luchsinger said in regard to the condensing factories always getting good milk. Now, it is true condensing factories are doing much to secure the best milk that it is possible to produce, but I have talked in the last three years more or less with their superintendents, their cry is that they are not always able to get as good a quality of milk as they wish they could get, and moreover, situated in these same cities where there are condensing factories, you will find creameries and sometimes cheese factories that are receiving the milk that the condenisng factories will not take, and their product is placed upon the market as human food. Now, whose business is it to see that these cheese factories are cleaned out and that the farmers who come to those factories are kept clean? It is the state's business, and the condensing factories, what have they done to get this good milk? Now, they have sent men right to the farmers' barns and to their buildings and have said to them, "You fix this thing so and so, or we will not take your milk." They have offered a premium upon it, and notwithstanding all this, they feel the need of the state to help them enforce the laws which they already have, they cannot do it single handed, even as great a company as Gail Bordens are; the state has a place to help get better milk to the creameries and cheese factories, yes, and even to the condensers.

Prof. Emery: I want to make a reply to a few remarks in regard to the impression going out over the country of the generalizations made here. If my friend had been here the first day of this convention, he would have heard me say to this convention that I appreciated the excellent work that was being done in very many factories in this state, to all that it had achieved in St. Louis, and all that, and assured them that that was appreciated, that we wanted more of it, but if we are content with present attainments, we shall never make progress. If it is true that we have today reached the climax and things are all right we do not need any inspection, but I said to them then that later I should talk about improving conditions, and now I should dislike to have it go out from this meeting that we feel satisfied with present conditions in the cheese factory or

creamery, I think that would be much more unfortunate than to have it go out over the state and over the country that we are not satisfied with present conditions, because the present conditions are not satisfactory. We have about one-sixth of the factories represented here today, where are the other five? We are in a condition that we need to improve. The fact that we have won the scores in St. Louis, the fact that we have so many cheese factories that are doing as good work as anybody, that we have a lot of splendid makers, does not change the fact that Wisconsin cheese factories need to improve in their products, and I go back to the proposition in my first paper this morning, that it will be a distinct step forward when we all recognize that there is need for every factory in the state to improve, and I believe that is the spirit which we ought to have, that every day and every year we ought to make progress, rather than the spirit that we are pretty good fellows and we are good enough anyway.

Mr. Noyes: I admire the plan that Professor Carson put before us yesterday in his paper, also as it is brought out in this dissecussion, and I believe if we go to work and get more inspection and if we go to work and incorporate, put our factories in sections of thirty or forty to start with, or make it fifty if you please, and let one man cover that territory and try to build it up that way. Now, as a manufactruer, I would be willing to go down into my pocket and give so much for my factories, and so much for the man's individual pay, $25 a year in order to make it that, to help start this, to get at it in that way, I believe we will accomplish more in a better way than we will to go to work and license to start with. Then, if we can build up a license afterwards satisfactorily, that I believe is the proper method.

Now, if we go at it with the law and tell the farmers, "You have got to become so and so immediately," you will stir up a great deal of bad feeling; when we approach them the other way and educate them and show them where they are wrong, work with them in a friendly manner, I think we will accomplish results faster than we will to license first.

Prof. Carson: I have had two years' experience as an instructor in Canada, and while they had no licensed factories in Ontario, they have a certain amount of law behind them. Now, their laws are made by themselves, they have not national laws. I may say their laws are made by the makers themselves. Now, many and many times when I was on the road as instructor, I

wished that I had the power of the laws of the country, and I think if I had had I would have made some of the instructions to be followed up quickly, but the point I could not lose sight of was, if we started to enforce the country's laws, we would lose the co-operation of the farmer. Now, the way we made our laws was this,—when we went to a factory and found the factory was not in a proper condition, we pointed out to the manufacturer or owner what were the conditions of the factory and where he needed improvement, but we did not stop there. We went to the farmer, and I always made it a point to seek out the most influential farmer that was sending milk to the factory, and besides teaching him how to take care of the milk, I pointed out the defects of the factory also; he went and told his neighbor, and the effect of the matter was, that the farmer got after the manufacturer and said: "Here, you have got to bring this matter up to a better condition, our instructor tells us your curing room is not right and that we are losing money on account of your carelessness," or else, "Sell the factory to us, or we will build a factory." Now, I do not see why we cannot start syndicating our factories on a small scale, say, take two districts, place instructors in those districts and work this thing up. This has been done in Ontario and they brought the condition of the cheese up so far that the buyers in Montreal are grabbing for the cheese and offering half a cent more than the other districts are receiving. Our Dairy and Food Commissioner has told us that they have a power that if a man is manufacturing cheese in a dirty factory to say to him that "if you continue to manufacture cheese in this building, we will fine you for every day you will make cheese." Now then, if we have our instructors on the road, and they fill out a report every day in regard to a factory, and let them send a copy to the Dairy and Food Commissioner, and if he will act on that report, I believe we will have all the law we want, if we only enforce it.

Mr. Mason: We have 86 factories in Manitowoc county, and I think there are eight boys out of the eighty-six factories that are here today. Now, if you go to work and bring up the system that each factory shall pay so much, I presume likely there would be eight factories in Manitowoc county that will contribute towards the instructor, and the other seventy-eight will go without anything.

Now, as a proposition before this convention, I am going to say, can we not ask the legislature to pass a law that will compel every cheesemaker and every buttermaker in the state to pay a

license of half a dollar a ton on the cheese, and whatever the proportion might be in butter, towards this fund for inspectors; now is that right, would that work? I am just bringing this up, simply because I would like to get at some system or something that will go to work and make it practical and go to work and bring every cheesemaker and every buttermaker into it. Now, if I give $25 towards inspection and I am getting 3,000 pounds of milk; if Mr. McKinnon gives $25 and he is getting 10,000 pounds of milk, it is not fair, you see it is unjust, Mr. McKinnon is getting just as much good as I am and he has pretty nearly three times as much milk to do it with. If we are working on the percentage plan we are making it more equal.

Mr. Everett: It may be all right for our friend elected to the assembly here to hear this kind of talk, but it is bad talk to go out to the general members of the legislature that the cheesemakers and buttermakers are going to furnish the means whereby to pay for inspection. Let the state pay for inspection, and if we are going to license dairymen and cheesemakers, let that go in some fund, but do not let it become known that the other is to pay for inspection, because the average member of the legislature will say, "Very well, let them pay for their own inspection," and we will get nothing.

The Chairman: I will call on Mr. Moore to make the closing argument on the subject.

Mr. Moore: Mr. Baer told me the truth when he said there was a great deal of interest in connection with this license question, and I feel honored to think that he entrusted the opening of the subject to me. It has been said here by Mr. Rankin, the gentleman who was to open the discussion, in regard to the barbers being licensed in the state of Wisconsin, that the making of food products was surely as important as the licensing of barbers. I grant you that is so, but I would like to ask—I am sorry he is not here—what advantage has the license been to those who are compelled to go to barber shops to get shaved? Has it increased the efficiency of the barbers? Has it kept their shops in any better sanitary condition? I was in the city of Janesville, and I got shaved in a—I was going to say butcher shop, but I take it back, it was a barber shop, and those barbers told me that while there is an officer of the board, or barber examiner in that city, they have never had an inspection. Why? The main reason is that the dollar they pay towards that inspection hardly pays the salaries of the men who are supposed to do the inspecting, naturally they sit in their offices and take

the money and there is very little inspection that the barbers get, and I guarantee that if you gentlemen go out and visit the barbers and talk to them as I have done since this subject has been put in my hands, you will find a very much dissatisfied lot with the license system. At one time the mayor of the city of Janesville was taken into court by the barber's board, but the barber's board dropped the case; for what reason I do not know, but I presume they did not have anything to back it up, or they would not have dropped it.

Now, the state has embarked in educational work along various lines; it has given to the Dairyman's Association a great deal of money in years past, and that money has been expended in a way that has brought a great deal of money back to the state. The cheesemakers and the state are felicitating themselves from the fact that they earned so much honor at the World's Fair. In that connection I would like to read the editorial in the latest issue of the "Cheese and Dairy Journal," it says:

"The writer has frequently heard the remark that cheesemakers were not nearly as progressive and up-to-date as their brethren in the creamery. Whatever grain of truth there may be in the statement, the recent educational scoring contests at the World's Fair do not seem to bear out the accusation.

"If Wisconsin creamery men are so far ahead in the matter of dairy education, why did they not make a more creditable showing in these contests? Minnesota swept the board clean at every month's butter contest with one exception. Wisconsin butter was simply not in it. But when it came to the cheese contest, Wisconsin was in evidence. From the first to the last month, she out classed and out ranked everything, making a clean sweep from beginning to end. This is not so bad, when we remember that only ten years ago Wisconsin cheese was in disgrace the world over."

There is a reason for Wisconsin leading in cheese; I tell you what my opinion is, and that is, because the Wisconsin Dairyman's Association has had in the field for the last ten or fifteen years instructors in cheesemaking. I think from the talk Ex-Gov. Hoard gave you, and Mr. Loomis gave you, it might take the conceit out of you to think that you are the ones responsible for the good scores. It seems to me if the interest of the state had been left in the hands of the makers alone, we would have been heard of no more than in the butter line. Now, I take it that the instructional work done by these men in these associations is largely responsible for the good showing that Wisconsin cheese

has made, and I think if we could work along that line amongst the creameries, we will have just as good showing.

Now, Minnesota swept the board at the World's Fair to our sorrow at this show. Why did it do it? Because the Dairy and Food Commission had inspectors sent to those creameries and kept them there, seeing that a good article was made. What did they do? They did not reject any milk,—oh no, they received poor milk there in Minnesota, but they divided the stream into two different vats, and the good milk was used to make that World's Fair butter. I have that not only from the lips of the buttermaker himself, but from the instructor of the Dairy and Food Commission of Minnesota. Now then, those men stood over that vat of milk just like a mother over a sick child until it was put in the churn and made up and shipped away. That is not the only advantage they had over us. Wisconsin shipped every one for himself and the devil for the hindmost, and they got it, most of them.

The Dairy and Food Commission of Wisconsin has three men working as inspectors amongst 3,000 creameries and cheese factories. Besides this work it has in its charge to inspect 6,000 grocery stores, 2,000 butcher shops, 1,000 mills, and I do not know how many drugstores, and if that is not work enough to do, I presume we could find a little more.

The inspection of food by an inspector is not the kind of work that it is necessary to have an expert in; he can learn that business in a much shorter time than a man can learn cheese or buttermaking. The license system, I take it, will fail to accomplish the point aimed at, and that is a better supply of raw material. I take it, if the average farmer or producer of milk was as up-to-date as the average butter and cheesemaker, we would have a better supply of milk. We have been educating the maker all the time, and we have stopped short of going back to the fountain head from where comes all this source of contamination. How to get at the man who does this,—if we have capable inspectors, through the factory meetings as Mr. Aderhold has been carrying along for years, we could do some good. I have done some work myself along that line and I know it is productive of good. But I think that if we have a larger force that we could do more; I think that the time has arrived when the Wisconsin Dairyman's Association should throw the weight of its influence and the force that it has at its command into this field into the field of instruction of patrons and inspection of the supply of milk, rather than try to instruct the butter and

cheesemaker. I think all that work ought to be put under one head. Now, I know as an instructor of the Association that I did not have the power or was unable to do as much good as I did when I was given a commission by the Dairy and Food Commission, giving me the same power as the inspector had. Is that so?

The Chairman: Yes, that is so.

Mr. Moore: Now then, if the Dairy Association would expend their force in that way and send a man out—I believe Mr. Glover did something like that in Illinois that was productive of much good—I think it would be a much better way to spend their money than to spend it in instruction in factories. I think that it should be concentrated.

Now, I am much in favor of the inspector being armed with the law; I know from my experience in the field that he can do manifold more work than he can without it.

Now, I would like to say something about the condensing plants and the reasons to my notion why they get a much better supply of milk than the average creamery or cheese factory, and that is this: The trust, we were told, are of some value. Mr. Monrad I believe made that remark, that they were forces directed only in the wrong way. Now we all know that the Gail Borden people have an absolute control of the market on condensed milk, they are the men who fix the standard prices. The farmers could get a better price than the average cheese factory could give them, and naturally they are not at all averse to taking a little extra precaution in order to obtain an extra price. If we can show the average patron that he can make more money by making a better grade of milk, make more money by getting a better grade of cheese, by furnishing a better grade of milk, then we will do some good, but the field is so much greater that we will have to have a greater force of instructors to do it.

Mr. Luchsinger said that dirty factories were the exception and not the rule.

The Chairman: He said dirty milk.

Mr. Moore: I thought he said dirty factories. Now, I had the pleasure of going through Green county with Mr. Marty and Mr. Baer one day, and we visited five factories, we did not select them, we just took a drive around from the center, and out of those five factories I think that the exception was the other way. I have stood at the intake of a great many factories taking in milk; I was at a factory just a week or two ago where

they had lost six cents a pound on their butter for a week or two weeks' make. What was the cause? Why, poor milk and cream. I was in another factory since then where they had lost a great deal of money, and almost all of it could be traced to the fact of poor milk that was being delivered to the creamery. In fact, I think that the largest portion of our loss in the creamery industry—I do not know anything about the cheese factory business—comes from the fact that we do not receive good quality of milk. I do say that the cheesemakers get a better quality of milk than the creameries do, because anything can go to the creamery.

Just one thing I want to say in regard to the number of inspectors. I believe there was an article came out in the Cheese and Dairy Journal, advocating employment at once of 40, 50 to 60 competent inspectors. I spoke to Mr. Glover here, who has had large experience in that work, and I believe I said in my paper a while ago that it is not every man who can pass a written examination as a buttermaker or cheesemaker in order to obtain a license that can go out and do practical work. I believe that thing is also true of an inspector. There may be and now are lots of men who are capable men so far as being able to make a first class article of butter and cheese is concerned, but I do not believe those same men would be able to make a success as an instructor, as a teacher. We know people who will obtain first class certificates as teachers, who make the most absolute failure when it comes to practical work. Mr. Glover, does that carry out your experience?

Mr. Glover: Yes.

Mr. Moore: How many men can we get to become competent inspectors?

Mr. Glover: I do not know; I cannot answer that because I am not well enough acquainted. I know in Minnesota it was very hard to get men that were well educated in the art of butter and cheesemaking, and also had enough diplomacy to handle this work intelligently. It not only needs a man that is capable in instructing in the art of making these dairy products, but it also needs a man who is a diplomat, who will handle it with a great deal of backbone at times, and if necessary, enforce the law. It is no small task to do those things. In my two years and a half that I was in Minnesota I had something like sixty lawsuits, and I know something of the duties and the ins and outs of this kind of work; it is not pleasant if you do your duty; and if you began with such a big force, thirty or forty, it would

be too big, I would rather it would grow into business by starting out with ten or a dozen, than to go into it with forty and make a failure out of it.

Mr. Moore: That side of the subject was taken into consideration when we commenced talking about the number of instructors. Of course we would be glad to have forty or fifty, but we are afraid when we get so many men, that the thing would be top heavy and break down of its own weight, so we would better start with a smaller number and gradually grow up with an increased force if the evidence was that we needed it.

The Chairman: I think we have got the thing pretty well thrashed over. I want to mention one little incident as to the assistance that this little law gives us that we have behind us as inspectors, from my own experience during the summer. One day I made a flying trip amongst half a dozen factories, and I found one that was very full of flies; had a nice sunny south side to it and not the least thing done to keep the flies out, and doors and windows open, and I spoke to the cheesemaker about it, he was the owner of the factory. He said, "Well, it is too much work to keep them out." Well, that did not satisfy me. I tried to prove to him that it required considerable more work to keep them out of the curd and bother with them than it did to keep them out of the factory, but he did not want to believe me. He was one of the kind that won't be persuaded, so I told him that if he did not agree to put on screens, that I would report him to the Dairy and Food Commissioner as unsanitary, and that the report would go into the printed reports from the commission and be distributed throughout the state, and some of his patrons would get hold of that and he would lose prestige; they would see that the state was getting after him for not doing his duty in the matter of sanitation and they would not be liable to listen to him when he explained, and I got to the point where I simply asked him "What are you going to do, are you going to put those screens on or not?" He said, "I don't know as I will." I said, "Well, I want to know whether you are going to put them on or not, you can do as you please, but I will report you if you do not." He said, "I don't want you to report me." I said, "What are you going to do about it then?" "Well," he said, "I guess I better put them on." Well, we need some law, that is a sure thing.

CHEESE SCORES.

The following announcement of the report of the judges on cheese was made.

Mr. President, and Gentlemen of the Convention: As Chairman of the Committee on Cheese Judging I will say that in our work we had critics who followed us and made notes which, no doubt, you will all hear of later.

The cheese scores are as follows:

American Cheese.

No.	Name	Post Office.	State.	Flavor.	Texture.	Color.	Make up.	Total.
1	Ben Radel	Richland Center	Wis.	43½	29½	14½	9½	97
2	C. F. Krueger	Mattoon	Wis.	43½	29	14½	9½	96½
3	Miss M. A. Roeder	Milladore	Wis.	44	29	14	9	96
4	F. J. Schuldes	Appleton	Wis.	45	28½	14¾	8¾	98
5	Jos. A. Roemer	South Kaukauna	Wis.	44½	29	14½	9	97
6	Chas. Mickle	Sextonville	Wis.	43½	29	15	9½	97
7	R. A. Murray	Yuba	Wis.	42	29	14½	9½	95
8	W. J. Elling	Dana	Iowa	42	26	13	8	89
9	P. E. Cranston	Sabin	Wis.	44	28½	14½	9½	96½
10	W. W. Waddell	Hub City	Wis.	44½	29½	14¾	9¾	98¼
11	C. A. Bremmer	Muscoda	Wis.	44½	29½	15	9½	98½
12	M. De Haan	Lineville	Iowa	43	28½	15	8	94½
13	M. De Haan	Lineville	Iowa	42	25	13	8	88
14	John Vogt	Freemont	Wis.	43½	29	15	9½	97
15	Fred Hadler	Appleton	Wis.	43½	29	14½	6	93
16	J. W. Grootemont	Brillion	Wis.	44	29	14½	8	95½
17	J. Hoeppner	Marion	Wis.	45	28½	14½	9½	97½
18	Jacob Stocker	Sheboygan Falls	Wis.	44	28½	14½	8½	95½
19	H. Anderson	Sheboygan Falls	Wis.	44½	28½	13	9	94½
20	Aug. Brandt	Forestville	Wis.	44½	28¾	14½	9	96¾
21	J. R. Biddulph	Providence	Ill.	43½	25	14½	9	92
22	G. J. Buchen	Antigo	Wis.	43½	28½	14½	8½	95
23	Edgar Lepley	West Lima	Wis.	40	29	14½	9½	93
24	A. J. Roycraft	Chippewa Falls	Wis.	43½	28½	14	9	95
25	Mrs. A. Schoenmann	Plain	Wis.	43½	28½	14½	9½	96
26	Aksel Bruhn	Spring Green	Wis.	43½	28¾	14	9½	95¾
27	H. M. Scott	Sheboygan Falls	Wis.	43½	28	14	9½	95
28	John Vogt	Freemont	Wis.	43½	28¼	15	10	97
29	J. F. Bachmann	Freemont	Wis.	44½	29	14½	8	96
30	Oscar Groves	Viola	Wis.	43½	29	14½	8½	95½
31	P. H. Casper	Nicholson	Wis.	44	29	15	9¾	97¾
32	G. Douma	Cleveland	Wis.	44	29	14	9¼	96¼
33	Otto A. Kielsmier	Maritowoc	Wis.	43½	28	13	8	92½
34	Julius Berg	Sturgeon Bay	Wis.	44¼	29½	14½	9½	97¾
35	Fred Lepley	Woodstock	Wis.	44½	28½	14½	9¾	97¼
36	P. H. Frawley	Soldiers Grove	Wis.	44¾	30	14¾	9¾	99¼

Brick Cheese.

No.	Name.	Postoffice	State.	Flavor.	Texture.	Color.	Salt.	Style.	Total.
1	Aug. F. Westphal....	Neosha.....	Wis...	38	37	9½	5	5	94½
2	Alex Schaller.....	Mt. Horeb.....	Wis...	37	36	9	5	5	92
3	Chas. Miller.....	Knowles	Wis...	38	38	10	5	4½	95½
4	Chas Brinkmann ..	Brinkmann	Wis...	34	35	10	4	5	88
5	R. C. Ganschow ...	Bonduel.....	Wis...	35	36	8	5	4	88
6	Middle Ridge Cheese Co	Bangor.....	Wis...	35	36	9	4	5	89
7	B. Jonely	Brownsville....	Wis...	38½	37½	9¼	5	5½	95
8	Aug. Regez	Dodgeville.....	Wis...	34	38	9	5	4	90
9	Jacob Regez	Monroe	Wis...	36	37	10	4	5	92
10	F. C. Reinhardt....	Allenville.....	Wis..	38½	37	10	4	4½	94
11	Max P. E. Radloff...	Hustisford.....	Wis...	37	35	9	5	5	91
12	F. Schueckert	Hustisford.....	Wis...	37	37	9	5	5	93
13	Casper Andregg.....	La Crosse.....	Wis.	34	36	9	5	5	89

Swiss Cheese.

No.	Name.	Postoffice.	State.	Flavor.	Texture.	Holes.	Salt.	Style.	Total.
1	Alex Schaller	Mt Horeb	Wis.	33	27	19	10	5	94
2	Mike Thoni	Hollandale	Wis.	33½	26½	18	9	5	93
3	Jacob Regez	Monroe	Wis...	33	26	18	8	5	90
4	Aug Regez	Dodgeville	Wis...	33	23	18	8	5	87
5	Gottfried Vogel ..	Mt. Horeb.....	Wis...	34	26	19	9½	5	93½
6	Aug. Regez... ...	Dodgeville.....	Wis .	30	21	15	8	4	78
7	Jacob Martin	Brodhead	Wis...	34	26	17	8	5	90
8	Herman Schoeffer...	Blanchardville.	Wis...	33	27	18	8	5	91
9	Jacob Marty.....	Brodhead	Wis...	34	29	20	8	5	96
10	Max P. E. Radloff...	Hustisford.	Wis...	33	24	19	9	4	89
11	Max P. E. Radloff...	Hustisford.	Wis...	30	22	16	8	4	80

Limburger Cheese.

No.	Name.	Postoffice.	State.	Flavor.	Texture.	Color.	Salt.	Style	Total.
1	R. C. Ganschow	Bonduel.....	Wis...	37	37	10	5	5	94
2	Jacob Regez	Monroe	Wis...	39	38	10	5	5	97
3	Aug. Regez.	Dodgeville..	Wis...	38	36	10	5	5	94
4	Peter Zumkehr.....	Monticello.. .	Wis...	38	36½	10	5	5	94½
5	Gottlieb Marty.....	Juda	Wis...	38	36	9	5	5	93
6	Christ Beller.	Mt. Vernon	Wis...	38	37	10	5	5	95
7	Henry Elmer	Belleville	Wis...	38	36	9½	5	5	93½

Sage Cheese.

No.	Name.	Postoffice.	State.	Flavor.	Texture.	Color.	Make-up.	Total.
1	J. R. Biddulph	Providence ..	Ill....	44	29	14	9	96

P. H. Frawley, Soldiers Grove, Wisconsin, won first premium, gold medal, on cheddar cheese.

Chas. Miller, Knowles, Wisconsin, won first premium, gold medal, on brick cheese.

Jacob Marty, Brodhead, Wisconsin, won first premium, gold medal, on Swiss cheese.

Jacob Regez, Monroe, Wisconsin, won first premium, gold medal, on limburger cheese.

C. A. Bremmer, Muscoda, Wisconsin, won second premium, silver medal, on cheddar cheese.

B. Jonely, Brownsville, Wisconsin, won second premium, silver medal, on brick cheese.

Alex Schaller, Mt. Horeb, Wisconsin, won second premium, silver medal, on Swiss cheese.

Christ Beller, Mt. Vernon, Wisconsin, won second premium, silver medal, on limburger cheese.

W. W. Waddell, Hub City, Wisconsin, won third premium, bronze medal, on cheddar cheese.

A. F. Westphal, Neosha, Wisconsin, won third premium, bronze medal, on brick cheese.

Gottfried Vogel, Mt. Horeb, Wisconsin, won third premium, bronze medal, on Swiss cheese.

Peter Zumkehr, Monticello, Wisconsin, won third premium, bronze medal, on limburger cheese.

The $100.00 cash premium fund will be awarded on the excess *pro rata* plan to all entries scoring above 90 points.

Every exhibitor whose cheese scores above 90 points will receive a diploma signed by the judges and verified by the President and Secretary, setting forth the score of the cheese, the

highest score, the lowest score, and the average score of all cheese exhibited at the meeting.

Respectfully submitted,

JOHN KIRKPATRICK,
Richland Center, Wis.
JOSEPH ACKERMAN,
Monroe, Wis.
Judges.

J. W. CROSS,
Mauston, Wis.
Superintendent.

J. D. CANNON,
New London, Wis.
FRED MARTY,
Monroe, Wis.
Critics.

BUSINESS SESSION.

Convention met at 7:30 Thursday evening, January 5, Vice-President Aderhold in the chair.

REPORT OF SECRETARY U. S. BAER.

Madison, Wis.

Mr. President and Members of the Association: I have the honor to report upon the work of this office for the year ending January 4th, 1905.

I beg to submit the following condensed official statement for the Association year just ended.

Total receipts	$1,810.13
Total disbursements	1,508.16
Balance in treasury	301.97

Itemized account of the receipts and expenditures for the association year, are given in the Secretary's books.

In the books of the Treasurer, Mr. M. Michels, an itemized report is made, showing the sources from which all money paid in the Treasurer's hands, were received, and the disbursements paid on orders from the Secretary and President which he holds as vouchers. These books are open for inspection at any time by and member of the Association.

The future outlook for the general success of the organization was never as encouraging as at the present time. The membership for the past year has increased nearly one-third over that of the preceding year.

In conclusion I desire to express my high appreciation and heart-felt thanks for the confidence placed in me for the several years I have served as your Secretary.

Respectfully submitted,

U. S. BAER.

REPORT OF THE BOARD OF DIRECTORS.

Gentlemen: A meeting of the Directors of the Wisconsin Cheese Makers' Association was held at the Republican Hotel, in the city of Milwaukee, at 7:30 p. m. on the 4th day of January, 1905.

The accounts and vouchers of the Secretary and Treasurer were carefully audited and found to be correct.

Signed:

J. F. BACHMANN,
F. J. KARLEN,
E. L. ADERHOLD.

The President: We will now receive the report of our committee on Resolutions.

REPORT OF COMMITTEE ON RESOLUTIONS.

M. MICHELS, Chairman.

WHEREAS, the natural conditions existing in the state of Wisconsin for the manufacture of cheese are not excelled by any other state, and the exhibit of cheese at this convention by the uniformly high grade, shows that the makers of Wisconsin have risen to the occasion and shown by their skill that they can take advantage of these conditions. Be it

Resolved, that we urge upon them the necessity of still further efforts along this line, that the state's reputation as the leading cheese state may be made still more secure, and be it further

Resolved, That the practice of scoring the cheese in the presence of the maker and having it criticised has proven of such great benefit that we continue this system at future conventions.

WHEREAS, the past year has witnessed the scoring contest at the World's Fair in St. Louis, and the exhibits of cheese from this state having taken all the prizes offered, that we extend our congratulations to the makers of the same, and that our thanks are due to the Board of Managers and the Superintendent of Exhibits for their work in this connection.

Resolved, That our thanks are due the gentlemen who acted as judges and critics of the cheese exhibit at this convention.

Resolved, That we appreciate the great and continuous efforts of our Secretary, U. S. Baer, and all of the officers and committees of this Association in their work to make this the splendid meeting that it promises to be, and we heartily thank each and every one of those who in true fraternal spirit, by addresses, by discussion and by counsel have contributed to our instruction and entertainment. And be it further

Resolved, That we tender our hearty thanks to the Hon. W. D. Hoard for his presence, to Hon. J. Q. Emery, for his untiring efforts to advance the cheesemakers' interest, and to J. H. Monrad who has for so long a time interested himself in the work of this Association.

Resolved, That we hereby tender our thanks to the supply firms and others who have so generously contributed to the premium fund.

Resolved, That the Wisconsin Cheese Makers' Association hereby earnestly appeals to the legislature to provide at its com-

ing session such an increase in the number of cheese factory inspectors for the Dairy and Food Commission as will furnish adequate inspection for the cheese factories of the state.

Resolved, That it is the sense of this convention that the legislature at its coming session pass such legislation as will compel the common carriers of the state to give all shippers similarly situated equal rates. And be it further

Resolved, That the Secretary of the Wisconsin Cheese Makers' Association be instructed to place on the desk of every member of the legislature a copy of these resolutions at the coming session.

Resolved, That it is the sense of this convention that every cheesemaker and others interested in the success and prosperity of the dairy industry be earnestly requested to arouse his utmost influence with the member of the legislature from his district to work in favor of such legislation as will advance his best interest.

Resolved, That it is the sense of this convention that the cheesemakers of Wisconsin would be greatly benefited by the holding of a monthly scoring contest, and be it further

Resolved, That we pledge ourselves to support such a contest and hereby call on the Dairy and Food Commission and the Dairy School to use every endeavor to get such a contest started.

Resolved, That we are in favor of such changes in the existing laws as will more fully restrict, regulate and prevent the manufacture and sale of spurious, adulterated and unwholesome food, and be it further

Resolved, That the members of this Association urge upon the members of Congress from their districts to use their influence in securing at the earliest possible moment the passage of a National Pure Food Law, and that the Secretary furnish the Congressman from this state a copy of this resolution.

Resolved, That we tender our sincere thanks to the citizens of Milwaukee for their kind invitation, welcome and cordial reception extended to this Association, and thank the proprietors of the Republican House, in particular, for their generous treatment.

Respectfully submitted,

M. MICHELS, Garnet, Wis., *Chairman,*
J. D. CANNON, New London, Wis.,
F. MARTY, Madison, Wis.,
Committee.

TREASURER'S FINANCIAL REPORT FOR 1904.

Mr. President and Members of the Association. The following itemized report is made, showing the source from which all moneys paid into the Treasurer's hands were received, and the disbursements paid on order from the Secretary, which I hold as vouchers:

Receipts.

1904.			
Jan.	9	Balance carried forward	$368 48
Jan.	9	Paid memberships	308 00
Feb.	22	State treasurer (cash)	265 65
Mar.	8	Memberships	2 00
April	20	Membership	1 00
May	1	Membership	1 00
July	14	State treasurer (cash)	600 00
Dec.	30	E. A. Roser & Co.	10 00
Dec.	30	Monarch Refrigerating Co.	10 00
Dec.	30	M. H. Fairchild & Bro.	10 00
Dec.	30	Crosby & Meyers	10 00
Dec.	30	De Laval Separator Co.	10 00
Dec.	30	Diamond Crystal Salt Co.	10 00
Dec.	30	A. H. Barber, Cry. Supply Co.	10 00
Dec.	30	Chr. Hansen's Laboratory	10 00
Dec.	30	Wis. Dairy Supply Co.	15 00
Dec.	30	Creamery Package M'f'g Co.	25 00
Dec.	30	Colonial Salt Co.	15 00
Dec.	30	J. B. Ford Co.	10 00
Dec.	30	Lumsden Bandage Co.	10 00
Dec.	30	Sturges & Burn M'f'g Co.	5 00
Dec.	30	Francis D. Moulton & Co.	10 00
Dec.	30	David Muir & White	25 00
Dec.	30	A. J. Decker	5 00
Dec.	30	Kimble Glass Co.	10 00
Dec.	30	M. McKinnon & Son	5 00
Dec.	30	A. H. Barber & Co.	10 00
Dec.	30	The Preservaline M'f'g Co.	10 00
Dec.	30	The Sharple's Separator Co.	10 00
Dec.	30	Cornish, Curtis & Green M'f'g Co.	10 00
1905.			
Jan.	4	Hon. S. A. Cook	9 00
			$1,810 13

Disbursements.

1904.			
Jan.	9	F. J. Karlen, borrowed money	$200 00
Jan.	10	Schwaab Stamp & Seal Co.	65 00
Jan.	10	Prof. G. H. Barr, traveling expenses	65 00
Jan.	10	Republican hotel, hotel bill	96 70
Jan.	10	R. A. Moore, traveling expenses	4 29
Jan.	10	Pro rata premium fund	100 00
Jan.	10	Frank Dewhirst, traveling expenses	3 89
Jan.	10	Walter Mayer, printing	100 15
Jan.	10	Mrs. A. L. Kelly, stenographic reporter	106 40
Jan.	10	U. S. Baer, traveling expenses	16 80
Jan.	10	Expenses, Secretary's office	150 00
Jan.	10	S. E. Knickerbocker, traveling expense	4 96
Jan.	10	J. W. Cross, traveling expenses	10 24
Jan.	10	J. K. Powell, traveling expenses	9 00
Jan.	10	L. C. Thompson, traveling expenses	8 54
Feb.	1	John Luchsinger, traveling expenses	11 00
Feb.	4	H. J. Noyes, traveling expenses	9 49
Mar.	14	U. S. Baer, traveling expenses	4 75
Mar.	14	Walter Mayer, printing	17 50
Mar.	14	F. A. Averbeck, 12 medals	55 00
Mar.	14	Postage, 19 letters	38
Mar.	17	Express, telephone, postage	2 44
Mar.	18	Express	1 52
Mar.	19	Postage	40
Mar.	21	Miss A. L. Moore, typewriting	2 45
Mar.	28	Postage, letter and reports	1 84
April	2	Postage, letter and reports	1 40
April	13	Postage on diplomas	80
April	21	Postage on letter and reports	3 40
April	23	Freight, express	60
April	25	Miss A. L. Moore, typewriting	4 20
April	25	U. S. Baer, postage on letters	32
May	4	Cuts for annual report	17 80
May	11	Typewriting on annual report	8 25
May	13	Drayage on reports	1 00
May	13	Printing, 1,000 large envelopes	2 10
May	23	Postage on letters and miscellaneous	2 44
June	6	Postage	4 10
June	13	Express	25
June	22	Telegram	35
July	18	Postage	1 45

July 21	Two telegrams	50
July 28	Postage on 5 reports	50
July 30	Typewriting	50
Aug. 15	Postage	1 00
Aug. 21	Cut, Democrat Printing Co.	2 10
Aug. 22	Stenographic work, Mrs. G. K. Rockwood	16 88
Sept. 1	Printing, Mayer's electric press	15 75
Sept. 10	Circular letter to Dairy Press	60
Sept. 11	Postage on letters and reports	84
Sept. 13	U. S. Baer, traveling expenses to Milwaukee, hotel	4 25
Sept. 21	Copy, proof, Miss Anna L. Moore	80
Oct. 1	Postage, 10 cts. each, 855 cloth reports	85 50
Oct. 1	Postage, 6 cts. each, 1,750 paper reports	105 00
Oct. 10	900 reports, boxing, cartage, freight and express	21 12
Oct. 15	Drayage, W. J. Post	2 50
Oct. 17	U. S. express, reports	2 55
Nov. 1	Postage on 13 letters	26
Nov. 3	Postage on 17 letters	34
Nov. 4	J. K. Powell, traveling expenses	21 50
Nov. 5	Postage on 22 letters	44
Nov. 6	Postage on 8 letters	16
Nov. 8	Postage on 21 letters	42
Nov. 10	1,000 circular letters	2 10
Nov. 12	Postage on 650 circular letters	8 50
Nov. 12	Postage on 13 letters	26
Nov. 14	Postage on 6 reports	60
Nov. 17	U. S. express, reports	1 05
Nov. 17	Postage on 26 letters	52
Nov. 18	Postage on 13 letters	26
Nov. 19	Typewriting, Alma B. Roump	7 28
Nov. 21	Postage on 16 letters	32
Nov. 22	Postage on 5 letters	10
Nov. 22	J. W. Cross, traveling expenses	10 24
Nov. 23	Postage on 3 letters	06
Nov. 24	Postage on 14 letters	28
Nov. 25	Postage on 11 letters	22
Nov. 26	Postage on 10 letters	20
Nov. 28	Postage on 26 letters	52
Nov. 28	Typewriting, A. B. Roump	1 25
Nov. 30	Postage on 16 letters	32
Dec. 1	Printing, 150 cards	85

Dec.	3	Postage stamps	2 00
Dec.	3	3 telegrams, I long distance telephone	1 25
Dec.	3	Typewriting, Miss A. B. Roump	6 75
Dec.	5	Typewriting, Miss A. B. Roump	1 10
Dec.	8	Postage on 14 letters	28
Dec.	9	Typewriting, Miss A. B. Roump	1 15
Dec.	9	Postage on 21 letters	42
Dec.	10	U. S. Baer, trip to Milwaukee and return, hotel, $1.00	4 28
Dec.	10	Postage, reports and letters	64
Dec.	11	Express on reports	25
Dec.	11	Freight on reports	30
Dec.	11	J. F. Bachmann, traveling expenses	7 90
Dec.	11	Typewriting, Miss A. B. Roump	10 00
Dec.	12	Three telegrams, Jefferson Jct.	1 15
Dec.	12	Twelve letters, postage	24
Dec.	13	Postage stamps, $2.00 for 2 ct. stamps, and $1.00 for 1 ct. stamps	3 00
Dec.	14	1,400 programs, postage, 1 ct., shipping tags, entry blanks	14 00
Dec.	14	Express on printing matter	80
Dec.	16	Western Passenger Association	17 00
Dec.	17	Postage	1 00
Dec.	18	Postage on 135 circular letters	1 35
Dec.	20	Postage on 321 circular letters	3 21
Dec.	23	Miss A. B. Roump, typewriting	5 00
Dec.	23	Postage, telegrams	1 15
Dec.	24	Postage on 31 letters	62
Dec.	25	Postage on printed matter	1 10
Dec.	26	Boxing, carting and express	1 25
Dec.	27	U. S. Baer, traveling expenses	3 28
Dec.	28	Postage on letters	71
Dec.	29	Postage on cuts and printed matter	2 11
Dec.	31	Postage on letters	1 04
Dec.	31	Cartage, reports	35
Dec.	31	Postage, advertising matter	96
		Total disbursements	$1,508 16
		Balance in hands of treasurer	301 97
			$1,810 13

Respectfully submitted,

M. MICHELS,

Treasurer.

ELECTION OF OFFICERS.

It was moved by Mr. Carswell to postpone the election of officers until the following morning, on account of so many members being absent from the meeting.

After some discussion, the motion to postpone was put to a vote and lost.

The convention then proceeded to the election of officers for the ensuing year, the Chairman appointed as tellers: Messrs. Berg and Wolfinger.

Nominations for President being called for, Mr. Moore placed in nomination Mr. E. L. Aderhold, which nomination was duly seconded.

Mr. Joslin moved a suspension of the rules and that Mr. Aderhold be elected by acclamation. This motion was put to a vote by Mr. Luchsinger and was carried unanimously.

Mr. Aderhold thanked the convention for the honor conferred upon him and then stated that nominations for Vice-President were in order.

Mr. Cross placed in nomination Mr. M. Michels and on motion of Mr. Carswell, the rules were suspended and Mr. Michels elected by acclamation.

Nominations for Secretary being next in order, Mr. Crosse nominated Mr. U. S. Baer. Mr. Bachmann moved that the rules be suspended and Mr. Baer be declared elected by acclamation, which motion was carried unanimously.

Nominations for Treasurer were next called for. Mr. Carswell nominated Mr. Cross; motion duly seconded. Mr. Helm nominated Mr. Fred Marty; motion seconded by Mr. Noyes.

A ballot was then taken, which resulted as follows:

Total number of votes cast	41
Mr. Cross	10
Mr. Marty	25
Mr. Luchsinger	1
Mr. Grottman	5

Mr. Marty having received a majority of the votes cast, he was declared duly elected.

Nominations for Directors, one to succeed Mr. Bachmann for three years and one to succeed the President, he having resigned, were called for.

On motion of Mr. Wolfinger, the Secretary was instructed to

cast the unanimous ballot of the Association for Mr. Grottman for three years.

On motion of Mr. Carswell the Secretary was instructed to cast the ballot for Mr. Cross as Director to succeed the President.

Adjourned until 9 A. M. next day.

FRIDAY MORNING SESSION.

January 6, 1905.

President Aderhold in the chair.

"THE ACIDIMETER AND ITS APPLICATION TO CHEESEMAKING."

Prof. W. J. Carson, Wisconsin Dairy School, Madison, Wis.

When we speak of acidimetry as applied to milk, whey or curd, we mean the process of determining the degree of sourness by means of a standard alkali solution. That an acid will neutralize a base and vice versa, is a well known law to our chemists, but it is only recently that this act of neutralization has been taken advantage of in the process of cheesemaking. Since lactic acid plays such an important part throughout the whole stage of cheesemaking, it has become extremely important that an accurate and speedy test for determining the acidity of milk, whey and curd at the time of setting, dipping, milling, and salting be adopted. With the introduction of the acidimeter a long felt want has been supplied, and I believe one of the most important changes brought about in the process of making since the introduction of cheddar cheese.

Until recently we have been making use of the rennet and hot iron test as a guide to the acidity of the milk and curd, but during the past summer and throughout the present dairy course the acidimeter has been in constant use in the cheese department of the Dairy School, and so far as I am aware this is the first that the acidimeter has been applied to Wisconsin cheesemaking.

Lactic acid is due to the presence of bacteria which act upon milk sugar, and approximately speaking, one part of milk sugar is broken down into four parts of lactic acid. As the acid is formed it enters into combination, chemically, with the paracasein of the milk forming what is known as paracasein monolactate, and the ability to form fine strings on hot iron is due to the presence of this latter compound. If the curd takes on too much acid a compound known as paracasein dilactate is formed, and as the secondary substance is less soluble it will not string on hot iron to the same extent as when the curd is working under normal conditions. Therefore the hot iron merely indicates the degree of chemical change that has taken place in the curd, but when we speak of measuring acid by inches, the expression is very misleading.

Nor is the rennet test any more accurate than hot iron. While comparing the use of the acidimeter and rennet test for setting the milk, I have noticed on several occasions that with the latter, the milk seemed to be "coming down" rapidly while the acidimeter showed no marked change. This was more noticeable in the case of milk working under abnormal conditions,—containing gassy fermentations for instance and when milk of this nature was set according to the rennet test, the whey invariably stayed on too long, the result being a corky or whey soaked curd, as well as causing a severe check to the development of acid.

The accompanying chart will show the manner of construction and the pieces of glassware required for the acidimeter. Since any alkali is neutralized and consequently weakened in strength by CO_2, when exposed to the air, it has been found necessary to keep the bottle containing the alkali tightly corked. But in order to have the alkali syphon over into the burette, air pressure is necessary. Therefore a smaller bottle (4 oz.) is partly filled with a strong alkali through which the air passes causing CO_2 to be neutralized before it enters the larger bottle. Indicator is added to this smaller bottle, the purpose being to indicate when the alkali has become neutralized. A fresh solution should be added as soon as the contents of the bottle has become colorless. By opening the pinch cock attached to the piece of rubber tubing leading to the burette, the air passes throug the smaller bottle, where it gives up its CO_2, into the larger bottle through the piece of glass tubing connecting the two, and by force of pressure the alkali is driven over into the burette.

The alkali is made up of such a strength that one cc. of the

solution will exactly neutralize .01 of a gram of lactic acid, and when 10 cc. of milk is used the percentage of acidity may be read directly from the burette by noting the number of cc. of the solution required to bring about a permanent change in color. This solution which is made from a definite weight of caustic soda or potash and distilled water should be 111/1000 in strength or 11/1000 stronger than a deci-normal solution. Alkali of the latter strength could be used but the operator would be required to have in mind a certain formula to enable him to arrive at the percentage of acidity which is as follows:

$$\frac{\text{C. C. alkali x .009}}{\text{C. C. of milk}} \times 100.$$

There is practically no difference in the trouble of making one or the other solution, and as some of our makers are not adepts at figuring decimals the use of the former solution simplifies matters very much. If for example, 10 cc. of milk be used and 4 cc. of alkali are necessary to produce a permanent pink color the acidity of the milk would be .4 because 1cc. of the alkali solution neutralizes .01 of a ram of lactic acid, therefore 4 cc. of alkali would represent .04 of a ram of acid. But this .04 of a gram is the amount in 10 cc. of milk. Therefore 1 cc. of milk would contain 10 times less or .004 and in order to get the percentage 100 cc. of milk would contain 100 times .004, which equal .4 acidity.

Phenolphthalein is the best indicator to use in testing the acidity of milk, but as carbonates interfere with the detection of the endpoint in neutralization when using phenol, every precaution should be taken to prevent the solution from absorbing carbolic acid gas. The indicator requires to be made accurately, and if the operator has been in the habit of using say three drops for each test he should aim to use about the same quantity each time. Any person can make the indicator with little care in weighing and measuring the proper proportions of its contents. It is made in the proportions of .2 of a gram of phenol phthalein (a cream colored powder) to 50 cc. of absolute alcohol and 50 cc. of distilled water. All of these can be obtained from the druggist, and twenty-five cents worth should be sufficient to do a full season, if carefully handled.

There are many strong points in favor of the use of the acidimeter and I have already mentioned the chance of error in setting milk with the rennet test. I have used the acidimeter for

the past three years and I have never yet been mistaken in my calculation as to the time my curd should be dipped. Any practical cheesemaker knows that if he sets his milk expecting that the whey will be ready to run in say three hours he should cook accordingly and aim to have his curd firm in that time. But if for some reason the acid does not come on he has to hold that curd one or one-half hours longer, the result is detrimental to the quality of the cheese as well as being very annoying to the maker. Now this will not occur with the acidimeter providing the strength of his alkali is right and he has not made a mistake in reading his burette.

The amount of acid on the milk at the time of setting should be such that the curd will remain in the whey 2¾ to 3 hours. From .19 to .21 acidity will usually give this result. As the temperature of the milk has no effect upon the test when using the acidimeter, it is not necessary to wait until the milk is heated to a setting temperature before making a test for acidity. In he spring of the year .19 of acidity will be found sufficient for setting and .2 to .21 in the fall. The slight variation in the amount of acid from season to season at the time of setting is due to the acid condition of the casein. As the acidity of the milk varies with the percentage of solids, the milk will usually contain a higher acidity in the fall.

If a test of the whey be made after cutting the curd it will be noticed that there is a smaller amount of acid than at the time of setting, usually .11 to .12. This is due to the acid reaction of the casein which is precipitated in the curd, and also to the lime that is in combination with the casein being liberated, which has the power of neutralizing a portion of the acid salts in the whey.

One of the strong points of the acidimeter is its usefulness to determine the rate of cooking. If the first whey shows .11 acidity this indicates that acid will come on slowly and the curd should be cooked accordingly, but if the whey shows .13 or .14 acid will develop rapidly and therefore the curd should be cooked faster. Up to the time of the introduction of the acidimeter we have had no guide as to the rate of cooking.

At the time of dipping the curd should show about .01 less acid than at the time of setting. This is a pretty safe rule to follow. But if the whey has been partly drawn down the percentage of acid should be about .01 more than had the milk at the time of setting. After the curd has been piled the whey should show about .28, but if it shows .30 or over the acid will

come on rapidly and the curd should be cut into finer pieces, but the high piling should not be attempted.

For milling, the drippings from the curd are taken. From .7 to .85 acidity is sufficient for milling. When curd is working under normal conditions it may be milled as soon as it contains .7 per cent acidity, but if the curd happens to be gassy or a firmer cheese is intended, a higher acidity is required.

Curd having good body and flavor may be salted when the whey running directly from the curd shows .1 per cent acidity. Gassy or weak bodied curds should have from 1.1 to 1.2 per cent acidity.

A great many makers are under the impression that salt when applied to the curd checks the development of acid. The following table is the average of a number tests which show that for some reason or other the acid from the drippings is less after salting than before, but it will also be seen that a much greater per cent acidity is contained in the cheese after being taken from the press than at the time of salting. The reason that the whey shows less acid after salting than before may be due to the fact that the whey is clear after salting, and therefore the turning point is much more easily detected.

Acidity of drippings at salting	1.03
Acidity of drippings one-half hour after	.85
Acidity of drippings from the press	1.04

Strictly speaking the work of the cheesemaker consists in making conditions favorable or unfavorable for the formation of lactic acid in the curd. Therefore with a reliable test in the hands of a skillful maker, which will show the exact amount of acid in the curd at any given time, should tend to bring about a uniformity in the quality of his cheese from day to day. Not only would there be uniformity in the individual maker's cheese, but by all makers setting, dipping, milling and salting with the same percentage acidity we should then have a uniformity throughout the state. Uniformity in quality of our cheese is something we lack very much at present but I believe this is due to a large extent to the lack of uniformity in our system of making. The sooner we become familiar with and adopt the most improved methods of making, the sooner will we have that marked improvement in quality which we are all so anxious to obtain.

In summoning up the advantage of the acidimeter they may be given as follows:

The acidity of any can or vat of milk can be determined at any time as temperature, time, etc., have no influence on the test.

There is less waste of milk and curd.

By knowing the percentage of acidity of the curd it serves as a guide to cooking.

There is less danger of acidy cheese.

It brings about uniformity in quality.

The main disadvantage will be to get a standard alkali solution.

DISCUSSION.

Mr. Moore: I would like to know why the Farrington alkali test could not be used as well.

Mr. Carson: Well, with the Farrington alkali test you understand that you have to make your solution every day.

Mr. Moore: Yes, but you avoid that weakening of the solution that is unavoidable with this liquid, do you not?

Mr. Carson: That is unavoidable with this liquid?

Mr. Moore: Yes, unless you have the apparatus that you have indicated there.

Mr. Carson: Well, with the Farrington apparatus, you have to have a burette just the same and you have to make up your alkali solution and it would not work, it would not be sufficiently accurate.

Mr. Moore: I think the Farrington book on testing says the alkali solution will not retain its strength more than one day, but one winter at the dairy school we had a student very carefully mix up a solution every day for a week, and we put up some of the milk and used some of the solution each day to see how much change there was, and we did not find any perceptible change, I think. Now, amongst the creameries we find the use of what we call the Motion test, or the acidimeter and the Farrington alkali test, and I know that amongst the creameries that we usually preferred the use of the Farrington test; the use of the Farrington alkali tablet to this solution, the solution gets weak from the action of the atmosphere, unless you have some such apparatus as this, and its delicate nature makes it apt to get broken, and I think at the weigh room that the Farrington alkali test used in the different systems would be much to be preferred and more quickly done than this test.

Mr. Carson: I cannot very well, see how you can apply the

Farrington alkali tablet to this, because Professor Farrington claims himself that this solution will not retain its strength, and in our experiments with the four year students this semester we have found that that has been the result of every one of the students. I mean when they are made up.

Mr. Moore: We did not find that to come out true.

Mr. Glover: I would like to ask if his is the tenth normal solution?

Mr. Carson: No, our solution is not tenth normal, it is 11/1000 stronger and by having it at that strength, we avoid the difficulty.

Mr. Moore: I would like to ask what pipette you use.

Mr. Carson: Ten cc. pipette.

Mr. Glover: I cannot see why the Farrington alkali, if above normal, made up of the same material, why that should deteriorate any more in strength than this, if kept under the same conditions. Why should the alkali in this tablet fail in this soluton any more than in the other solution?

Mr. Carson: The instrument is so constructed that the air does not come in contact with the solution, the carbonic acid of the air is utilized before it passes in.

Mr. Glover: What objection do you have to making up the solution each morning, the Farrington?

Mr. Carson: We find when we make up the Farrington solution, it loses in strength very quickly.

Mr. Glover: I say, make it up every morning.

Mr. Carson: That is quite a work for the cheesemaker to make it up every morning.

Mr. Monrad: I was just going to answer Mr. Glover that the percentage of air will be so much greater if we make up a small quantity and have to measure off the water for the solution and also in the hurry of the work you are liable not to get in all the salt. I have used tablets and I prefer the solution prepared, and as to Mr. Moore saying that it is a costly and troublesome apparatus to use, my experience is not that. I have found that when I put it in in several creameries, that when we placed it on the shelf in the proper corner, there is no need of breaking them any more than your pipette and it is much handier than to make up the other.

Mr. Glover: I am not complaining about that in the least, but I have had some experience in finding that a great many of these solutions get weak, even if tightly corked, and when you begin to advocate the use of this system of testing the acid in

the cheese, it must be done with caution. Now, for instance, Professor Carson I think mentioned that when he put in this phenolphthalein or this indicator, as it is commonly called, and then added the alkali to this solution, or to the milk, it changed to a pink. Now, some makers will carry it a great deal farther. It is a little training they ought to have in the use of this before they could go and do it in the factories and use it; if you put in by mistake one centimeter more than others, the sample gets another color, they fail to note the right acid color, they should have a piece of paper with the right kind of color to bring that to each day so as to be a guide; it does not make any difference whether deep or light pink, but it must be the same each day in order to be intelligent. Then we should be very, very careful to know that our solution is correct, it is so very easy for it to become weak. I have found in creameries that if we are going to use it at all, we must use it with great care or it will not do us any good.

Mr. Berg: It seems to me that anybody that starts to use that test who is not in the habit of using it, ought to use both tests, or all three, the rennet test and also the hot iron test to compare, so that he knows where he is until he has learned to use this acid test, and I think that will overcome these defects.

The Chairman: That is a good suggestion.

Mr. Monrad: That is good advice, but I want to say to Mr. Glover that while it is perfectly true, there is always an element of difference in the eye and there may be color blindness. You know men sometimes cannot work on railroads on account of color blindness, but what I mean to say is, it will help in this way, that a comparison between my reading and Mr. Scott's reading will not be the same, but each of us will work in our factory and find out what to his eye is the right degree, but when we come to compare this cheese in different factories, then the element that Mr. Glover pointed out comes in, because unless we have all the same eyes, we will certainly not read the test exactly alike, but it is perfectly true also about the solution,—I want to emphasize what Mr. Glover says, that if you do adopt the test, you must be very careful and we must have that apparatus so as to prevent the air from coming in. We buy a gallon of solution,—as they use it in the factories, they would leave the cork out for hours and then they will go on and say, "Oh, pshaw, there is nothing in the test." So I think it is a timely warning; but, on the other hand, we must not condemn the test,

it is a great thing, I experimented with it a good many years ago and gave it up, because I could not make it correspond to the rennet test, but it is certainly the most reliable of the two, and when we have the authority of Professor Dean or Professor Carson and all these other instructors who say it is worth a great deal more than the cost, I will say that if we apply it with care I would cordially recommend the test to the Wisconsin cheesemakers.

Mr. Glover: I also recommend it, but I cannot help throwing out this caution, which I did, I have had so much experience in finding so many imperfect solutions. Now, let me make a suggestion to you,—we have a Dairy and Food Commissioner in the state, and we also have a dairy school; now, I believe that it is practical and it is possible for either of these institutions to supply the cheesemakers with a standard solution. The Minnesota Dairy and Food departments are doing it, it will add one more duty to the department, and we hope to get them some money this winter and more men, and I believe it will be a good thing if the Dairy and Food Commission or dairy school would supply the cheesemakers of this state with a standard solution.

A Member: I got my formula from Professor Barr of Canada. I used the acidimeter about three months this summer and I calculate to have it put up in quart bottles and thereby I think I save a great deal of strength. Where you get it by the gallon, I think you are liable to lose strength. I think if we get the formula from some reliable person that has used it and get it in quart quantities, it will last that much longer.

Mr. Anderson: I had a little experience with this alkali test last summer, but I found when I made up a solution it gave trouble, it was not reliable at all, at the same time when I kept it corked, it lost its strength, the test did not come out right at all, and rather than to have the trouble to make a solution every morning, I went back to using the rennet test, but I see now, if we could have that solution as indicated we could find out at all times the strength of the alkali soluton, and that we would know what we are doing, and I think it would be the best of the tests.

Mr. Carson: We have a number of cheesemakers here that are attending the dairy school, I would like to hear from them; they have been using it in the dairy school.

Mr. Rhodes: We have been using the acidimeter in connection with the rennet test and the hot iron, and we find that the

acidimeter is more accurate than either the hot iron or rennet test.

Mr. Maker: I would like to ask Mr. Carson what would be the cost of an apparatus like that?

Mr. Carson: It depends on where you buy it. If you go and buy it at one of the supply houses, the Creamery Package Company have it for sale now, they would charge about five dollars for it, but you can buy the ingredients, and the whole thing all together will not cost you more than $1.25 to $1.50.

Mr. Mason: I went to our druggist in our city and I had him put up one last summer, I think he charged me a little over $3, but we could not get the solution accurate enough so that I could make any use of it.

Mr. Luchsinger: I would like to ask Professor Carson whether this test or the Farrington test either are used at the dairy school in connection with the manufacture of any other than the cheddar or so-called American cheese.

Mr. Carson: No, but I am just putting one in use in the Swiss cheese department and I believe the time is coming when it will be used just the same in limburger and brick cheese as in American cheese making, because I believe the amount of acidity in the milk or whey has the same effect in foreign as in American cheese making.

THE MANUFACTURE OF DOMESTIC CHEESE.

PROF. JOHN MICHELS, Madison, Wis.

Mr. President and Members of this Association: I felt complimented when asked by your worthy Secretary to address this intelligent and progressive body of cheesemakers upon the subject, The Manufacture of Domestic Cheese. It was with some reluctance, however, that I persuaded myself to accept his request, because a good many, no doubt, will look upon the manufacture of a rather soft, fast ripening cheese as an innovation scarcely to be tolerated in a state which has hitherto been such an exclusive manufacturer of the firmer kinds of cheese. This feeling was intensified when I recalled the time when my place was beside the cheese vat from one season's end to the other,

and when I should have considered myself a failure had a day's product turned out too soft to bear exportation across the ocean. But my experience during the past four years has convinced me that there is sufficient demand for a softer kind of cheese, to warrant its manufacture, in a limited way, even in this state.

You are already manufacturing to some extent cheese of the softer kinds, such as limburger and brick, and the kind that I wish to bring to your attention stands, perhaps, between a brick and a cheddar. It is what is known as "Michigan," or what you would call soft cheddar, a cheese with quick curing properties. Such a cheese might be designated as "domestic," as it is strictly for home consumption.

This class of cheese is more popular in Michigan, and parts of Ohio and Indiana than cheddar, and commands better prices, and this in spite of the lack of uniformity which it possesses. Elsie cheese, which represents the best type of Michigan cheese, has become nearly as well known as the famous Herkimer county cheese of New York. This cheese, when I first came to Michigan in 1900, was selling from one to two cents per pound more than the best cheddar.

Elsie cheese is characterized by its porosity, low acidity, high rennet content, and somewhat high moisture content. The method of making this cheese is essentially as follows: set the milk fairly sweet, say with about .17 to .18 per cent acid, using at the rate of 5 to 6 ounces of rennet per 1,000 pounds of milk. Cut moderately coarse, and heat to 108° F. in about 45 minutes. Allow to remain at this temperature about two hours, when the curd should show not more than ⅛ inch of acid on the hot iron. Remove the whey, stir about 15 minutes, and salt at the rate of 2 to 2½ pounds per 1,000 pounds of milk. Cheese made in this way will develop openings about the size of buckshot, and will be fully cured in six weeks when placed at a temperature of 60° to 65° F. Such cheese is not pasty in texture, but is meaty, wholesome and palatable. The fact that it ripens fast makes it short-lived, so that in the course of a few months it becomes sharp to the taste. Needless to say, cheese of this description must be made from good, clean milk.

Owing to the prevalence of gassy milks in the summer, many of the Michigan cheesemakers have found it wise to adopt the curd mill in the manufacture of fast ripening cheese. This makes it somewhat more difficult to secure the highly open texture, but permits making a cheese of rather high moisture content. The method of making is briefly as follows:

Set the milk fairly sweet, say with .17 to .18 per cent acid, so that in 2 to 2¼ hours from setting the curd will just show acid on the hot iron (1/16 inch). Add 4 to 4½ ounces of rennet and handle the curd the same as for ordinary cheddar up to the time of dipping, which is the critical stage in making a soft cheese. At this stage the curd should be only moderately firm and should not show more than 1/16 inch of acid by the hot iron test. Allow the curd to mat on the racks with more moisture than for cheddar, and mat quickly by frequent and deep piling. The quicker the curd is matted the more moisture it will retain. If the curd is gassy it should be matted until the gas holes are thoroughly flattened out. After the curd has been put through the curd cutter, it should be aired by stirring 15 to 20 minutes, and then salted at the rate of 2 to 2½ pounds of salt per 1,000 pounds of milk. The acid by the hot iron test at the time of salting should not exceed ½ inch.

Cheese made by either of the foregoing processes is mild in flavor until it is about five weeks old, after which the flavor grows more and more pronounced, and after two months it becomes rather sharp to the taste. Its texture at no stage of ripening possesses that degree of curdiness, rubberiness, even harshness, which characterizes the true cheddar in its early stages of ripening. This is largely due to its somewhat higher moisture content.

There are many people who like new, mild flavored cheese, and for such cheese, of the fast ripening order should prove more wholesome because of its greater digestibility. On the other hand, those who are familiar with the cheese consuming public, know that a great many people want cheese that possess a great deal of flavor, flavor that is even sharp and strong. To supply the demand of these two classes of people, it is believed the limited manufacture of a rather fast ripening cheese may be entered into with profit.

THE COMMON INTERESTS OF THE CHEESEMAKER AND PATRON.

HON. JOHN LUCHSINGER, Monroe, Wis., President Southwestern Wisconsin Cheese Makers' Association.

It does sometimes happen that differences arise between cheesemakers and patrons, leading in rare instances to dissensions and litigation. These instances occur oftener in new dairy districts than in the older ones, for in the latter, experience has taught that there are really no interests that clash between them. That while their respective tasks differ in form and method, yet they are all necessary links of the finished chain. The patron and cheesemaker are as the right hand is to the left. As the miner must bring forth the ores before machines can be made, and the chopper and sawyer and quarryman must precede the builder before houses and palaces are possible, so the patron must with his lands and cattle produce milk, good milk and plenty of it before a cheesemaker can use his art, and only when each has done his possible best, does profit and success follow.

I need but briefly sketch to this meeting of intelligent cheesemakers and patrons what their common interests are and what is required of each to best serve both.

The patron or farmer being the foundation on which all dairy work rests, will make that foundation sure and lasting by producing and delivering at regular times, milk of good quality and clean in the strongest sense of the term; to that end he will provide good cows of any dairy breed, or of no breed at all as some very god dairy farmers practice. He will be generous with their food, water and shelter summer and winter. He will treat them kindly, milk regularly and thoroughly and they will gratefully respond. He will on no account deliver milk from any cow diseased or suspected of disease. No greater cause of loss and damage is known to the cheesemaker than milk from cows not in normal health, the milk of only one such cow has been known to injure the quality of all milk with which it comes in contact, so that the whole when made into cheese produces an inferior article. Hundreds of dollars are often lost to factories in a few days or weeks from this cause, and such loss falls on all the patrons alike in price and reputation, and the cheesemaker sustains not the least loss in an unjustly besmirched reputation, for it is quite certain that when inferior or worthless cheese is

produced in a properly built factory by a competent cheesemaker (and no other should be intrusted with one) that the fault may be traced to faulty or diseased milk.

If the factory is a co-operative one, the patrons will build it solid, tasty, and for the sole purpose of making and storing cheese. It should be on an equal with your public buildings, a structure to be shown with pride, such as will tell better than words that its owners are intelligent and progressive and therefore successful. Its appearance should show that you believe that your business has a future for your children and their children. It should be so kept and operated that there shall be not traced to it or its condition any of the losses and failures of the season.

It is to the patrons best interests that ability, skill and good character be the first requisites when hiring a cheesemaker. Too many incompetent men are put in charge of factories and thousands of dollars worth of good milk, because they are cheap, because they promise to make cheese for a trifle less than some one you know is truly competent. Such mistaken economy rarely fails to end in an expensive lesson in experience.

The common good requires of the cheesemaker, that he bear in mind always, the great trust imposed upon him when the owners of 200 to 500 cows have intrusted him with their milk and factory for a whole season and that upon his good sense, skill and industry depends whether there shall be a loss or gain. It is up to him after the patron has given up control of the milk, to so use his best art and skill to convert it into the best possible cheese. He should have a full share of tact also, so that in dealing with many patrons each of different temper, he will stear clear of trouble.

In the busy summer on a farm many events unforseen happen which cause at times delay in bringing milk, he will find that patient consideration for such occasional faults will beget a like kindly feeling towards himself.

We may fairly assume that good cheese has been made under conditions as sketched. It becomes then of the first importance that it be well sold at the proper time, and with fewest possible stops between the factory and the consumer. Too many brokers, commission men and agents cheapen the price at the factory and make it too dear on the consumers table. It is, however, seldom that patrons are both willing and competent salesmen. Each has his own affairs to occupy his time and thought. To sell except in small lots to consumers an dretailers is not practicable,

the wholesale buyer is a necessity. Mr. Monrad has told us that even in thrifty Denmark where nearly everything is done by co-operation, wholesale dealers are indispensable, for they know the prices, the markets, and their demands, as no patron can possibly know them.

When you know and have proved your wholesale buyers, it is not wise to be led into shipping your cheese to far away markets, New York, New Orleans, St. Louis, etc., to strange concerns of whom you know nothing except some rating in Duns or Bradstreets. Concerns may bait you by paying liberal prices promptly for a shipment or two to start you. The losses caused by such unwisdom amount to thousands annually. The safest and most profitable sales are those made to the buyer at the factory, after the cheese has been examined and selected. Such sales are seldom followed by the complaints and deductions so frequent where factory and buyer are far distant from each other.

It is especially for the interest of us all that the grand reputation of Wisconsin for quality, variety and purity of her cheese be sustained, that the fame of being highest and best so fairly won at St. Louis Exposition remain with us, and to that end that the abomination of making and selling grease filled cheese shall never again tempt any one to their ruin. Such laws should be demanded and sustained as will enforce in every detail honest, clean and skillful practices from the farm to and beyond the factory to the consumer.

Reputations are slowly won but quickly lost. Let our first expensive lesson be also our last, and the term "Wisconsin cheese" will remain a guarantee of goodness.

Nature has gifted Wisconsin far beyond her sisters of the West in all that goes to make dairying successful, climate, water, soil and grasses are just what are required, therefore, patrons and cheesemakers need but do their part well to insure to generations to come the prosperity which has crowned the efforts of each and all of you who have given their best thoughts to this work.

One more matter of common interest to all is the question of transportation. It is right that those who carry our cheese from factory to market have fair pay for their services, but extortionate rates and the carrying for one for less than for another are wrongs to be resisted, as we would resist robbery from our houses and persons. I do not believe in fighting railroads because it seems popular to do so. Much of the outcry against them is from prejudice rather than for good cause; the fact that they

have also shared in the prosperity of these busy times should not condemn them, but I cannot see right or justice in the same railroads charging second class rates from Wisconsin to Chicago or Milwaukee and carrying it from Illinois factories to those points as third class freight or 11 cents per hundred pounds less for equal distances, thus enabling the Illinois factory to undersell to that extent, the factory on this side of the state line. Nor is there justice in their carrying cheese from points east of Chicago, more than twice as far for less rates than from Wisconsin. Such conditions afford real grounds for complaint. They are the just reasons for the present strong movement in state and nation to compel equal and just rates by means of Rate Commission. I think, however, since state authority extends only to state lines, that the measures before Congress promise surer relief than any state law or commission. Uncle Sam has power over carriers in all states and from one state into another, such commissions, however, should be so organized as to afford as prompt and speedy hearing and relief as the business demands, the present interstate commission makes it necessary for a complainant to be very young to be likely to see his complaint heard and decided. So while it may not be amiss to approve of the agitation for a freight commission in this state, I am of the opinion that we can do greater good by using our strongest influence with our members of Congress, to support them in the enactment of such laws as will protect us, and every other business from unjust charges and discrimination by carriers.

DISCUSSION.

Prof. Emery: I would like to ask Mr. Luchsinger if it is his proposition that Congress can regulate freight rates within the states.

Mr. Luchsinger: Yes, unquestionably.

The Chairman: We are too crowded for time to discuss freight rates and we will have to confine ourselves to the question.

Mr. Luchsinger: Of course, Mr. President, the matter of transportation is one of common interest to patrons and manufacturers also, whatever is of profit to both I think is germane to the subject. I do not wish to enter into any discussion, but a law of congress has always been found to extend all over the whole country. The law of oleomargarine extended all over the

country. I think that railroads are subject to laws of congress, no matter whether they are wholly within one state, or run from one state into another.

Mr. De Land: I regret very much that Mr. Luchsinger has taken a rather narrow view in regard to the marketing of cheese. He has given you to understand that you should sell to near by people, or if possible, go to the consumer. All that shows that he is not a man that is in the business. There are just as good buyers in New York as there are in Monroe or Sheboygan. Through commercial reports and other ways, you can find out who are the reliable men. The facts are the most skinning of factories has been done by the buyer right in our home that you have known perhaps for years. Now, we do not select Udell & Company or somebody else because they live in the city where we have known them, but we select Udell & Company or any other party because the report has been that they are reliable and you will get your dues from them. Now, you have to have these men, you cannot sell to the consumers, it is all the dealers can do to keep track of the good consumers through wholesale grocers.

HOW TO GET BETTER MILK FOR THE CHEESE FACTORIES.

Prof. A. J. Glover, Ft. Atkinson, Wis.

(With Hoard's Dairyman.)

In preparing myself for this pleasant occasion of meeting the cheesemakers of Wisconsin, I have tried to prepare a paper that would create discussion, and not one, that in any way, goes into detail of different points that I wish to bring before this convention.

To solve this question of getting better milk for cheesemaking, I shall consider briefly three things: 1. Every cheese factory in the state should be put in good sanitary condition. 2. The farmers should be educated to care properly for their milk. 3. Elementary agriculture should be taught in the common schools.

The question of getting better milk to the factory has been

discussed long before there was such a thing as a cheese maker's association. I do not feel that I can add anything that is new to this all important subject, but I can perhaps help to keep it before the cheesemakers and people that are interested in making a better article of cheese. I am beginning to feel that about enough talking has been done and that some action should be taken immediately to help the cheesemaker see the importance of keeping his cheese factory in good condition and to make the owners build factories that can be kept clean.

I am of the opinion that the first thing to do, is, to get every cheese factory in the state of Wisconsin in good sanitary condition. And what does this mean? It means that the buildings inside and out as well as the general surroundings shall be kept clean and tidy. If the cheesemaker is slovenly and careless and is dirty in his work as well as in his person, he can not expect his patrons to deliver clean and wholesome milk. But whose business is it to see that the cheesemaker keeps his factory in good condition? It is the state business. The quality of Wisconsin cheese will never improve much beyond where it is now, unless the state places competent men in the field endowed with police power, and skilled in the art of cheesemaking.

The men that go forth to instruct and inspect must be capable men; and fully conscious of the great responsibility that they are assuming. It is no easy task to step into a cheese factory and give directions on the proper method of making cheese. The person that has given it thought must realize that the improvement or decline of Wisconsin cheese, rests more or less upon how wisely he teaches. He must not only be a capable cheesemaker, but he must possess enough moral courage to state plainly and firmly how the factory should be arranged to make it a sanitary plant from which it is possible to make good cheese.

The first reform is to see that better cheese factories are built. The next one that should be brought about is better construction and location and sanitation of the whey tank. I do not dare to state how many times I have seen dirty, foul whey put into milk cans and hauled home, when the whey, from a nasty tank that is never washed, is carried home in the milk cans, it is impossible to get first class milk to the cheese factory. The location and case of some cheese tanks make me think of an incident that happened near my home in Minnesota.

A very young scholar had fallen and injured himself quite badly and the teacher found it necessary to remove his clothing to see whether anything serious had happened to the child. As

the teacher proceeded to remove his blouse and was about to remove other garments, the young lad exclaimed, "Teacher, you must not take off my undershirt, for my mother has sewed me up for the winter." It is much the same with many whey tanks. They are sewed up not only for the summer, but, forever and will remain that way, unless the state inspection breaks the seal and forces every cheese factory to keep the whey tank clean as any milk vat. The whole factory should receive the most scrutinizing examination by the inspectors and they should show the cheesemaker how to keep his cheese factory in the proper condition, and they should see that the cheesemakers carry out their instructions.

When the cheesemaker is placed on the road to righteousness, the inspector must then begin with the patrons. The farmers should understand that they must deliver clean milk and it should be the instructors' duty to see that they do. They must go to their places, if necessary, and show them how to be clean and how to care for their milk and dairy utensils. We have been calling for years for clean milk and better milk when many of the farmers do not know how to produce clean milk. The cheesemaker at the receiving tank tries to tell his patrons how to be clean and to care properly for their milk, but, how many cheesemakers go right to the farmer and instruct, by actually showing the farmers how to produce clean milk and to care for it. Too many cheesemakers are simply telling their patrons to be cleaner without showing them how.

Perhaps I am looking on the dark side of things. Maybe I am a little pessimistic. But, I believe we must go to the farms. The farmers in many ways are not responsible for the poor milk that they deliver. Some of them, of course, are indifferent and do not try to do as well as they know how. But many of them have been in such a state of filth for so long that they do not realize their conditions. They are in a measure very much like a speaker that was to deliver an address in Chicago, a noted orator from the South that had consented to address one of the many meetings held during the world's fair. A large crowd had gathered to hear him and were anxiously awaiting his arrival when the master of ceremonies discovered that the speaker was drunk, almost to unconsciousness. He was berated soundly by some of his friends and given to understand he had to speak, drunk or sober. He gathered himself together and staggered on to the stage and was introduced. He said, "Ladies and gentlemen," in a very low tone. Somebody in the back

part of the hall called "Louder." He repeated a little more distinctly "Ladies and gentlemen" and again the voice cried out "Louder." This irritated the speaker, and in a clear, distinct voice said, "Ladies and gentlemen, when the end of the world shall come, when the angel of Gabriel shall blow his trumpet and as he stands with one foot on the land and the other on the sea, he shall proclaim that the time shall be no more, then some d—— fool from Chicago will holler "Louder."

We must remember that many farmers are very much like the man in comprehending the necessary things to do in caring for their milk. Let us strive to give them the necessary instruction. It however is no easy task to reach the farmers and give them instructions, but great good can be accomplished if we have a few competent inspectors to give them some light in their own homes. When we have our force of instructors busy at work in the field, we must not think the solution is solved, but on the other hand we have only begun to reach this great and important subject. The question will never be thoroughly solved until elementary agriculture is taught in the country schools. Why wait until a man is grounded in habits, that are almost impossible for him to change before we begin to teach him the proper way of doing things? Why not teach the country boys and girls some thing about their business in the school room? It would be a practical thing, it would be a sensible thing to do. It is not necessary for me to state just how this instruction should be given, but you can all readily see the great field work to be done in the common school and the great good that would come from it.

Just think what it would mean to this state alone if every child would learn to care properly for milk. Let each member here use his influence in getting agriculture taught in the public schools. It is in the school room where should begin this work. If we don't succeed at first let us follow the precept of the little girl, who, when she said her evening prayers, asked God to make her a good little girl, and then added, "If you don't at first succeed, try try again."

DISCUSSION.

Mr. De Land: All these conditions that we have just listened to are true. We have been denouncing them in conven-

tions and in various papers for years. Have we remedied those defects? To a limited extent, we have, yes; if we continue as we have been doing, may we expect to remedy them in the future? I say no, there is only one way and that is as he intimated, the state must take a hand, we must have inspectors. These inspectors can do this work and we will be able to get cheesemakers who will be a great deal better and we will not have to put in these fellows that are not worthy and never will be good cheesemakers, they should step down and out and this can be done and injure no man. Now, we have talked of these things, we should come together to find out how to remedy them.

Mr. Scott: It is my experience that the majority of farmers work too hard to be good dairymen, and in general farming, they come in from the hay field and harvest field, they do a bigger day's work than the majority of laboring men that work by the day, then they go in to do the milking when they are tired out, and they do not feel like taking care of the milk, and the worst time for gassy milk is at the time of the year when the farmer is working hardest. Even the neatest, hardest working patrons sometimes at that time bring the gassiest milk. One farmer in particular who had built a new barn, he had it just as nice and clean as it possibly could be made and his milk would come in and we would make the curd tests and it would show gas. Mr. Aderhold came to the factory and made a curd test and one test he showed the farmers in the evening as a perfect curd, we kept it warm, the next morning this curd test that he showed them as perfect was chock full of Swiss holes. One point comes in there,—those farmers see that and what caused that I could not tell them, Mr. Aderhold could not tell them. I went over to that farm and attended to the milk myself, I stood right there when the milkers took this milk from the cows, I put the covers on the cans and we pumped on water and cooled it down to 50, then I made a curd test, still it showed gas.

A Member: Did they clean the udder before milking?

Mr. Scott: We brushed them off with a woolen cloth.

The Member: In a case of that kind, if you had followed it up and made a curd test from each cow's milk, you would probably have found one cow caused it all.

Mr. Scott: Yes. I think it would but the idea is here,—it is so hard to make the farmers understand. I am getting at the general principle of how to get at the farmer to make him furnish better milk, and the idea is that they are all working so hard that they do not have time to study this out themselves.

If you tell a man his milk is coming in bad, there is not one farmer in the summer time who has the time to devote to going to work and finding out where the trouble is. Well, in this one case I found it out in the end. Right through the country there there is a creek which in the summer time runs dry and it will be full of pond holes covered with green scum, and this man told me that his cows would not drink at the trough and I said, "Shut them out of the pasture," and he said, that was all the pasture he had and he could not go to work to fence in all those pond holes, twenty or thirty of them all along that creek, but the next week he got them shut out from those pond holes and the trouble stopped. Then he was convinced, because he saw it himself.

Prof. Emery: That shows what the Wisconsin curd test will do.

Prof. Glover: Mr. Scott has given us the whole solution to that thing, that is what we are talking for, getting people to go out and educate the farmer. The same thought came in when I used to make tests in Minnesota, the cleanest patron I had brought in the gassiest milk, I went to the farm and found the cows drinking from the slough. That is just what we want to do when we get our inspectors, employ men to investigate the thing, think of the dollars and cents it means to the state. Now, if that is taught in the school room to the students, think of the money we would save and the idea is just as developing as it is to learn something that we never use.

Mr. Monrad: Prof. Glover showed a little ignorance when he spoke about Wisconsin not teaching agriculture in the common schools. Wisconsin leads the United States in having started county high schools where agriculture is taught, and I think it is due Wisconsin to put a nail there. I want to emphasize what Prof. Glover said that you have to go work on the young people. I do not believe that we can commence teaching in the grammar school, in the lower grades, the Babcock test or acidimeter or curd test or agriculture, generally, I do not think it is practical, indeed, we should confine the education there to reading, writing and arithmetic in the first years, but what I do believe in is that in the text books for teaching arithmetic, for instance, in teaching writing, there we can inoculate into the child's mind a respect for the profession of farming instead of the present text books that always tend to lead the mind of the child to the shop, to the city, but to start in teaching agriculture as a common course in the lower classes, I do not believe it is practical.

I believe in country agricultural high schools. Let us cut short the common schools, instead of eight years and nine years, cut them down to four or five years and then let us have good county schools where agriculture stands as high as the professions of law and medicine and all the other professions and where we can find out and where the child can find out his own trend, what he is fit for, where they will teach manual training, where the future blacksmith will find out whether he would like to be a blacksmith, where the architect will find out whether he will be an architect, where the farmer will find out that there is just as much room on the farm for brain work as there is in any other profession. From these small high schools we can send them to the university for instruction in these different groups. That is my idea on that subject. We have seen those books that have come out that pretend to be a guide for a teacher, who is apt to be a young girl, how is she going to teach agriculture? I do not think it is right, it is just loading up more work on the small schools; they have work enough in teaching reading, writing and figures, properly.

Prof. Emery: All knowledge has its beginning in the senses. This is a fundamental psychological truth and proposition. We ought to make use of some of the discoveries of our agricultural experiment stations, we ought to produce conviction in these people that we need clean milk and ought to have clean milk. But we may talk that for many years and it will fall off the minds of those people like water off the duck's back. But if you take the Wisconsin curd test, have some samples prepared, large, so that they can see the effects produced upon the curd from the milk by the unclean conditions, that the good curd is made from good, clean milk, and that the curd made from dirty milk is full of gas holes or pin holes, when you bring those curds before them and let them see what these milks produce, you instruct them and you produce convictions and you improve the quality of the milk. Work of this kind is being done by Mr. Aderhold and we have been adding to the burdens of our commission by making assignments to Mr. Baer and Mr. Moore to go to our institutes to do this kind of work and emphasize the best possible way we know the necessity for right handling of milk in order to produce clean milk for the creameries and cheese factories, and I think that this work will be productive of great good. This great dairy enterprise of Wisconsin is too big an affair to revolutionize it in a moment, if we can make reasonable and steady progress, we ought to be encouraged.

Now, about this school business, I am surprised at my friend Monrad when he advocates putting our scholars through school in four or five years; he is robbing them for their life. I have no word of discouragement for the county agricultural training schools, let us have them, but they cannot take the place in this state or in any other state of the common schools; for all education you have two conditions, inherited tendencies, and environment, and these two properly directed, make the education of the boy and the girl. We come into this world with certain inherited tendencies, these our ancestors gave us. In my judgment these tendencies in a large way may be said to be the results of habit. We have certain intellectual tendencies, certain powers and disabilities and our environment develops these, and I think we have been too long too stupid in recognizing our environment for the proper purpose of developing these God-given powers and the country neighborhood furnishes the best possible opportunities in many ways for the development of these faculties and why we should limit our instruction and our efforts to those things which are within the four bare walls of the schoolroom, is an unaccountable problem. It has been demonstrated again and again that you can teach just as much and just as good arithmetic and reading and writing and geography when you are at the same time teaching the fundamental principles of Nature, and that is agriculture. So you can bring out this child and let him see with his eyes, appeal to his senses. I repeat, let us have the training of the senses and he can see the growing of the plants, he can see the conditions of the animals, he can see the soils and other conditions, and the kind of vegetation that grows on them, and the trees and the grasses, he can become acquainted with the conditions of the atmosphere, he should learn more about these lines of physics and that is agriculture, these are the elements of agriculture, these nature conditions, these soils, these plants, these animals, these various elements, and we ought to go into chemistry too. I know what I am talking about, for I have gone through these experiments, I have taken children myself from the primary and intermediate grades and taught them these principles of physics and chemistry and these principles of botany and zoology and you can do that and at the same time you will make them just as strong and I believe stronger people in arithmetic and grammar and writing, because in this way you are giving them ideas, and that comes first and then you are giving the language and that

is the proper way of proceeding. I do not care whether they will go into the factory or into the law schools or into the medical schools or into the ministry, or wherever they go, there is no training that can be better for them than that training, and if they are to remain on the farm, there certainly is no training better for them than that, that they can have the power and the habit of reading out of God's book these great lessons that He teaches.

Prof. Glover: I believe I owe Wisconsin an apology for not mentioning the fact that they have agricultural schools, but you must not forget that other states have them, too, perhaps I can inform you that Illinois has them, but notwithstanding, agriculture is not taught in common schools to any extent.

Mr. Monrad: I believe I was the first to urge the teaching of agriculture in common schools some fifteen years ago, but not in the way that it has developed lately. I urged at a convention in Minnesota the introduction, as I called it, by insinuation, and I protested against the later development when they went to introduce it by getting out a special text book on agriculture. I want the agriculture to be insinuated into the other text books, so that the mind of the child will be drawn towards the farm, instead of towards the city. I want to stand right there.

President Aderhold: This is along the line of school work, and our program is too crowded to admit of discussing the subject any further.

CARE OF STEAM BOILERS AND ENGINES.

G. H. Benkendorf, Madison, Wis.

The subject "Care of Steam Boilers and Engines," which was given to me by your Secretary, Mr. Baer, is indeed a very wide one. It is one that may be divided in two parts. The first and the more important part may be called "The Care of Steam Boiler," and the second "The Care of the Engines." On each of the subjects volumes upon volumes have been written and hence in the limited time which I have at my disposal can only just touch upon the outer edges of these vast subjects, pick out a few points here and there, as a person walking along an ocean

beach can pick up only a few of the many beautiful shells and pebbles which he sees.

In the evolution of man from savages to civilized life we find there is a continual tendency toward a more perfect division of labor. There was the savage that could make a more perfect bow and arrow than his fellow beings. Nature had given him a talent for this work. He could select a better piece of wood, than his brethren. He loved his work and in this way became a bow and arrow maker. He traded the products of his labor for food, clothing, etc. It was better for the whole tribe that they had a party who excelled in this line of work. Later on, probably another savage commenced to make arrows, etc. Competition began and the one that could produce bows and arrows cheaper and better than the other party got the trade.

So man has developed along all lines, and by this distribution of labor, has made it possible to produce a better product and cheaper than before.

Take it in our own line—we know that cheese used to be made in many, many homes, but the tendency of specialization entered this field, as all others, and we find men gradually getting more and more milk from their neighbors. The small factory appeared and soon we find men that did nothing but make cheese, because by so doing they could do the work cheaper and turn out a better article. Other factories starter around them seeing if it would be possible to better the quality of their goods, so they could find a readier sale of their products of manufacture, and at the same time, try and see if they could lower the cost of production so as to allow a larger margin for profit.

Thus we see how natural it was for the cheese industry to drift from the kettle, on the kitchen stove stage to the self heating vat basis, and now to a basis where we find the factories equipped with boilers, to furnish steam, and engines to do part of the manual labor.

We find however that new duties are now thrust upon the operator of a cheese factory, if he never handled boilers and engines, he must learn or feel the truth of Huxley's inflexible law of the "Survival of the Fittest" for some other man will come along and as the expression is, crowd him out.

The boiler in the cheese factory has come to stay. It is a necessary adjunct to every well equipped factory. To assist the operator the engine is gradually entering the factories, to help in the manual labor, such as grinding the curd, pumping water, etc. It is very evident therefore that all that expect to stay in

this line of work should become familiar with at least the elementary details concerning the care and operation of both steam boilers and engines.

Let us take up the subject of boilers first because it is the more important. For my part I use to be of the opinion, when I was small and inexperienced, that any one that could shovel coal could fire a boiler, but the engine with all its rapid motion bewildered me. This is the usual delusion and the quicker it is dispelled from the minds of all the better. It is the boiler that needs the attention. Upon the care bestowed on it, to a great extent depends the success of the factory.

There is a book entitled, "Put Yourself in His Place," and so let us put ourselves in the place of a young man that has just been employed to operate a factory. He goes into the factory which he may be totally unacquainted with. What should he do? We shall discuss just his duties with reference to boiler and engines as outlined by the subject assigned me.

The first and most important thing to do is to get acquainted with the water supply and the method employed in feeding it into the boiler, for when the water is low, steam up, milk coming in, there is not much time left to study the piping, valves, etc. And as low water is the great cause of boiler explosions it behooves him to be careful. We often hear such words as "inexplainable," "mysterious," used but the word "negligence" sounds harsher, but comes nearer telling the truth of the "mysterious" "inexplainable," calamities, so destructive to property and fatal to human life. Therefore under no conditions should he attempt to take charge of a plant and fire up until he is perfectly sure that he can feed water into a boiler at a moment's notice.

If he possibly can it is his duty to see that the boiler is clean before firing up. Even if the boiler is new and just came from the factory, there may be bits of wood inside which may by floating get into the pipes. Small bolt heads, bits of iron may also be in the boiler and might cause serious trouble. It is labor well spent to attend to this.

It would be foolish for him to neglect inspecting the safety valves, pressure gauge, blow-off, etc. Under no consideration should he take it for granted that everything is O. K. simply because his predecessor says it is. If he has not time to clean the boiler before taking charge he should do so as soon as possible. He may find a wheelbarrow full of sediments in the boiler, which of course had better be taken out. He may also find a

great deal of scale in the boiler and this brings us to the question of scale, its prevention and removal.

We hear a great deal about the evils of incrustation, especially in regard to the economy of having a boiler perfectly free from scale. While there is no question as to the injurious effects of scale, especially if the scale is very thick at places, there is a gross exaggeration of the difference in the amount of fuel consumed by a boiler having ⅛ of an inch of scale as compared with one perfectly free from scale. As scale is a non-conductor of heat there naturally would be some difference but not the enormous loss that some agents for patent boiler compounds would have us believe. In fact a thickness of scale of 1/32 of an inch or less if spread evenly over the entire interior is held by some high authorities to be beneficial, for it guards against the corrosive effects of the water.

The scale as is well known is the deposit from the water, and which adheres to the inside of the shell and surrounds the tubes and braces of the boiler, therefore it is advisable to use, if obtainable water for the boiler which is free from carbonate of lime, which is the most common source of scale. Therefore rain-water or soft water is the ideal water to use, but as most of us must use other water, we usually resort to a chemical treatment of the water to keep our boiler clean.

There are many kinds of boiler compounds on the market for this purpose—slippery elm, saw-dust, potatoes, lye, salsoda, etc., have been used under certain conditions and with certain water will give satisfaction, but with most of us the most satisfactory chemical is the common, ordinary salsoda, or carbonate of soda, obtainable at any supply house, at the low price of two to three cents a pound if bought by the barrel. It is cheap and also very valuable for the washing up around a cheese factory or creamery. It also has the advantage of overcoming any grease that may be in the boiler. Another advantage is that it has no effect on the iron, unless it is impure. This is an important point for many compounds on the market while they will remove the scale, will also effect the iron, so as to be positively injurious. For the ordinary boiler one-fourth of a pound a day is amply sufficient. All compounds should be fed regularly and a small quantity at a time rather than in large amounts, just once or twice a month.

To prevent the accumulation of dirt in the boiler it is very important to blow off some of the sediment as it settles to the bottom. This should be done every morning before firing up, as the water is then quiet and the sediment will have gathered

over night around the blow off pipes. Sometimes in case there is a vacuum in the boiler it is necessary to open some valve to let the air overcome this vacuum so that the water will pass out better. Another advantage of blowing off in the morning is that it cleans the blow off pipes of any sediment which may have collected in it, thus assuring a free entrance to the boiler of any water forced in by the injector.

Very many make the mistake to fire up first and get the dirt in circulation before blowing off. It can be seen, that while it does some good to blow off an inch or two of the water, still not as effective as the first way mentioned.

Another point that I want to dwell upon is the matter of blowing off a boiler for a thorough cleaning. This should be done frequently, say once or twice a month, depending on the amount of water fed into the boiler and converted into steam. The usual way is to allow the steam to get down to about 10–15 pounds pressure, and then open the blow off valves. Some even blow off at 30–40–50 pounds pressure. This surely is positively injurious to a boiler and makes cleaning very difficult. The great trouble from blowing off at any pressure, arises from the fact that the walls of the boiler are very hot and will bake on any dirt or sediment remaining in the boiler, the very thing we are trying to prevent. It is far better to allow the boiler to cool and then allow the water to pass out for then the dirt that remains in the boiler will stay soft and can easily be washed out with a hose.

Another cause of great mischief to the boiler is what is termed external corrosion. We quite frequently see a water tank over a boiler the leakage of which getting on the iron swoon causes corrosion to set in. This is quite dangerous for it soon weakens the boiler plate at these places. Sometimes we see where the boiler is covered with rust due to the rain coming down along the outside of the chimney. This could be very easily remedied by placing a hood over the opening. Under these unfavorable conditions the boiler will very rapidly deteriorate and in a few years a new boiler will be necessary which expense could have been saved by a proper care of the boiler.

We sometimes see upright boilers left for the winter with a lot of ashes underneath them which absorbs moisture from the air, thereby causing severe corrosion where the ashes touch the iron plate.

One of the disagreeable features of having to work around a boiler is the attention the flues require. Owing to this they

are very frequently neglected, not being cleaned as often as they should be. All of us know that a boiler will steam easier if the flues are clean and if we have a good draft. It is strange that we hear so much about the loss of fuel if we happen to have a little scale around the flues, and hear so little of the tremendous loss caused by the flues not being clean. Soot is a non-conductor of heat and as it fills up the flues seriously retards the draft. Then in addition we have the corrosion effect of sulphuric acid in the soot which attacks the iron.

To illustrate the loss of fuel where the flues are not kept clean I will cite an experiment conducted by an establishment when they burned 1,000 pounds of coal a day. It took fifty per cent longer time to raise the steam when the flues were swept once each week than when they were swept three times a week. The amount of fuel was reduced from 1,00 pounds a day to about 600 pounds, threby affecting a great saving. A saving which inside of a year would amount to a neat sum of money.

The saving of this vast amount probably was not due to the soot just being a non-conductor of heat but more likely that because the flues were clean there was a better draft.

The matter of draft is of vital importance. In the process of combustion the carbon of the fuel unites with the oxygen of the air. If the union is complete, that is if there is enough oxygen present the gas given off is Co_2. That is one volume of carbon unites with two volumes of oxygen. The heat given off by the combustion of one pound of coal where the product is Co_2 is about 14,000 heat units. Suppose we have a poor draft or do not give enough air to the fire only one volume of oxygen will unite with one volume of carbon, the resulting gas being Co. If we burn a pound of coal under these conditions we get only about 4,000 heat units or less than one-third the heat obtainable by proper firing. It is strange, then that there is such a variation in the amount of fuel consumed at different times? Is it therefore not advisable to take out the ashes from under the grates so the air can get to the back of the grates as well as to the front, at the same time saving the grates from being destroyed? Is it strange that the fire will be hotter when the clinkers are removed from it thus allowing the air to get to the fuel? Can a person get good results when the coal is piled on so thick as to stop all passage of air? Is it economy to have chimneys just about one-half as high as they should be? Care, however, must be exercised so as not to furnish too much air otherwise the surplus will take a lot of heat up the chimney

which represents a loss. To avoid this the fire should be fired so that there are no holes in the bed of coals and that the bed of coals is not too thin. From this we can see that the man in charge of a boiler can do much toward cutting down the expense account of a plant. He must use his head as well as his muscles. A man cannot be judged a good fireman simply because he can shovel coal. In case of an emergency, such as low water foaming he must know just what to do and have decision enough in his make-up to act at once. If he has low water and is wise he will not rake out the fire, thereby giving the fuel the oxygen necessary for a rapid combustion, but instead will dampen the fire with dirt or wet ashes. You may say, if he is careful he will not be caught with low water. Very true but with all things that a cheesemaker must look after, it may happen to the best of men.

Should there be two men working in a factory let just one man attend to the boiler. The old saying, "Two cooks spoil the broth" is particularly applicable here. One will continually think the other is tending the boiler and it is just a question of time when there will be a serious accident.

Let us turn our attention for just a few moments to the engine. In the ordinary cheese factory it will probably be of a simple slide valve type. It may be new or it may be one that has seen service for many years. There are several points which he should observe before starting. He should see that the governor is in good working condition and that the belt running the governor will transmit the power required. It may be too lose and slip continuously. To observe this is very essential. The governor should be one that if the governor belt flies off or breaks, will stop the engine automatically. A severe accident may be averted in this way. Owing to the fact that the operator cannot always be near the engine, no other type of governor should be in a factory.

One of the most perplexing and at the same time annoying things around the factory is to have an engine that pounds Why does an engine pound? This is indeed a difficult question. It may be that the bearings, etc., are too loose, but the chances are they are too tight.

I, for my part believe that more engines pound because some part is too tight than too loose. It may be that the clearance is not right, or the engine out of line. To locate a pound in an engine is no easy task. A person can stand beside an engine and hear it pound, and imagine it is in several different places,

but when he tries to apply the remedy, ah! that's a different story. It requires patient, sytematic work but the satisfaction and piece of mind it gives a person to locate a serious pound is surprising.

It is a good policy once in a while to take the cylinder head off and give the inside a good bath of kerosene to clean out the old gum, especially is this advisable if a poor grade of lubricating oil has been used. This cleaning may also reveal some creases or scratches in the cylinder. Should there be some they should best be remedied by applying graphite and oil to the inside, which graphite will get in the scratches and cause the inside to be almost as smooth as the original cylinder.

There is an old saying, "Let well enough alone" which every person should heed, but it should not be an excuse for shirking our duties. It does not mean that we should never examine the bearings to see if they are too tight or have grit in them. It does not mean we should never take a proper position, having the proper lead at each dead center of the engine, for by watching the lead carefully we may be able to have a smoother running engine and incidentally save an immense amount of steam.

To let well enough alone does not mean that we should neglect the appearance of the engine and allow all the drip from the steam chest and cylinder to drain on the floor, making an oily mess around the engine, instead of piping it to some convenient drain.

To take care of aboiler and engine requires attention to the small details. How much better does a boiler and engine appear if kept clean, with a clean floor around them, and really how long does it take to keep things clean? How much better does an operator feel if after trying his safety valve each day and his water glass several times each day, to know they are in good working order?

In closing let me speak just a few words in regard to his duties just before he leaves his factory. Of course, he has his boiler full of water which is proper, he has shut off the main steam valve and drained the pipes and engines, etc., to prevent any serious trouble in case of cold weather, let him then take a glance around and see if everything is safe from fire. Many persons apparently delight to have a lot of unsightly oily rags or waste lying around. Burn them up. Now waste is too cheap to run the risk of a serious fire. If you have received a lot of slack coal to burn, keep an eye on it. Of how many fires, do we read in the dairy papers, of cheese factories or creameries

burning, that may not be traced to carelessness on the part of somebody. A defective flue, a bearing not oiled, the coal banked against a hot boiler, matches scattered promiscuously, some oily waste in a corner among some old kindling. A fire starts in the absence of the operator and the factory is destroyed. He is required to make an explanation and tells the same old story in the same old way,—"I don't know how it happened. When I left the factory, the last thing I did was to close the fire and ash doors and the fire was out anyway."

Poor man! He may not know exactly how it happened, probably not until he has shuffled off his mortal coil will he find out he true cause of that fire. After the long and tedious journey he arrives at the pearly gate. His card is sent in and without the usual delay he is at once ushered into the presence of St. Peter, sitting at his desk in his gilded office with beautiful pictures hanging profusely on the walls. After a few words of greeting, for St. Peter is noted for the cordial receptions he accords Wisconsin Cheesemakers, he invites him to sit down while he beckens his clerk to bring the record book for Wisconsin Cheesemakers and upon receiving it turns to the index and soon finds his account. Adjusting his gold rimmed spectacles he carefully glances over the ledger and says, "Very good, my friend, very good. Your record shows you always kept your whey tank clean. You fired economically and kept your engine and boiler neat and tidy. You paid by the test and your tests and weights were honest. You nearly always turned out extras and only received a cut in the price once or twice and I see that you got a high score at Milwaukee in 1905. I see you treated your wife kindly and confined your smoking within the proper limits. In fact, you have a very good credit side, but I see charged up against you that you were careless and allowed the ashes to accumulate thereby burning out the grates, and that once you had a defective flue in your factory and in your absence the factory burned down. I am sorry but under the circumstances I cannct do better than give you a seat in the 21st. row from the front, and while you may be able to plainly hear the celestial choir, stillI would rather were it in my power to do so, give you a seat on the front row along with Mr. Baer, Mr. Aderhold, Mr. Luchsinger, and other prominent cheesemen from your state."

DISCUSSION.

Mr. Scott: I understood Mr. Benkendorf to say in his paper that rain-water was preferable for use in the boiler, as it does not form scale, is that right?

Mr. Benkendorf: It is the best water we can use, because it has no carbonate of lime.

Mr. Scott: In the city of Sheboygan a short time ago, one of the best engineers told me that there they have to alternate using rain-water. They had to use rain-water because they could get it cheaper, as they have to pay for their water, and that rain-water gradually spoiled the boiler, it soon wore the boiler out, and it was found so in the city of Milwaukee. The two big concerns that used rain-water had to cease doing that, they had to alternate, they could use the rain-water, but had to use different water occasionally. I speak about it because it was brought to my attention, and some cheesemaker might have rain-water and spoil his boiler.

Mr. Monrad: In what way would it spoil it?

Mr. Scott: I could not say, it corroded it; the boiler gradually grew thin and gave out.

President Aderhold: Mr. Benkendorf, have you ever heard of such things?

Mr. Benkendorf: I said in one place that it seemed as if some little scale in the boiler is very beneficial; if the scale is not very thick it is beneficial, not over 1/16 inch. It is beneficial because it prevents the acid that is in the water from affecting the boiler plate. Otherwise, if everything is all right, rain-water is the ideal water with us, and in the northern part of the state we have a soft water which is a very good water. In the southern part of the state we have this limestone water, and it is not so good, hence we have to resort to chemicals to get rid of the lime.

Mr. Scott: I understand that was the fault, and this gentleman whom I am speaking of said he could not explain it, but he said the boiler seemed to be eaten away inside and gradually grew thin, and all of a sudden it would go to pieces.

Mr. Benkendorf: Most of the corrosion is caused from the outside. There will be some water leaking onto the boiler from the outside, it may stand in some part of the building where the rains can get on, but most of the corrosion is from the outside. In my experience there is a lot of sulphuric acid in the soot, and that affects the iron.

Mr. Luchsinger: I want to ask Mr. Benkendorf whether I am right in gathering from what he said in his paper that ordinary sal soda is just as good as anything to cleanse the scale in boilers.

Mr. Benkendorf: Of course, the best way will be to have your water tested to see whether it is really carbonate of lime that is causing the trouble. I am assuming that to be the fact, and in that case sal soda is the best thing that I know of. We have made something like one hundred experiments in testing different chemicals and we have gone back to sal soda; it is the best and the cheapest.

Mr. Moore: I would like to ask Mr. Benkendorf if they have ever used buttermilk or whey to try to get the scale off the boiler.

Mr. Benkendorf: I did not hear you.

Mr. Moore: In my travels as inspector I came across a factory in Grant county, where the water is very hard, and the buttermaker had been using for quite a period of time, buttermilk to get rid of the scale. Now the action of it was simply this, that it caused the boiler to foam, and it would break loose the scale and it could be all blown out when the boiler was blown off. Now, I know that is so, for it has been used in some creameries. I know of one case where the milky water that was used in washing the butter (on account of the pump being broken, or something of that kind), in order to save the water it was used in the boiler and just as soon as enough of it was in there it caused this foaming of the boiler, and when the boiler was cleaned out, to the surprise of the maker, the boiler was just as clean, practically, as a new one, and if some makers are troubled with limy boilers, a little whey, of which they have plenty, will help them out.

Mr. Scott: I know that to be a fact, and I know it to be a fact that I ruined an engine for that very reason; I put it in and the boiler foamed, and the foam carried all this scale and cut a horizontal engine so that it was an oblong; I had to go to work and take that all out and put in new rings, and have them bored out and true them; it did that in the space of two minutes. I would not advise any one to use buttermilk in a horizontal engine.

Mr. Moore: Mr. Scott could have obviated that by turning on the steam valve and letting the steam into the sink, the object would have been attained and the engine would have been preserved. It is not necessary to start the steam out of the boiler, but the engine, if you start it out quickly into the wash sink, or into a basin of hot water, you will attain the same result.

Mr. Scott: If you are working the engine for all it is worth, it will gradually draw moist steam, and if you have anything at all that will make the boiler foam, it will tend to injure the boiler. My idea is to keep anything out of the boiler that will make it foam while using it.

Mr. Moore: I do not want to put it in unless I want to clean the boiler out.

A Member: I think the gentleman said in his paper that the pounding of an engine was hard to be discovered. I would like to have him tell how to discover it.

Mr Benkendorf: If a man is sick, he asks the doctor to tell him what is the matter. The only way is to apply the remedy here and there. You can always tell,—a man in my experience has to experiment, I could always pick out the students that had a great deal of experience and those that were just beginning to have experience, those without experience could locate a pound at once, without any trouble, but those with experience could not do it so fast, but when it came to locate the point really, that was a different question, because it is like a will-o'-the-wisp, you think it is here and it is not there, it is somewhere else and it is a very difficult thing to locate the pound of an engine, and if you can locate it, it gives you some satisfaction. You will have to apply the remedy slowly.

THE VALUE OF COMPETITIVE CONTESTS.

J. G. Moore, Madison, Wis., President Wisconsin Butter Makers' Association.

The competitive contests as a factor in improving the quality of butter and cheese has passed the experimental stage. The idea of a monthly scoring contest, I believe, is an importation from Denmark, where the government has placed its seal of approval upon it. It appropriates the sum of ten thousand dollars annually for this purpose and has a system of judging whereby the butter or cheese is scored by three or four sets of judges acting independently of one another.

In connection with this, it has what is called a "surprise call" where the makers are compelled to send in their exhibit from

goods already on hand and without the chance to select their milk or change their methods as is the case in the so-called contests carried on in this country.

I believe it is to Mr. J. H. Monrad that the credit belongs for first advocating the subject of these scoring contests and showing their value as an educational feature. After a good deal of agitation and discussion of the subject the National Creamery Butter Association inaugurated a series of monthly scoring contests which have proved to be very successful. In these contests the "surprise call" was made as much of a feature as possible. However, it was inevitable that some makers would take advantage of conditions and evade, so far as possible, this requirement. Besides its value as an educational feature, the scoring contests have brought to the front and made prominent those makers who have participated in them.

It is believed that a monthly scoring contest held by the states individually would be of much greater value to the individual maker than the national contest. Many makers are deterred from participating in the national contest who might be induced to partake in a state contest. This has been the experience of those conducting the contests recently held in Michigan. The states of Michigan, Minnesota and Iowa have each held these contests and their value has been demonstrated by their success at the World's Fair.

If Wisconsin is to retain its place as one of the leading dairy states, it must adopt some such method whereby its makers can attain the necessary education to produce a better quality of butter or cheese than they are now making. It is admitted that there are many makers both of butter and cheese who have graduated too quickly and who are a menace to the reputation of the state as a whole. In a state contest the inspectors employed by the Dairy and Food Commission and the instructors under the Wisconsin Dairymen's Association could visit those factories whoseproducts were found to be lacking in quality and aid the maker in obtaining better results.

The cost of these contests under present conditions must necessarily fall on the maker, except in those rare cases where the owners of the factory can see that it is to their advantage to have the makers participate in these contests and aid them by donating the necessary expense, which no doubt keeps a great many from seeking the advantages to be gained by these contests. It might be that state aid could be secured for the furtherance of this contest idea, as it would only be an extending of the

principle of education as already expressed in the aid given to farmers' institutes, state fairs and conventions of various kinds. The influence of this organization acting in connection with the butermakers' association, expressed in resolutions might be of help in securing this aid. It is to be hoped that this convention will take some action in regard to this matter in order that the forthcoming season may witness some development along this line of work.

FRIDAY AFTERNOON SESSION.

January 6, 1905.

President Aderhold in the chair.

ADDRESS.

Mrs. Adda F. Howie of Elm Grove, Wis., addressed the convention, giving the attending delegates a speech that was highly entertaining and instructive, in her own characteristic way, that has won the hearts of thousands of her hearers of all classes and sexes in her home state and abroad. Unfortunately, a report of this valuable address could not be secured for publication.—SECRETARY.

DISCUSSION.

Mr. Glover: I would like to ask Mrs. Howie if she objects to the stall being raised one inch higher in front than it is in the rear and if you think the cow will notice an incline so small as that.

Mrs. Howie: No, I think in boarding over the platform, you may raise it one inch at the top, but always be sure to make the bed so as to throw the weight of the body of the cow towards the shoulders. You will find that a great advantage to the cattle.

Mr. Glover: I am glad to hear Mrs. Howie say that, because I have been one of the criminals that she condemns for advocat-

ing such a thing. I helped Mr. Gwinn to construct a barn and I told the architect to be sure to have the incline a little towards the back, about an inch, and by the way, we put board over the cement, but instead of doing that, he has it about a half inch lower in front, and the consequence is, the cow is lying in filth unless a great deal of care is taken, and that is very objectionable, the liquid manure runs forward and it is a serious mistake to have such an arrangement as that.

Mrs. Howie: If you arrange the bedding by raising that a little higher at the back, you will find the drainage perfect.

Mr. Monrad: The lady referred to Denmark as if there were special laws in regard to keeping barns clean, and so on, and I want to correct that, at least I do not know of any special law for that; they are just as free as we are to build their stables and keep them, but they are educated, and things are not perfect there either. There has been a great deal of talk about the cleanliness in Denmark. I saw dirty factories in Denmark and I have seen dirty stables. We are apt to praise what is absent. I am a Dane myself and I am proud of the success they have made, but I do think it is so much better there than here, it is just a little education and co-operation spirit that we lack.

Mrs. Howie: Well, we have for many years had Denmark held up as a model to us, and knowing that she has made such splendid progress and that she stands at the head, we surely think the laws must go back to the cow barn, because the cow barn is the beginning of all things in the dairy industry.

Prof. Emery: I want to emphasize Mrs. Howie's appeal for the use of stalls in our dairy barns by means of which cows can be kept clean, and to again call attention to her remarks that so many appeals are made to have milk produced that is clean without pointing out how that can be done, and I know of no one thing that will contribute so much to cleanliness in milk as the provisions of stalls in our dairy barns by the use of which the cows may be kept clean. The principle is that a stall of this kind—and there are several varieties of them—you can place the cow in the stall and adjust her to the stall and by this means the floor on which she stands will remain as clean as this floor, and the cow, during the entire season of her being put in the barn will be as clean, yes, cleaner, than when she is at pasture. Now, I do not believe that we are ever going to get good, clean factories until we have a revolution in our appliance for keeping cows in our barns. I speak from experience in the matter, I have kept cows in the other way and I have

kept them in stalls of this variety where our cows can be kept absolutely clean. Now, when we go to milk these cows that are kept in stalls of this variety, their sides will not be all plastered with filth. Oh, think of it! But the cows are clean, their udders are clean and you have there the first conditions for cleanliness at our factories and you men, in undertaking to get a clean milk, can do no one thing that will tend more to that result than to acquaint yourselves with this variety of stalls and urge upon your patrons to adopt them. Some of them are expensive, others are less expensive. Here is a variety of stall that costs more than the stanchion; it is worth a great deal more than the stanchion and I am very glad that Mrs. Howie has brought this to the attention of this convention and I wish it could be brought to the attention of every farmer in the state.

Mr. Glover: Is not the whole situation in a word, or rather in a sentence,—the barn is a place in which human food is prepared. We forget it, we so many times forget it.

Mrs. Howie: There is another thing I would like to say in regard to cleanliness in producing milk. How many farmers have the facilites in the barn for washing their hands? I have known farmers who were careful in other respects, after performing all kinds of disagreeable labor, to deliberately sit down and milk the cow with their filthy hands, possibly wet the hands and let the drippings go into the pail. How do you expect to produce perfect milk in that way? There is another thing to be considered, every barn should be provided with a wash basin and a towel and no milker should be allowed to sit down to his cow until he has thoroughly washed his hands, and it is a very good idea to wash the hands between milking each cow, you will find it an advantage to do so. Why, suppose a woman were to begin to mould bread without first washing her hands, what would you gentlemen think of her habits in regard to cleanliness? Supposing she were to do this, if she were a young woman she would remain an old maid all the rest of her life.

Mr. Moore: I think Mrs. Howie's suggestion that a wash basin and towel should be in every barn, would not come amiss if it were followed out in the line of creameries and cheese factories.

Mr. Noyes: How long, I wonder, have we got to talk on this subject before they will put it in practice? I have heard this talked and have helped talk it over for the last twenty years, and I often wonder if anybody could answer **that** question, how long

have we got to talk this? Some continue right along in their old barn, old house the same as they did before. Others go further than that, they bring their cows in, either summer or winter, for fear they will get dirty, or I do not know but they simply leave them out to get their shelter in the barb wire fence, and these conditions are going right on. You can drive five miles away from the city limits of Milwaukee and you can see it. Go to any town in Wisconsin, drive out five miles, you can see the same conditions we had twenty years ago. There are some improvements, people are keeping up with the times, they are getting to the front, but how are we going to get at those people who are not coming to the front? If we can only point out some way by which we can get at it, start in Milwaukee and clean up every barnyard all the way through, I would be glad to hear some plan to do that.

Mr. Scott: I think Mrs. Howie has told us how it can be pretty well done.

Prof. Emery: I would like to ask Mr. Noyes if he thinks from his observations that there has been substantial progress in these matters we have been discussing?

Mr. Noyes: Yes, I do, only too slow, that is all. Now, the subject of putting the curd test before farmers, that has been put before the farmers for five years. I carried those tests with me two years myself, and I think the last suggestion in our operating those tests is, getting the milk right from the farmers, so that they can see them when they carry it around in bottles. Farmers look at just the end, but if you can show the farmer then and there that his milk is poor, show him why it is poor, you will do more good than to take those bottles already prepared, while they are much easier done; and during an institute, a man in charge has plenty of time to run those tests and bring them before the farmer.

Prof. Emery: Mr. Baer proposed this winter in the instruction that they give, to also take some of these milks that they have gathered and filter and get the dirt out of the filtered milk and let them see, show them how much dirt has come out of certain milk delivered to factories.

Mr. Noyes: That is a good suggestion too.

Mrs. Howie: There is certainly some improvement for the efforts we have made. It is not many years ago since the average cow in Wisconsin produced 50 pounds of butter per year; today the average has been raised to 160, so you see it must have been along careful breeding, selection, feeding and those

lines, and we have no doubt at all that this most important factor of cleanliness has advanced at the same rate as the other knowledge.

One thing I would like to say in commendation of our Dairy and Food Commissioner, when he first went into office he did not look around to see how he could improve the profits of the manufacturer or of the consumer, or anything of that kind; he went right at the farmer and helped to make it easier for them to produce clean milk. One of the first laws enacted in the legislature was that every can must be washed before it was returned, and only a lot of grateful farmers can tell you how much this law has helped them in their labor of producing a good quality to send to cities or factory.

Mr. Marty: I very much object to the treatment which is occasionally given the herd of cattle. How often do we see that in the evening or the morning the cows are brought to the barn by means of a dog, they are driven to the barn, twenty or thirty, through a small entrance which will only allow one cow to enter at a time. They are driven in there as criminals and they are put into the stanchions as criminals, they remain there during the night. Twenty or thirty in one room locked in stanchions at the same time, and there is only one place for them to go out, and they are driven out again like criminals, and I must say that many cows are injured by the manner in which they are brought into and driven out of the barn.

SHORT STATEMENTS FROM PRIZE WINNERS "HOW CHEESE WAS MADE."

Mr. Charles Miller: Is there any question you gentlemen would like to put to me? I will try to answer the best I can. I am not a public speaker.

Mr. Marty: I would like to ask that Mr. Miller just explain his process of manufacture of brick cheese.

Mr. Miller: Well, I would have to begin with the cow then, in order to do so; but I see our time is getting very short, so I will just begin at the milk, after the milk is in. I can begin at the vat, providing I have steam to begin with. I heat that milk after it is in the vat, until the moment it says 92 degrees, then

put in sufficient rennet to coagulate it in hirty minutes. Then I get lazy when that begins to coagulate, and I go outside and light my pipe, until I put my finger in there, and when that finger comes out clean, then I think it is about time I was doing something. Well, I suppose you are all cheesemakers, you all ought to know how to make cheese, we do not need to exhibit any curd rinds, or anything of that kind, but I work that cheese, —that is when I do get to work,—I work that cheese into the molds in about an hour, and have the vat slick and clean. That prize cheese was cooked at 122° F. I take in good milk and I reject the poor. That was October cheese, and it was one day's milk, once a day in October I took in milk. During the hot season twice a day.

Mr. Carswell: Can you not take in milk once a day in the hot weather, if you have the patrons cool it?

Mr. Miller: Yes, if I can compel the farmer to buy a good aerator and take care of his milk, I could make just as good cheese from the milk delivered once a day as I could if delivered twice each day.

Mr. Michels: Don't you think a good cooler would be better than a good aerator?

Mr. Miller: A good cooler would be still better, Mr. Michels, but we have got to begin at the bottom and educate our farmers; we have got to go slow.

Mr. Michels: It does not cost more to get a good cooler than to get an aerator.

Mr. Carswell: I would like to ask another question. Don't you consider that milk that has been cooled properly, cooled and aerated, in the morning's milk, and taken in once a day, is far better than taking in warm milk that has not been properly cooled and aerated? A. I think it is, and I think that milk before it goes in the vat, ought to be aerated, to get the bad odors out of it.

Mr. Carswell: The animal heat. Don't you think that can be done by the cooling of the milk?

Mr. Miller: A certain amount of it can be done that way.

Mr. Marty: May I ask if you ever took any notice of the ripeness of the milk, did you ever use a starter in making brick cheese?

Mr. Miller: I never did. When they wanted to float I let them float.

A Member: I would like to hear of anybody that has used starter in brick or Swiss cheese making.

Mr. Moore: I am not a cheesemaker. I never used a starter in brick cheese making, but I know of a factory where they do make it, and I must say when I go there I always bring some of that brick cheese home; he is a very fine cheese maker, Mr. Westphal, of Columbia county, and he always uses starter in making brick cheese.

Mr. Marty: Answering the question whether starters could be used and have been used, I must say we could certainly use a starter, I think in any branch of foreign cheese, and we are using it to a certain extent, and we are always dependent upon lactic ferment, and I think there have been good results in using the starter in the manufacture of brick cheese, and I dare say that the time is not far distant that we will ascertain the secret of the manufacture of Swiss, block, brick and limburger, in order to obtain the uniform quality we will first consider what the condition of the milk is as to its ripeness, and it is an evil which we must overcome, therefore, the reason that we are manu-manufacturing so uniform a quality of cheese is that there is no precaution taken as to determining the ripeness of the milk in the manufacture of foreign cheese.

The President then called on Mr. Charles Brimmer, winner of the silver medal on American cheese.

Mr. Brimmer: The cheese was made the second of November; the milk when I set it was at 86° F. I ripened it down to thirty seconds by the Marshall rennet test.

Mr. Marty: Do I understand the ripeness of the milk was 3 per cent?

Mr. Brimmer: No.

Mr. Scott: Maybe it would be more intelligible,—how long did it take for it, between setting and dipping?

Mr. Brimmer: Well, from the time it was set until the time it was dipped was two hours. I gave it a temperature of 106° F. I used four ounces of rennet, Hansen's rennet. It was matted in the bottom of the vat. I piled it three deep. I do not pile very deep at any time. From the time I dipped it until I milled it, was two hours, and from milling to salting was about an hour. At the time of dipping I had a quarter of an inch of acid as shown on the hot iron.

A Member: How much acid did you have when you salted?

Mr. Brimmer: Well, that is something I never test, my acid on the curd, at the time of milling or salting either. I washed the curd with water at 125°. I make a practice of washing all curds.

Mr. Glover: Do you wash the curd or rinse it?

Mr. Brimmer: Rinse it is about all. At the time this cheese was made I was getting about 2,500 a day and I used two pails of water at the temperature of 125°, I do not use very much water and I use it about fifteen minutes before salting. Just spread the curd out in the bottom of the vat and throw the water over it.

A Member: How much time did you give after salting before pressing?

Mr. Brimmer: Well, leave it lay about fifteen to twenty minutes to drain. I did not cut my curd so very fine, I cut three times with the knife, both knives, about a half of an inch I think to the cube, maybe a little smaller. I use a common wooden rake, the same as we use for raking up hay.

A Member: How much salt do you use per thousand pounds of milk?

Mr. Brimmer: Two and three-quarters pounds, this amount I used nearly all the season through.

Mr Michels: I would like to have you tell us at what temperature you cured this cheese.

Mr. Brimmer: At a temperature of between 50 and 65° F. I have not a very good curing room and we had to keep fire part of the time in the curing room and the temperature varied somewhat but it did not go over 65°.

Mr. Michels: Did you use a starter, and if so, what kind?

Mr. Brimmer: I did, lactic ferment. About two per cent as near as I could judge.

PRESSING, BANDAGING AND BOXING CHEESE.

Hon. A. D. De Land, Sheboygan, Wis.

To succeed as a cheesemaker, careful attention must be given to all parts of the work. You may have a good curd but neglect in not properly putting it in the cheese hoops that are properly bandaged and the curd properly pressed is likely to detract from the value of the cheese resulting from bad handling one-half to one cent per pound. A well shaped, properly handled cheese will sell for more money and give better satisfaction to cheese

dealers and to the trade, than an ill shaped, lop-sided and carelessly handled cheese. Many cheesemakers do not seem to realize this fact. We would not put our best brand "Badger State" which carries a guarantee of being good in every particular, on an ill-shaped cheese even if the texture and flavor were all right.

The "up-to-date" cheesemaker will have clean hoops, clean followers and press caps and will use ready-made or sewed bandages as those are the only kind that will fit telescope cheese hoops and keep the cheese in good shape. Adjust the bandage in the hoop to have only one inch of bandage to turn over each end of the cheese, place a press cap in the bottom of the hoop and the cloth circle on this, then insert the bandages with the bandage. The cloth circles should be ½ inch smaller than the hoop.

Weigh the curd you put in each hoop. This is easily done by suspending a spring balance scale over the vat and suspending the curd pail on the hook. Weigh 11 lbs. curd for a 10 lb. cheese, 22 lbs. for a daisy, and 33 lbs. for a flat cheese.

When you dress the cheese draw the bandage up evenly, fold down the end, place a cloth circle on this and then put on the press cap; do not put the top circle on till you dress the cheese.

The Automatic cheese-press is without doubt the very best kind as it gives the right amount of pressure continuously. It also prevents the loss caused by extreme lever pressure and closes the end so as to prevent irregular shaped holes between the pieces of curd which are often found in cheese pressed in the old style cheese press. Cheese should be pressed as long a time as possible to have the hoops ready for the next filling.

When you remove the cheese from the press and hoops, if any are found with bandage slipped down, wrinkled or out of place, or cheese not good shape, wash the cheese with warm water and adjust the bandage and press such cheese longer. When boxing for market, secure the best boxes, even if they cost more; reject all thin or rough boxes. Give good weight. "Good weight" is when the scale beam goes up and remains up on the pound mark, if you do this on a correct scale. No honest dealer can or will dock you a pound per box, if he does then insist on a legal weighmaster's certificate before submitting to any reduction in weight. In justice, all claims of buyers for short weight should be accompanied by the city weighmaster's certificate.

Dealers as well as cheesemakers should be honest in receiving and giving good weight. Mark the weight in plain figures next

the lap on the box, with the date when the cheese was made, under the weight to facilitate inspection.

Always send the invoice and railway receipts to the buyer when you ship cheese. By following the suggestions given you at this convention you should have what I sincerely wish you: a successful and happy new year.

DISCUSSION.

Mr. Michels: I would like to ask you if you advise turning cheese in the press and if you advise washing them with hot water at that time?

Mr. De Land: If I were using a peg curd mill, it seems necessary to take the cheese out and wash it, but with a knife mill, or the grinding process, it is not necessary to take them out. I am told that some using the seamless bandage always take a cheese out and wash and replace, changing the ends of the cheese, that is an advantage, but with good, knife milling in the ordinary telescope hoop, it is not necessary, I never found it so, except in cases where the bandage would slip down.

Mr. Michels: Don't you care whether the cheese is turned around in the hoop, from the buyers' standpoint.

Mr. De Land: No, there is no buyer in the state that can tell whether the cheese has been turned or not, those made in the telescope hoop.

Mr. Michels: What do you mean by the telescope hoop?

Mr. De Land: Ordinary gang press hoops, usually they slip into each other.

Mr. Michels: If Mr. De Land is right that there is not a cheese buyer in the state that can tell that, I believe any cheesemaker here can tell.

Mr. Scott: I do not believe a cheesemaker can turn a cheese in a long horn hoop.

Mr. De Land: I stand by my position, there is not a cheesemaker in the state that can tell whether a cheese has been turned in the hoop unless it be pressed in a seamless bandage.

A Member: I think Mr. Michels has reference to twins or cheddar cheese. I turn my cheese every morning and I can get a finer looking cheese by turning it, and I think every other cheesemaker can, and I think the buyers would rather have it and I fail to see why a buyer could not tell the difference.

Mr. Michels: How could you turn one hundred cheeses in the morning?

The Member: I think I would get up early enough in the morning to turn them, I would have help enough.

Mr. De Land: I do not see how any benefit can be derived from turning cheese at the time of pressing, except the fiber ring on the forward end be too small and there is an edge pressed up, by pressing that down you do help it a little. Other than that I see no advantage and I know that I made cheese thirty odd years, personally, and except in cases where the bandage happened to slip down, and something was not looking just right, I never turned a cheese in the hoop and I think my cheese has never been objected to after the first few years.

Mr. Anderson: If the cheese is closed perfectly when it is taken out of the hoop the first time, I do not see any reason why it should be pressed over again, provided the top is all right, and, in fact, with a long cheese you cannot turn it. But then the cheese is so close, I would ask Mr. De Land to give reasons why cheeses do not close; of course, in that case if the fat was started, it would have to be taken out and washed in hot water, and pressed over again. I would like to have him explain the reason why cheeses do not close.

Mr. De Land: Because in using the peg mill it will tear the curd and allow the butter fat to get out, and that free fat gets between the pieces of curd and it will not close up. If you take very warm water and wash that fat out, the curd will then press together, that is all there is to it. Of course, I would take the cheese out of the hoops if I found that that was the case. I have been getting quite a good many cheeses lately the surfaces of which showed carelessness on the part of the makers in not keeping the followers scraped clean and the fiber rims pounded out to fit the hoop, and I think that is one of the worst features I ever had, because the surface is not smooth, there is a kind of sticky cement, hard, dry stuff that lots of factories leave to accumulate in the followers. You cannot make nice cheese unless you keep everything clean.

MANAGEMENT OF FACTORIES AND MARKETING THE CHEESE, FROM A PROPRIETOR'S STANDPOINT.

J. H. HOEPPNER, Marion, Wis.

MANAGEMENT OF CHEESE FACTORIES.

The cheesemaker should be the manager, whether the factory is owned by him or by stockholders.

He should have served at least two seasons apprenticeship before he should be accepted as manager. The most important part in managing a cheese factory is cleanliness, for how can a cheesemaker expect clean milk from his patrons, when he himself stick in filth and dirt up to his ears, which is too often the case, in taking in milk.

1. He should not take in milk which is not properly cooled and aerated or otherwise unfit for cheese.
2. He should not take in milk any longer than for one and one-half hours, and that should be from 5:30 to 7 A. M.
3. He should not take any milk brought to him by patrons of his neighboring cheesemakers.
4. All milk should be bought and paid for by the test.
5. The cheesemaker should do all the figuring.
6. He should keep a good set of books, which should be open to every one.
7. He should be of good sound principle, and he should possess lots of energy, so that whatever he preaches he should practice, for if he does not his patrons will soon lose all respect for him.

Marketing of cheese is one of the hardest problems which confronts the cheesemakers of Wisconsin at the present time. Some of you may think that the mraket is all we can expect, but do you remember that the factory man received only 6 to 6½ cents for his cheese in April and May, and cheese was retailing at 15 cents in the cities of our own state and as high as 20 to 23 cents in the Southern states. We have at present from 20 to 30 call boards scattered all over our state, but what do these boards amount to? As you all know cheese is sold at these boards subject to inspection of the buyers' storage; I have known where buyers would go to these boards and buy or bid from ½ to 1 cent per lb. more than they could afford to pay, so when the cheese was shipped and the inspection O. K. they simply

would cut on weight, to make up for what they had overpaid.

Now, brother cheesemakers, what protection have we got? Some of you will probably say ship only to honest parties with a good rating. Now I ask you have you ever thought it over what a rating of $50,000 or $60,000 amounts to when you stop to consider that these houses have from two to four men buying? You ship from $700 to $1,500 worth of cheese per month, and this on from 10 to 30 days' time. Now you are not the only one. There are probably 50 or even 100 more shipping to this same house. So this house is doing from $75,000 to $150,000 business per month, and if they failed you might get 25 cents on the dollar, and most likely nothing at all.

So at the present time we have absolutely no protection whatever. We are the guarantee between the farmers and buyers. If the house we ship to fails, we must pay the farmers, or lose patrons, factory and reputation. Now brother cheesemakers, there is only one way out of this and that is to sell cheese for cash, only cheese should be sold under the trier, and if we stand together we can do it, and it will do away with all fraud cheese buyers, and the only way to accomplish this is by co-operation, and such a co-operative organization we have in the Wisconsin Cheese Board which was organized nine months ago, with headquarters at Milwaukee.

DISCUSSION.

Mr. De Land: I am sorry Mr. Hoeppner takes such a narrow view of things. Do you know that the amount of business that is done is done largely on credit? Credit is worth more than money to any man, a good name, a name proven to be honest, that is worth more than the money. What is $50,000 or $60,000 to some one if it is in the hands of an irresponsible or dishonest man? If he has succeeded, or anybody else has succeeded in getting an honest deal at any particular board, that is the place for the factorymen to sell their cheese, but I believe there are other boards where the factorymen have no reason to complain and they have been paid good prices and paid promptly. I mean that cheese that are shipped one week is paid for the next and it is not good business on the part of the dealer when that is not the case. Is that what you understand by cash sale, or do you expect the buyer to come around

with cash in his pocket and test your cheese and hand it out before you load it?

Mr. Hoeppner: Yes, Mr. De Land, I do.

Mr. De Land: You better get in some other business.

Mr. Hoeppner: I do not think I will have to, because I tell you, the farmer, when he takes his wheat to market, sells for cash, why should we go to work and sell the cheese on credit? I do not see any reason for it whatever.

Mr. Anderson: I will say that the factory men to a certain degree get credit and I would agree with Mr. De Land, cheesemakers could hardly do business without credit. You have to buy your supplies and you have to have the package and the paper before you can get them, yet it is a good thing to pay for them after you get them. So with cheese in Sheboygan county; you sell the cheese there on the dairy board every week in the summer, every two weeks in the winter, and at our next meeting we will have our check for the balance. I call that a cash business, and I do not ask a cheese buyer to hand me the money before he has gotten the cheese.

The Chairman: Would you be willing to let him have the cheese if he had to ship it away 100 miles?

Mr. Anderson: No. That is the difference. In Sheboygan we have got the cheese right at home, and I will just say that we have a good sale for our cheese right at home.

The Chairman: What would you think would be a good way to sell if you had to ship fifty or a hundred miles or more?

Mr. Anderson: I do not think the cheese factories in Wisconsin ought to ship their cheese out of the state to sell it. What I mean, they do not have to sell to the buyers outside of the state, there are buyers enough inside of the state.

The Chairman: But there are quite a few that have to ship fifty or a hundred miles or more to get to the buyer inside the state.

Mr. Anderson: Well, provided he would sell to the nearest buyer, of course, we are looking up in our part to two or three places that will buy it inside the county, if the cheese gets there and if there is not anything the matter with the cheese, we can take it back, or take the price we can get for it.

The Chairman: It does not cost you any freight; but it is different for those that have to ship to get it to their dealer.

Mr. Anderson: What I mean to say, if we sell to a responsible buyer, as we always should do, why, I think that that man ought to be entitled to the credit, that is, the cheese, of course

we have a provision in our dairy board not to ship the cheese outside of the county before it is passed on. Of course they do it sometimes, but I do not think we ought to do it.

The Chairman: I think this question of marketing deserves some attention here. I know that we cannot depend on the dealers to discriminate according to the quality of the cheese. I did have that happy dream once that they would do it, and in that way help build up the quality where it ought to be. I have gotten over it. They are in the business to make money and there are times when the demand is good and the milk is good when they will pay a great deal more than they ought to for the cheese; they will overlook a great many imperfections, and pay the full price for it; then there are other years when the demand is dull, when they will take the other extreme, and this season I know they cut and slashed when they had no business to, as far as the quality was concerned. Then there are buyers who are tricky, or there have been; I have tried to keep a little tab on the thing, and as near as I could get at it during the past two or three seasons, I would estimate that the farmers and cheesemakers who have had to stand the loss have lost probably $100,000 in that way. I know of one cheesemaker up in Shawano county who has $1,900 coming for cheese that he shipped to a dealer inside of the state and cannot get a cent. I know of another factory that has over $2,000 coming and cannot get a cent, and there are lots of others.

Mr. Scott: It seems to me that a man that allows a bill to run that high is foolish. But when we figure on a cash basis we cannot do business, and if a farmer came to my factory every morning and asked me to pay for his milk, he would "bust" me, sure, because I could not get enough to pay him every day, but the suggestion we tried to incorporate in our rules that would cover that was to have the cheese buyers give security for fair dealing. That is, they have a board of trade, and he sells at the board of trade, each one buyer has to give a bond to stand the expense to have inspectors to inspect the cheese. If Mr. De Land should buy cheese, say from one of the buyers, it would be shipped to his warehouse, and if he rejected the cheese, then this board of inspectors would go down there and inspect it, and if Mr. De Land had discriminated unfairly, the cheese was all right, and he simply cut it to be mean and dishonest, the man would get his cheese back and Mr. De Land would pay the expenses incurred. On the other hand, if Mr. De Land was perfectly fair, the cheese buyer would have to pay

the expense. Our cheese buyers voted that down, but the cheese-makers would not do it.

Mr. Hoeppner: That is altogether different. Now, the cheese-maker in generaal has a factory, but the average cheese dealer has only rented storage and when the cheese is gone, you have no definite hold on him whatever and if he has money in his pocket you cannot take it away from him. Now, a little case I had.—I started in and I shipped my first cheese shipment and the dealer wrote back to me that he could only give me seven cents. Cheese was selling at 8¾ and I was losing money. Then he asked me if I had some other party that I wanted him to turn the cheese over to, and I told him he should telephone over to a certain house and have the inspector come there, and he never answered my letter. I waited three weeks and meanwhile there was another man came along and this cheese dealer claimed the cheese was all acid: another dealer came along, bought the rest of the cheese and gave me another cent for the cheese. He said the cheese were not acid, but they were weak-bodied. It seems that when a young man is starting in business, the dealers take him in, that is a great deal of our trouble in the Wisconsin cheese business at the present time, the young man has to pay for experience, and I paid for all I have. Then the second season I got it in the neck $250 and that is the way it kept going.

Mr. Schumann: I think it was purely your fault that you got caught on the start. If the man wrote that the goods were at your disposal to sell to anybody else, I think the man gave you fair treatment. I do not think he beat you.

Mr. Hoeppner: I do not think he did, because I wrote and told him what he should go and do for me, he did not do so, he simply took them and sold them. I wanted him to telephone over and get another man there and if he could give more to let me know and I would tell him what to do with the cheese.

Mr. Schumann: That was a thing beyond the pure policy for any dealer. I do not think there would be any dealer.—I do not think Mr. De Land would like to deal that way himself, if I had to sell in my business, although I am not a dealer myself, I represent a dealer, I would reject the goods if I did not want them and I would notify the manufacturer that I rejected the goods. If he has anybody else that can use the goods, all right, take them out of my hands, but to come into my house and pick out a box here and there as he likes best, and pay for them what he pleases, if you want to charge me for the rest of the lot, I do not think that is right, I do not think any dealer

will do that kind of business. I think the dealer is doing his perfect duty if he rejects the lot and puts them at the man's disposal.

Mr. Michels: I would like to have this gentleman explain what he would have done providing he were in Mr. Hoeppner's place, supposing you were two hundred miles from the market, what are you going to do under those conditions, at the same time knowing that all these cheese buyers are all in one ring; if you turn them over to another, they will but give the same price?

Mr. Schumann: I differ with you that the cheese buyers are all in one ring, I differ with you very greatly. I do not believe there is a board in the state that the cheese buyers are united. I have bought some goods on the board myself, and I know the cheese buyers have knifed each other as hard as they could and I do not call that a ring by any means. It is hardly a month over a year ago that goods were paid for about a cent more than they were practically worth, and I do not call that a ring.

Mr. Michels: That is simply speculation, everybody thought he was going to make money on it.

Mr. Schumann: Well, I do not know, everybody was after the goods, but an honest dealer is entitled to honest goods, and if he rejects a lot of goods, he is doing his duty when he rejects them and places them at the man's disposal. I know any dealer will show courtesy enough, as Mr. Hoeppner says, if the request is made, "Place these goods in storage on my account," he would probably have done so.

Mr. Michels: I asked for information. I wanted to find out what you would have done if you were in this gentleman's place.

Mr. Schumann: I would have done this very same thing. I would have taken the goods, as soon as a man has refused the goods, placed them at my disposal. I should have taken care if I knew my goods were not right, as Mr. Hoeppner said they were not.

Mr. Michels: He did not refuse the goods, simply offered him seven cents.

Mr. Hoeppner: He did not buy them on the board.

Mr. Schumann: You sent the goods to the man, you consigned them to sell on your account?

Mr. Hoeppner: They were not sold on the board, they were shipped.

Mr. Schumann: That is what I say, you shipped them to consign them to be sold on account. The man did not buy the

goods on the board, did not buy them in the factory, did not buy them by inspection, but I understand you simply shipped the goods to be sold on your account, on commission.

Mr. Hoeppner: No, they were not; they were to be paid for in cash on the basis at that time from ten to thirty days.

Mr. Schumann: At board prices.

Mr. Hoeppner: Well, they were going at Sheboygan prices.

Mr. De Land: Did he write you that he would give you Sheboygan board prices?

Mr. Hoeppner: If the goods were first class.

Mr. Schumann: Well, then they were sold on that basis, Sheboygan board price, and he rejected them and said that he could give only seven cents, I suppose, is not that the substance of it?

Mr. Hoeppner: Did not reject them, only said he would pay seven cents.

Mr. Schumann: Why, certainly; if he did not pay that price and say it was only worth seven cents, he rejects, do you want him to write out the words, "I reject and solomnly swear?"

Mr. De Land: Well I do not know but I shall go out of the cheese business if we are a gang of cut throats and robbers; I am going out of the cheese business. but when I was a factoryman, which was for over thirty years, I never saw the trouble that Mr. Hocppner is complaining of here, and whinning about. I have been a cheese buyer for nearly thirty years, that makes me pretty old, and I am not having any trouble in my relations with factories in our territory and I belong to no ring, and I believe there are others just as honest as I am and I believe there are scalawags in the cheese business that are buying cheese, and as I said, you can, by careful investigation, find out who are those men who are dealing fairly and squarely, deal with those men, reject bids of anybody else, there is your remedy, but do not class us all in this catagory of dishonest and cut throat men.

Mr. Michels: I did not mean to class you among them.

Mr. De Land: What my neighbor dealer is offering for cheese has no more to do with what I would give that party for the cheese than if he had never made the offer. I know what I can get for cheese, whether it is first class or second grade or cull, and I will pay a man that honestly, or I will pay a boy ten years old, if he is selling cheese, just as much as if he were the best man in the state; it makes no difference whether the man is 100 miles from Sheboygan, or two hundred miles, he will get the same treatment that a man next door will; I think there

are a few Sheboygan men here that will bear me out in this, and there are other dealers that are just as good and do just the same as I do. Now, we are not so bad as some would like to make out.

Mr. Michels: I think what Mr. De Land has said is all well and good enough; I have nothing to say against Mr. De Land. I have sold cheese to him years ago time and again. I have never found fault with his way of dealing; the only fault I have to find with Mr. Deland is, he has so many cheese, you write whether he wants your cheese, almost always he does not want it.

Mr. Hoeppner: That same summer a man who is averaging about 40,000 pounds of cheese a month, had been shipping to a house for the whole season, until he got the house filled up, and he shipped the same party and they went to work and did the same thing to him, they offered him ¾ cent less than the market. This man wrote right back to them that if they would not give him Sheboygan market, he would take the cheese out of his cold storage, and he got the price, just simply because he knew the business and had the money to come over.

Mr. Bachmann: I wish Mr. DeLand would build a warehouse right next to my factory; I would like to deal with him, but we are not all happily located, and it has produced, in the northern part especially, one-half the trouble and problem of marketing cheese. I had an experience last summer where I had the choice of two things, if I wanted to take the cheese back from the dealer, for about eight different times I had to pay just as much as the make amounted to.

Mr. DeLand: Now, you factorymen, if you find, if you know or are afraid of a certain dealer, and know that he has done these things with your neighbors and possibly with yourselves, but if he bids a quarter cent above some other dealer that you know to be reliable, that you never had a bit of trouble with, you will take that bid, and you will get left some time, it is only a question of time. Now, why is it, why don't you stand by those who are right and do right, instead of taking chances? Now, instead of selling more cheese, I have to look out for my buyers quite as much as you do, I find out what that man is and try him once, if he pays promptly and is all right, why, I continue with him, and I have customers that commenced with me twelve years ago, weekly orders, and I have shipped them ever

since. You can do the same with your dealers, get the right man and sell to him.

Mr. Hoeppner: The trouble is, nowadays you cannot find the right man. If there is a cheese firm worth $150,000 one week, they may not be worth a cent the next week. We had an instance of that kind this last summer.

MY EXPERIENCE WITH AUTOMATIC CURD AGITATORS.

H. M. Scott, Sheboygan Falls, Wis.

Mr. Scott: You cannot expect a paper from me, for within about an hour ago they asked me to take Mr. Alves' place. It is his experience that you expected to hear, but I might tell you of my experience and give you a few cautions in regard to using the agitator and tell you what I regard as benefits.

I have had the agitators in my home factory for two years and I would not undertake to run a factory for any length of time without agitators, because I believe that just as good cheese if not better, can be made with the use of them and it saves work. Every minute of work of a cheesemaker saved is so much taken off, and when you save a man's bodily work, you give him a chance to work with his head, he does not get tired, a tired man cannot do good business. There has been lots of bad cheese made by using agitators, some did not understand them and went to extremes, but I got my high score on cheese that was made with the agitators. This summer we used the engine and when we made in one vat I found it was too expensive to keep the large boiler going, so I worked by hand, but I got sick of stirring it, then I bought the gasoline engine, to run the agitator. We could set the agitator working and I could sit and read the paper, generally got a half hour's reading time in that way. Well, the main thing affected by the agitator would be the texture and where the agitator has made bad cheese, it is simply because they did not get a thorough cook, did not get the curd thoroughly firmed down. Now, in operating the agitators, you can lessen the expense of running, it will only take half the wood to heat up a vat of curd with the agitators, you can get it heated up in

half the time. The way I work, I get up my heat, set it at 86 and get my heat to 100 or 104, as it runs at this time of the year, just as quick as I am getting the heat up, and it generally takes from twenty to thirty-five minutes. Then I stop the agitators and take them off and hang them up and keep the curd stirred loose with the rake and generally calculate to run so that I draw my whey from an hour and a half to an hour and three-quarters from the setting. I use about 4 ounces of rennet, it generally takes about twenty minutes to coagulate, I cut it once with the horizontal knife, then cut it with three-eighths cut it finer. The curd is not broken a particle, every piece of curd will remain in the same shape when it is cut, it is always floating and for some reason it gets thoroughly cooked through, but it does not firm up like curd does when it is stirred with a rake. I think the settling down, the weight of the curd on the top, has the tendency to press out the moisture and firm it up, for that reason I stop the agitator just as soon as I get the temperature up and by that time the heat has gone through it all, and all it needs is firming up, and the acid is not coming so fast but what it can be stirred up, it does not mat down much, as a rule, and I believe that with the agitator we can get a closer bodied cheese, we do not have these ragged holes in the cheese, or at least so many of them as we would have from stirring with the rake. If there is any question, I would rather that you would ask me questions.

Mr. Chaplin: About how many times do you stir? And how fast?

Mr. Scott: I run the agitator just fast enough to keep it from settling on the bottom. Now, mine have run,—I have the first set Mr. McKinnon put down, it is the old Canadian make with the scoop fan, and I like them the best, I believe they can be run slower and keep the circulation up better than the separate paddles, then I run in the summer time ten revolutions a minute. The vat in the Harmon factory holds 7,500 and there was a mistake made there in the vat, the paddles are not wide enough, they do not come within six inches of the side; it is a dry steam vat, and the steam will bake the curd right along next the edge where the steam pipe runs and those paddles should be spread two inches farther; then he would not have to run them so fast, he runs them fast and so he gets along all right and I do not interfere with the cheesemaker if he is satisfied, but I would have them changed if I were there myself.

Mr. Chaplin: Don't you think you can stir with the separate paddles to a greater depth?

Mr. Scott: I do not think it is policy, I think it needs that settling down weight of the curd on itself to firm it up, press the moisture out. I think that is better policy and then stir it up once or twice.

The Chairman: Even with a slow-working curd?

Mr. Scott: No, as I tell you, I am talking of my fast-working curd practice, as I do not work slowly, it might be possible that a man that sets his vat to work so that it goes from two to two and a half hours to dipping time, he might possibly get just as good results in running his agitators up to the time of dipping. Bro. McKinnon made the first agitator in that country. He was very much dissatisfied, had a gasoline engine, took that out, could not make that work, I believe Ed Coe was also dissatisfied and took his out, then I got Mr. McKinnon to put them in for me after these failures, and got them going O. K. and then Mr. Alves put them in. He came down to see how I ran them, and he went home and went to work at them at once and you could not get Mr. Alves to run his factory without them to-day. He has run them every day from the time he got them in and never lost one cent on his cheese, it is always fine. I will say in the Harmon factory the cheesemaker works 65,000 to 75,000 pounds of milk per day alone by having his agitator, and having his power to run the curd mill, and he did not complain about working too hard, he had plenty of time to go and see his girl after he got through with his work.

A Member: What would be the cost of one of these agitators?

Mr. Scott: The minimum cost is $45 for an agitator, and then the larger the vat the more fans have to be put on, that would increase the cost somewhat, perhaps five or ten dollars, according to what a man wanted, and the size of the vat you put them in.

A Member: I would like to ask Mr. Scott if the slot at the bottom is a moveable slot, so that it would fit into the bottom, or if there is a scoop of some sort that would tend to stir all the curd, not leaving it there at the bottom?

Mr. Scott: I told you I prefer the first kind that I put in with the scoop sheet paddle, I have no trouble with the curd settling on the bottom, the current is so strong. I have to go along and loosen it up the first thing, of course, curd naturally sticks to the side, you have to take your hands and loosen it,

after that we have no trouble. You want a sort of little plowshare that will take it up and loosen it from the bottom and throw it up toward the top.

The Member: Yes, but if you have a moveable slot at the bottom that you can set with a set screw and let it come, say, within a quarter of an inch of the bottom, or you can raise it as you choose, would not you be apt to get every particle in there so as not give it a chance to set?

Mr. Scott: I do not believe that would do any better than they do now, because this paddle would not take it off the bottom, you simply have to put your hands right into it to remove it.

The Member: Supposing that the agitator was kept going, and that gave the curd a chance to settle and taking it from the bottom all the time?

Mr. Scott: As long as the agitator is in motion it does not have a chance to settle.

The Member: But I think you stated that you had taken, after working your agitator some minutes, you then took your hands to stir it all up?

Mr. Scott: Yes, I do if the agitator is stopped long enough to let the curd settle, it settles down and gradually mats together, and usually the agitators, as they are built, they have to stand on a loop, the loop is about that high (indicating), higher if you want to have your beam overhead and these loops are not strong enough, they will spring and twist, so you will get all tangled up. If nearer the bottom, they will work so much better, if they are strong enough, but the curd is too heavy, it mats together and it would be too heavy for them to carry, we would have to have heavy iron frames to make them practical at all.

Mr. Moore: I think it can be made practical.

President Aderhold: Now, is there anything else to come before the convention? I do not know of anything. Now, members, I hope that this convention will prove as profitable to you and more so than you expected it would. Every time I come down here, I have not only a good time, but I learn a great deal. There is one thing, it makes the year's labor seem a great deal shorter than it would if we did not have these conventions, and I hope it will affect you the same way, that you will not forget it when our next convention time comes around, come down again and bring your neighbors with you, prepare to stay three days and bring some cheese. I think we have had a very good

convention throughout and a good program and everything has been carried on very smoothly. That was due, in the first place, to the splendid arrangements that the Secretary had made and to the courtesy and good behavior of the members, and I want to thank you particularly for being as good as you have been. I now declare the convention closed.