First annual report of the Wisconsin Buttermakers' Association : held at Madison, Wisconsin, January 14th, 15th and 16th, 1902. 1902

Wisconsin Buttermakers' Association
Madison: Democrat Printing Company, State Printer, 1902

https://digital.library.wisc.edu/1711.dl/SLCWGJ3MWSV4J8L

FIRST ANNUAL REPORT

OF THE

Wisconsin Buttermakers' Association

Held at Madison, Wisconsin, January 14th, 15th and 16th, 1902

Organized February 21, 1901

COMPILED BY

E. H. FARRINGTON

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1902

AIMS AND OBJECTS.

The object of this association shall be to increase the practical knowledge of creamery operation, to raise the standard of Wisconsin butter to a higher level, and to educate ourselves for larger fields of usefulness in our profession.

TABLE OF CONTENTS.

LIST OF OFFICERS.

F. B. FULMER, *President*.....ETTRICK

GEORGE HANSEN, *Vice President*.....KIRKWOOD

DEWITT GOODRICH, *Secretary*.....FT. ATKINSON

M. MICHELS, *Treasurer*.....GARNET

EXECUTIVE COMMITTEE.

E. H. FARRINGTON.....MADISON

GEO. H. HOLMES .....BARABOO

R. C. GREEN .....ALBION

NAMES OF MEMBERS OF THE WISCONSIN BUTTER-MAKERS' ASSOCIATION, 1901-1902.

Ace, F. P	Story, Wis.
Adams, M. J	Milwaukee, Wis.
Alexander, C. B	Chicago, Ill.
Allen, A. R	Patch Grove, Wis.
Allen, Geo. W	Waupaca, Wis.
Andrus, H. B. J	Neillsville, Wis.
Ashman, F. W	Woodlawn, Wis.
Austin, H. W	Buck Creek, Wis.
Baer, U. S	Madison, Wis.
Bair, F. B	Chicago, Ill.
Bartholomew, W. E	Stettin, Wis.
Bast, Frank	Elkhart, Wis.
Bast, Joseph	Stockbridge, Wis.
Bates, R. M	Madison, Wis.
Bates, R. R	Madison, Wis.
Beavis, Geo. W	North Bristol, Wis.
Benedict, M. V	New York, 168 Duane St., N. Y.
Berkholtz, H	Middleton, Wis.
Bibby, J. M	Galesville, Wis.
Bickel, M. V	McGregor, Wis.
Blood, F. J	Chicago, Ill., 6142 Ingleside Ave.
Blumenstein, F	Sullivan, Wis.
Bluer, Dan	Omro, Wis.
Boettscher, J. E	Guthrie, Wis.
Boss, F	Fulton, Wis.
Boss, F. W	Leyden, Wis.
Bowar, F	Cazenovia, Wis.
Bowman, H. S	Sauk City, Wis.
Brandt, B. S	Woodlawn, Wis.
Brunner, F	Northrop, Minn.

Brunner, J. A ..... Tarrant, Wis.
Bush, F. H ..... Merrillan, Wis.
Bussard, R. M ..... Poynette, Wis.
Buswell, L. E ..... Kendall, Wis.
Button, C. E ..... Fennimore, Wis.

Chapin, B. J ..... Amherst, Wis.
Chapin, C. J ..... Amherst, Wis.
Christianson, C. H ..... De Forest, Wis.
Cole, A ..... Magnolia, Wis.
Cook, J. W. B ..... Chicago, Ill.
Cornish, O. B ..... Ft. Atkinson, Wis.
Cornelinson, T ..... Cooksville, Wis.
Cotton, J. B ..... Madison, Wis.
Coulson, H ..... Allenton, Wis.
Cox, W. T ..... Black Earth, Wis.
Crippin, G. E ..... Eau Claire, Wis.

Dabareiner, J. F ..... Jefferson, Wis.
Dallyager, B. H ..... Milwaukee, Wis.
Dickson, W. C ..... Madison, Wis.
Dixon, A. E ..... Evansville, Wis.
Dodge, B. J ..... Leeds, Wis.
Donner, H ..... Dayton, Wis.
Dosch, E. O ..... Oaks, Wis.
Douglas, O ..... Boston, Mass.
Driscoll, J. L ..... Ashridge, Wis.
Duffner, S. J ..... Leon, Wis.
Duxbury, E. L ..... Green Bay, Wis.

Eastman, E. L ..... Saukville, Wis.
Eberhart, Otto ..... Camp Douglas, Wis.
Eggert, O. W ..... Marshall, Wis.
Eldridge, C. J ..... Chicago, Ill.
Ellis, B. J ..... Stoughton, Wis.
Elgin Butter Tub Co ..... Elgin, Ill.
Enger, John ..... Union Mills, Wis.
Erickson, Alb ..... Volga, Wis.
Esker, Ole ..... Bloomer, Wis.

Falk, J. W ..... Greenwood, Wis.
Farrington, E. H ..... Madison, Wis.
Frank, H. J ..... Neenah, Wis.
Fredricks, P. E ..... New York, N. Y.

Friday, H. P ..... Markesan, Wis.
Friday. S. B ..... Brandon, Wis.
Froehlich, J. L ..... Madison, Wis.
Fulmer, F. B ..... Ettrick, Wis.

Garrison, J. M ..... Sparta, Wis.
Gensked, L. W ..... Royalton, Wis.
Geusmer, H. T ..... Mayville, Wis.
Gibson, C. N ..... Gilmanton, Wis.
Gibson, D. I ..... Nelson, Wis.
Gibson, J. O ..... Beloit, Wis.
Godfrey, J. H ..... Madison, Wis.
Grant, Geo. P ..... Luverne, Minn.
Grashoin, C ..... Mayville, Wis.
Green, R. C ..... Albion, Wis.
Greenwood, E ..... Quincy, Wis.
Grimm, Fred ..... Tustin, Wis.

Haberstick, A. C ..... Hanover, Wis.
Halm, John ..... Rockdale, Wis.
Hammer, G ..... Olivette, Wis.
Handy, Fred ..... Bangor, Wis.
Handy, Selah ..... Bangor, Wis.
Hanson, Geo ..... Kirkwood, Wis.
Hanson, Jake A ..... Windom, Minn.
Harabugh, C. B ..... Hartland, Wis.
Hardiker, F ..... Chicago, Ill.
Hardison, W. F ..... Alma Center, Wis.
Harris, R. T ..... Warren, Wis.
Hart, T. H ..... Symco, Wis.
Harwood, O. E ..... Chicago, Ill.
Hastings, F. H ..... Burlington, Wis.
Hayward, P. K ..... Royalton, Wis.
High, John ..... Berlin, Wis.
Hildeman, E. J ..... Belle Plaine, Wis.
Hilfiker, J. H ..... Union Mills, Wis.
Hinn, C. P ..... Fennimore, Wis.
Hoiberg, H. B ..... Floyd, Wis.
Hoiberg, S ..... Oregon, Wis.
Holbrook, B. F ..... Durand, Wis.
Holgersen, L. P ..... Jacobsville, Wis.
Holmes, G. H ..... Baraboo, Wis.
Holmes, A. J ..... Tomah, Wis.

Houghland, A. C..... Chicago, Ill.
Howland, H. B..... Tarrant, Wis.
Hoyt, E., Jr..... Marshall, Wis.
Huebner, E. A..... Shiocton, Wis.
Huth, F. W..... Troy, Wis.
Hyne, W. J..... Evansville, Wis.

Jahnke, L. F..... Watertown, Wis.
Jensen, J..... Berlin, Wis.
Jones, E. I..... Zeigler, Wis.
Jones, J. E..... Bangor, Wis.

Kachel, J. C..... Whitewater, Wis.
Kates, C. U..... Custer, Wis.
Keith, S. C., Jr..... Boston, Mass.
Kelling, F. H..... Pipersville, Wis.
Kniffin, Fred..... Fairchild, Wis.
Koch, E. E..... McFarland, Wis.
Kraus, W..... Kirchhayn, Wis.
Kruger, A. F..... Sandusky, Wis.

Laberee, M. W..... Necedah, Wis.
Labundy, B. A..... Elkhorn, Wis.
Larson, H. C..... Dodgeville, Wis.
Larson, P. O..... Holman, Wis.
Lawrence, Louis..... Sundown, Minn.
Lea, A. H..... Amherst, Wis.
Lee, Frank..... Evansville, Wis.
Aikens, C. C..... Walworth, Wis.
Livermore, A. B..... Fairchild, Wis.
Lund, W..... Forest City, Wis.

Maryfield, F. V..... Wild Rose, Wis.
Masser, Otto..... Ixonia, Wis.
Mau, Wm..... Elk Mound, Wis.
McCormick, F. E..... Hetzel, Wis.
McCready, John..... Madison, Wis.
McIntyre, Geo. G..... Whitewater, Wis.
McLane, A..... Whitewater, Wis.
Mennes, O. J..... Springfi'ld Corn'rs, Wis.
Meracler, O. L..... Whitewater, Wis.
Meyer, J. B..... Modena, Wis.
Meyer, M. H..... Cedarburg, Wis.

Michels, Math ..... Garnet, Wis.
Michels, M. J ..... Calumetville, Wis.
Milius, H. A ..... Almond, Wis.
Miller, Wm. E ..... Marshall, Wis.
Moats, H. H ..... Urne, Wis.
Moore, James G ..... Albion, Wis.
Morrison, Geo. W ..... Fennimore, Wis.
Mower, E. C ..... Merrillan, Wis.

Oakhill, B. & C. Co ..... Oakhill, Wis.
O'Brien, Chas ..... Augusta, Wis.
Otterson, Oscar ..... Little Falls, Wis.
Orvald, O. M ..... Stoughton, Wis.

Paddock, E. A ..... Tibbits, Wis.
Palmer, A. L ..... Mazomanie, Wis.
Pamperin, A. R ..... Green Bay, Wis.
Paulson, A ..... Grantsburg, Wis.
Paulson, Chris ..... Verona, Wis.
Payter, C. A ..... Whitewater, Wis.
Peacock, J. J ..... Fennimore, Wis.
Peacock, W. M ..... Fennimore, Wis.
Pearson, H ..... Neenah, Wis.
Peterson, C. A ..... Weyauwega, Wis.
Pheatt, H. S ..... Milwaukee, Wis.
Pingel, E. C ..... Chilton, Wis.
Proctor, Max ..... Mount Hope, Wis.

Quirk, J. P ..... Burlington, Wis.

Ratzerstein, Wm ..... Chicago, Ill.
Renner, C. L ..... Elgin, Ill.
Riley, Jno. F ..... Milwaukee, Wis.
Ristow, W. H ..... North Bend, Wis.
Rockman, Edw ..... Barron, Wis.
Rohn, Frank ..... Arcadia, Wis.
Rosenberg, R. R. & Son ..... Alma Center, Wis.
Rundell, J. C ..... Chicago, Ill.

Safford, O. P ..... Van Dyne, Wis.
Scheberle, E ..... Brodhead, Wis.
Schroegler, A ..... Madison, Wis.
Schroeder, A. F ..... Greenville, Wis.

Sheldon, D. A..... Lake Mills, Wis.
Shephard, E. H..... Yorkville, Wis.
Shumway, C. P..... Milwaukee, Wis.
Smith, A. D..... Springfield, Wis.
Smith, R. L..... Madison, Wis.
Stavrum, W. L..... Menomonie, Wis.
Stratton, J. R..... Meridian, Wis.
Strebe, W. F..... Brothertown, Wis.
Sudendorf, E..... Elgin, Ill.
Swatek, C. W..... Springfield, Wis.

Thompson, A. E..... Poplar Grove, Ill.
Titus, W. O..... Hustler, Wis.
Tingleff, C. P..... S. Wayne, Wis.
Townsend, H. H..... Poynette, Wis.
Trowbridge, O. C..... Columbus, Wis.
Trager, Gust..... Mazomanie, Wis.
Tyler, Clay..... Cobb, Wis.

Uehling, E. A..... Shopiere, Wis.
Uehling, F. O. & Co..... Hanover, Wis.
Ullmer, J. S..... Green Bay, Wis.

Van Dreser, M. L..... Bloomer, Wis.
Van Duser, James..... Hebron, Wis.
Vincent, W. T..... Mindore, Wis.
Voigt, W. A..... Naugart, Wis.

Wahler, L. O..... York, Wis.
Walton, Ira C..... Richland City, Wis.
Warner, J. A..... Viola, Wis.
Warner, T. J..... Elk Creek, Wis.
Warrens, I. J..... Elk Creek, Wis.
Weaver, R. D..... Tibbits, Wis.
Weber, B..... Belleville, Wis.
Weber, G. H..... Beaver Dam, Wis.
Weber, J. F..... Toland, Wis.
Weigeman, A. H..... Lake Mills, Wis.
Wiggington, W. R..... Warrens, Wis.
William, C. H..... New York, N. Y.
Wilson, D. W..... Elgin, Ill.
Winsor, G. B..... Hustler, Wis.
Winter, Theo..... La Valle, Wis.

Wittig, Thos ..... Rusk, Wis.
Wollensock, S. C ..... Grellton, Wis.
Wolff, Louis ..... Marshall, Wis.
Wuetrick, F ..... Mayville, Wis.
Wunsch, Jno ..... Suben, Wis.

Zastrow, Harry ..... Zeigler, Wis.
Zeitler, A. H ..... Kleghorn, Wis.

CONSTITUTION AND BY-LAWS

OF THE

WISCONSIN BUTTERMAKERS' ASSOCIATION.

(Organized February 21, 1901.)

PREAMBLE.

Whereas, there has been a growing feeling among the creamery operators of the state of Wisconsin, that there should be a closer mutual association, we buttermakers of Wisconsin, hereby ordain and establish this Constitution and By-Laws for the governing rules of our organization:

CONSTITUTION.

ARTICLE I.

SECTION 1. The name of this association shall be the Wisconsin Buttermakers' Asssociation.

SEC. 2. The object of this association shall be to increase the practical knowledge of creamery operation, to raise the standard of Wisconsin butter to a higher level, and to educate ourselves for larger fields of usefulness in our profession.

ARTICLE II.

SEC. 1. The membership of this association shall consist of practical creamery operators, and such other persons as are connected or interested in the manufacture and sale of pure butter.

SEC. 2. The membership fee shall be One Dollar per annum, payable to the Secretary or Treasurer.

ARTICLE III.

SEC. 1. The officers of this association shall consist of a President, Vice-President, Secretary, Treasurer and an Executive Committee of three members.

SEC. 2. The afore-named officials shall constitute the Executive Board.

SEC. 3. The term of office shall be for one year, or from one annual meeting to the next annual meeting, except in Executive Committee, where the term of office shall be for three years, one member being elected each year.

SEC. 4. At the first annual meeting one member of the Executive Committle shall be elected for one year, one member for two years and one member for three years.

SEC. 5. All elections shall be by ballot, except in the case of a single nominee, when election by acclamation may be substituted.

ARTICLE IV.

SEC. 1. The regnlar annual meeting of this association shall be held at such time and place as the Executive board shall designate.

SEC. 2. Special meetings of any nature may be called by the President upon recommendation from the Executive Committee.

ARTICLE V.

SEC. 1. Any section or portion of this constitution may be altered or amended by a two-thirds vote of the members present at any annual meeting, provided that notice of such alteration or amendment shall have been publicly read by the Secretary in open meeting eight hours previous to time of voting on the proposed change.

BY-LAWS.

ARTICLE I.

SEC. 1. The duties of the President shall be to preside over all meetings, to appoint all necessary committees and perform such other duties as may pertain to his office.

SEC. 2. The duties of the Vice-President shall be to serve in the place of the President, if this office is vacant, or in his absence, or at his request.

SEC. 3. The duties of the Secretary shall be to keep an accurate record of all meetings; to carry on all necessary correspondence for the association; to publish the programs for and the proceedings of the annual meetings; to issue membership cards and such other duties as his office may demand.

SEC. 4. The Treasurer shall keep an accurate record of all moneys received; a record of all members in good standing; shall pay out money upon written order of the Secretary, and such other duties as may properly come before his office.

SEC. 5. The Executive Committee shall have sole charge of all irregularities or questions of dispute that may come up during any annual meeting. They shall determine the compensation that may be connected with any of the various offices; shall audit all accounts, and shall assist the other officers in formulating the program for the annual meetings.

ARTICLE II.

SEC. 1. All points of parliamentary practice, not covered by the constitution or by-laws, shall be governed by "Robert's Rules of Order."

ARTICLE III.

SEC. 1. These by-laws may be changed in the same manner as prescribed in the constitution.

FIRST ANNUAL MEETING

OF THE

Wisconsin Buttermakers' Association.

The meeting was called to order at two o'clock P. M., January 14th, 1902, President F. B. Fulmer in the chair.

Music.

Invocation, Dr. E. G. Updike.

ADDRESS OF WELCOME.

HON. STORM BULL, MAYOR OF THE CITY OF MADISON.

Mr. President, Members of the Association: It is one of the prerequisites of my office as mayor of this city that I have the privilege of bidding various people and societies welcome to our beautiful city. Sometimes, perhaps, this is not an undivided pleasure, but I can assure you that in bidding you buttermakers this common welcome to the capital of the state, I do so with unmingled pleasure. I am very sure that you must feel that this city, which lies in a district in which the dairy interests are paramount, is especially suited for your place of meeting and you must feel proud that you have chosen it. Because of this fact a formal welcome on the part of the mayor might not seem necessary, especially

as he is not competent to talk on dairy matters, or more particularly buttermaking. Nevertheless it ought to be done, if for no other reason to assure you, that, even (as a class) we city people know what we owe to you. As a member of the faculty of the University of Wisconsin, which through its dairy course, its experimental farm and agricultural institutions has done so much to further your interests, it gives me still more pleasure to bid you welcome and to assure you that we all take a deep interest in your work.

I take it that you do not desire to listen to any extended remarks on my part. You surely would rather listen to those among you who with complacency can talk to you on subjects in which you are vitally interested.

In concluding I desire to say that I know that I can with entire safety—and that I do it with pleasure—give you the freedom of the city, with the traditional keys and other necessary appurtenances, and also that I hope that you will enjoy your stay here and that your deliberations will prove as fruitful as your best friends may wish and hope.

RESPONSE.

PROF. E. H. FARRINGTON.

This is the first public meeting of a new organization. It is the introduction to the public of an association which we hope may prove to be a benefit to the buttermakers and through them an aid to the development of the dairy industry in the state. The usefulness of such an organization will depend upon its members. This is self-evident. But as the strength of a wheel depends upon its spokes, so the value of our work will be shown by a united effort to make the wheel go round and to accomplish something at each revolution.

When an organization has become a strong one and its in-

fluence is widespread the membership is crowded with applications from persons wishing to join it; we all like to be on the winning side and to have an interest in a useful and popular body. The reputation, therefore, which an association possesses will determine whether its members are proud of the distinction of belonging to it or whether they wear its badge out of sight. We then, as charter members of this organization, should realize that on us rests somewhat the future reputation of this association and we must see to it that everything possible is done to give the child a healthy and vigorous start in life.

It so happens that I am acquainted with more buttermakers than with any other one class of people interested in dairying. My list has been added to at the rate of about seventy-five per year for the last seven years and this year our dairy school has eighty buttermakers in the class of 130 students.

From the personal acquaintance which I have had with buttermakers, and from my correspondence with them after they leave the school, I think I have had a very good opportunity of learning something about them. Among the four hundred at least that I can call by name I have become acquainted with the expert, the mediocre and the average buttermaker; the man who reads and thinks, the man who possesses neither of these useful accomplishments and says he has no use for them, and the man who is fairly well satisfied to work for fifty dollars a month and never ask for a raise in wages. This latter I consider the average buttermaker. These men all have to do with the same kind of work and from my experience with the dairy school creamery I think I can understand pretty well what work this is. I am also acquainted with troubles which buttermakers have, not only with patrons but with machines, with agents and with the man who buys the butter.

The patrons are, of course, a very important spoke in the wheel and it is absolutely necessary to deal successfully with them. Ignorance and plain stupidity are some of the characteristics of human nature that we buttermakers must contend with. Sometimes these defects are found under our own hat

and at other times in the heads of some of the milk producers. There is the exasperating patron and the encouraging patron, and I am well acquainted with both as the following illustrations will show.

Not long ago I was called up by telephone and asked if a certain milk hauler was running the whole University. The man at the other end of the line stated that this hauler did not leave the milk cans in the right place in his yard and he wanted me to come right out there and see to it.

Another patron hitched up and drove ten miles to the factory because he had found by weighing his skim milk at home that it was three pounds short of what he thought it ought to be. Still others are inclined to be suspicious that their milk is not fairly tested, especially when there is a small decrease of perhaps two-tenths of one per cent. fat from one week to another. They never ask for an explanation, however, when there is an increase in the test, although in either case the patron is generally in a better position than the buttermaker to form an opinion as to the cause of the variations in tests; his knowledge of how the cows are milked and through whose hands the milk has passed before it arrived at the creamery is better evidence than the buttermaker possesses as to the probable reason for these changes. The patron does not seem to think of his side of the question but he wants to be sure that the buttermaker is perfectly honest.

These and other things are constantly being brought forward in the buttermaker's daily work. The patrons, however, are always willing to appreciate a man's good qualities. I have known several instances where they have had such confidence in the buttermaker that they were the means, not only of raising his wages, but they subscribed money to build him a house and did everything they could to induce him to stay with them. I think there are at least two buttermakers attending these meetings and members of this Association, who are now living in the houses built for them by the patrons of their creamery.

The disposition of the patrons towards a creamery may be greatly influenced by the buttermaker. He can be an educator among them if he chooses. A good many patrons I think assume

that the buttermaker knows more than they do, in some cases perhaps on account of his knowledge of the steam engine, the separator and the milk tester, and it is a good plan to encourage this respect of the patrons for your superior knowledge. If you can win their confidence you can begin to try to teach them something and if you can by some means induce them to take a good dairy paper they will pass it around from one farm to another and after a while you will begin to see the results of this reading.

I have no sympathy with the disposition to keep patrons as much as possible in the dark about the creamery; neither do I think there is much advantage in allowing them to see the account books and to know every detail about all the buying and the selling of the creamery, but if a buttermaker is well informed about dairy matters and can give the patrons some useful information occasionally he will find that it will be a great advantage to him and to the creamery. A buttermaker ought to know what crops it is advisable to plant in the interests of milk production and what feeds it is most economical to buy and sell each season. Sometimes the farmer can afford to sell his oats and buy bran to feed the cows and in other years this is not profitable. Good, sound advice or helpful suggestions in this direction will be beneficial to both farmer and factory.

Another way in which a buttermaker may be helpful to his patrons is to keep himself informed as to the cows that are available to be either bought or sold in the vicinity. Very often some patron may want to buy cows but doesn't know where to find them and others may have some to sell without knowing of a purchaser. Both parties come to the creamery with milk, and the buttermakers can, by keeping posted on such and similar things, be the means of helping both.

The testing of cows for patrons is a line of work that does not receive sufficient attention but it will pay the creamery large returns if its patrons can be awakened to the fact that some of their cows are producing $40.00 worth of milk in a

year and others on the same feed and care are making less than $20.00 worth of milk.

A buttermaker would not think of running a certain separator in a creamery if he knew that some other one would skim the same amount of milk with the same power and leave less than one-half as much fat in the skim milk as the first one.

Now why can't you induce farmers to take the same view of their cows as you do of your separators. It will pay you as a buttermaker to help the farmer become prosperous. Any one will set a trap for a rat that is trying to get something for nothing and why shouldn't we set a milk weighing scale and a Babcock test on the cow path?

According to statistics the average cow in the United States produces only 3,000 pounds of milk and 130 pounds of butter in a year. This is about one-half what the production ought to be and is in many good dairy sections. Buttermakers can surely help to raise this average by testing the patrons' cows and by demonstrating that some of them are not worth milking.

During the past year I have written a book of over eleven hundred pages; it is a letter book in which is kept a copy of all my correspondence. Now these letters are most of them replies to inquiries from farmers and from buttermakers in regard to some phase of the dairy industry. These men get into trouble and want information on certain subjects which they think a dairy school professor can give them. This shows a very encouraging condition of affairs and I am confident that if the creamery buttermaker is well informed he will find many an opportunity to be of aid to his patrons.

There is a demand for men that know something about the dairy business, as a record I have kept the past year shows. This record is a list of 229 applications I have received from parties wishing to employ a dairy student. Ninety-seven of them were for buttermakers, 11 for men in retail sanitary milk establishments of large cities, 10 skimming station operators, 8 helpers in creameries, 3 process buttermakers, 2 separator agents, 1 dairy editor, 4 dairy farmers, 5 instructors in dairy departments of other states, and 88 cheesemakers.

This gives some idea of the interest taken in dairying in Wisconsin at the present time and yet the dairy industry is very young. The first creamery was started in this country only about forty years ago and the combined churn is not much over five years old, but even with this rapid development during the last quarter of a century it is estimated that only about one-fifth of the butter now made is creamery butter so there is still a chance for improvement and a good field for labor for the members of the Wisconsin Buttermakers' Association and other kindred organizations.

One of the ever-present problems which the buttermaker has to deal with is the care of milk by the patrons. Volumes have been written on the subject and probably more talk has been made on this than any other one part of the creamery business. In many cases it does not have much effect because competition makes the farmer send his milk to a neighboring factory if he doesn't like the one he is patronizing. Now this state of affairs can be regulated if the buttermakers or the creamery owners will agree among themselves not to take the milk rejected by another factory. If the patron cannot dispose of his tainted or unwholesome milk he will begin to clean up, wash the cans, scald the tinware, cool and aerate the milk and protect it from dirt until it is delivered to the creamery. Competition for milk among creameries is very strong in some localities and sometimes they are so close together that a farmer can drive to a neighboring factory with his milk if on account of its impure condition it is refused at one creamery. In such a case it is a great mistake for the second factory to accept the milk, and I hope the time will eventually come when buttermakers will refuse to receive it. This will do more to improve the quality of butter in general than all the wise sayings that may sometimes be heard about the magic mystery of cream ripening which some buttermakers claim to be so familiar with; they assume to be capable of regulating these things by their intimate knowledge regarding starters and flavors. This kind of wisdom may be easily obtained as an acuteness of taste and smell may be cultivated by practice in the same way that

an athlete trains for a race, but the development of the resources of a creamery by educating its patrons to improve the quality and amount of the milk produced is a much larger and more profitable field of labor for the buttermaker.

The President: It is my pleasure to see among us here this afternoon one who is perhaps the oldest veteran in dairying of the state. We should be pleased to hear a word from Uncle Stephen Faville.

Mr. Faville: Mr. President, I did not come in here with any idea of talking at all; I came to listen, and I have been listening with very great interest and profit, and while brother Farrington was talking I felt like correcting his statement that the first butter factory was started forty years ago.

Prof. Farrington: Information secured from the Department of Agriculture, Washington.

Mr. Faville: Well, if the first butter factory was established forty years ago, my mother made butter in New York more than forty years ago. The first factory in the West that I know anything of was started about thirty years ago at Elgin,—that is, a distinctly butter factory. We have progressed wonderfully in the time, there have been rapid strides made in the dairy interests. The success of the dairy interests is very gratifying to me, and I have watched it carefully from its infancy until today. Really I think I am just as much interested in the dairy interests today as if I were getting my bread and butter out of it; I am not, but I am interested in eating good butter and good cheese, and that is as far as my personal interest goes. Yet I feel a hearty interest in the success of all these enterprises because I know it means wealth to the country, wealth to the farmer, and general prosperity. I want to endorse what Prof. Farrington has said in regard to the buttermakers about seeing which cows the patron is keeping at a profit and which at a loss. I would like to know what he would tell the farmers if they should ask him what kind of feed to buy this year to make money out of. I do not think he would answer it.

Prof. Farrington: I will tell you what I heard a young lady

ask an agricultural professor. She wanted to know if he could tell a good cow; he said he could, and she wanted to know what he would tell her.

Mr. Faville: But this is an exceptional time; I have never seen one like it in fifty-seven years. I am now speaking of southern Wisconsin, but the dairy interests are thriving and this season is not what we can count on. The more the buttermaker knows about the business end of the business, the better he will be off; it will be very valuable for him to post himself; do not be afraid of learning too much about both ends of the business, the farmers' end and the business end. A great many farmers are very careless in feeding cows and in knowing what they are doing, they keep lots of cows at the expense of others. Do all you can to enlighten them in these matters.

I do not want to take your time but let these young fellows talk. I am glad to be with you—guess I am one of the oldest dairymen in the state. I built the first butter factory in this part of the country in Jefferson county,—there was one in Rock county the summer before, but these were the first two that I know of,—and from that the growth has been immense and I am greatly gratified. It is a paying business and is becoming more and more a source of wealth and profit.

PRESIDENT'S ADDRESS.

BY F. B. FULMER.

In meeting together in this, our first annual convention, we have no past record to refer to. With no past to judge by, we can only conjecture what our future is to be. In preparing for this meeting, your committee have, perhaps, found a degree of similarity between this and the starting of a new creamery on its first day's run. If some particular piece of apparatus should not work to perfection, or some of the machinery should

not be properly adjusted, it would not be a surprising fact; while your committee has had none of these mechanical details to deal with, there have been other new and irksome details that have needed attention. There usually is more or less uncertainty connected with the first meeting of this nature, but you are to judge for yourselves as to the success of the same. We have had many people of note in the dairy line throughout the neighboring states wish us the fullest success, and with the mutual coöperation of all the members there is no reason why this desirable end cannot be realized.

It is true that the membership of the organization at its opening is not as large as it might be, but this is no cause for discouragement. A number of buttermakers have waited till this convention for the opportunity of joining. It is reasonable to hope that before the next annual convention, our membership roll will contain the names of at least 300 progressive members. This indeed would be a conservative estimate, if each present member would consider himself a special committee of one to secure new members. Is it not worth your earnest efforts to try this? Make the effort, and one year hence you will be surprised at the growth of the association.

We, as an association, have a proper field of labor in this state. There is much that we can help in, as in the matter of state dairy laws. It should be our earnest effort to assist the commendable start that the state dairymen's association has made in the matter of having a state instructor among the creameries. We should strive to shortly have two or three more added to this list. If need be, we should assist the dairymen's association to secure a larger appropriation from the next legislature, for this work.

From the eighth biennial report of the Minnesota state dairy and food commission, issue in 1901, we find reported 582 creameries as the total for the state, and they have had six inspectors among the creameries. The proud position that Minnesota occupies in butter production is largely due to their splendid system of inspection.

Wisconsin claims 1,086 creameries; how many inspectors or

instructors do we need? The conditions in this state are somewhat different from those of Minnesota, but if we can form any opinion from the experience of others, we see that Wisconsin needs more creamery instructors. This same question is being brought up in Iowa, and the probabilities are that they will have four or five traveling instructors in the near future, and the latest reports indicate that other states are soon to start along this line.

Your committee has made a new departure from the usual methods used in connection with the scoring of the butter exhibited at conventions. A written statement, dealing with the defects of a tub of butter, is better than no criticism at all. This statement, if compared with the butter in question, after it has been examined by a competent judge, is quite instructive. But it has seemed that sight, smell and taste are hard qualities to adequately impart to others by pencil and paper.

Believing it entirely possible to make a further step in the instruction along these lines, it has been decided to have the buttermaker present when the judge examines his tub of butter, so that he may receive the benefit of personal criticism at first hand. With this object in view, your committee has secured the services of a man who is recognized as the leading judge of the west, and who has the reputation of having scored more convention butter than any other man living. We have considered ourselves fortunate, indeed, that we have been able to secure the services of as able a man as Mr. W. D. Collyer, to act in the capacity as judge for our butter exhibit. Mr. Collyer is personally known to very few of the buttermakers of this state, and for this reason he will be in a position to avoid all suspicion of partiality. If you will stop and consider, you will see that it is a very difficult position in which to place a butter judge, when he has to render a personal criticism to the exhibitor. Mr. Collyer will with pleasure answer any questions pertaining to the exhibit, and it will be your privilege to have him show you any of the defects of your butter; but with this exceptional privilege it is hoped that none of you, for your own interests, or for the benefit of the association,

will engage in any extended discussion relating to the merits of the butter on exhibition.

So far as we know, this is the first time that this system of scoring has been tried, and this convention will in a large measure determine whether the method will be followed in the future or not. We believe that this system embodies the largest educational feature possible and we trust that the exhibitors will profit by this opportunity.

Your committee sincerely trusts that many of you will come forward with suggestions for improvement for the future meetings. It will make the work of the officials much easier if they feel that they have the personal support of each member. Help make this convention a complete success by taking part in the discussions following the various papers. If you do not agree with the speakers, make it known as soon as they have taken their seats. If you believe as they do, see if you cannot add at least one new point of interest. If not, feel free to relate your own personal experience. It is these discussions and personal experiences that can be made the most interesting portion of our program. The exchange of new and progressive ideas and comparing of different methods of work will, if followed up, prove to be of far reaching benefit. Support each session as though the success of it depended wholly on each of you, and then no one need have any doubt as to the ultimate success of this convention.

REPORT OF SECRETARY.

BY DE WITT GOODRICH.

My report at this time must necessarily be brief as at this, our first annual meeting, the history of the association is largely before it.

I am pleased to note that at this first session the prospects seem favorable for a good attendance and a profitable meeting.

The exhibit of butter is large for a state convention, over one hundred entries. Whatever success the meeting may have will be due to the hearty coöperation your secretary has had in every effort, both from officers and members, particularly in the matter of preparing a program.

In the matter of getting up a pro rata premium fund I am very much indebted to the several supply houses and individuals who contributed so liberally to it, and I take this opportunity to thank them in behalf of the association. You will get some idea of the work done by this office from the fact that about $25.00 has been expended in postage. In addition to a lot of correspondence in getting up the program and matters pertaining to that, about 2,000 tracts and circulars have been distributed in various ways. The meeting has been quite thoroughly advertised among Wisconsin creamery operators.

While the matter has been mentioned heretofore, I want to repeat and still further emphasize the fact of the new departure in scoring by Mr. Collyer. We are much indebted to that gentleman. We have undertaken a difficult proposition, a new field of work in some respects, and we do not know what the outcome will be in the matter. The expense is uncertain and the matter of the time it will take to go through with it.

The treasurer has asked me to make a short statement of the financial condition, which is made only up to the preparations of the present meeting,—simply the expenditures, and receipts from memberships:

Receipts for memberships	$84 00
Printing	14 00
Total in treasury	$70 00

The President: We have a very interesting subject for discussion on our program this afternoon, "The Benefits of State Associations." We have come here and we are going to discuss whether it is going to be a benefit to us or not. This discussion will be started by Mr. Kolarik of Chicago.

THE BENEFITS OF STATE ASSOCIATIONS.

BY JOSEPH KOLARIK.

Mr. President, Ladies and Gentlemen:—Your secretary, Mr. Goodrich, placed me on the program in the belief, I suppose, that one who talks to you every week through the medium of a department in a creamery paper would be just the one to present and discuss a subject before this convention, particularly on the line of what benefit can be had from a state association. He has allowed me the privilege of broadening the subject to include "Coöperation among buttermakers," which one must have in an association in order that members may receive the benefit they should from such organization.

It has been my privilege to attend quite a number of buttermakers' conventions during six years past, and through my observation of their workings I am satisfied that buttermakers who are faithful and active members of their state association, and who come to the annual meetings, not only receive full value in benefits for their time and money spent, but receive it in double measure.

To make an organization possible and a power in state affairs, there must first be a cause to associate. In this association that object is a higher plane of progress, a desire to reach the ideal, fostered by a commendable local and state pride. I would urge upon every buttermaker member of this association,—and I am pleased to have learned that there are over two hundred of you on the roll,—the importance of being a live, active member, who is ever ready to take hold and work with zeal and energy in the interests of the association and the dairy business generally. You have here a great common interest in which problems arise that none of you can manage single-handed, but through the influence and strength of your combined efforts represented in your association work, great and lasting good can and will be done.

It's a wonderful help to tell of one's troubles, especially when we have a listener who is capable through like association to properly appreciate our struggles and give us a word of sympathy and encouragement. A buttermaker will get bad milk. He will refuse it and the patron will resent it more or less strongly,—as though it were the buttermaker's fault. There will be days of delay in skimming; the fires won't burn well, the boiler won't steam, the belt will slip or break, and perhaps the separator will get clogged with sour milk. There will be complaints with haulers, patrons will be short of skim milk, the butter will have gotten churned too long, and there will come letters telling of mottles, too high or mild salt, moldy tubs, and so on through the thousand and more troubles of the business, some of which beset every buttermaker in the year to the point of wanting to run far away from it all. It is no wonder the buttermaker wants to get away from these daily worries. Human nature is not intended to stand monotony—the all-alone life of the buttermaker who will not get out among his fellows. And the very best place to go when you are determined to run away for a few days is to the annual convention of your own state association. You will see new scenes and new faces, and get new ideas. You will learn much that will make your work easier or more pleasant or will help you to make a better product. You will make new friends and renew acquaintances among old ones and you will soon realize, if you do not now, how much this will mean to you. Take pride in your association, come to the conventions, put your new knowledge into practice, and you will readily admit there is a wonderful benefit derived by each one through association of this nature.

Your state association may be likened to a combined churn. You who are members are the staves, and your officers and executive committee are the ends and the hoops that keep all together. The speakers at your convention are the running gears, their addresses the cream to be churned, and the discussions the churning process. The great unity of interest in the dairy business is the motive power. If the members, the staves, dry and shrivel up into themselves, the churn, your association,

will go to pieces. You must expand; and expanding, you will get closer to one another. Likewise, as a churn must have many staves, so must your association have many members—the more members, the bigger the churn. Again, each single member has an important place to fill. Take out a stave and you have a spoiled churn. You cannot use it until a new stave is put in. You may feel that your association will not miss you, but you are mistaken. You are all very necessary to each other and all must work together, and the more of you, the greater the capacity for large results. Act upon these suggestions and your association will be accepted as a recognized power in Wisconsin's creamery field.

Now that you are assembled here in one of the best conventions it has been my good fortune to attend,—the very best first convention of a new association, I believe, we have had in our history,—don't forget the churning process. You will listen to addresses on many very important topics; all is cream to be churned, though probably varying in quantity and richness. Many topics will stand minutes and hours of discussion. Be prompt to take hold and churn them thoroughly until you are all satisfied that out of the bulk of cream you have the last particle of golden product. I am sure this will be such as will help you in your work when you get back home, and will make each one of you feel thankful that you have so fortunately attended at this, your splendid first convention, and inspire you with a desire to get together in all the meetings of your association in future.

Music—Singing by the Dairy School students.

SONG.

(*Tune "Hot Time."*)

1. The butter-men are winners
In the old Badger state,
For the pure golden butter
Is bound to take the cake.
We are after Mister Ole,
And we've got him on the run;
Come along, now, you fellows,
If you want to share the fun.

CHORUS:—
U-rah-rah, Wisconsin's right in line,
The Convention, too, is not behind the time,
When the scores are read
Wisconsin men will shine,
There'll be a hot time in Madison to-night.
Cheer boys, cheer, Wisconsin's right in line, etc.

2. We are all butter-makers,
From the greatest to the small;
And we want to make a product
That will be the best of all.
To find out how to do it,
A convention is good source;
But if you want it all,
Take Wis. Dairy Course.
CHORUS.

The President: We are fortunate in having with us people who have had considerable experience along the line of conventions and state associations. I am sure we would all be pleased to have Mr. U. S. Baer, instructor in cheese making at our Dairy School, address us along this line and give us his views.

Mr. President, and Gentlemen of the Wisconsin Buttermakers' Association:—I am proud to represent the Cheesemakers' association in conveying to you their compliments and heartiest good wishes for your success and prosperity as an association. The Cheesemakers' association of Wisconsin, if I may be permitted to say it, occupies a very unique place in connection with the dairy interests and the farming interests of the state. It has never been actuated by narrow or selfish prejudices, but all the same it recognizes this association at least as a younger brother, and there is no friction between us.

I wish to say that as great organizations grow stronger, jealousy sometimes exists between them. I sincerely hope that no jealousy will ever exist between these two associations.

Our grand old State Dairymen's association, the Agricultural society, the Dairy School, and the Cheesemakers' association have built up a material industry in Wisconsin and have always stood together without any personal bitterness, and that is the only reason why Wisconsin has made such splendid advancement. The time will come when you will see in your meetings a thousand buttermakers interested in the butter making business and I feel sure that when that time comes you will have the same kindly feeling you now have for all the co-workers in this line.

Our State Dairymen's association stands for dairying in its widest sense; it is not confined to butter making and it is not confined to cheese making, but takes in the whole business and it is glad to see it prosper in all its departments.

The Dairy School is looking after the professional buttermakers and the professional cheesemakers, and this association is looking after the buttermakers of the state.

I cannot hope to tell you of half of the great benefits to the dairy interests which have come out of the several state dairy and agricultural societies.

The State Dairymen's association has been a strong agency for the distribution of dairy knowledge and the defense of legitimate dairy products from the competition of counterfeits and frauds. Its annual meetings have been held in different sections of the state, carrying to the Wisconsin farmers the best knowledge of the dairy business in all its phases. It stands as a parent to the Dairy School, Dairy and Food commission, Farmers' Institutes, Cheesemakers' association and this association. It has scattered a great wealth of dairy knowledge all over Wisconsin.

The Farmers' Institutes have given the farmers powerful object lessons in the shape of improved stock and well finished dairy products.

Much has been added yearly to the profits of our dairymen and others through the educational work of the Cheesemakers' association. Their annual meetings have gathered facts and

through the distribution of its reports has spread information throughout the cheese districts of the state.

The results of these several organizations working harmoniously together have been apparent in every agricultural and dairy county of the state. Their work has awakened renewed interest in the dairy business, encouraged improvement in stock, improved methods of handling that stock, brought about the better care of milk and perfected the manufacture of butter and cheese, in the better preparation of all dairy products for market, and in a more intelligent study by dairymen of the question of markets.

Wisconsin has become a great state because of the educational influence coming out of the agricultural and dairy associations of the state. Farmers and dairymen who have been so situated in life that the education of the schools was impossible, who have not seen fit to obtain that information in dairy papers, have had their curiosity aroused by the novelty of these meetings, and who, when drawn into the meetings became interested and were thus led to give their business such careful and intelligent thought as to help place Wisconsin in the lead of all states in the Union in the production of high grade dairy stock, fine butter and fancy cheese.

J. K. Bennett, Secretary Minnesota State Butter and Cheesemakers' Association: It is several weeks since I received your kind invitation to attend the first annual meeting of the Wisconsin Buttermakers' association, and deliver a paper on "Benefits of State Associations, or Coöperation of Buttermakers." I have watched, meanwhile, with much interest the preparations for your meeting, and upon arrival of your program, which is indeed a fine one, I am doubly assured that your association will be a success.

The support you have received from contributors and advertisers shows the interest the trade has taken in your welfare, and also an unlimited amount of work done by the officers in

charge. Few, if any associations, have ever started with such support and bright prospects.

I regret not being able to be with you at this meeting, but briefly will state what I consider should, and I wish could, be accomplished by all associations of its class, though Mr. Kolarik, who has this subject in charge, is much better qualified to do it.

The benefits to be derived from such an organization as this are many. More than I will attempt to enumerate. Only year by year as our state associations grow do we learn to fully appreciate their value, and realize that the buttermakers who do not attend or take interest in these meetings are becoming back numbers, so to speak.

The coöperation of buttermakers. What does it mean? A coöperative association, to be a success, or the greatest success, all must coöperate. Your association will be a success, but think how much greater a success it would be if every buttermaker in the state would take an interest in it, live up to, and follow its teachings. A certain strife that exists between buttermakers would be done away with, and all would work for the advancement of the art of buttermaking. Milk rejected at one creamery would not be good enough for the buttermaker at a neighboring creamery. Tests brought by dissatisfied patrons of one creamery to be tested by the maker at another would not be tested, unless upon the request of the buttermaker of the same creamery. Is the buttermaker who accepts poor milk from the patron of another creamery doing it because he is anxious to do more work or to lower the grade of his butter? Is it because he wishes to help a brother buttermaker that he juggles the tests tested for patrons other than his own? No, it is strife. Strife, not to excel, but to defeat.

These are the buttermakers, who through lack of knowledge and carelessness are stumbling-blocks to progress. These are the buttermakers who do not attend conventions, and keep coöperating associations from coöperating. Let every buttermaker in the state of Wisconsin join this association and resolve to do his share to help make it a success, and it will accomplish what its promoters have proposed it should.

The President: It was a pleasant surprise to me today to greet a friend from a neighboring state, and I am exceedingly glad he is here with us. We should be pleased to hear from Mr. Renner, ex-president of the Iowa State Dairymen's association.

Mr. Renner: I am more than pleased to be with you here at this convention, but as Mr. Fulmer knows, I am no speech-maker. I am happy though to be with you at your first annual meeting, and I wish you all the success of the convention. We do gain a great deal of knowledge by meeting and mingling with each other at these conventions, not alone that we can hear papers and addresses, but the personal acquaintance we get with each other is very important and helps us in our furthering of the creamery and dairy interests. I am pleased to look back ten years to being here when the National association had their session here. I would say that I am a native of Wisconsin, although I have not been in the state since that time, and I am pleased to see here at your meeting so many today. You are having a very interesting session, and we undoubtedly will have more enthusiasm when the Chicago boys come out. I thank you for your attention.

The President: I have heard it said in the past that to a large extent Madison was the Mecca of dairy knowledge, and in proof that this is no idle term, they are converging here from all points of the country. We should be pleased to hear from Dr. Crawford, of Georgia.

Dr. Crawford: Mr. President, Gentlemen of the Convention:—It is a surprise to me to be called upon to address you at all. I was called to this convention by a telegram received at Pensacola, Fla., last Saturday. The secretary spoke of advertising this meeting; I am sure his advertising has been successful when a telegram reached me from Chicago that such a meeting was to be held.

I have always had an interest in dairying, farming, butter-making. I have been a western man all my life; my parents came from Pennsylvania to Iowa when I was twelve years old and I have seen that great state go up from its infancy, and its

prosperity is largely owing to the buttermaking business and the cheesemaking business. There were many farmers there and in New York who were dependent altogether, or almost wholly upon wheat raising. Many of you know the results which followed, but after they went into a different class of business, that of buttermaking, they made a success.

I am glad to see so many young men here today about to start out in life, and I want to say to you that this is a good place to come to get practical knowledge. We get two kinds of education in this life, the theoretical and the practical. We can sit down and read about anything you please and you simply get theoretical knowledge, but when you come into contact with those places and things you have read about you get practical knowledge.

Young men, today you are in a measure getting practical knowledge by contact with people in practical business, that of buttermaking and dairying and cheesemaking, and it is good for you to be here.

For the past few years I have been making visits through the southern states acquiring a knowledge of many things from a practical standpoint, coming in contact with food products in the south I knew nothing of before.

Some of you will be looking for locations elsewhere in the next few years as dairying increases, and I think it will, and the ground will be taken up in dairy business here and you will look for new locations, while in the southern states, Alabama, for instance, there are immense areas of cheap lands, and your Wisconsin lands are getting high priced, so that you will be looking for new fields where with limited means you can open up. There are also other reasons why business can be done well in other locations; one of them is on account of foodstuffs. The gentleman asked what he would feed in this section of the country, but this question is solved in the southern states by the soy bean and velvet bean. I visited a stock farm in Tuskegee, Ala., where there were 900 head of cattle, and they put up over 300 tons of hay made from the velvet bean. We can produce more food per acre than with clover or alfalfa, and they tell me it is rich in nitrogenous food. For dairying and the buttermaking business

in the South it is much better to feed milch cows than clover; it makes more and better milk and more butter.

There is also another thing which they have in the South which some of you have not heard of, and that is the cassava root. It is a root which will produce 20 tons to the acre, and is being fed for fattening purposes there. With the cassava, velvet bean and soy bean stock can be raised much better and cheaper than in the North. If they do succeed in making butter, and I do believe they will and are succeeding, it will work a revolution in the buttermaking business, dairying and stock raising.

I have met one of your noted men in the South, at Jackson, Tenn., and heard him deliver an address there which was listened to with great interest and which has helped to develop that country. Wisconsin men have come from the Buttermakers' associations and given them ideas in dairying and buttermaking they had never had before, and I have no doubt that you who are here today will in a large measure fix the destinies of many who are starting out in this line of business. It is educational and I am glad to meet with you and to listen to what you have to say because I know it is going to be beneficial not only to me but to all who listen.

Mr. Faville: There is one thing I would like to ask about that southern country. He says they cannot raise the grasses there such as we have here; what do they have to take their place?

Dr. Crawford: There are certain kinds of grasses, but they do not do so well there as timothy and the native clover; they have, however, the soy bean and the velvet bean to take their place

Mr. Faville: Those have to be planted, do they not? Do they not have grasses that make permanent pasture?

Dr. Crawford: Yes, they have to be planted, but for permanent pasture they have Bermuda grass and Lespidae clover, which grow splendidly there.

The President: We would be pleased to hear a few words from Mr. Russell Bates.

Mr. Bates: I am glad to see so many here; there are more

than I thought there would be and I believe it is a good thing. What is the success of one is the success of all, and we ought to organize and go before the National Convention with a butter representative; it would be a good thing for the butter business. I know from the experience I have had in traveling over this state that there are as many good buttermakers, as good creameries, as good milk as in any state in the union. I am glad to see the boys organize and know that when they exhibit at the National Convention they will send out a lot of butter that will be of interest to all the people. It is not true that Minnesota or any other state produces better butter than Wisconsin, and if we all put our heads together we can stand better than one man can stand alone. We should not be pulling apart, but remember that one man's interest is bound up in every other man's interest. Through these organizations the right feeling can be brought about and it will be possible to so organize the buttermakers and creameries that they will not be divided against themselves. The Good Book says, "A house divided against itself cannot stand," and we want to stand.

Mr. Faville: I want to say a word to emphasize what Mr. Baer said about the Wisconsin Dairyman's Association. It has been very successful, and I am much interested in it; I have been connected with it from the first, and a large element of its success has been due to the interest with which each member has taken hold of the work. There never has been the least jealousy in the whole thirty years. You must make up your mind you are going to work for the association and not for the individual. There is power in organization, and through this organization you will be able to improve your products and send to the larger conventions products that cannot be beaten.

The President: We would be pleased to hear from Mr. Lorenzo Benedict, of New York city.

Mr. Benedict: If I had known you were going to call on me for a speech when I started out from Chicago I would have done as Mr. Kolarik did and made some notes, but I read a very interesting book part of the time and had a very interesting conversation with a gentleman on the train the rest of the time.

I am glad to see this convention open under such favorable auspices, and I wish you every success in your convention.

The Chair appointed the following committee on resolutions: Mr. Jos. Kolarik, of Chicago; Mr. James VanDusen of Hebron, and Mr. J. G. Moore, of Albion, and for the committee on nominations, Mr. Clay Tyler, of Cobb; Mr. T. J. Warner, of Elk Creek, and Mr. J. J. Brunner, of Tarrant.

Convention adjourned to meet at 8 P. M., in the Engineering building at the University.

Convention met at 8 P. M. in the Auditorium of the new Engineering building at the University.

President F. B. Fulmer in the chair.

Address of welcome by Dean J. B. Johnson, College of Engineering, University of Wisconsin.

Dean J. B. Johnson: I will only say a few words. We are glad to have anybody come and see this building, for we are proud of it. It serves its purpose beautifully. You would be interested, I think, to know that our poverty was our great good fortune; if we had had $150,000 we would have been obliged to accept, I suppose, some of the various designs that were sent in by the different competing architects. There were three sets rejected because we could not have such an expensive building, so we had to make up our own plans, and now we have gotten what exactly suits us. We think we have gotten a good deal for the money (we had $100,000), so when you go about to look over the building, it will be all lighted up; you will see what we were able to get for our money. I would call your attention to our method of illumination; the source of light is out of the range of vision, and the thing you look at is the brightest thing within the range of vision. I do not mean to say that I am the brightest thing within your range of vision, but your president is—look at him. You will find on the third floor another room,

the drawing room, which is lighted by a different method. The lights are entirely hid and the light is reflected to the ceiling, then down, and produces a diffused sort of daylight.

You will be pleased, I think, to see how we have arranged our laboratories—the beautiful laboratory at the rear of this room, where Prof. Richter is to be found, and which he takes care of so beautifully, and who will speak to you presently. His laboratory is to be the interior court of the building; this is only the first quarter of the building; there will be four sides surrounding an interior region, which will be wholly occupied by the steam laboratory; it will be three times as large as it is now. When completed as designed we will be ready to do business as we planned; now we are only getting started.

Of course, you know we are here for the purpose of teaching mechanical, electrical and steam engineering in four year courses. We also have a summer course of six weeks, which you may be more interested in. This was started last year as an experiment, and it will be continued so long as it is a success. This six weeks' course in the summer begins July 1st and is designed for the men who are engaged in mechanical employment who either cannot or ought not to go to a college because it does not give him what he wants. I have some catalogues here of our summer school course, and would be glad to have you take one and look it over. I will read you a part of the first paragraph: "This school has been established for the benefit of machinists, carpenters or sheet metal workers, marine or locomotive engineers; shop firemen and superintendents; superintendents of water-works, electric light plants, power stations, factories, large office and store buildings in cities, and for young men who wish to qualify themselves for such positions." It is for the young man who wants to qualify himself for such positions, and if you want to master the business then you need some theoretical instruction which you cannot get ordinarily at all except as you get it in a sort of apprenticeship; here we delegate some of our professors of the College of Engineering to do this work for a period of six weeks and it has proved very effective.

I do not know that I have anything more to say. Please notice

all of the walls are colored; it costs no more than white walls; they are rough plastered and colored above the baseboards, and it gives a good background for pictures. We have a profusion of pictures which have been contributed, almost all of them free of charge, beautifully framed with a very polite letter of thanks for the opportunity of giving them. So we have a beautifully decorated building at practically no expense to us. It only requires a very polite letter to be sent, and we managed to get up a fetching letter of that sort. The building is thoroughly ventilated. We consider the building is rather a model and will remain a model until Dean Henry gets his building, and then of course we will take a back seat. He laughs best who laughs last, but it is well to laugh at all if you can so we are getting in our laugh now.

The President: In all lines of business there are rare opportunities that come to different ones, and we in our vocation have our opportunities. We may not always make the most of them, we may not appreciate them when they do come but I think the buttermakers will all appreciate the address we will now have by Dean Henry.

THE BUTTERMAKERS' OPPORTUNITY.

PROF. W. A. HENRY.

Ladies and Gentlemen and Members of the Buttermakers' Association:—In this, your first annual gathering, I am pleased to follow so able an exponent of his own splendid department. The engineering department is the pride of the University and of the Northwest. Its students go everywhere and win laurels for themselves and their Alma Mater.

The Agricultural College has always been in close relations with the Engineering College, and it has been particularly helped through the kindness of Prof. Richter, who will follow

myself. Mr. Richter is a kind hearted man who early went into helping our agricultural students. I want to speak for him a good audience and a kindly greeting, for he will have the best things to say to help you and will be exceedingly useful. It is, indeed, kind of him to give you this opportunity, for he is a very busy man and it must be at some personal inconvenience that they give these voluntary lectures.

For my own part, members of the Buttermakers' Convention, there is not much that I can say to you tonight. Your days are crowded with usefulness, much is being pressed upon you, and although Gov. Hoard may not be here, as he is looking after the butter interests in Washington, but despite that you are going to have a busy meeting.

I want to speak upon one point, and that is making the most of your opportunity, be it what it may. Your vocation is as honorable as any other—no more, no less. What you get out of it depends upon what you put into it. I am brought into contact with hundreds of young men during the winter months. I travel a good deal and visit all sorts of people, and I am learning more and more to see that it is the man who is full of persistence and push and keeps along a narrow line toward one fixed point that "gets there." There are occasional geniuses in this world, but they are not numerous; nine out of ten go to pieces before their brilliancy brightens the world, and very few of them have the physical and mental combination that enables them to become recognized in any particular way. The thing for you to do is to say I am going to succeed in my vocation, get a good living and get enjoyment as I go along. That man can succeed. I am called upon to recommend young men to positions, and I have had one hundred calls from men for buttermakers, and had three calls in one day this week for men to fill several positions, and I find all the time the shortage is because young men are not willing to start in at the bottom and work patiently and persistently to a given point. Today a young man came to me saying he wanted to study agriculture. He wanted to get through in three years. What can I learn? He was in a great hurry to get through, but he left me in about five minutes somewhat dis-

couraged, I guess. If he had come to me and said he was interested in agriculture and wanted to learn all he could and said I want to put myself in your hands, or in the hands of some one to get the proper training such an attitude would have shown that he had the right spirit to succeed.

But when a man comes into such a thing and expects to go through like a streak of lightning, and when he has finished expects the world to welcome him with open arms and find positions waiting for him on every hand, all he has to do is to name his price. He does not realize there may be ten thousand men like him.

In training a trotting horse Leland Stanford believes that a horse's training should begin at three months old. When you consider the care required in looking after these horses, the time and attention given to them from such an early age and how short the life of the horse is why not put something better than that in the way of preparation and training for yourself. What a long race this is if you live the ordinary human life, and why not put in special training for yourself now. If you are in the butter business, say to yourself now while you are young, I will go into the butter business and develop into a butter man, whether in Wisconsin, Illinois, Iowa or South America, or if you choose to stay in Wisconsin I will go into the best factory with the man from whom I can learn the most, even though I may not get the highest wages, and not choose the place paying the highest salary if the opportunities for improvement and advancement there are not equal to those with the better man and better factory. The world will pay you what you earn; it is a little slow sometimes in recognizing you, but it will find you out. Men are all the time hunting for those who can do better than the ones they have and they pay high wages; they are forced to.

In looking for a college president there are many considered but they have to have a peculiar fitness for the position, and the same principle applies to other lines of work—the conditions are just the same.

Your great trouble is to say you are earning so many dollars a month; nine out of ten will throw up a job, sneak out of it, or

shake it by doing miserable work because some one else has offered him $5.00 more a month. What is $5.00 more to a better opportunity; it is simply $5.00 at your age. But there are some who will jump from one factory to another for an advance of $5.00. No man can make money in any quantity until he is an expert; $5.00 a month does not count in the life at your age; you cannot begin to make money until you are 35 years or more of age. Study for opportunity and work for position, opportunity, friends and backing. I well remember the smile of happiness that came over the father's face when telling me of a compliment he had that day received about his son. A banker said to him, Your son need not come with an endorser on his note. We will lend him any reasonable sum he wants on his own security. That was twenty years ago this winter in a town in this state. He was just able to get a few hundred dollars on his note; he is now well-to-do and a highly respected and well known citizen of this state.

Prepare yourself well now, then you will be able to spring ahead. Our engineering boys are farm boys, and they are able to pound iron better than Prof. Johnson's boys; they do not do quite so well as ours to begin with, but at the end of the four years his boys have a tremendous energy stored up and our boys are left behind, for they have only a few weeks in the machine shops, and while they have learned much the boys who have the four years there have been able to get ahead of them.

Make a school of your factory; make it a school to which you will go daily, and as you get along in life and get friends, reputation, experience and ability to correct your mistakes you will be able to make money, so when a man has trained himself to be an expert there will be a call for him—there are always calls for experts.

Take a chosen line and then proceed to become expert in that line. Be satisfied to work for a reasonable amount to begin with. We cannot all be rich, but the better fitted you are for your work the better able you will be to command a high salary. As you have chosen a buttermakers' calling you can never make money in any quantity until you have other people working for you. I

might run a farm with my two hands, but when I add to this and have another man to help, then increase to two men and a horse, and so on, then I can make just that much more money than if I had only myself to do the work. Just so in buttermaking; if you attempt to do it all with your own two hands you limit your capacity. Be a buttermaker working for another man, but a little later be the man who has a buttermaker working for you; get some other man to using his two hands, and you get the profit of his hands. You get 25 cents income from a man working for you and you have your income plus his 25 cents a week, then if you get two men you have their combined income, plus your own. You must have other people working for you if you get beyond a certain limit in the amount of your income, and that ought to be your ambition. Work for another man now, but at fifty have others working for you. There is no disgrace in your working for another man now; it is according to nature; you are gaining experience, reputation, friends, capital—then pretty soon you can begin to make other men work for you.

I am not in sympathy with those who are continually condemning millionaires. They get their money just as honestly as you get yours at the churn. If they have acquired their wealth by taking advantage of natural resources and have developed such resources the world is better for them. But those who get rich by crushing others down I join with you in saying that it is better that such men were not. But there is a place for millionaires; they are captains with armies of men behind them, in some cases to slaughter and destroy, but today it is organizing railroads, building smelting works, getting the gold out of the ground and the ore out of the earth. Do not envy those great men; let your ambition run in the same way.

Put your mind along one line and stick to it. You have just as good a chance in making butter as anything. You must work other men if you are going to get ahead and get capital. Be willing to start at the bottom and gradually accumulate a competence. I do not mind if beside your main line of work you have a hobby, but have something, that when your day's work is done in buttermaking that you can enjoy. Read, take a chosen

line of reading, gardening, horse training, history or something you can work upon, and when you are by yourself you can forget all about the cares of the day. President Adams was a student in certain lines; he was a great student of French history, and came to be known as one of the world's experts. He would read at the dinner table, supper table and at all odd times these French books, a pursuit that was entirely separate from his day's work.

Remember to get pleasure out of life as you go along. Let each day bring each day's business, and make up your mind as a buttermaker that you are going to give your employer the best satisfaction and later have some to work for you. Get out of this work a good living, because the world owes you a good living, because you have given the world the best that was in you.

The Chairman: We will next listen to an address on the Origin and Development of the Steam Engine, by Prof. A. W. Richter.

GROWTH AND DEVELOPMENT OF THE STEAM ENGINE (Illustrated).

PROF. A. W. RICHTER.

In Alexandria, the principal city of Egypt and the center of civilization 2,000 years ago, are to be found the first traces of the steam engine. A learned writer of this age, Hero, describes a machine commonly known as Hero's engine. It consists of a lower vessel or boiler partly filled with water. A globe is supported above by a pair of tubes, which form a passage for the steam from the boiler into the globe. Two short, bent pipes issue from the sphere, at points opposite each other, and are open at their extremeties. Steam, being formed in the boiler by means of a fire underneath, will rush into the globe and out of the bent pipes in such direction that the reaction produces a rotary motion of the sphere.

It seems strange that, although continually confronted by evidences of the power of steam, mankind was unable to control it and put it in practical use, up to very nearly the close of the seventeenth century, now 200 years ago.

In 1601, Porta described an apparatus by which the pressure of steam might be made to raise a column of water. It included the application of the condensation of steam to the production of a vacuum into which the water would flow.

In 1615, De Caus describes a machine which consisted of a metal vessel partly filled with water, in which a pipe was fitted, leading nearly to the bottom and open at the top. Fire being applied, the steam forced the water out through the vertical pipe, raising it to a height limited by either the desire of the attendant or the strength of the vessel.

In 1629, Branca described in a work published in Rome, a steam engine in which the steam, issuing from a boiler, impigned upon the vanes of a horizontal wheel.

During the last half of the seventeenth century, the Marquis of Worcester appears to have constructed, in his home at Vauxhall, near London, a device for the raising of water by the aid of steam, and we here come to the first instance in which the expansive force of steam is supposed to have been actually applied to do important and useful work. But Worcester was very unsuccessful in his efforts to introduce the device and fearful it seems, that he lose the financial benefits which must follow such introduction, we find no drawings and no minute description of his work. And as a consequence, mankind received no immediate and direct benefits from his labors. The right hand figure is all that remained of the work of Worcester. With its aid and with the aid of his ambiguous description, and with considerable imagination the left hand figure has been reproduced, among others, as being the engine of Worcester. It is similar in operation to that of Savery, which will be described later.

From this time on, many men were earnestly working on this problem, the raising of water by the aid of steam, and the necessities of the commercial world lent an impetus to the work. toward the close of the 17th century, English miners were

beginning to find the greatest difficulty in clearing their shafts of the vast quantity of accumulating water. A more powerful aid than that of horses was absolutely necessary for their work; as a consequence, many mines were idle and many others were threatened with a like fate.

In 1698, Thomas Savery devised a machine which partially met this want, a machine whose type is represented today, in an automatic form, by the well known pulsometer and steam ram.

Savery's engine consisted of two forcing vessels and two separate boilers; the steam being admitted, the air was driven out; the steam then being condensed by means of a stream of water which was allowed to flow over the outside of the vessel, a vacuum was formed, and the water rose from the reservoir below. Steam again being admitted, the water was forced out and up through the vertical pipe. The steam being again condensed, the operation was repeated. The valves were regulated by hand. The two vessels being used alternately, a continuous stream was discharged. The large boiler was the main boiler, the smaller one being used as an auxiliary to supply feed water to the larger one.

This machine of Savery's was the first commercial success, the first device of the kind that successfully aided man in the performance of the task set before him. Whether or no Savery obtained his ideas from a knowledge of the work of Worcester, certain it is that to him must be given the credit of successfully introducing the device, and thus really first benefiting mankind commercially.

The Savery engine was used to draw water out of mines; it gave a new impetus to the mining industry. Mines previously abandoned again commenced operation, and it was probably the means of drawing much attention to the importance of the power of steam as an aid to the work of the human race. But the device of Savery was not entirely successful. Boiler making was not understood, and the device required pressures beyond those that could be safely carried in boilers then in use, and consequently several explosions resulted, followed by doubt in the minds of many as to the safety of the device. It was besides a

most uneconomical machine and was displaced in 1705 by the engine of Newcomen and Calley.

Just previous to this time, Denys Papin had devised the two-way cock, the safety valve, the digestor, and also separated the steam from the water by means of a piston or float.

The Necomen or atmospheric engine consisted of a boiler, above which was placed a steam cylinder, connected to the boiler by means of a pipe containing a valve. Steam being admitted to the cylinder, the piston rose by means of the weight of the pump rod situated at the other end of the beam. A spray of water was then admitted by means of another pipe and valve; the steam being condensed, a vacuum was formed and the piston was forced down by means of the atmospheric pressure on the outside of the piston. The engine made about 8 to 10 strokes per minute. The valves, being operated by hand, required a boy attendant, until a boy named Humphrey Potter, noting the regular motion of the beam attached the valve handles thereto by means of chords, thus constructing the first valve gear. This increased the speed to 15 or 16 strokes per minute. This valve gear was then improved and given a more permanent form.

The Newcomen engine was a commercial success—a steam engine using steam pressures, so low as to be entirely safe, capable of pumping water from any depth or of turning the wheels of any manufacturing establishment, one meeting all the requirements that could then be made upon it and one which, by means of a train of mechanism, was capable of transmitting the power to the resistance to be overcome at the other end. Newcomen's engine is the first of an entirely new type and he was the first to give the steam engine a form in any way resembling our modern machinery, and it is to Thomas Newcomen I would accord the honor of being the first inventor of the modern steam engine. The success of the Newcomen engine attracted the attention of the best men of the time, as for example such skillful engineers as Henry Beighton and John Smeaton, who made some improvements, but nothing of any particular importance was done until James Watt gave his attention to the work which made him famous.

James Watt was born on Jan. 19, 1736. He was a bright boy but exceedingly delicate in health, and quite unable to attend school regularly or to apply himself closely either to study or to play. His early education was consequently given by his parents. The use of tools borrowed from his father's carpenter bench served at once to give him a dexterity and familiarity with their use that proved of great value to him in after life. When finally sent to school, his ill health prevented rapid progress; and it was only when 13 or 14 years old that he was capable of taking the lead in his class, and showing marked ability, especially in mathematics. At 18, Watt was sent to Glasgow, to learn the trade of mathematical instrument maker; he soon removed to the city of London for the same purpose. Watt returned home at the end of a year on account of ill health and later, in 1756, he again went to Glasgow with the intention of pursuing his calling there; the trades unions, however, prevented him from opening a shop in the town. Dr. Dick, of the University of Glasgow, came to his aid, and he was finally allowed the use of three rooms in the University building. In the college collection was a model of a Newcomen engine. The proposal to repair this model, together with his associations with the professors and with Dr. Robison, then a student of the University, directed his attention to the steam engine, and henceforth Watt devoted his best energies to a study of the steam engine and to its improvement. Watt soon began experiments of his own and for this purpose he used, at first, apothecaries' phials and hollow canes for steam reservoirs and pipes, and later a Papin digestor and a common syringe. These experiments led to practical results. He finally took hold of the Newcomen model and made experiments with that. Watt soon determined the sources of the losses occurring in the Newcomen engine. Continuing his investigations, Watt constructed a new boiler, and arranged it in such a manner that he could measure the quantity of water evaporated and the steam used. He soon independently discovered the existence of the latent heat of steam, the discovery of which was made previously by Dr. Black. The results of his many experiments, which were well devised, and truly scientific, led Watt to

his correct conclusions as to the sources of loss of heat and power in the Newcomen machine and in addition he discovered many other scientific facts concerning steam and the steam engine. Watt soon saw that, in order to reduce the losses of steam in the cylinder, it would be necessary to find some means, as he said, "to keep the cylinder always as hot as the steam that entered it." This finally led to the invention of the separate condenser, followed by a series of modifications, which gave to the world the modern type of steam engine. This, the separate condenser, is Watt's greatest invention, and upon it, more than any other one thing, rests the undying fame of the inventor.

Watt immediately proceeded to make an experimental test of his invention, using for his steam cylinder and piston a large brass syringe 1.75 inches in diameter and ten inches long; at each end was a pipe leading steam from the boiler and fitted with a cock to act as a steam valve. A pipe also led from the top of the cylinder to the condenser. The condenser was made of two thin pipes of thin plate 10 or 12 inches long and about 1-6 inch diameter. Another pipe about 1 inch diameter was connected to the condenser and was fitted with a piston, with a view to using it as an air pump. The whole condenser was set in a cistern of cold water. This little model worked very satisfactorily and raised a weight of 18 pounds. The success of this invention being confirmed, others followed in rapid succession. But even Watt's great mind was occupied for years in working out the details of the new engine. Watt now built several larger engines which were not very successful, due principally to the lack of skilled labor, and the entire lack of boring, turning and planing machines. As a consequence, severe leaks were a necessary evil, and there being no financial returns Watt was reduced to poverty.

In 1767, Dr. Roebuck, a wealthy physician, assumed Watt's liabilities to the amount of 1,000 pounds and agreed to provide capital for the continuation of the experiments and for the introduction of the engine, receiving therefor a two-thirds interest in the engine.

Several engines were again built, followed by partial failure, due as before to unskilled labor and a lack of the necessary tools and machinery. During these early struggles, Watt was, at times, driven to the pursuit of his vocation as an engineer, in order to gain a livelihood for his family.

While on his way to London to procure a patent, Watt made the acquaintance of a wealthy Birmingham manufacturer, Mathew Boulton, who owned a large manufacturing establishment at Soho, two miles from Birmingham. This acquaintance finally led to a partnership in the engine business, and Watt removed to Soho.

Mr. Boulton had a great business capacity, vigor, courage and health, but above all, large financial resources, which, together with Watt's wonderful mechanical ability, enabled them to overcome all difficulties.

Free from the uncertainties regarding his business relations, the next ten years, 1775 to 1785, were the most fruitful in inventions in Watt's life. During this period the firm obtained five patents, covering many improvements on the steam engine, and several independent inventions. Time will not permit a description of these patents, and indeed this is probably not necessary, since most of them are well known, as they appear in our modern engines.

These patents include the following:

1. Five devices by which he obtained rotary motion without the use of the crank.
2. The expansion of steam and six methods of applying the principle and of equalizing the expansive power.
3. The double acting steam engine.
4. The use of a rack on the piston rod, thus securing a perfect rectilinear motion of the rod.
5. A rotary engine.
6. A steam hammer.
7. The beautiful and widely known Watt parallel motion.
8. The fly ball governor.
9. The mercury steam gauge.
10. The glass water gauge.
11. The steam engine indicator.

Mr. Murdock, Watt's most trusted workman, patented the D or slide valve.

The earliest double acting engines of any considerable size which were built to turn a shaft, were the Albion mills engines, which were erected in London in 1786. There were a pair of engines of 50 horse power each. Financially this enterprise was a failure, as the mill was totally destroyed by fire in 1785, Boulton and Watt being the principal losers.

For the remaining years of his life Watt filled his time in studying the details of the steam engine and in working over his earlier inventions. His health improved as he advanced in years and the last years of his life were among his best.

James Watt died on the 19th of August, 1819, in his 83d year, and was buried in Handsworth church. The sculptor Chantry was engaged to erect a fitting monument above his grave and the nation erected a statue of the great man in Westminster Abbey. Smiles says: "The visitor to Westminster Abbey will find neither monarch, nor warrior, nor statesman, nor poet honored with a nobler epitaph than that which is inscribed on the pedestal of Chantry's monument to Watt:"

NOT TO PERPETUATE A NAME,
WHICH MUST ENDURE WHILE THE PEACEFUL ARTS FLOURISH,
BUT TO SHOW
THAT MANKIND HAVE LEARNT TO HONOR THOSE WHO BEST
DESERVE THEIR GRATITUDE,
THE KING,
HIS MINISTERS, AND MANY OF THE NOBLES AND COMMONERS
OF THE REALM, RAISED THIS MONUMENT TO
JAMES WATT,
WHO, DIRECTING THE FORCE OF AN ORIGINAL GENIUS,
EARLY EXERCISED IN PHILOSOPHIC RESEARCH,
TO THE IMPROVEMENT OF
THE STEAM ENGINE,
ENLARGED THE RESOURCES OF HIS COUNTRY, INCREASED THE
POWER OF MAN,
AND ROSE TO AN EMINENT PLACE
AMONG THE MOST ILLUSTRIOUS FOLLOWERS OF SCIENCE
AND THE REAL BENEFACTORS OF THE WORLD.
BORN AT GREENOCK, 1736.
DIED AT HEATHFIELD, IN STAFFORDSHIRE, 1819.

Among the foremost of Watt's contemporaries was Jonathan Hornblower, who patented the compound engine in 1781; this was followed in 1804 by the Woolf compound. It was found that the engine of Hornblower, using steam at a low tension, was no more economical than the Watt engine and in some cases did even less work with the same amount of coal. Woolf, on the other hand, used higher pressures and obtained a duty of 40,000,000 foot-pounds, as against the 30,000,000 of James Watt. For many years there was much doubt in the minds of many prominent engineers as to the value of compounding and as late even as the early 40's, we find an article in the Scientific American discrediting any advantage which might be gained by the use of the second cylinder.

In 1843 and 1845 Frederick E. Sickles of New York took out several patents on the drop cut-off as devised by him and forming the first drop cut-off applied to the steam engine. This cut-off was not regulated automatically, but was manipulated by hand by means of a wedge or screw. Although many changes had been made in the details of the steam engine since the time of Watt, they were only details and the system established by Watt remained substantially unchanged until the middle of the past century, when, by a fortunate circumstance, the attention of George H. Corliss was called to the steam engine and its relative inefficiency.

In 1843 Mr. Corliss took out a patent for a sewing machine for stitching leather. This was the first machine ever patented for stitching leather and was brought out three years before the celebrated Howe sewing machine appeared. In 1844, Mr. Corliss went to Providence, Rhode Island, for the purpose of having his machine manufactured and placed upon the market. He sought out the firm of Fairbanks, Bancroft & Company, a Rhode Island steam engine establishment. The firm was at that time very busy with several large engine contracts and agreed to help him later if he would help them in this present exigency; and it was here, while acting as draughtsman for this firm, that Mr. Corliss' attention was first called to the steam engine and its relative inefficiency. Mr. Corliss was not one to serve others

in a subordinate capacity, and finally announced that he would quit unless they took him into the firm. As a consequence, the firm of Corliss, Nightingale & Company was formed, and later this firm was succeeded by the Corliss Steam Engine Company, with Mr. Corliss as sole owner.

This chance which diverted Mr. Corliss' attention from the development of the leather stitching machine to the development and improvement of the steam engine resulted in the invention of the successful attachment of the James Watt regulator to a liberating gear, which was patented on March 10, 1849.

This was accomplished in such a manner and with such a construction that the position of the point of cut-off immediately responded to a variation of load, that the pressure in the engine was almost equal to that at the boiler, that the action of the gear was almost instantaneous. This, in connection with a reduction of clearance occasioned by his use of the rotary valve and its position in the cylinder, resulted in an enormous increase in economy and regulation. This accomplished, Mr. Corliss was destined to assume his place in the steam engineering world, second only to the immortal Watt. His improvement produced so great an economy in the consumption of coal in manufacturing establishments that the Corliss engine, in time, superseded all others. In the manufacture of textile fabrics it also enabled a uniform speed to be obtained by its almost human intelligence in regulating its own power to a constantly varying load. For the first time in the history of cotton spinning could the machinery of a mill be run without jerks and the subsequent breaking of threads throughout the mill, with the attendant vexation and loss.

Probably no more potent factor entered into the cotton industry of America to establish it upon a profitable basis than the Corliss steam engine.

In 1867, the Corliss engine was exhibited in Europe for the first time, at the Paris exposition, where it received the highest awards. At Vienna, in 1873, Mr. Corliss again received the highest award, in spite of the fact that no machinery and not even a drawing was exhibited by him. Since then the awards

and honors conferred were numerous, and flattering in the highest degree.

In 1875, Mr. Corliss submitted plans for a single engine of 1400 horse power, to move all the machinery in the Centennial exhibit. At that time an engine of 1400 horse power or a maximum of 2,000 horse power was considered enormous.

Mr. A. T. Osborn, Director General of the Exposition, in speaking of the exhibit of Mr. Corliss, says: "It worthily represents the genius and engineering ability of the producer, and the advanced progress of mechanical ingenuity and skill in the United States." The engine was proclaimed by the French commissioner in his report to the French government, as one of the greatest works of art ever produced by the hands of man.

The success of the Corliss engine was not, however, reached in a minute. Like all great innovations, it was at first assailed with derision, and was scornfully designated as the "Come and go fetch" valve motion. Radically different in operation, appearance and theory it was inevitable that it should not escape condemnation by those less enlightened and professing to be steam engineers.

The story of the development of our modern steam engine would not be complete without a few words on the work accomplished by our fellow citizen, Edwin P. Reynolds.

Just previous to his coming to Milwaukee Mr. Reynolds was general superintendent of the then famous Corliss works. Entering upon his new duties as superintendent of the Allis works, Mr. Reynolds at once designed his well known and celebrated Reynolds–Corliss valve gear, consisting of the knock-off, claw and bonnet bearing which has since become the standard and universally adopted Corliss gear in America and possibly in the world. The introduction of the roller flour mill soon created a demand for a more economical engine than was then used in the west. The Reynolds–Corliss engine met this demand; its success was established; its designer had laid the foundation for his own increasing reputation. The Allis company were among the first to build the direct coupled type of engine and electric generator, now the acknowledged standard for economic per-

formance, the world over. In this connection, the latest production is the 8,000 H. P. engine for the Manhattan Elevated Railway company, New York city. These engines have a maximum capacity of 12,000 horse power, and are the largest engines ever constructed for this class of work.

Since Mr. Reynolds' connection with the Allis shops the Allis engines have even been the recognized standard for efficiency and design throughout the entire civilized world. Occasionally losing their ground for a time as regards efficiency, they invariably regained it with better and surprising results. The Allis engine holds the world's record for economy for saturated steam, as shown by recent tests of the Boston type of pumping engines. They have no equal in the whole world.

Thomas Newcomer designed and constructed the first type of the modern steam engine. James Watt found it exceedingly low in economy and of a construction unable to meet the ever-increasing needs of the human race. By means of his matchless genius and ingenuity he produced the modern engine embodying all of the essential features of the successful engine of today.

George H. Corliss found the engine of Watt a commercial success but of economy equal, perhaps, to less than half of that attained at the present day. By a master-stroke he raised the economy by at least fifty per cent., and laid the foundation upon which Edwin Reynolds, by means of his skill in the thermodynamic principles involved, produced the record results of the world.

The modern steam engine, a product of the brains of the English speaking race, will ever stand as a monument, proclaiming to the world the genius and engineering ability of four great men: Thomas Newcomer, James Watt, George H. Corliss and Edwin Reynolds.

The introduction and development of the steam engine revolutionized the methods of production and means of transportation.

The spread of civilization, depending upon extended intercourse by means of rapid transit, the application of more forces

and the consequent discovery and invention of mechanical appliances, is perhaps due more to this substitute for the brute strength of man and its necessary adjuncts, than to any other one thing.

Machinery was a necessary consequence of the power to propel it; at first, labor loudly protested. That the introduction of the power to move and propel vast numbers of machines would also in a far greater proportion increase the demand for manufactured articles and ultimately increase the employment of labor, did not for a time dawn upon the mind of the laboring man. What supplied his place in the workshop and the mine arose before him like an evil spirit to deprive him of his power to gain a livelihood. How opposite was the effect! New enterprises sprang up on every side; the cheapening of manufactured articles by the increased facilities for production, increased the consumption. But labor had to acquire a certain degree of skill, the application of the mind was as necessary as the application of muscle, under the improved methods of production; physical strength and animal persistence were not the only requisites of the laboring man, but intelligence and practical learning became prime movers in the industrial world.

The greatest influence exerted through the invention of mechanical appliances has been upon manufactures, traffic and commerce, means of communication, and finally upon the methods of warfare. The discovery of a new motive power was of the first importance; the wind-mill and the ancient water wheel are displaced by engines of mighty power. The discovery of this motive power was followed by the invention of numberless machines. Every branch of manufacturing was invaded; new industries were established; and all received renewed life and activity.

But without a corresponding increase in the means of transportation, all these improved methods of production would be of no avail. Time was when only a limited area of agricultural land could profitably be tilled, when the base and precious metals remained in their subterranean chambers, when vast unbroken forests cast their shadows upon a virgin soil, and a great

portion of our mighty domain was the home of the savage and of wild beasts.

The advent of the railroad and steamboat revolutionized commerce and vastly increased manufactures and agriculture. The exchange of products with the over-crowded nations of the Old World became a possibility, an established fact, and has created an intimacy between nations that were as strangers to one another before, made all mankind brothers. The progress made in methods of transportation and traffic are wonderful; considerably less than a century ago there was not a mile of railroad in existence; today there are several hundred thousand miles of track in this country alone, extending to every corner of our land, connecting ocean with ocean, traversing seemingly impassable mountain ranges and opening up to improvement the remote portions of our country. Further, this ever-growing institution opens up one of the greatest avenues of employment for labor; many hundred thousand men are employed directly in the service of the railroad companies today; and the division of labor from the highest executive ability, from the army of clerks and the superior craft of engineers and mechanics to the common work-man upon the line of construction is, perhaps, more marked than in any one single enterprise employing the labor of man. The extremes of mental and physical capabilities meet.

The increase of the facilities for carrying the mail is another era inaugurated by the introduction of steam. The introduction of the telegraph, flying before the locomotive with its marvelous speed, a herald of its approach, of danger, of obstruction, enables the rapid motion of that other great product of the human brain; they move hand in hand, one is a necessary accompaniment of the other, and together they have been the means of establishing our great system of trade and our immense commercial intercourse and business relations.

Warfare has become a science; discovery and invention have made it so. From the war-ships of wood have been developed the magnificent steel cruisers of our modern navies. The steam

engine has been an important factor in this wonderful development.

Should the ratio of increase in these improved methods of destruction continue as in the past, war between the great nations of the earth will become an impossibility, and peace will exert her gentle sway on earth.

The field of invention is practically unlimited; what has been accomplished to the present day was never dreamed of by past generations; what will be accomplished in the future is beyond the imagination of living man to conceive.

Convention adjourned to meet in the assembly chamber at the capitol the next day at 2 p. m.

The president explained that the forenoon would be occupied by inspecting the exhibits of supplies and machinery in the basement of the capitol, and that all buttermakers having butter entered for premiums would meet the expert butter judge and discuss the butter with him at some stated time during the day. The visiting buttermakers were to be divided into sections and admitted to the scoring room in squads of ten men each.

The audience was then invited to look over the engineering building before leaving, and inspect the various rooms and machinery. This invitation was accepted, and the half hour spent in wandering over the building, which was thoroughly lighted for the purpose, was greatly enjoyed by all present.

The convention was called to order by the president at 2:00 p. m., January 14, in the capitol.

The following papers were read and discussed:

THE RELATION OF BUTTER-MAKER TO PATRON IN A CO-OPERATIVE CREAMERY.

BY THOMAS WITTIG, OF RUSK, WIS.

The butter-maker of a co-operative creamery has a larger field of labor and a greater variety of work than the maker employed by individual creamery owners or operators of a line of creameries who have competent men in charge of each and every branch of the business. In the average co-operative creamery the butter-maker is usually the only one connected with the enterprise who has trained or fitted himself for the business, and frequently the success or failure of the creamery in his charge is dependent upon him. To fill his position successfully he should have a fair knowledge of the breeding and general management of dairy cattle. How to formulate balanced rations and disposing of the by products of the creamery are problems which the up-to-date butter-maker should be able to solve.

The net returns per cow to patrons does not necessarily depend on the price of butter at New York, Elgin or Chicago, which is regulated by supply and demand, but we, as butter-makers, can and should encourage our patrons to keep better cows. When a patron is found whose herd is below the average he should make tests of the individual cows, and in this way convince him that he can improve his herd. A very good way is to introduce the Babcock test and scales for weighing milk at the farm. It is not necessary to use them daily, but an occasional use of them will teach to discriminate between good and poor cows. This we cannot accomplish in a short time, but a little persuasion here and there will help to bring about the desired result, and in a few years' time the average dairy cow would be a better producer than is now found in most sections where dairying is considered one of the main branches of farming. The success of a creamery depends largely upon the quality of butter turned out, and while the maker is often held re-

sponsible for this, he is unable to make a fancy article without the help of the patrons in bringing good milk. Here is where the butter maker of a co-operative creamery has the advantage, as the patrons being mutually interested in the welfare of the creamery can really see the importance. If a patron delivers milk that is not up to the usual standard, not only should its defects be pointed out to him, but suggestions should be made for overcoming these defects and improving the quality. When milk is refused it may be advisable to call on the patron, by so doing you get a better understanding of conditions and a personal interview will do away with any unpleasant feeling that might exist. If at any time there is disatisfaction among patrons regarding their tests it is best to have them present on testing day to see their milk tested. This gives opportunity to explain matters thoroughly.

A butter maker should be slow to take offense. He is bound to be needlessly annoyed but should keep peace. Any spare time in the afternoon can be used to good advantage in visiting the patrons, instructing them in the care of milk and other matters. It teaches them that you are interested in their cause and leads to harmony between patrons and buttermakers. Study your business carefully and devote your entire time to it and you will gain and maintain the good will of your patrons.

DISCUSSION.

Prof. Farrington: I would like to ask Mr. Wittig something about the size of his creamery. How large is it? How many patrons he has, and if he has ever refused any milk, and what effect his refusing had on the patrons. Tell us something about your personal experience in dealing with patrons.

Mr. Wittig: Our creamery is operated on the whole-milk system altogether. We have anywhere from 100 to 125 or 130 patrons. We get from 22,000 to 23,000 pounds of milk in summer time and the patrons are taking more interest right along. We have refused milk a few times. It caused some hard feel-

ing, but when matters were explained thoroughly to them they soon understood that it is best for them to take good care of their milk and in this way it does not cause so much hard feeling after all.

Question: Did you ever print and distribute rules on the care of milk among your patrons?

Mr. Wittig: To some extent, I had some rules printed and told them about the feed, condition it should be in when used for dairy cows, also in regard to the drinking water, purity, etc., also points in regard to milking and taking care of the milk, milk cans, time of delivery of milk at creamery, etc.

Prof. Farrington: How far away was the nearest competing creamery?

Mr. Wittig: Eight miles, I think. There are two cheese factories about four miles.

Prof. Farrington: When you refused the milk did it go to the other companies?

Mr. Wittig: Not very much. There was an understanding between us and they would not accept milk I had refused and I would not accept milk they had refused, so they did not often try it.

Question: Do you ever have meetings for your patrons?

Mr. Wittig: We have meetings of stockholders and the patrons attend these meetings.

Question: On what system do you pay your patrons?

Mr. Wittig: Butter fat system, use the Babcock tester. We do not do as a great many co-operative creameries do, take out the expense each month and divide up the proceeds, but we follow the method of taking out a certain amount for each pound of butter manufactured and divide the proceeds among the patrons according to amount of butter fat.

Question: Have you ever had a surplus in that fund?

Mr. Wittig: We do have sometimes. We pay stockholders dividends and have a small dividend now. We regulate this at the end of the year.

Question: How long have you been with the factory?

Mr. Wittig: Five years.

Question: Has the milk increased in your neighborhood, or have the patrons increased their supply of milk per capita?

Mr. Wittig: We have more patrons than we had when we began; there is more dairying done than previously. I think the same patrons last year delivered more milk than the year previous.

Prof. Farrington: Are farmers selling their cows this fall?

Mr. Wittig: Not very much. Present high prices of feed leave a small margin for them, but they hang on.

Mr. Faville: How many of the buttermakers are prepared to enlighten their patrons as you suggested in your address?

Mr. Wittig: I think the majority of the young men facing me are prepared to do so, or will be when they get through with the Dairy school.

SOME IDEAS ON ESTABLISHING AND OPERATING A WHOLE-MILK CREAMERY.

BY H. B. J. ANDRUS, NEILLSVILLE, WIS.

My creamery is a private, exclusive, milk affair. Managed, equipped and cared for by myself. We have no skimming stations, neither do we want any.

So far, we have received nothing but milk. However, should any of the patrons wish to use hand separators, I would have no objections to receiving the cream.

I think it would be very easy to give a patron just service while delivering sweet separated cream. I would not want cream rendered by the gravity process. Our methods and appliances are as simple as possible, and so far have given the desired results.

I don't like the "forced draft" way of doing things. It may be all right in emergencies, but the creamery is such an ordinary, every day, routine sort of a place that it's not needed.

In the management, ample "grate area" and "medium pressure" are sufficient.

In starting business, I first found a suitable place for a creamery, bought the lot and went to work putting up the building. I did not ask a bonus, neither did I ask anyone to promise to furnish milk. Promises are so very shallow that the fewer we have in this line the better off we are.

I employ the "to be" patrons so far as possible in doing the work and was very careful to pay them for everything done. I did not expect to make their butter free of charge, therefore I did not ask them to donate their time and strength. When we were ready for business, we started out with quite a flourish but with very little milk—666 pounds and five patrons.

My idea was to deal honestly and with everything wide open. I have carried out the idea and have no regrets.

I told the patrons that we would make the butter for four cents per pound the first year and then we would see.

The next season I told them that we would make for three cents whenever the milk would average four thousand pounds per day, or over, during any month.

The milk has been very good and the patrons seemed very anxious to make their delivery in the best possible way.

In dealing with the patrons, I consider it my special duty to carefully weigh, sample and test their milk.

The testing is the vital part of the work and there is no end to the care that should be given to it.

While you are testing a patron's milk you are mixed right up with his money, and a mistake, negligence, or carelessness on the part of the operator and you have got something you don't want, and something that is hard to explain.

It's a homely thing to say, but you all know what an attachment there is between man and dog. Well, if I were going to do something not exactly right and at the same time expect to retain a patron's friendship, I would rather "can" his dog than to make a botch of his test.

I would like to have the patrons come in and see the testing done, and whenever I see one going past while we are at work

I call him in. One patron nastily asked me what made his test so low.

I explained to him the several things that might be the cause. This was unsatisfactory. Then we had a short talk that was quite devoid of rhetoric but spiced up in other ways. We both lived, however.

I make it a practice to know as many of the little things as possible and that keeps us away from the big things.

A copy of each test is placed in the weigh room where the patrons can see it, and they have access to the book which has all previous tests recorded.

The patrons receive a complete statement each month of the creamery's work. Some don't understand and some don't care what it does, but the most of them are interested. Quite often you'll see toggled up harnesses and rickety wagons delivering the milk of those that don't care and I really believe they don't.

The buttermaker and the patrons must work together. It is easy when the whole work is carried out as it should be.

Buttermaking is one of the many cases of evolution that are before us and it is my earnest hope that the Wisconsin Buttermakers' Association will live to do its part in reaching the higher and better things that are coming to us all.

DISCUSSION.

Mr. Tyler: Have any of your patrons ever expressed a desire to examine the books and straighten out your accounts, if necessary?

Mr. Andrus: No, they have not.

Mr. Rumhill: How long since you started your creamery?

Mr. Andrus: It has been considerably less than one hundred years. We have not been running a great while, started two years ago and we have a good deal more momentum now than we had to begin with.

Question: Do you own machinery and apparatus yourself?

Mr. Andrus: Had to pay taxes on it this year.

Question: What are your objections to the skimming station?

Mr. Andrus: I consider it a hole in the bucket. Years ago we had a big sugar bush and we youngsters had to gather the sap, but there was some mean scoundrels in the neighborhood who shot holes in the bucket. Of course, we could plug them up all right, but they wasted the sap, and that is the way with skimming stations to my mind.

Mr. Wallace: Have you had any experience in operating on that plan?

Mr. Andrus: No, sir, and I heartily hope I never will. I will tell you why I say this. There has been quite a call on me for skimming stations as my patrons are scattered and quite a lot of the country roads are none too good in that northern part of the state and they hate to haul their milk so far over bad roads, but I tell them they must bring the milk there and give us more to handle, the more we have to handle the cheaper we can do it.

Mr. W. S. Moore: Are you able to make a fair amount of your investment when your milk does not exceed four thousand pounds a day?

Mr. Andrus: Yes, that is all we should have.

Mr. Faville: You invite your patrons to look into your private business—we have the same privilege. He says he paid taxes, did he borrow the money or did he earn it out of the business?

Mr. Andrus: If you are milking cows and delivering milk to a creamery I will tell you.

Mr. W. S. Moore: I want to know whether out of the three cents you take anything for a sinking fund, or charge against your profits anything for depreciation of your plant? The plants nowadays do not last long; after four or five years you have no plant at all. I want to know if you take out enough to keep your plant in good repair and provide against the loss your are bound to sustain?

Mr. Andrus: We built just as good a plant as we could with the money we wished to invest and bought the best appliances we could get, and they are wearing beautifully and doing excellent service, and the building and machinery are just as good now as they were two years ago, and I think they will be just as good five years from now with careful management, and I do not think it is necessary to take more than three cents per pound for making the butter. If we received ten thousand pounds we could charge 2¾ cents, and if fifteen thousand we could charge 2½ cents and still make good reasonable money. If a patron milks one cow and is encouraged to buy another cow then I will make more money next year than if he only milked one cow. We want to encourage them to milk more cows.

Mr. W. S. Moore: Have you any other interests that are benefited by the creamery you are running or is the creamery business your only business, in other words?

Mr. Andrus: I haven't anything benefited in particular but a wife and two babies.

Mr. Froelich: Do you pay patrons by butter fat or actual yield?

Mr. Andrus: I take one hundred pounds of milk as a basis. I will enclose one of the statements I use and you will understand and make it clear.

Prof. Farrington: What items do you give in the statements you give your patrons each month?

Mr. Andrus: I can enumerate. At the top of the page is the patron's name, then the number of pounds of milk delivered, the average test, price received per pound of butter, the net price after making comes out, amount of cream, buttermilk and skim milk sold (once in a while we sell a pitcher of whole milk), pounds of butter fat, net price per pound of butter fat, price per 100 pounds individual brought, number of pounds delivered by the patron, patron's test, and patron's price per 100 pounds of milk.

H. B. J. ANDRUS,
Manufacturer of
PURE CREAMERY BUTTER,
Neillsville, Wis.

Report of ....., 190
Name of patron .....
No. lbs. milk received .....
Average test ..... per cent.
No. lbs. butter .....
Price received, $.....; Net price, $.....
Amt. of cream, milk and buttermilk.....
No. lbs. butter fat .....
Net price per lb. for butter fat.....
Average price per cwt. milk, $.....
Lbs. milk furnished by patron.....
Patron's test ..... per cent.
Price per cwt. of patron's milk, $.....
Amount due patron .....

Mr. Wilson: What is the average test for last month?

Mr. Andrus: 4.92 for the week; have not the test for the month.

Question: Have you any distinct breed of cattle?

Mr. Andrus: We have all kinds—some Jerseys, Guernseys, a lot of Natives, a few Shorthorns, and once in a while a little sprinkle of Holsteins.

Question: What is the average test?

Mr. Andrus: Last Saturday I tested the milk but did not figure it all out but I do so when the owners call for it. The lowest was 3.8 and the highest was 7.4. The 7.4 is all right. There are two cows that are very nice Jersevs that are almost dry and practically giving no milk at all. That is the way it came about.

Prof. Farrington: Do any of your patrons have figures that tell how much they have received per year per cow?

Mr. Andrus: They do keep their statements. You see it is new to them and they are interested in it.

Question: How much did they average?

Mr. Andrus: The average was about $4.60 to $4.80 per cow for July. I cannot tell exactly for other months.

Mr. Heath: Would you be willing to tell us what your average over-run is?

Mr. Andrus: Last month, if I remember rightly, it was between 11 and 12 per cent., something like that.

Mr. Grossman: I understand Mr. Andrus is from the same county where I started a creamery two years ago, Clark county. Clark county is a very fine county and will be one of the richest in the state by and by. Mr. Andrus seems to be against skimming stations. If you want to do a large business nowadays you must have skimming stations. We have two at Greenwood and will have another next year. We used to gather cream years ago but that is all played out now. He says he will take cream from hand separators. If I gather I gather. Cream with whole milk is not right because farmers' milk is all right when it is separated but they do not keep it right. Sometimes when you get it it is sour, and they do not want to bring it every day, but twice a week perhaps. Now, the right way to do is to take in the whole milk every day, and with a large business you must have skimming stations, and of course you have to get the milk from the skimming stations as quick as you can in warm weather.

Mr. Andrus: In page one of my paper I said I have no objections to receiving sweet separator cream.

Mr. Peterson: If you took in the cream would you pay the same price for that as for butter fat?

Mr. Andrus: It would be received just the same as milk.

Prof. Farrington: I would say that in such cases there is a slight difference that should be made in paying the cream patrons as compared with the milk patrons. The cream must be tested the same as the milk and then the pounds of cream fat which a patron delivers is multiplied by 1.03. This puts the cream patron on the same basis as the milk patron.

Mr. Andrus: If a man were milking twenty cows, how much difference would that make?

Prof. Farrington: The test of skim milk is perhaps 0.12 per cent., that of whole milk about 4.0 per cent. Now, this loss in the skim milk is 3 per cent. of the total fat in the milk. The whole-milk patron gets paid for the total fat in his milk and in order to pay the cream patron for the fat in his whole milk, the cream fat should be increased by 3 per cent., or multiply by 1.03.

Mr. Andrus: If any of my patrons should bring in cream I would look the matter up and pay for it on the right basis. They have never done so as yet.

Question: Concerning making price, you say a creamery cannot be operated on 4,000 pounds of milk and make for three cents a pound. I should think this would pay a good dividend. Unless you pay freight and commissions there must be a leak somewhere which has not been explained.

Mr. Andrus: We receive 4,000 pounds of milk and we get four cents for making butter. If we received 4,001 pounds of milk we could make it for three cents a pound, and any honest creamery can take 10,001 pounds of milk and, according to my rating, three cents a pound for making the butter gives him all he deserves. If he does not know enough to accumulate a larger business that is all he deserves.

Question: Do you remember how much cream you sell in a month?

Mr. Andrus: I have not tried to remember.

Mr. Faville: How much do you get out of a year's work?

Mr. Andrus: I do not know, but if you will give me your address I will send you the figures when I get home.

Mr. W. S. Moore: You say the average test was 4.93. How low was any of it at that time?

Mr. Andrus: I do not think there was a test lower than 4.4, although there might have been; we certainly get good milk.

Question: I do not see how he can have such a high average if he figures right. It is a pretty high average, and I would like to know how he figures it.

Mr. Andrus: I would multiply the average test of each man's milk by amount of milk. I would take each patron's

milk, multiply it by his average test, then take the whole amount of butter fat and get the average test with the whole amount of milk.

Question: We have only about 10 or 11 per cent. It would incline some people to think he had made a mistake.

Mr. Andrus: We use the standard Wagner glassware, we test all test bottles and the incorrect ones we break, the good ones we keep, we use the regulation pipette, standard acid and measure and do the work when we are perfectly sober.

Question: How many days in the week do you run your creamery?

Mr. Andrus: We run every other day during the winter, every day during summer.

Question: I think the gentleman on the floor has not said he paid the freight and commission out of this four cents.

Mr. Andrus: Did I not tell the people that I had on my statement the net price?

Question: Now, Professor, here is a technical point. Does the very best kind of food make the very best kind of milk?

Prof. Farrington: This is a question that has been much discussed and I believe that the evidence so far received indicates that under normal conditions the feed has no influence on the test of the milk.

Mr. Andrus: Well, we have the very best kind of feed ir our county.

Prof. Farrington: I really do not think it makes a bit of difference with the richness of the milk.

Mr. Andrus: We have good cows. There are a lot of natives and some of them are very good cows and they give very good milk.

Member: Prof. Henry tells us a man cannot make money if he is operating the creamery himself, that he cannot begin to make money until he is thirty-five years of age. After that time he can begin to make money.

Member: I would like to put this question to the gentleman right straight once. Does he pay the freight and commissions out of the three cents, or do the patrons actually pay that?

Mr. Andrus: I deliver the butter to the station and there I stop. The making comes out of the net price for the butter.

Mr. Holmes: The trouble is in making butter for three cents when a great many are charging four cents and have the milk delivered at the door and receiving the money there, the man operating the creamery paying all freight and commissions.

Mr. Andrus: We make for four cents a pound and we do all of the team work in connection with it. Our patrons bring the milk there, we empty the cans and return the skim milk to them as clean as they bring it. We put up our own ice, buy our own wood, carry out our ashes and board ourselves.

Mr. J. A. Moore: I do not doubt the statement as to the average test. We have 181 patrons at our creamery and the average test is from 4.80 to 4.90 and we have 13,000 to 14,000 pounds of milk a day. The price for making is 1.51; we take out of that price insurance, taxes, wages of three men, officials, and ten per cent. on money invested.

Mr. Andrus: When we develop to where we get a big flow of milk, say 50,000, we can work cheaper.

Mr. Tyler: I would like to explain our method of making so he will understand why I question so. We make for four cents a pound the year round but we pay the patrons within four cents of the Elgin market. We pay all expenses, freight, commissions, buttermakers' wages, taxes, and everything must come out of that four cents.

Mr. Andrus: That method does not agree with my ideal in regard to this—it is liable to develop avariciousness.

Mr. J. A. Moore: It is the principle worked upon by the neighboring creameries and gives good satisfaction.

Mr. Andrus: Let every man stand independent and not give a "hooter" for his neighbors.

CO-OPERATIVE GATHERED CREAMERIES.

BY S. E. OAKS, WEST SALEM, WIS.

It has been and is now in the majority of gathered creameries the custom to make a poor grade of butter, and it is generally caused by a poor manager and poor board of directors. It does not make any difference how good a buttermaker may be in the creamery, he can not make good butter from poor cream. But if he is backed by the board of directors and they will let him grade the cream, he can then make good butter. In order to grade the cream properly he should have vats enough so he can have one to put the poor cream in and should have a small tank in the wash room for the drivers to put rinsings of their cans in, and also to rinse their floats in. He should not let them rinse them over the cream vats as they do in some of the factories I visited last summer. You should find out right away where the poor cream is coming from and go and tell them how to care for it, and until he does take good care of it and keep it sweet so that it will not be "off flavor," he should be docked from fifteen per cent. to twenty per cent. of the cream. Do not take this off all the patrons by putting all the cream together and making a poor grade of butter and getting a low price for it, but make two grades of butter and get the highest price for the best and get as much for the poorer grade as most of the creameries get for their butter. It can be done if the cream is gathered three times a week anyway, and in order to make it profitable for the creamery and for the patrons the cream haulers should be paid by the number of pounds of fat that is contained in the cream and not be paid by the number of pounds of cream they haul. If they are paid for the fat they only get paid for what they do and do not get paid for hauling water and skim milk that is not of any benefit to the creamery, and paying 25 to 50 cents per hundred pounds for hauling, and the cream haulers should give good bonds that if they let any cream spoil after they get it from the patrons, or if they spill any, they shall pay for it. If the but-

termaker cannot tell if it has spoiled on the haulers' hands he is not the right man to have in a creamery of this kind.

The company should furnish canvas for the driver to cover his cans with so as to keep the dust and dirt from the can, and in the winter time the company should furnish soap stones or some other kind of heaters so that the cream will not freeze, because number one butter cannot be made from frozen cream. There are some students here this winter who said they made good butter from frozen cream, and maybe they did, but I would not advise anyone to freeze their cream in order to make good butter. The buttermaker should have control of the drivers and say when they should get to the creamery, and if they stay out on the road and keep the cream in the sun three or four hours longer than there is any need of and do not get to the factory until seven or eight o'clock at night, they should be fined at least $2.00 for each time they stay out after the time they are due at the creamery, and if there is a shortage of butter to the amount of cream you are receiving the buttermaker should not let the company think that he has some friends that he is shipping butter to and putting the money in his pocket, but get after the drivers and see where the shortage is. Do not weigh the cream at the factory when unloading, like lots of the factories that I know of do, but get after them right and find out who is the thief. I do not say that all cream haulers are thieves but I do know of some that have put water in their cream to make it hold out in weight. If a gathered creamery is run right, and it can be if men of the right kind are at the head of it, the first thing is a good number one buttermaker, and in picking out a good number one buttermaker do not pick out a man who, when you go into his test room you will find his sample jars all smeared up with cream from the top to the bottom so that anyone cannot see through them. I would not want that kind of a man because if he is dirty and slack in the test room and with his sampling jars he will be slack with his other work, and if you get one that is clean and understands making butter, and the creamery is run right, and you use box churns and wheel workers so that you will know how much salt you want to use in your butter and

will not have to guess at it, I think the best grade of butter can be made and get the highest market price at a gathered creamery; but if a combined churn is used in a gathered creamery you do not know anything about how much salt to use, but I will admit they are all right for a lazy man. I will say that if a gathered creamery is run right, and it can be, the patrons will get a larger profit than they can from any separated factory. It should be co-operative creamery and the overrun, or profit, should be going back to the patrons and making them better satisfied than if it were going into the hands of an individual.

DISCUSSION.

Mr. Wittig: I would like to have the gentleman tell us what method he uses in distinguishing good cream from bad cream.

Mr. Oaks: If you have a good nose you can tell poor cream from good cream; that is the way we tell our cream is not good.

Mr. J. G. Moore: Mr. Oaks said in his paper the patrons of a gathered cream plant received more for their product than patrons of whole milk creameries. I would like to know how he figures it out.

Mr. Oaks: All I can say is that I know of eight or ten factories not far from us and we pay from 1½c to 3½ more for butter fat than any of the creameries around that section of the country.

Mr. Dodge: I would like to know how he makes his test of the milk. How do you pay?

Mr. Oaks: We pay by the number of pounds of butter fat in the cream; we have a composite sample and test once a week.

Question: Do you measure with a 17.6 cc. pipette?

Mr. Oaks: We weigh it out.

Prof. Farrington: Tell us something of the size of your factory.

Mr. Oaks: In 1901 we made 740,000 pounds of butter, and the largest day's work last summer was 4,350 pounds, the largest week's work nearly 24,000 pounds of butter.

Prof. Farrington: Is not that the reason why you can make butter so much cheaper. Is it not due to the large factory and not entirely to its being a gathered cream factory?

Mr. Larsen: Is the cream weighed out at the factory?

Mr. Oaks: It is weighed out by the haulers at the farms; he carries his scales and does the weighing himself.

Question: Have you a special style of scale for weighing?

Mr. Oaks: Yes, we have a scale that the haulers use.

Question: I mean for making the test, have you a weighing pipette or do you measure the cream?

Mr. Oaks: We use 18 grammes for a test.

Question: How much more is that than 17.6 cc.?

Mr. Oaks: I have never had much experience in the testing room; have had no experience until I came here; our head buttermaker did that.

Question: In regard to using the combined churn the gentlemen said there was too much uncertainty about salting with the combined churn in a gathered cream factory. I do not know why there should be any more guess work about it than at a whole milk factory where these are used with good results.

Question: How much butter do you churn a day.

Mr. Oaks: Not less than 2,700 or 2,800 pounds a day.

Prof. Farrington: How many patrons have you?

Mr. Oaks: About 500.

Prof. Farrington: When any farmer is sending in milk that is not up to the standard, you say you send a man around to see the farmer. Does not that take one man's time almost entirely?

Mr. Oaks: No, because we do not have much poor cream; they all take first class care of their cream.

Question: How much time does it take to keep the patrons up to the standard with their cream?

Mr. Oaks: Two or three visits during the year.

Question: What is the average test of your cream?

Mr. Oaks: Along about 24 or 25.

Question: Is there any material difference in the average test from day to day?

Mr. Oaks: I cannot say as to that.

Mr. Livermore: I would like to ask the gentleman if he has trouble in figuring his salt in putting in the combined churn, how he would figure for coloring matter?

Mr. Oaks: Guess at it as with the combined churn. I will admit that the combined churn is all right for a separator factory.

Question: I want to ask how he gets the sample from which he makes the test, whether the driver takes it, and how he keeps that composite sample for 30 days.

Mr. Oaks: The driver takes the sample of the cream from day to day when he goes to the farm and he brings it to us in a glass tube in a box he carries in his wagon, and each one of our patrons has a jar that is numbered and we take the driver's box and find the number of his sample of cream and put it in the jar and put in a tablet to preserve it.

Mr. J. G. Moore: If the driver takes samples at the door what precaution does he take to keep the haulers from favoring a person; that is, taking a sample that is better than the cream?

Mr. Oaks: None that I know of. If they think a driver is favoring any one they would catch them if they could.

Question: What is the average length of the cream route of your drivers?

Mr. Oaks: Somewhere in the neighborhood of 28 to 30 miles that each team makes each day.

Question: Do you have trouble in your cream being churned when it comes to the factory?

Mr. Oaks: Once or twice it has been churned when it came from farms about 35 miles distant.

Question: What price do you get in a gathered cream factory for your butter as compared with the whole milk factories; is it larger or smaller?

Mr. Oaks: I cannot say, but for the month of June our butter sold for 22½ cents a pound. But I am not posted on this subject as the president takes care of that part of the business, the buttermakers do not know much about it.

FAULTS IN BUTTER AND HOW TO PREVENT THEM.

By Dan Blauer, Omro, Wis.

Mr. Chairman, Ladies and Gentlemen:—

Our secretary has asked me to prepare a paper on the Faults in Butter and How to Prevent Them. I do not know all the faults, but am familiar with some of them. The first to be considered is the flavor in the butter, as was seen by the returns from our score cards at conventions and state fairs, which were marked perfect in everything but flavor.

Let us bear in mind first, that milk is naturally a pure product, and if it is found to be unclean chances are that it is not the fault of the cow. Some person is to blame: either the one who cares for the cow or the one who handles the milk. In order to make a fine flavored butter the milk must be in first class condition when taken into the creamery. There are some, however, who get good milk and then cannot make a first class article of butter. Of such it must be said the fault is not in the milk but in the man or his tools. If the buttermaker has his creamery disinfected with antiseptic which is applied muscle and brush, he can in that way prevent the development of foreign germ life. The cream should be ripened by giving it the desired amount of acidity and no more. I might say here that I use Mann's acid test in determining the acidity of the cream. I churn the cream at 30 c. c., at a temperature of 54 to 56 degrees.

We have many complaints that the butter comes soft at a temperature of 54 to 56 degrees. My experience has been with different churns that in the process of churning the temperature runs higher, varying from two to five degrees. My way of testing the churn is to put about the same amount of water as I have cream to churn, take the temperature and churn about as long as I do the cream, then take the temperature again and this tells me the temperature the cream should be when put into the

churn. The salting and working the butter is another important matter. Many buttermakers hold to the theory that the quicker it is salted and worked adds so much to the quality of the product. This is a mistake. The salt must have time to do its work. Work the butter about one minute, then let it stand about fifteen; after this take out a sample on a ladle, examine it closely and you will find a drop of buttermilk and water hanging to each kernel of salt. Work it again for another minute and let it stand another fifteen; then take out a chunk and you will find that the drop of buttermilk and water has increased in size. Butter should be worked about five minutes and not to exceed one minute at any one time. By this method the salt has plenty of time to do its work and take the most of the unnecessary buttermilk and water out of the butter. In the matter of rancid butter my experience teaches me that the trouble lies in the butter containing too much buttermilk and being poorly packed.

The causes of mottles are many. They may be caused by not properly straining the cream. Another cause is washing the butter with water which is not of the same temperature as butter itself. Mottles may come from uneven distribution of salt in the churn. Remedy this by salting as evenly as possible before working and have salt the same temperature as the butter.

Mr. R. B. Watrous, secretary of the Citizens' Business League of Milwaukee, presented an invitation from Mayor Rose of Milwaukee to the Wisconsin Buttermakers Association to hold their next convention in Milwaukee.

Milwaukee, January 13, 1902.

To the Officers and Members of the Wisconsin Buttermakers' Association, in Convention, Madison, Wisconsin.

Gentlemen:—Milwaukee extends greeting to you in this, your first annual convention, and trusts that the growth of your association may be as rapid and substantial as the growth of the great industry you represent has been in our splendid state of

Wisconsin. Our citizens extend a cordial invitation to you to hold your next annual convention in this city, assuring you that your welcome here would be most cordial, and that everything possible would be done to contribute to a successful business meeting and the pleasure of your members individually.

We are confident that a convention of your association here would be of material benefit to you from the fact that Milwaukee by its central location and easy access from all parts of the state would attract a large number of buttermakers to your convention. The hotel accommodations here are uncommonly fine and the attractions to be enjoyed in our city are such as to contribute greatly to the pleasure of visitors. We point with pride to the large number of state organizations which have made a practice of meeting here regularly, it having been demonstrated to them that their meetings are more largely attended and the results most satisfactory.

Hoping that you will select Milwaukee for the 1903 meeting, I am, Yours truly,

CITIZENS BUSINESS LEAGUE,
By R. B. Watrous, Secretary.

Milwaukee, January 13, 1902.

To the Officers and Members of the Wisconsin Buttermakers' Association, in convention, Madison.

Gentlemen:—I take great pleasure as mayor of Milwaukee in extending to your representative organization a most cordial invitation to honor Milwaukee by meeting with us for your next convention. Our city takes great pride in coöperating with all interests that have to do for the advancement of our great state, and I know I speak for our community at large when I say that it would be a source of great satisfaction to them to greet you as representatives of the creamery butter making interests of Wisconsin in our beautiful city of Milwaukee.

I trust that your association may have a very successful opening session and that the coming year may be one of decided prosperity for the industry you represent and for your new association.

Respectfully yours,

DAVID G. ROSE,
Mayor.

The invitations were received with thanks, and referred to the Executive committee.

Convention then adjourned till 8:00 P. M.

The Convention was called to order by the President at 8:00 P. M. He first called on Mr. John M. True, Secretary of the State Board of Agriculture, who spoke as follows:

It is always embarrassing to appear as a speaker at a meeting when the audience has been disappointed in meeting the speaker of their choice, and I feel confident I can add very little to the interest of your program.

I am pleased as a representative of one of our agricultural organizations to come to you and express the interest of our organization in you and your work. While the State Board of Agriculture is supposed to divide its activities among a variety of lines of agricultural pursuits of the state, still it has come to be recognized more prominently with its agriculture than with dairying.

When we compare the direct agricultural pursuits of the state of Wisconsin with that of some of our neighboring states we are a little inclined to be discouraged, but when we fall back on our dairy statistics we feel that there we can rest with greater assurance, and we are therefore proud of the position the state of Wisconsin takes as a dairy state. The extent of its work and the quality of its products were shown at our last State Fair, where 142 exhibits of butter were made; of this number, 138 scored sufficiently high to win prizes. The dairy exhibit in connection with the Dairy School of the University was one of the most interesting points of the whole exhibit, and we feel very grateful indeed to the dairymen of the state for the interest manifested in coming to our aid in making so good a showing. I want to say tonight that we wish for a continuance of that interest, and it is the intention of the Board to keep pace with your growth, and there have been recommendations for receiving exhibits and showing them in a creditable

manner. I think I cannot go amiss in saying that the Board will be very much pleased to receive any suggestions as a body that you make with reference to anything you think would make our work in connection with yours of greater interest to you as exhibitors.

The President then introduced Judge E. W. Keyes of Madison.

Mr. President, Ladies and Gentlemen: I am not in exactly the same condition that a certain speaker was on an occasion when as he appeared before his audience he said: "I am unexpectedly called upon to address you," and thereupon proceeded to draw a lengthy manuscript and commence reading. I was drafted to appear here by your worthy President, and when the President of this Association or of any similar association in the state of Wisconsin calls upon me for any duty which I might perform, I shall most heartily respond.

Now, I do not know, my friends, what I can say to interest you tonight. You do not want me to tell you that buttermaking is a great calling, you do not need to have me assure you that in buttermaking there is money; you know it now, and while the organization of buttermakers in this state is in a sense in its infancy, I can see a great future before it provided it is pushed with energy and the interest is maintained. We know that in union there is strength, in organization there is victory, and that no cause, however meritorious, will thrive and prosper unless there is a power behind to push it forward. So with your organization: if your interest continues unabated, its influence will spread throughout the length of the state and great advantages will accrue to you.

It is true, as stated by your worthy President, I have always manifested a deep interest in the dairy business, in agriculture and in the Short Course in Agriculture in the university because,—if I do state the fact, it is none the less true—that it was on my motion that the first steps were taken to create the Short Course in Agriculture, and that motion was followed up by earnest endeavor on my part to make it materialize and

to lay the foundation for its becoming the grand interest of our university it is today. It was very difficult to get a start, and when I look back and see the obstacles in our path and how hard we had to work to get the students to come for instruction, I am astonished at the success attained. When I look the ground over to see what course of instruction to follow, we found no precedent anywhere, no text books, no books on the rudimentary practice of agriculture; so in one sense we had to go it blind. We created the course and then tried to get students to come. I remember that I spoke to a farmer friend of mine living in a town north of here who had two sons, and I asked him if he did not think one of them knew enough to come up and go through the Short Course in Agriculture. "What is that?" he said. "I never heard of it." I explained it to him, and he seemed quite pleased with the idea. He said he had two boys, Tom and Jim, and Tom will probably plug away here on the farm, but Jim, if he could have a chance, might do better than feed hogs and milk cows, and he would send him. Upon the opening of the Short Course, Jim came and stayed one winter, three months, and he made such progress and was so delighted with the course that he came the second winter. He turned his attention to veterinary surgery and seemed to have a natural adaptation to that pursuit, and when he left the University Short Course after two years he went to Ontario, Canada, and took a course there, and he is today stationed in Illinois in the government employ with a good salary. That case I always point to with pride as a product early in the history of the Short Course in Agriculture.

There was an Institute at Evansville, a short distance away, the second year of the Short Course, and we had eighteen or nineteen students. They did not come in as rapidly as we had hoped, and we were a little inclined to be discouraged; so I determined we would bundle up that Short Course in Agriculture and transport them to the Farmers' Institute at Evansville. It was a question as to how we would get them there, for they had no change in their pockets; but I said, "They are going," and I applied to that great railroad magnate Marvin

Hughitt, and he sent passes to take the whole lot down and back, as a compliment from his road; and they went. We got them down there and palmed them off on the kindly neighbors, so that it was a very economical trip. The object was to advertise them, to exploit them and let the people of the state know what was going on in our Short Course in the university, and it was productive of considerable good in this matter. See what the Short Course means to this state, see what it produces and what good it accomplishes, what a standing it has in the states of the Union for furnishing instruction unexcelled anywhere in any similar institution in the country. We feel proud of it; it is worthy of the effort, it is worth a great deal more than it cost, and I conclude from the faces I see before me tonight that many of them are members of the Dairy School.

I might go back a little and relate my first experience in buttermaking in Wisconsin territory. There are not many in this audience who were here when I first commenced dairying or buttermaking in a primitive manner. My mother and I constituted the whole force. I went after the cows barefoot in the marshes and drove them into the yard at night, milked them —sometimes she helped milk them—strained the milk into the milk pans and then skimmed the cream. Then came the worst part of the whole story: the stone churn was filled and I had to do the churning, and I shall never forget that part of my dairy experience because sometimes the butter at that time was very contrary, and it did seem as if it never would come; but I do not remember a single churn-full that successfully resisted the appeals which were made to it to transpose itself from cream into butter. Many is the time when the churning was done I had to help work the butter and fashion it into golden balls of butter and then start off to the country store to sell or swap it for groceries, sugar, tea or other things; and many is the time I have borne the platter with a few pounds of butter freshly made to the grocery store and received in exchange the few articles I desired, receiving six cents a pound. That was not very encouraging, but was the best we could do at some seasons of the year. There were no railroads, no markets anywhere.

There were hardly any railroads anywhere in the United States at that time, and nobody ever dreamed that any person then living would live long enough to see the state of Wisconsin gridironed by railroads as it is, which bring it within easy reach of the markets of the world and with a market at your very doors. There has been a great transformation since I first went into dairying. There were no cows in the territory when my father landed here in Lake Mills in 1837 and it was some time before I saw cows, but after a time they were brought up here from southern Indiana and the extreme southern part of Illinois; they came in small herds. They were native cows, with wide branching horns, like the horns of a Texas steer, but they were cows and the settlers would buy them. They cost $7.00 to $9.00 apiece. They were driven through the country and the drivers of the herds camped upon the ground or in a covered wagon. They made their pilgrimage from the southern border of the territory into the central part of the state, hardly ever going further north than Portage. I remember the first cow my father bought; that is a cow of blessed memory, and we children called her Tilda, and we bought her of a farmer in Rock county woods. That cow was a great luxury and we appreciated her society to the highest extent possible. What a mighty change has taken place since then; look at the creameries and cheese factories, what capital, enterprise and business ability which is devoted to butter making. It is almost incredible to me to see the mighty changes which have taken place in butter making.

I hope that this association will manufacture lots of butter and I hope you will all strive to make good butter. I think that buttermakers have to be more honest than cheesemakers. I never heard of an honest cheesemaker. I remember a year or two ago some one coming to me in the capitol and saying: "We want you to come in and make a speech before the Cheesemakers' Association. We expected Hoard and he cannot be here, and you must come and give us a talk." I said, "Hold on a minute, let us get our bearings. I think you cheesemakers a most contemptible lot; there is not an honest one among them,

and if I go in there I will tell them what I think." And he said, "We do not care, you must come." And I went and I proceeded to give my opinion to them. I told them what miserable cheese they made; they wanted to make their cheese today and sell it tomorrow. If I wanted to have a piece of cheese I might go to every grocery in the city before I could get anything I could eat, but when shown cheese made in old Herkimer county, I could stand that. The reason why I think buttermakers are necessarily more honest than cheesemakers is because they can not make poor butter and sell it; it is more easily detected what its quality is. But the cheesemaker will set up his cheese and put in a car and away she goes and gets the general market price, but you cannot handle butter in that way. You can not successfully conceal its defects. "Murder will out."

I have always claimed that if every manufacturer of butter, and cheese especially, would produce the best article possible that then they would receive the highest possible price for it, because there are many consumers, especially in cities, who are willing to buy whatever price is charged if they can get a good article, but they do not want to pay a high price for a poor article. This organization here in session ought to teach every one of its members that the highest point of excellence should be attained in the manufacture of butter, and make a reputation for it, a record for it, so that it will command by its reputation the high prices. I do not exactly understand market prices. When you want to get a pound of butter in Madison you have to pay Elgin price for it. You want to make good butter that will command a high price. I am astonished that this organization was not started years ago, but I look forward into the near future and see how much benefit and help will be secured in the manufacture of butter through the aid of the organization which you have under your consideration.

Wisconsin is a great dairy state; consider for a moment the lines of wealth which have been added to the pockets of the farmers of the state of Wisconsin through the production of butter and cheese. There was a time when we all raised winter

wheat, but after a time it ceased to be productive; some raised spring wheat exclusively, but there was a prejudice against spring wheat flour—it did not make the right kind of bread.

I am not going to take up more of your time; I did not expect to say anything to interest you, but when my friend here drafted me I was bound to respond. It has given me an opportunity to look you all in the eye, and bid you God speed in the efforts you are making for the manufacture of butter in this state.

The audience was then entertained by the following song from the students of the Dairy School. Everyone joined in the chorus.

SONG.

Tune, "Marching Through Georgia."

Wisconsin is a dairy state,
The lily of the west.
The dairy products which we make,
Are always of the best,
For we make them good and pure,
They always stand the test,
And we are very proud of old Wisconsin.

CHORUS:—
Hurrah! Hurrah! for good old butter milk,
Hurrah! Hurrah! we're just as fine as silk,
For when it comes to prizes we make butter out of milk
No Ole-o for us in old Wisconsin.

We are dairy student boys
And always right in line;
For making cheese and butter
We're as good as you can find.
When the state conventions come
We'll get there every time,
Hip, Hip, Hurrah for Wisconsin.

ENCORE.

Tune, "Union Forever."

Wisconsin forever,
Hurrah, boys, hurrah!
Up with our standard,
Down with the fraud,
And we'll rally 'round our banner
Of purity and right.
Shouting Wisconsin forever.

Prof. Scott of the University of Wisconsin was then introduced, and spoke on the following subject:

ECONOMICS AS APPLIED TO BUTTER-MAKING.

PROF. W. A. SCOTT.

Ladies and Gentlemen:—The creamery industry is the latest phase in a movement, the beginnings of which date back a long way; the movement, namely, by which little by little one industry after another has separated itself from agriculture and taken on an independent existence in the factory form.

In one sense, agriculture is the mother of all industries. The time was when the farmer used to manufacture his own clothes. He used to raise the sheep; cut the wool from their backs; clean, card, spin and weave it into cloth, and manufacture it into clothes. Then the flax was made into linen, the leather tanned and made into shoes, in the household. By his own hands the primitive farmer turned the forest trees into the house in which he lived and provided shelter for his animals. In those days all sorts of food were produced on the farm. There the cattle were slaughtered, and the beefsteak cooked. The wheat was ground either in the mill of the farmer himself or in one that belonged to his neighbor, and the flour was turned into bread in the household. It could then be truly said of the farmer that he was the most independent man in the world. You might have cut him off from all the rest of the world without injuring him materially. Nearly everything he consumed he produced, and practically everything he produced he consumed.

Since those days of primitive simplicity and independence great changes have taken place, among the principal causes of which have been the extension of the division of labor and the separation of industries from agriculture to which I made reference in my opening statement. The first industry to become independent was that of the manufacture of cloth. After the invention of the cotton-gin, the spinning-jenny and the power-

loom, the factory system of cloth manufacture made its appearance. By the new methods better cloth at lower prices could be produced, and in a short time the business of manufacturing clothes on the farm ceased, the farmer finding it more profitable to purchase his cloth on the markets. Soon the leather industry was also brought under the domination of machinery, and facories for the tanning of leather and the manufacture of shoes were established. After this the farmer sold his hides to the tanner and bought shoes made at the factory. Saw-mills and factories for the manufacture of agricultural implements followed in rapid succession, and finally the production of food products became specialized and took on the factory form. In huge packing houses in various parts of the country animals are now slaughtered and the meat packed for shipment all over the world. Cheese is now-a-days generally manufactured off the farm and under the factory system.

The last industry to assume the factory form is the one we are met this evening to consider. Its removal from the farm seems to end at least one phase in this process of the division of labor. The farmer has ceased almost completely to be a manufacturer. He must now be regarded as simply a producer of raw materials destined to be worked up into completed products by other branches of industry. As the last link in the chain of causes which has given the farmer this position, the creamery industry possesses special significance at the present time, and it is from this point of view that I wish for a few moments to consider it.

The chain in which the creamery industry is one link has at one end the farmer, at the other the consumer of butter, and as coördinate intermediate members the various classes of dealers. Previous to the rise of this industry the farmer manufactured the butter and sold it directly to the consumer or to the dealers. The interests of both farmers and consumers are, therefore, intimately connected with your industry. Let us examine them for a moment.

The consumer is interested primarily in the quality and price of butter. If you succeed in giving him a better quality of

butter at a lower price, he will call you blessed; otherwise he will prefer the old regime and will use his influence against you. The farmer's account with you is more complicated. It has both a debit and a credit side. The debit items are about as follows: You have taken away from him the profits which he previously earned from the manufacture of butter. He now sells his milk to you, and whatever profit he once earned by transforming the milk into butter before putting it on the market is now gone. He will also debit you with having interposed yourselves between him and the consumer. He has doubtless found you a more exacting and efficient bargainer than the people with whom he has previously dealt. You are doubtless more familiar with the conditions of the market. You are much more inclined to push down the price of milk, and you are more inclined to insist upon such things as cleanliness, good quality, promptness, etc. Whether he realizes it now or not, the farmer will ultimately regard you as responsible for his final separation from the actual consumer of his products. The producer of raw materials, whose product must pass through various hands before it finally reaches the finished goods which are consumed, and the value of which in the last analysis determines the value of his own product, is much more apt to be overlooked in the struggle of the forces above him and about him than is the man who is nearer the sources of these forces themselves. The farmer may be compared in this respect to the man in the mine, who works constantly beneath the surface and rarely sees the daylight. He is conscious perhaps of the importance of his own work; knows that the industries humming on the ground above him could not move a wheel without his activity; but he often finds that the people who are turning the wheels above forget that he is in the ground below and overlook the essential character of his connection with them. The people who have their hands directly upon the markets, and who are in a condition to manipulate them in their own interests, have certainty an advantage over the man who must depend upon them for his market and the value of whose goods must be determined largely by their activity.

On the credit side are important items which doubtless in the long run more than counterbalance the disadvantages which have been mentioned. In the first place the farmer is saved considerable labor by the transfer of the manufacture of butter to the creamery. His wife and his boys and perhaps his daughters are relieved of a good deal of hard labor. Whether or not these released energies are turned in other directions to the advantage of the farmer may perhaps be questioned. Probably in a good many cases the work which was performed about the churn and the milking cans has resolved itself into leisure, and while it is an advantage to the farmer and all concerned that his wife and his children should have more leisure and enjoy life better, there is perhaps no direct pecuniary advantage involved in such a transformation. In the second place, the farmer must credit the creamery doubtless with a steady market for his milk. He will probably find less difficulty in selling all of his milk product than he formerly did his butter, and this advantage he will owe to the institution which needs his product and that of his neighbors every day as raw material. Doubtless also the farmer will be forced to produce a better quality of milk, and consequently to pay more attention to the care of his animals and the scientific aspects of his business than before. He will learn that milk of a high quality brings a higher price and is much better worth producing than milk of a low quality. This will certainly be an advantage to him in the long run. Anything which makes him a better farmer, compels him to use more brains and less muscle in his work will ultimately redound to his advantage. There are doubtless other advantages which will accrue to the farmer and which should be included in any complete list of his account with the creamery. I desire simply to call attention to the fact that there are two sides to the question so far as the interests of the farmer are concerned, and it is necessary that the credit side of the account should be made to very largely overbalance the debit side if the creamery industry is in the long run to benefit the great mass of farmers, and it is safe to say that unless it does

this, its appearance as a new and independent industry will be a questionable advantage to the community as a whole.

The important question for us to consider, therefore, is, What must the creamery do in order to justify its existence and demonstrate that it is an advantage to the community as a whole?

It must certainly produce a better quality of butter than the farmer was able to do in the old way, at a lower cost. Indeed, it should lower the cost of production to such an extent as to more than counterbalance the new expenses involved in the factory system of manufacture. A butter factory is obliged to pay for skilled help at the market price. It must pay a fair rate of interest on the capital invested. Machinery has to be used, and the factory is subject to depreciation and wear and tear. The saving in cost must be sufficient to counterbalance these expenses and leave a balance on the right side. Precisely how this is to be accomplished is a question which experts must solve. I wish simply to insist that such a cheapening in the cost of production is the sole condition by which the creamery can put itself in a position to confer benefits upon the community. It is perhaps not surprising that in the early stages of the development of this industry mistakes should be made along this very line. One or two instances have come under my own observation. In another state a creamery was built at considerable expense and equipped with the latest and best machinery. It was learned, however, in a short time, that the cow population of the vicinity was entirely too small to justify the expenses incurred. It was absolutely impossible to produce a sufficient amount of butter in the creamery and to earn sufficient profits to pay the wages of the attendants, to say nothing about the interest upon the capital invested and a fund for depreciation. Another creamery of which I have some knowledge failed from the lack of application of ordinary business methods in its management. Its book-keeping was so imperfect that no one connected with the concern knew precisely how its affairs stood. No one knew whether money was being made or lost until the concern was in a condition of bankruptcy. It is evident that this form of factory, like every other, must be

conducted in accordance with the very best business principles. It will not do to introduce loose methods of management or of book-keeping, nor will it do for the owner of this kind of a factory to allow himself to get behind the times in the way of equipment of his factory. The very best and latest machinery must always be introduced; the very best methods of organizing the labor force; the very best advantages in the way of location, etc., etc., must be secured; else the factory will fail in producing a product at a sufficiently low cost to make possible the payment of ordinary expenses, to say nothing of the accumulation of a fund which is capable of being distributed among other members of the community as their share in the profits of the concern.

However successful the creamery may ultimately prove to be as a cheapener of the cost of production, the advantages which it confers upon the community as a whole will depend much upon the distribution of the profits. If the creamery business is so managed that all the advantages of cheap production and of improved quality go into the pockets of the capitalists interested in the concern, the community will not only be deprived of the benefit which might be conferred upon it, but it will be positively injured by the appearance of this new industry. In this connection it is interesting to note the forms of organization of this new industry. Upon this depends largely the ability of the community to share in the profits. I am told by one of your number that three forms of organization prevail in this state and in the northwest generally. One is the proprietary form, under which a single individual or stock company owns the factory, furnishes all the capital necessary to run it, purchases the milk from the farmers, and sells the product on their own account and to their own advantage to the consumer. A second form is that of the coöperative creamery, in which the farmers themselves own the factory and its equipment, furnish the milk, and receive the entire value of the butter produced, paying the expenses of its production. The third form is a combination of the two preceding. The proprietor in this case acts as an agent for the farmers. He

receives their milk, tests it according to modern methods, and returns to each an account of what is received in the form of butter fat, manufactures the butter, and acts as the agent of the farmers in its sale, returning a strict account of the gross receipts and distributing to each farmer the total value of the butter manufactured from the milk brought in, charging simply a commission for his own services.

It is evident that the second and third of these forms of organization are calculated to distribute the profits of the concern among the farmers. In the coöperative creamery, all the profits go to the farmers themselves, and in the third form of creamery all the profits go to the farmer with the exception of the commission paid to the proprietor. In case the commission amounts to no more than the market wages for his labor and the market rate of profits upon his capital, this form is quite as profitable to the farmer as the other. Indeed, it is possible that in the long run it may prove more profitable. The difficulty with coöperation in all of its forms is the fact that it rarely proves as efficient in the actual management of the concern as does the proprietary plan. It rarely happens that the people employed by a coöperative industry are as skillful and as well paid as those who are employed by proprietors. It is rare that the people employed are so carefully watched and held so closely to account for their management of the concern as are the employes of a proprietor. It will perhaps result in this case, as in many others, that the proprietary creamery, which serves as an agent for the farmers and works on a commission, will prove most advantageous to all parties concerned. The pure proprietary creamery, managed on the capitalistic basis pure and simply, affords many possibilities not altogether pleasant to contemplate. This form of organization usually conceals the amount of profits earned. It is generally difficult for outsiders, even though they may be interested, to find out exactly what the costs of production are and what the profits. There is danger of combinations and the monopolizing of the industry. There is danger of associations between the proprietors and the dealers rather than between the proprietors and

the farmers; indeed, there seems no good reason why the same sort of development may not appear in this line of industry as in others, and that the total advantages, and perhaps more than the total advantages, involved in the new form of manufacture may fall into the hands of the people immediately concerned, and the community, including the farmers and consumers, suffer rather than benefit from the industry.

I do not wish to pose as a prophet, neither would I have you understand that in the remarks I have made I am passing criticism upon the creamery industry. I have simply attempted to call your attention to those phases of your industry which interest the general community and which indicate its larger economic aspects. There is much reason to believe that the industry, in this state at least, is in good hands, and that the farmers, and consumers as well, are profiting greatly as a result of the new enterprise. Let us hope that nothing will occur in the future to interfere with the progress of the industry and that in its continued prosperity the community will share as well as those who are directly concerned with its management.

ADVANTAGES OF A CONTINUOUS SCORING CONTEST.

A. E. THOMPSON, POPLAR GROVE, ILL.

Mr. President, Ladies and Gentlemen:—

Up to a few minutes ago I did not expect to talk to you. I find it much easier to make prize butter than to make public speeches; it is somewhat more in my line. I am not used to this part of the business.

I may say, in the first place, a continuous scoring contest furnishes incentive to do the best one knows how to do, not only for the special day that he intends to send to the contest, but in every day's make. I know I find it the case with myself. It

is certainly a great help to the buttermakers' reputation, even if he does not score the highest. It stands to reason that if he gets a mark of 94 or 95 in a six months' contest it is better than when he gets 97 in one scoring; it shows he is a better buttermaker. If a man gets 97 for one make of butter and cannot repeat it right along he is not as good a buttermaker as the one who scores lower but keeps up his score right along.

Another way in which sending butter to exhibits will help the buttermakers is the money they get out of it. I can say in my own case it has been a decided benefit to me in the matter of a very material increase in wages ever since I have been in the contest.

Another thing that I think is not touched upon in the contests or scoring of butter is that not enough attention has been paid to keeping qualities; they have given more attention to something that scores strictly high at the time of the scoring rather than its keeping qualities, and certainly the product that scores 95 that keeps well is better than one that scores 97 that goes off in a few days. In scoring contests properly conducted that point should be brought out and more attention paid to it.

Another thing that I am sorry is as it seems to be, is a sentiment to favor a surprise plan or unexpected call for butter. I hardly think that is just the thing, for the reason in a contest of any kind there is usually a great deal of preparation, even in a prize fight. I do not see why it is the proper thing to take a buttermaker unawares. I should consider the surprise plan a happy-go-lucky method, and it seems to me the proper plan is to have due notice and plenty of notice so that he may do the best he possibly can, and make the butter after any method he sees fit.

Another point in scoring contests: it must be educational or it is of no value, and to get this educational feature we must have due notice so that he can take account of the full history of the manufacture, such as temperature, how long held, acidity, etc. All these points are necessary to be taken into consideration.

DISCUSSION.

Mr. Michels: I would like to ask Mr. Thompson to tell us how he made the butter that won the gold medal he has on.

Mr. Thompson: To begin with, we separated the milk at a temperature of 85, we had about 12,000 pounds, the cream was skimmed to about 45 or 50 per cent. fat. I selected out 60 pounds of morning's milk and put that directly in the cream vat. I used a starter of a special kind of my own invention. That starter was developed from a Douglas starter; this was put in before I commenced to skim the cream. At time of finishing separating the temperature was about 74. Then no attention was paid to it until 2:30; then commenced to cool to about 52. It had an acidity then of .7 with Farrington tablets; then it received no further attention until the next morning at about 4 o'clock, when it was churned at a temperature of 52. Worked on worker, salted and packed.

Question: Do you usually allow that much acid in your cream?

Mr. Thompson: Pretty nearly. Right here is a question that possibly I can get a little information on as well as others. It seems to me that the tablets were weak; there did not seem to be so much acid. Perhaps Professor Farrington can give some instruction in this line.

Prof. Farrington: I do not manufacture the tablets, but I have tested a great many and have never found them to be inaccurate in any way. They are just like salt. They will not change their strength. One point I have noticed in their use is that buttermakers some times dissolve the tablets in tubes that are not perfectly clean; they use the same measure for tablets and for acid. The tablets are extremely delicate and the least film or trace of acid left on the glassware in which they are used will make the test inaccurate. The pipette, cylinder and cup must be perfectly clean, and if the tablets are thoroughly dissolved you will find they will give accurate results.

The President: Another question has been brought up, and that is the subject of a six-months' contest that we have all

heard so much of the last few months. It is with pleasure that I introduce to you Mr. E. Sudendorf, secretary of the National Buttermakers' Association, who will speak along this line.

Mr. Sudendorf: Regarding the six-months' contests there has been so much written in the daily press and the officers of the National Buttermakers' Association have had so many letters of inquiry that they finally concluded to take the matter under advisement and get as much information as possible from the different sections as to the wishes of the buttermakers, but there is one thing that stares us in the face, and that is the large expense bill. In order to have a six months' continual scoring contest to be of any value to the buttermaker it is necessary that it should be free from all outside interests, so that we, financially, cannot depend upon any supply manufacturers for contributions. The buttermaker has to be at liberty to use any churn, separator, salt, or any appliance he chooses, and he could only do that when there is no outside help. We have tried to figure the matter of expense down very close. We conclude that if we have 500 entries it can be done at an approximate cost of $6.00 for the five months, because the six month would be at the national convention. We figure on having three East, two in New York and probably one in Pennsylvania, and the sixth at the national convention, wherever it may be held, and use the same judges we have at the convention at each test. We do not believe it is wise to change the judges around, one month this one, one month another, and we do not think it wise to have one judge for the five months and then another for the sixth. We cannot get the judges to do that work for nothing; we have to pay them for it. When we have our scoring in the East three months we have to pay the railroad fare of one judge from Chicago, and of an expert to point out the faults, and we have to pay the expenses of the secretary, because he cannot walk and he cannot pay his own expenses; we have to pay hotel bills of these people in New York, and the railroad fare along for three men to New York and one man from Philadelphia to New York would be $150.00 to $175.00, and when we have the scoring contest West we have to pay for the New

York fellows out there. Altogether it will cost us from $5.00 to $6.00 for the five months per entry.

Our intention, if we carry it out, is to deduct this amount from the first tub of butter. For this reason we might have 500 entries the first month, and if we took the proportion out of that for one month of $1.20, and for the second and third, we might have 100 or 200 drop out if they did not score high enough, and they would not pay and we would be in the hole. And we do not propose to have any financial failures connected with the National Buttermakers' Association.

If the expense should be less than $6.00 the money would be refunded to those buttermakers who have taken part in the contest. We would sell the butter each month at the highest market price, and there would be no commissions to be taken off of that, and it ought to save you enough on that scoring to bring the expense down. But we have to have at least 500 entries, if less we shall not attempt it. We cannot use the funds of the National Buttermakers' Association that are at present in the treasury except for the pro rata premium fund.

The idea of the committee was to have the butter called for at stated times, the surprise plan so-called is impossible. No man can have a monthly contest on the surprise plan. Many of the buttermakers are far from the stations and post offices and have to have reasonable notice, so that plan is out of the question in this kind of a test where there will be butter from all over the United States.

The entry blanks will contain one page on which the maker will give his method of making the butter and explanations that the judges will note on these blanks where he thinks they are at fault and how he believes they can remedy their faults, and this will be returned with his score card every month. The butter will not be sent to any commission merchant but will be sent to cold storage, and there will be no chance for any one to say that this one or that one has an ax to grind. We invite each state to send a representative.

The president then called for a showing of hands as to how many buttermakers present in the audience were willing to enter the six months' contest on the plan outlined by Mr. Sudendorf, and about forty responded.

The report of the committee on Resolutions was then read by its chairman, J. Kolarik. After being read the resolutions were adopted unanimously by vote of the members.

We, the Wisconsin Buttermakers' Association assembled in this our first annual convention at Madison, January 14, 15, and 16, 1902, do adopt the following resolutions:

Resolved, That this association tender their hearty thanks to the officers upon whom devolved the work preparatory for this meeting and through whose efforts it was made a success; to the superintendent of public buildings for the use of the assembly room and space for butter and machinery exhibit in the state capitol building; to the engineering department of the state university for the entertaining and instructive evening session which they provided for the association; to Prof. E. H. Farrington for his management of local arrangements and his courtesy to members who inspected the splendid dairy school building; to the city of Madison through its mayor and to the business men associated as the "Forty Thousand Club" for their assistance to and entertainment of the association, and others who assisted in this work.

Resolved, That we tender the thanks of this association to W. D. Collyer, judge of the butter entries, who gave his time to discussing personally with the maker of each entry the faults found therein, and thereby helped instruct each in the scoring of his own butter; and we endorse this system of scoring with the recommendation that an expert maker of butter be engaged to accompany the judge and give personal advice to the exhibitors as to how to overcome the faults noted by the butter judge.

Resolved, That we urge the proper authorities to continue the work of creamery inspection, which was so well done for a short time, and request that two or more inspectors be provided at once to promote good sanitation among our creameries and to instruct and help those factories which need assistance.

Resolved, That the state legislature be requested to provide an annual appropriation for meeting the expense of these creamery inspectors.

Resolved, That the state legislature be requested to provide an annual appropriation for defraying the expenses of the meeting of the Wisconsin Buttermakers' Association.

Whereas, we note the alarming increase of the sale of yellow oleomargarine as butter, oleo being given to purchasers who call for and pay for butter, and served to guests at hotels who by its yellow color mistake it for butter, and

Whereas, this counterfeiting of genuine butter produced from the cream of cow's milk is a great detriment to the dairy industry of our beloved state, and this injury is felt more strongly each year in spite of state laws in this and other states seeking to prevent the making of yellow oleo, therefore be it

Resolved, That we consider it is time for a national law that will reach the root of the fraud and we therefore urge upon congress the necessity of a national law taxing oleomargarine ten cents a pound when colored in the semblance of butter.

Resolved, That we recognize in the Tawney–Grout bill a measure embodying the restrictions that seem to us a proper means of stopping the fraudulent making and selling of oleomargarine, and that we urge our representatives in congress and our state senators to give their aid to this bill and vote for its enactment into law as early as possible at this session.

Resolved, That we recognize ex-Gov. W. D. Hoard and Dairy Commissioner H. C. Adams of Wisconsin, and Charles Y. Knight, secretary of the National Dairy Union, who are now in Washington in the interests of this legislation, as our leaders in this fight on the oleomargarine fraud and tender to them the hearty support of this association, and to those senators and congressmen who have worked and are now working to secure to the dairymen their just rights to honest competition as will be secured by the passage of this bill.

Resolved, That a copy of the above resolutions bearing on this subject of oleomargarine be sent to each of our state senators and congressmen in Washington immediately at the close of this session of our convention.

Whereas, the dairy industry of Wisconsin engages the attention of thousands of our citizens, and is the most extensive and largest industry of the state, we believe it worthy of a large representation at the St. Louis Exposition in 1903, and we be-

lieve it urgent that a competent man be secured for the important office of superintendent of dairy exhibits, one who is thoroughly acquainted with the resources and present standing in dairying and creamery buttermaking of the states comprised in the Louisiana Purchase territory, and

Whereas, we believe and have confidence in E. Sudendorf, of Elgin, Ill., that he would acceptably fill this position, be it

Resolved, That this association endorse Mr. Sudendorf for the office of dairy superintendent and urge upon the managers of the exposition our request to his appointment by forwarding to the proper authorities a copy of this resolution.

Resolved, That this association accept no special or side premiums at future conventions; that those interested in the welfare of the association be invited to contribute to the general premium fund and that those offering or entering for special or side premiums contrary to this provision or other rules of the association be barred from all benefits of the association.

Resolved, That this association limit the size of butter packages entered in competition at our contests to twenty pounds, and that the proceeds from the sale of this butter belong to the association to be offered as a premium fund, less the amount of membership fees and express charges.

Resolved. That the privileges of our butter contest be open to the world, provided that exhibitors outside of Wisconsin must be present or have a representative of the creamery present at our annual convention to entitle them to share in the pro rata or compete for other association prizes, and all must conform to other rules provided alike for all exhibitors in these contests.

Resolved, That the action of the United States department of agriculture with reference to the inspection of dairy products for export be endorsed by this association.

Resolved, That this association endorse and lend its aid to the holding of a six months' educational butter contest by the National Creamery Buttermakers' Association along the lines presented by Secretary Sudendorf at this meeting, and that the executive committee of that association provide for the holding of such contest this present year.

Resolved, That we learn with deep regret of the sickness with pneumonia of our illustrious collaborator and scientist, Dr. S. M. Babcock of the Wisconsin experiment station, and we pray for his speedy recovery and extend to him our heartfelt sympathy; and though he cannot be present with us we recognize

his great interest in our welfare and we assure him of our deep regard as one whom we love to honor as much for his worth as a man as for his wonderful scientific benefits to our industry.

Resolved, That this association endorse the six months' educational contest proposed to be held by the National Creamery Buttermakers' Association, as embodied in the suggestions offered at this meeting by Secretary E. Sudendorf.

JOSEPH KOLARIK,
J. G. MOORE,
J. VAN DEUSEN,
Committee.

Mr. W. S. Moore: The plan for a scoring contest is an important matter. At the time the subject was spoken of there were no comments from the association members. If these resolutions are adopted as read this matter will not be included and it will be equivalent to saying they do not agree to engage in the contest. The resolutions do not touch this subject and if the buttermakers want this six months' contest, well and good, but if they do they should express themselves so that the secretary of the National Association will know what to do.

Mr. Kolarik: When we drafted these resolutions we did not know that the six months' contests was to be discussed or anything said about it at this meeting. I most heartily endorse that movement. It would be a great benefit to ourselves and to Wisconsin in the matter of advertisement. It will place us before the world in a way that we could not secure in any other manner. I move we embody it and adopt the resolutions as suggested.

Motion made and seconded.

Mr. W. S. Moore: It has been proposed that before these resolutions are adopted we get an expression of the buttermakers as to how many would enter this proposed contest, and I suggest that all who would enter stand up and see how many there are. Forty-one stood up. Sentiment in favor of the resolution.

Mr. Kolarik: Since drafting these resolutions it has been suggested that we send word to Washington to those people who

are working for our interests there, and that same be sent by wire.

Telegram was sent to C. Y. Knight, secretary National Dairy Union, at Washington, assuring him of the hearty support of the Wisconsin buttermakers and expressing their appreciation of what he is doing for honest dairying and genuine butter.

Mr. Kolarik: I wish to mention another matter in which we are all interested, and that is the matter of raising funds for the Grout bill. Funds have been raised in the past two years by the scheme of badges. We have a scheme which we think is better than that; we will give you something for your money. We are having printed now a Creamery Patrons' Hand Book. Prof. Farrington has told you he has written a book of 1,100 pages to creamery patrons wanting suggestions on dairy and creamery work. The patrons want information on this line and are going to get it in some way. Many of these patrons that have written to Prof. Farrington have asked the same questions. We propose to answer all of the questions that can come up about dairy work, selection of cows, concerning the care and management of stables, building of silos, and the proceeds from the sale of this book will be used to push this bill.

Your Wisconsin men are largely represented in that book. There are seven men from Wisconsin who will write chapters for that book. Ex-Gov. Hoard will tell about the dairy business. He has had a world of experience you know and will have something that will be worth reading. Dean Henry will have a chapter on the line of feeds and feeding, which will be a very valuable part of the book. Prof. Farrington will have a chapter on the care of milk; it will be something that every patron ought to read. It will probably be a condensed report, or a chapter condensed from the line of 1,100 letters that have gone into that book of his. Prof. Russell will have a chapter on bacteriology in which you will all be interested. Mr. DeWitt Goodrich will have a chapter on the variations in the tests of milk as he found at the Pan-American Exposition. Mr. C. P. Goodrich will have a chapter on the selection of cows.

I do not recall all the contributors, but all lines of work will

be taken up and it is going to prove a very valuable book. I wish to present this matter to your members and ask you to get orders among your patrons for this book. It will sell for $1.00 for a single copy, but if you get up a club of 25 or 50, the price will get down to 50 cents. It is a 250 page book, cloth bound in good, substantial binding. When you leave this convention begin to work on this idea of getting orders for this book and help us in pushing this Grout bill, which means everything to you as buttermakers when you go to running your creameries during the coming year. I hope you will take up this work and do all you can to help us. The book will be ready about February 1st. It is in the hands of the printer now.

Convention adjourned.

Thursday, January 16th, 1902.

President in the chair. Mr. P. A. Larson, temporary secretary.

Report of committee.

Mr. Tyler, Chairman of the Committee on Nominations: We, the members of the nominating committee, recommend for president, F. B. Fulmer; for vice-president, J. Van Dusen; secretary, Prof. E. H. Farrington; treasurer, Mr. Mat. Michels; for the executive committee, G. B. Winsor, C. J. Dodge and R. C. Green.

In submitting our report will say that we are sorry to lose our present secretary; we have highly appreciated his services and we regret that we can not have him for another season, but owing to his having accepted a position in another state he declines to accept the nomination, therefore we have nominated in his place Prof. E. H. Farrington.

We have tried to follow out as best we could the wishes of the Association by getting the ideas of the members as best we could.

President: You have heard the report and it is open for discussion before the house.

President: I would make the suggestion that each officer be elected separately. It is essential that the executive committee be so elected, as the constitution provides for a long and short term, and at the first annual meeting, Art. 3, Section 4, it was decided each should be voted on separately.

Motion made and carried that each officer be elected separately.

J. G. Moore nominated Mr. F. B. Fulmer president and he was unanimously elected.

On motion, Mr. Jas. Van Dusen of Hebron was nominated for vice-president, and elected by acclamation.

On motion Prof. E. H. Farrington was unanimously elected secretary, and accepted the office under protest.

It was moved and seconded that Mr. Matt. Michels continue his position of treasurer for the ensuing year. Motion carried.

On motion, duly seconded, Mr. G. B. Winsor, of Hustler, Wis., was elected a member of the executive committee for the one-year term.

Mr. C. J. Dodge was duly elected as a member of the executive committee for the two-year term.

Mr. R. C. Green, on motion, which was duly seconded, was elected member of the executive committee for the three-year term.

Mr. J. G. Moore: The members here can see with what perfect unanimity the report has been accepted, and it can hardly be otherwise, for the committee has worked hard to get the consensus of opinion of the members, and I think it is perfectly right to take their report and accept it, but I think in future that the nominations should be left to the convention as a whole and not to a committee. In the light of some of the other association's past history it can readily be seen that it might lead to evil results. In this instance it is perfectly satisfactory, but we ought not to go on record now as establishing a precedent of this kind. The nominations should be left open to the convention without the assistance of a committee, for they are apt to

be restricted in their appointing power and might feel under obligations to appoint certain ones. There are people who have expressed the opinion that these evils do exist and that a ring might be formed that continues from year to year, and we do not want this to happen with the Wisconsin Buttermakers' Association.

President: I am more than anxious to entertain the motion that a resolution be passed now that it be the sense of this Association that future nominations be left for open meeting.

President: Motion made and seconded that we vote on the resolution that it is the sense of this Association that future nominations be left for open meeting. Motion carried.

I wish to mention one thing which was suggested this morning,—that a committee be appointed to get out a large state convention for the next national convention.

Mr. Willson: The success of the new method of scoring butter has been so pronounced, judging from expressions I have heard from buttermakers and others in attendance, that I think we might go a step further and carry out a suggestion that has been made by quite a number of persons. That is that you score the butter at the stage at which we consumers get hold of it; have it made this week and scored next week, for we do not get it before it is a week old. This is a suggestion for the buttermakers to take up. We people who eat butter do not get it right from the churn or within a week or ten days after it is made. What we want is butter good when we get it, no matter how good it is when it leaves the churn. We would have you make butter that would be good when the consumers get it. You have gotten into the way of making butter that is good when it leaves the churn but is not so good when it reaches the consumer. Not because they want to make it but have gotten into ways that tend toward that sort of thing, and the scoring judge might give them information that would be useful to makers of butter and good for the consumers of butter.

On motion of Mr. Tewksbury that future scoring contests of the Wisconsin Buttermakers' Association the butter be scored when at least one week old. Discussion was called for.

Mr. Dickson: There is something else to be considered. At the national convention you have to compete with other states and you can not send butter a week old when they send fresh butter.

Member: I should think Wisconsin buttermakers might do as they pleased without considering what others do.

They can do so but are not in a position to compete.

President: Motion has been made and seconded that the butter that is scored by the Wisconsin Buttermakers' Association hereafter should be at least one week old.

Mr. J. G. Moore: I move that the motion be laid on the table.

Motion seconded and duly carried.

Mr. J. G. Moore: The reason why I have had this motion laid on the table is that sometimes motions that are made and seconded and duly carried, on second thought are found to be illy advised, and we might take the step now and reconsider it afterwards. The seed has been sown and can be thought over and at the next meeting we may be in a better position to take it up.

FAULTS OF BUTTER.

BY S. C. KEITH, JR., BOSTON, MASS.

Mr. President and Buttermakers:—It is a great pleasure that I am able to be here today to take up a subject which I think perhaps has not been dealt with in the talks given you by the buttermakers who have addressed you thus far.

It is not my purpose to address you on starters or butter cultures, but rather to interest you perhaps on another subject which is of vital importance to you, and that is the Faults of Butter.

We all know how to make butter, but we do not all know how to make good butter all the time, and good butter all the time is what makes the product desirable and what makes the price.

Take it on a slow market and the better that is uniform is the one that is desired, and not the one that has good butter today and poor butter tomorrow. I have in mind a certain commission house in Boston which sells a great deal of butter and I went there to buy some butter from them for another firm, and they showed me a tub of a certain make and said, "This man's make is always very nice," and I took fifty tubs; but when I looked into all of the tubs, the butter was not equally nice—some were good and some were not, showing he did not use the same methods all the time, falling down some times more than others.

I do not profess to be able to tell you how you can make butter that will always be good, for if I could I should charge you very much for it and for which you would be able to pay a large price.

The faults of butter may be summarized in the following list: Moldy butter, lack of flavor in butter, undesirable flavor in butter, oily butter, fishy flavored butter, weedy flavored butter and rancidity.

Taking up these one by one we will first start with moldy butter. The parchment paper lining has come in for a great share of abuse for moldy butter. That is all very well, but parchment paper has nothing to do with it. Parchment paper which is used as a liner often becomes coated with dust in the store room because dust is allowed to settle on it, and if it is not thoroughly washed and salted the paper takes up these little spores of the mold and they cling to it and produce a moldy tub.

There are two or three molds that may cause black mold and green mold which we ordinarily see on tubs, and which is the common mold; its technical name is Renceler globular. If any of your are familiar with Roquefort cheese, you know what it is, and the flavor produced is not desirable; it is a taste which has to be cultivated, and we do not want to cultivate our taste for Roquefort when eating butter.

The black mold is of another type, but is similar in character to this one; and let me say right here, that we never get these

molds developing much if the butter is packed and well salted, but if poorly packed same is liable to mold. To prevent this trouble we have recourse to two things: In the first place let us see that the tubs are well scoured with water and steamed; it is a good idea to mix a little limewater in the water in which we scour the tubs, because alkalies—that is, anything of the nature of lime water or sal soda—is detrimental to the growth of mold. Lime water is the best thing we can use; it hinders growth and sweetens the tub. And then before we use the tub it is well to throw in a handful of salt and shake the tub until it becomes finely coated with a layer of salt.

As to liners, they should always be soaked in strong brine before being used; salt, which is the chief part of brine, is antagonistic to the development of life, the vegetable life of which molds and bacterial life are examples. It is a preservative, but I would not have you confound it with the other kinds of preservatives. Preservatives of the nature of borax and formaldehyde are all a very poor substitute to use in butter in one form or another, and I cannot condemn too strongly their use. Anything that will inhibit the growth of bacteria or molds is not wholesome, and we do not want to make embalming factories of our stomachs. We ought to bar out anything that is in the nature of preservatives aside from salt.

It has been suggested that a very good remedy for the prevention of mold in liners, because we get mold along with liners (the mold does not necessarily accompany liners, but it generally does), is to put them in boiling water so that the spores may be killed, then soak in brine; this kills the molds and toughens the paper. A good article on this subject has been translated by Mr. Monrad and appears in the New York Produce Review of two weeks ago; it is translated from Prof. Allen Jenson of Switzerland.

Now lack of flavor. Lack of flavor is due to two things, but generally it may be said to be due to this, that the cream has not been ripened enough. If we ripen cream enough we get plenty of flavor, but not necessarily good flavor. In fact, a great deal of the butter that we saw at this convention went down,

if I may use that term, because the cream was over-ripe. We are apt to think that if a little is good, a good deal more is better, and oftentimes we buttermakers would do better to take the ordinary make and send to a convention than try to outdo ourselves and make an extra good butter for the convention, because we are very apt to think a little extra ripening will develop a higher flavor and perhaps a little more working will help it, while as a matter of fact they fall down on flavor and spoil the grain.

Another thing is that in lack of flavor the wrong kind of bacteria are present in the cream in the fermentation. So far as we know today, flavor of butter is caused by a breaking down of certain substances in the cream—milk sugar is one of them, albumen and casein others. There are two schools of opinion in regard to the flavor of butter: the Danish school, which holds that the flavor of butter is due wholly to the development of lactic acid in the cream, and that when we have developed a certain amount of lactic acid in cream we have the development of a certain amount of flavor. The other school is the opinion held by Dr. Wiegmann of Germany, and Prof. Conn of the Wesleyan University of this country. They hold that the development of flavor is due to the breaking down of certain albuminous or nitrogenous matter in the cream, as albumen and casein, together with the development of lactic acid. I am not prepared to say which is right, and I do not think anybody is prepared to say which is right. We may say, however, with truth, that it is certainly due to the breaking down of all the substances. If I am right, I believe the development of lactic acid takes place and at the same time there is a breaking down of the albumen in the cream, and the two together gives us a very complex chemical reaction and this gives rise to the delicious aroma that we have in well made butter.

Undesirable flavors. I cannot go into this very fully, as my time is limited. We can best trace them, I think, as a rule, to the source of the milk. If a farmer, or producer as you call them, sends you milk that is dirty and full of hay dust, which is usually found by straining, and if hay and other filth get into

the milk, you cannot expect to make good butter. You may say that by separation or pasteurization you can destroy these bad flavors, but you cannot make the best butter of such milk. The best buttermakers could not make the best butter out of such milk; they might make better butter than some, but not the best butter. So that the undesirable flavors for the most part come from poor care of the milk, and I cannot urge too strongly the fact that to help our industry to make better goods and make uniformly better goods we must begin at the beginning. We have done a great deal, but we have begun at the wrong end; we have started with the creamery end, and we should start with the farmer. And every buttermaker should realize the fact that to make better goods he has got to hold up his farmer for good milk. Good milk is the war cry; the milk should be kept up to a standard and a high standard.

The Hazlewood-Hanford Creamery Co. in Iowa have a method of scoring milk as butter judges score butter, and there is some little rivalry among milk producers to see who will receive the highest average score; they take pride in sending milk that will score high. I do not know whether it is practicable or not but I honestly believe that if we could today pay for milk by what it scored, and if we had a good score system, we would see them fall into line. The surest way to get good results is through a man's pocketbook; if you can make him realize that it will benefit him financially and that it is for his interest to send in good milk they will soon fall into line; they will wash their cows three times a day if necessary, but if he thinks you get all there is and they get nothing they will not want to do anything for you.

Oily butter. Oily flavored butter is to be divided into two classes. The common cause for oily flavored butter is using direct steam in heating the milk. I condemn direct steam in cream or milk, especially after going through the engine first, as it sometimes does. Direct steam, whether from the engine or boiler, always has a flavor and will produce a peculiar flavor in butter. To avoid that never use steam directly in the milk—

always have a tank where you can raise the temperature of the cream or milk by surrounding with hot water.

Fishy flavored butter. Fishy flavored butter has been studied a great deal of late and it has been found that the fishy flavor of butter can in most instances be traced to the development of a particular mould often found in milk, the mould of milk Four years ago I remember looking over some tubs of butter and in every instance where we found poor butter there were great numbers of moulds so that in that way I am able to confirm that fishy flavor developed in butter in cold storage may be traced to mould.

It is not necessary that mould should show itself as a green layer to be present. Moulds for the most part develop through the butter and cheese in an invisible manner the vegetable portion of the mycelium, the so-called little film, or threads that run through the mould, and is as clear as water, and you can hardly distinguish them until they come to the surface of cheese or any substance and develop there any part of the spores or seeds, but they are not really seeds, only little round bodies that become incrusted and will produce the mold when they do spread. On their development we get mouldy butter and they give the green or black color to mould in fishy flavored butter. We can seldom see the mould, but when the product is subjected to a bacteriological analysis we find the mould present.

Feed flavors. I will not dwell upon feed flavors. There was one of the buttermakers, Mr. Bluer, who told you about flavors, induced by food conditions in milk. I would take exceptions to a few of the statements made, but in the main he is right.

The influence of food is not strongly felt in butter. When food is eaten by the cow it is digested, assimilated, taken into the blood and from the blood to the cells, from the cells to the udder, as well as to the cells of the heart and muscles, and nourishes those cells simply. The cow has a great aggregation of minute cells depending on the food supply which is to be carried from the stomach to the cells, which enables one to move the muscles, as well as to walk and to speak; some of the food is developed into one form or another, but the cell of the udder

becomes nourished by the food and swells until it becomes so full that when we milk the cow and the cell bursts and flows out into the milk ducts, and that is milk. All of the butter fat in the milk comes from the cells. We might say a bunch of grapes represents the udder of a cow in a sense and will use it for an illustration. The interior of each grape may be considered to be a little aggregation of the milk cells which, like the milk ducts, the cells are nourished and in turn produce the milk which fill the grape or teat and flows through the stems and connects with a central stem, which represents the milk duct.

Bacteria are not present in milk, as it is found in the udder. That is well worth pondering on. While at Ames I performed an experiment for the boys. We enveloped a cow in a sheet, cutting a hole so that the teats might protrude, and in milking the cow we directed the stream into a sterilized closed dish. I milked only one teat; the other three I did not touch. The milk was kept at 90 degrees Fahr. from Sunday night until Friday night (temperature hotter than summer), and it did not sour, and was not sour Friday night. I examined some of the milk to determine the number of bacteria in it, and it was absolutely free from bacteria as far as we were able to tell. We removed the sheet from the cow and the usual milker of the farm went in and with a so-called sanitary milk pail with a small opening at the top, milk the cow under the ordinary conditions. We poured out some of the milk into a sterilized dish and allowed to stand at 90 degrees Fahr., and Monday night it was sour. I examined some of the milk five minutes after being drawn, and there were several thousand of bacteria to every half teaspoonful. Where did they come from? They were not present in the milk originally and they must have got in somewhere during the milking process. Numerous hairs from the back of the animal dislodge and fall into the milk pail and a certain amount of the filth clinging to the hair goes into the pail, far more than we wish to see, and when that drops into the pail it carries numerous bacteria, and there is also dust in the bedding of the cow, from which clouds of dust arise and fall into the pail; the man's hands

may be a little dirty and he may milk on his hands to begin with; then the dirt and filth drops to his hands and then to the pail. I do not drink very much milk myself. Therefore those sources may be ascribed to the bacteria we find in milk as milked in the ordinary process. It is easy to tell which would make the best butter.

I shall only touch on one point more—rancidity of butter. When held for any length of time butter becomes rancid. What is rancidity? It is the breaking down of fat into the fatty acid, butyric acid. This, then, is always formed when butter becomes rancid. Let us see under what conditions it will be formed. If butter has not been properly washed when made it will become rancid more quickly than if washed thoroughly; if you leave buttermilk in it it will become rancid quickly, as this is excellent food for bacterial growth, and they develop in there, and as they develop they change the butter fat, and we get the development of butyric acid and rancidity. If we ripen our cream too far, carry it up to .8 of one per cent., they will not live in it longer. Bacteria will multiply in cream until there are five hundred million in one-fourth teaspoonful; it is richer than soup, which contains five million per cc.; the fecal matter from the cow only contains five hundred million, so that it is very rich in bacteria; the reason for same is that lactic acid is prejudicial to any further growth, and then we have another change taking place. As the bacteria grow and develop they change the lactic acid over to the butyric acid. If we ripen our cream up to the highest point, then we are on the decline again, coming down hill, and as we come down hill there is another group enters and change lactic acid to butyric acid and we have rancid butter. This is not quite so pronounced at first as it is when kept for some time.

I have spoken of the faults of butter here and some of their causes, and I will tell you in general what may be considered the remedies.

Poor cream is best treated by pasteurizing, but you do not get as high flavored butter by pasteurizing, although you do not get any bad flavor. You should bear in mind that you ought not

to pasteurize your cream to cover up bad flavors. It is very easy to pasteurize cream or kill the enemy after he gets in, but it is better to keep him out. So I think our best method of treating bad cream is to go to the producer and get him to promise to do as well as Mr. So and So. Do not find fault with him, but treat him well and try to convince him it will be to his advantage to take good care of his cream and you can do more with him in that way.

I have already touched on liners; they should be soaked for some time in a salt solution, and it would be a good idea for you to boil them.

Another point which is not generally thought of very much is the water supply. We ought to be very careful about the water supply. You will not have fishy flavored butter or introduce that into your cream when the water supply is good. Mr. Witting and I had a talk on this subject only a few moments ago and he tells me he is going home, and next summer he will arrange to scrub out his tank, which holds his water, every two or three days. Last summer he had considerable trouble with a slime that developed in the tank; when this slime develops the water is not suitable to wash butter with. Perhaps the water supply may deserve a great deal of attention in preventing the so-called fishy flavors in butter.

Do not ripen your cream too much. When you ripen cream you develop acid, and as I said before, you want to start before the bacteria have arrived at their highest point. You do not want to develop too much flavor—you want to stop when going up hill rather than down hill, but carry as far away from you as you can.

Use of starters. I believe the time has come when we are going to use starters more and more. The starters are going to be made because you can make better butter than you do at some particular times. I believe we are able to make as good butter at some times of the year without starters, but we cannot make uniformly good butter all the time. A great many troubles are controlled by using a culture or starter. A well made home-made starter is not to be despised and if that is used with care

it will control the ripening process in the cream to a very great extent, and by the development of these pure cultures of bacteria in the cream, we thereby suppress a great number of the abnormal fermentations and therefore make more uniform goods.

DISCUSSION.

Mr. Michels: I would like to ask Mr. Keith to tell us where he finds the butyric starts in—at what stage?

Mr. Keith: Butyric acid is developed in the cream, as a rule, after the maximum amount of lactic acid is formed, but that ought not to be used to govern us in the ripening of cream. In the ripening of cream we ought to stop before we reach the maximum acidity; about ½ of one per cent. of acid to .6 of one per cent., as a rule, is a fair amount of acidity which ought to be developed in the cream for the best flavor with best keeping quality. Do not try to get too high a flavor, which means short life; low flavors mean long life. Weigh one against the other and get just as near the balance as you can. At the Iowa Experiment Station they have a system of ripening cream whereby the question of butter fat enters into the problem. Butter fat, as you know, has nothing to do with acidity; it simply takes up so much space in the cream, and so they have found the best results, as a rule, when the cream is ripened so that the serum in the cream would have .55 or .65 per cent. acid.

We should give more attention to ripening of starter than to ripening of cream. At the point where the starter begins to coagulate when ripened at 65 to 70 degrees, you should use the acid test rather than the appearance of curdling in determining when to cool the starter.

The starter is used not to introduce flavor but to introduce bacteria which will produce flavors, and we wish to add these bacteria when they shall be in the most vigorous condition, and that is just about the time when the milk coagulates. If allowed to whey off it gets sour, and you do not get good results.

COMBINED BUTTER AND CHEESE FACTORIES.

MATHIAS MICHELS, GARNET, WIS.

The advantages and disadvantages of having a building equipped for both butter and cheesemaking are quite numerous. The disadvantages are: First, the cost of the building and equipment; second, the trouble in maintaining your markets for goods; third, the matter of help.

The first cost of a combined factory is probably from 20 to 25 per cent. more than for one equipped either for butter or cheese alone. One set of apparatus would always be unused and this would mean not only that the apparatus would be lying idle but will become of less value because of rusting, etc. When you are making butter your vat, hoops and press will get rusty and spoil, more or less. When making cheese your separator, churn and cream vats need looking after and will always suffer some.

Regarding the markets for your products, it is very unpleasant when you have worked hard to find out just what your market wants and have a good trade established for your butter, to be called upon to make cheese for a few months and find that some one else has gotten your trade, which will make it necessary for you to find a new market when again making butter. It is much harder and takes a much longer time to find a market for your butter than it is to find one for your cheese. As good cheese can be sold upon the open markets for nearly all it is worth, which is not so with butter. You cannot get the highest price obtainable for your butter until people come to your dealer and call for your brand. As regards help, I find it much harder to get a good man who understands the making of both butter and cheese than to get one who understands either one or the other. Furthermore, the prices paid for such men are much higher.

The advantages of having a combined butter and cheese factory are that you will not lose part of your patrons during the summer by having them go to some cheese factory, or, if making

cheese, to some creamery, for just as soon as there would be too much of a difference in butter and cheese prices you will have to make the one which pays the highest price; and, if making butter when equipped for both butter and cheesemaking, the chances are that you will not be called upon often to make cheese, but if you are equipped only for butter making you will have to listen to a great deal of cheese talk at times and probably even lose some of your best patrons where cheese factories happened to be near by. A better price can also be gotten for making when giving the patrons the option of having either butter or cheese made. During the last eight years I have made less than four months of cheese, and during that time made only about three-eighths of the milk into cheese. I felt that by giving every patron the choice of having either butter or cheese made I would satisfy them all, but this was a great mistake, for there never were so many kicks of all kinds as during the three months I made both butter and cheese. Some thought I would favor one side and some the other. Those that thought they could not afford to wait such a long time to get their skim milk found that very often they could not get away any quicker than the skim milk teams. Some thought that whey was as good as skim mlik, and that by making a sudden change they lost calves and young pigs; a few even wanted to divide their milk and have part made into butter and part into cheese. I am not thinking of ever again making both butter and cheese at the same time. I shall do only as the majority of my patrons will ask me to do in the future.

ADVANTAGES OF A CLOSED RIPENING VAT.

BY J. G. MOORE, ALBION, WIS.

A wonderful advance has been made during the last ten years in our knowledge of cream ripening.

As this is comparatively a modern term, to get an intelligent idea of it, we should first know what ripe cream is. We will then be able to understand what the process requires. I take it that it means cream ready for the churn in the best possible condition to produce the greatest amount of butter in the best possible condition as to flavor, texture, etc. Of these requirements, the greatest of all is flavor.

It would follow that the practical question for the creamery man is how to produce this condition in the cream with uniformity, for we all know that a uniformly good article is the key to success.

It is what the consumer demands and is willing to pay for, and the standard in this as well as other things is being constantly raised higher and higher.

The improvement of creamery machinery has kept pace with these demands and the modern buttermaker must use all that is good in the latest appliances if he would keep his butter up to the standard of extras at all seasons.

Among the best of these appliances is the *closed cream ripener,* and not alone the fact of its being closed would place it in the position it holds today, but that it is a machine, by which the temperature, that important factor in the making of good butter, can be controlled by the buttermaker, and the process of ripening hastened or retarded, or what is just as important, kept stationary.

Practical observation and scientific investigation have demonstrated that the failure to make fancy butter is often due to faulty methods of ripening the cream, and a careful study of the process has shown that both the flavor and the body of butter are greatly influenced by the temperature of ripening.

The control of the temperature, therefore, and the quickness with which it can be raised or lowered are among the important features necessary for the proper ripening of the cream, and this we have in a greater degree in the closed cream ripener than was ever possible in the open vats in common use.

With the open vat, cooling by water to a temperature that would produce a firm body in the butter was not always possible, but with the closed cream ripeners the use of water alone will quickly and thoroughly cool the cream to within a few degrees of the temperature of the water, and as the ripeners are insulated the temperature will not vary but a little, even after standing till next morning.

To be able to obtain this condition of the cream and not have to put ice in the vat, as most buttermakers have had to do with the open vat, is in itself a great advantage, for I think no one needs to be told of the dangers arising or liable to arise from the use of ice in the cream.

The dust that arises from the passing of horses and the wheels of the wagons blows through the screens at the open doors and windows, and the flies that sometime are liable to get into the cream in an open vat, which in a closed ripener would be perfectly free from any or all of these.

The average creamery is so constructed that the extremes of temperature are reached. In winter, as soon as steam is shut off, the temperature goes down so quickly that by next morning the cream is near freezing, and in summer there is no way of keeping out the heat, and what buttermaker has not worked hard getting ice out to cool the cream with, only to find next morning his cream so warm that he must get more ice to use in the churn, or have his butter so soft as to be almost impossible to handle.

And these extremes are to be deplored especially where the butter is put into prints.

To the gathered cream buttermaker, it would seem that the covered cream ripener would be a boon, indeed, as most of the cream gathered during the summer needs the ripening process stopped, rather than started, and the buttermaker is indeed

master of the situation who has a covered ripener. He need not stay up most of the night stirring ice in the cream, for the ripener, with its arrangements for cooling, will not only quickly cool but also thoroughly mix the different lots of cream and that with the minimum amount of labor.

The making of pasteurized butter and the pasteurizing of cream for family use are assuming large proportions and it would seem as though the ripener would be able to perform this work satisfactorily and thus obviate the necessity of having a separate machine for the purpose.

The large and increasing list of prizes and high scores won by the butter made in these machines are indeed a proof of merit and would seem to indicate that the best buttermakers know a good thing when they see it.

DISCUSSION.

Question: I would like to ask how near the extra expense of fuel in the Farrington cream ripener comes to amounting to the cost of ice for the ordinary cream vat? Does one off-set the other?

Mr. Moore: I believe our manager could answer that better than I can as he pays the bills. We try to keep the expense down as much as possible and yet hold at a temperature that will obtain the amount of acid right. After dinner, just as quickly as we get back, we start the cooling process and are done inside of an hour. We have to have ice anyway to get the temperature of refrigerator down.

Question: At what temperature do you hold your cream to get the proper degree of acidity right after dinner? Also would like to know what kind of a starter you use.

Mr. Moore: I do not use a starter. When I used butter culture I had some trouble with the butter that I had not had before. I had Prof. Farrington down there and he could find nothing to enable him to see the cause of the trouble.

After I got rid of the starter I did not have any more trouble. I then used a buttermilk starter.

Prof. Farrington: Do you think, Mr. Moore, that you overcame the difficulty by using a buttermilk starter?

Mr. Moore: I did not have any more letters from people who buy our butter.

Mr. Bussard: What quantity of cream did you have?

Mr. Moore: Two or three hundred gallons of cream, for 200 gallons of cream we used about four pails of buttermilk.

Mr. Bussard: We do not use that much. We use about half a pailful for 75 gallons. How long do you take to get acidity up to the right point?

Mr. Moore: By next morning; we churn at 54 to 56 at this time of the year.

Question: We have our cream in an open vat with a cloth cover. How is the temperature in your creamery controlled so that it does not go up or down?

Mr. Moore: We use a stove. We have to keep the fire up until we get through with the steam, but naturally we want to get through as quickly as possible.

Mr. Faville: What is a closed cream vat?

Mr. Moore: It is a cylindrical vat which revolves with the cream inside, and as there are two cylinders with water between them, the temperature of the cream is controlled by changing the temperature of the water. It is the Farrington Cream Ripener.

Question: Do you have any trouble with the cream churning at speed of 16 to 20 revolutions?

Mr. Moore: The only difficulty is the frothing of the cream.

Mr. Godfrey: Ours runs from six to eight revolutions, and I have sometimes thought we might do just as good work at three or four. It is only necessary to turn the cream so there will be a fresh surface next to the water. In the churning process the cream increases in volume.

Prof. Farrington: What change in temperature is there in your cream from night to morning?

Mr. Moore: In winter none, in summer it will go up quite a little. Of course we have a large amount of cream; if the

temperature is 50 at night it will go up to 54, going up four degrees in the night.

Mr. Bickel: Is this vat as designed first as a pasteurizer so arranged that it can still be used as a pasteurizer?

Mr. Moore: I believe so, although I have never used it for that purpose.

Mr. Russell Bates: Mr. Keith tried to explain to us about fishy flavor in butter. I was partly satisfied, but not altogether so, and perhaps Mr. Moore can explain it. I do not see why a man does not think that when he takes ice from a fish pond and puts it in his cream that he might blame that as quick as one hundred other things which might make his butter smell like fish.

Mr. Moore: I think Mr. Bates has answered his own question.

Song by the dairy students.

SONG.

Tune, "My Country 'Tis of Thee."

Convention day is this,
Butter maker's bliss.
Of our great state
We come from far and near
Things new to learn and hear.
Sing with your voices clear,
Our chance is great.

Wisconsin's Dairy School
Turns out no man a fool,
They're up-to-snuff,
For all the faculty
Are up-to-date you see.
Latest machinery,
Never runs ruff.

Let the experienced men
Welcome the new ones in
To join our band.
Let's bring up by degrees
Our butter and our cheese.
Down with Ole Grease!
Let *Justice* stand.

Let us not take a rest,
Until we've made the best,
Then let's not die.
We've been there twice before:
At Buffalo's butter score,
In April and once more
On last July.

MY EXPERIENCE WITH STARTERS.

J. H. GODFREY, MADISON, WIS.

As we cannot discuss starters without discussing cream ripening and butter flavors, I shall, for convenience, discuss flavor first. The flavor of butter depends upon the feed the cows receive and the character and extent of the fermentation which takes place in the milk and cream from the time it is drawn from the cow until it is churned. If the cows have eaten no improper or tainted foods, such as turnips, onions, etc., which give milk an undesirable flavor, and the fermentation is normal, i. e., lactic acid—the butter will be of good flavor, although comparing one churning with another it may be far from uniform. I have made a few experiments which prove to my satisfaction that a greater or less degree of acidity in cream when churned, provided it is not over-ripe, has nothing to do with the goodness or badness of the flavor. I have churned cream with only .4 per cent. acid and submitted samples of the butter to several well known experts and they have pronounced it very good butter, in one or two cases better than butter made from the same cream ripened to a higher acidity. The acidity of the cream, however, determines whether the butter has a quick, snappy flavor or whether it is simply good butter.

The market requires that creamery butter shall have a good, clean flavor and that all the butter from one creamery shall be uniform one day with another, and week after week, and it is in this direction that a starter is of the most benefit. The proper place to get the good flavor started is on the farm, and I think that we buttermakers can very profitably spend a considerable portion of our leisure time devising ways and means for improving our milk supply and putting them into effect, as it is only in this way that we can hope for any permanent improvement. But even if the average grade of milk should be considerably higher than now, we shall still need to use a starter to control fermentations, for to make uniform butter of good

flavor, or what is called quality, three conditions are essential—uniform per cent. of fat in cream, uniform ripening period at nearly uniform temperature, and uniform temperature and acidity at churning time.

The first essential is quite easy of attainment, if your separator is in good order and easily handled. For the second you need a starter. If the first and second are attained and proper facilities for controlling temperature are available the rest is easy.

Now the question arises, what kind of a starter shall we use, buttermilk, sour cream, sour whole milk or skim milk, home made or commercial cultures? Sour cream is out of the question as after using it a few times the butter acquires a rancid, disagreeable flavor which is characteristic of over-ripe cream, and if you have ever tried to mix sweet cream and ripe cream you know the difficulty of effecting a thorough mixture and in churning an unnecessary amount of fat is lost in the buttermilk.

Buttermilk is much better and if the milk supply is pure will greatly help in securing uniform flavor. The common objection to buttermilk, which from my own experience I know to be well founded, is that, should any slightly bad flavor gain the upper hand in the milk supply, it is carried on from day to day and while unnoticed in fresh butter becomes quite prominent later on. Many of the faults of butter when thrown on the market from a week to two weeks old have been traced back to buttermilk starters and the trouble has disappeared on discontinuing its use, so that I regard buttermilk with suspicion and only use it in case of emergency.

The next method mentioned is sour skim milk or sour whole milk. The best way to secure this is to select milk from some patron who always delivers high grade milk. This milk is either run through the seperator and the skim milk therefrom is taken, or the whole milk itself is used. I have found this unsatisfactory for several reasons, among which are, that if the skim milk only is taken, the receiving vat must be empty when this milk arrives, which is not always possible. It must be held in cans until separation is finished or a small special vat must

be fitted up and connected with one of the separators, which entails expense that might as well be used in buying commercial starters. If the whole milk is used and for any cause the starter should be unfit for use, considerable butter fat must be thrown away; if used, it will contaminate the cream. Supposing this happens once per month, the loss would easily pay for a commercial starter which in my opinion is much more reliable.

Another method which has given good results under favorable conditions is the homemade culture which is prepared in about this way:

Take several pint milk or fruit jars, and after sterilizing by steam select milk from patrons who deliver the best milk, filling jars two-thirds full and set them at a temperature of 65 to 85, according to the season; when thick examine them and any milk which has a good, clean, acid flavor and a smooth firm curd with no pin holes will make a good starter; empty the best jar into about fifty pounds of previously pasteurized skim milk which is set at a temperature of 65 to 70; this should ripen in about 24 hours. Save out a little of the old starter each day to add to the next lot; in this way a starter may be carried for quite a number of days and the work of selecting samples and noting the conditions is a good education in creamery bacteriology.

Having obtained the very necessary knowledge concerning the fermentations which occur in the different lots of milk which are selected for cultures, and finding that it is very nearly impossible to obtain the same results twice in succession, and as the method of preparing homemade starters requires the same appliances as commercial starters, should you for any reason fail to get a satisfactory culture you naturally (if you read the dairy literature of the times) turn to the commercial culture for a more certain method of getting the desired results. This gives more uniform results, is more dependable and more vigorous than the natural or homemade variety. And I may say here that the standard for a satisfactory starter keeps getting higher all the time, which is one of the good things about using it.

I have several times compared the two by pasteurizing skim

milk in a Pott's pasteurizer. The milk after cooling was drawn off into shot gun cans which were set into water at temperature ranging in the different trials from 54 to 70 degrees. At 60 degrees or over the commercial culture worked considerably faster and was in every case a better starter. In one trial, setting at 54 degrees for 48 hours, the commercial ripened to about .8 per cent. acid and was very good. The homemade in the same time had developed only about .3 per cent., and when warmed up to 70 degrees thickened in about six or seven hours. It was not a good starter as it wheyed off as soon as it coagulated.

Then again a homemade starter can very rarely be carried along for more than a week or ten days while with proper care a commercial starter may be used for an indefinite time. If the skim milk could be thoroughly sterilized each day it might, barring accident, be carried on for years.

When a new culture is started it should not be used in the cream until carried forward for several generations, in fact most of them are about a week old before they are really fine. You will note that for the first week the bacteria grow more vigorously with each generation and that less startolene is needed and it may be set at a lower temperature.

After a starter has acquired its full vigor it can be set at the same temperature each day and by using the same per cent. of startolene, can be relied upon to be in the proper condition at the desired time. At the first signs of failing vitality, or as soon as the starter does not ripen to the desired point in the usual time, if temperature and other conditions are unchanged a new culture should be secured and built up. I have found that when it becomes necessary to raise the temperature three or four degrees in order to have a starter ripen, that in a few days at most the starter will be off in flavor, and unfit for use.

The apparatus for making and handling starters which I have until recently used, may be described as a tank two feet square and two feet deep, fitted with a noiseless steam heater and water connections; the water over-flow is near the top of the vat. I have a twenty gallon factory milk can about sixteen inches in diameter, which is very well made of heavy tin with all seams

soldered flush; an agitator made of heavy tin seven inches in diameter with four two-inch holes cut in at equal distances apart; it has a heavy wire handle soldered at right angles to the center and is reinforced at this point with tin.

In every-day work, after sterilizing the can I fill it full of skim milk from the separators, put this in the vat which is then filled with water and the steam turned on. Stir the skim milk every few minutes until the water boils, when I shut off the steam, stir the milk thoroughly and leave it for twenty minutes or half an hour. I find that this method always gives a temperature of 170 to 180, although I always have a thermometer in the milk to make certain. At the end of thirty minutes draw off the hot water and turn on cold water; stir frequently while cooling. Cool down to 65 degrees Fahrenheit or below; add two per cent. of old starter; stir thoroughly; cover up with tin cover which will permit air to circulate over the milk. (I used for this purpose an inverted dishpan.) Having fixed up the starter I leave it alone until the next morning when it should be just thickened; skim off the top which is thrown away and then take out a few quarts in a sterile can, which is set away in the refrigerator. As soon as I have a little cream in the vat, I empty the starter into the cream vat.

Everything used in connection with starters must be sterilized every day. When washing starter can the cooked milk adhering to the sides may be easily washed out by the use of a little washing powder, afterward rinsed with clear hot water and sterilized.

I am now using two starter cans which have within the last year been put on the market by enterprising manufacturers of creamery supplies and which are fitted with steam and water connections. The milk is kept in motion by agitators run by a belt from the line shaft. In these cans the milk is heated and cooled very quickly and they are in most respects satisfactory. They have some minor faults, among which is the use of perfection gates which extend outside of the water space. These gates are hard to clean and the milk which is in them is not pasteurized, at least not thoroughly, and leaves a method of con-

tamination which can be guarded against only by drawing off this milk several times and pouring it back into the can. What faults they have may be very easily remedied, and while I should not advise anybody to buy one before he has learned the cardinal principles of making and handling commercial starters, those who are already using that system will find that a starter will save a great deal of time and is besides an ornament to the creamery.

Now, while as you will infer from the foregoing, I do not believe that the starter is a cure for all the troubles with which the buttermaker has to contend, and will not, unless a good average quality of milk is received, be even a guarantee of uniform or desirable flavor, yet when all has been said against its use that can be said, both science and good practice are in favor of its use in intelligent hands. There is really no valid objection to the use of a starter of some sort and why not use the best? All my experience points to the fact that the commercial starter is the best, because it is the easiest to procure a good one, and when for any reason that fails you may be certain of obtaining another just as good. I do not think that any buttermaker after using it for a year would like to go back to any other method, much less attempt to get along with no starter at all. I for one would not.

DISCUSSION.

Mr. Faville: Do you have any difficulty in getting good commercial starters, and is there any danger of getting bad ones?

Mr. Godfrey: Sometimes we get starters which are bad. I got one which would not sour the milk. I have had commercial starters and set them in quart bottles and for control I used a quart of the same milk and kept them side by side and in two or three days the skim milk would be thick while the commercial starter was almost perfectly sweet.

Mr. Ashman: Have you had any experience in using a skim milk starter?

Mr. Godfrey: I have had some experience with skim milk starters. I think the commercial starters could be used in a skimming station if you had a competent person to make them.

Mr. Ashman: How would you handle the cream when some of it is received at 11 o'clock, some at 2 and some at 4 o'clock? How would you ripen? I use Hansen's starter but not successfully as some of the patrons say the butter is a little sour.

Mr. Godfrey: I think the trouble is that you skim your own cream at 9 o'clock and put in the starter immediately so that it will be pretty well ripe before you mix the sweet with the ripe cream all day. If you could divide it into two vats and make two churnings you could overcome that trouble. How much starter do you use?

Mr. Ashman: About 10 to 15 pounds to 100 pounds of cream, sometimes more and sometimes less, depending on the condition of the cream when it comes in. I test with the Farrington tablets and test before putting into the vat.

Mr. Godfrey: How much is your acidity in the afternoon?

Mr. Ashman: From .32 to .38 per cent.

Mr. Godfrey: I think part of your trouble comes from mixing ripe cream with sweet cream. The first milk is nearly ripe when the second lot is added. After you get your cream almost ripe it does not do to mix with sweet cream as you get an undesirable flavor. You would get better results if you would hold the first cream cold until the other comes in and ripen all together.

Question: I would like to ask if he considers the beneficial results of commercial starters are lost when you cool the cream directly from the separator down to 58 or 60 degrees and ripen at that temperature?

Mr. Godfrey: I do not. My trials showed that the commercial starter grew quite rapidly at 54 and gave a good flavor, but the homemade variety did not.

Question: Don't you think it is the safest plan for practical, every day buttermakers to cool the cream directly from the sep-

arator down to 60 when through separating? Don't you think it is the most practical and economical?

Mr. Godfrey: Yes. Cool directly from the separator as fast as you separate it; it is the safest and you get more uniform results.

Question: We are making about 5,000 pounds of starter every day. We use the commercial culture, and the way we used to make the starter we add our commercial culture to the fresh can of milk each night and that is thick with a very heavy body the next afternoon when we want to use it. Are the beneficial results of that commercial starter lost in using it that way? We also add enough of the old startolene to ripen our can of starter. We use about 200 pounds of startolene as a starter to ripen the rest of the starter.

Mr. Godfrey: That is about five per cent. of the old startolene. You can keep a starter going with that amount. After experimenting with your starter and noting the conditions of your milk you can regulate the cooling. Cool lower some days than others. Generally get about the same result. I have always followed the method of cooling cream as quickly as possible and have had fairly good results. I think from my own experience we make pretty good butter by cooling to 56 or 58 degrees and hold for 48 hours. The best tub I have ever made was made in that way.

Question: Don't you think it has longer keeping qualities?

Mr. Godfrey: No, because that particular tub did not keep. That cream was divided and the other lot ripened with starter at 65 degrees and that lot scored 96 but had the better keeping quality of the two.

Question: Was it because you washed the buttermilk out?

Mr. Godfrey: Showed no signs of buttermilk in either.

Question: I am very much in favor of commercial starters in preference to buttermilk starters. I have never had good success with buttermilk starters.

Mr. Godfrey: For a time it does help to make good butter, but you have to change and let a lot ripen naturally and for

three or four days it will have a good, uniform flavor and ripen in a uniform time.

Question: Do you get better results with sour milk starters?

Mr. Godfrey: I do not like sour milk starters. I prefer buttermilk.

PRESENTATION OF MEDALS.

The President: Will Mr. George H. Holmes please come forward?

The President: It is with great pleasure on behalf of the Association of the Buttermakers of Wisconsin that I congratulate you on the great success you have won. A man that goes into an athletic contest goes in trained with that end in view; many enter the race but one secures the great prize. We had a great race, for our first race 103 members entering into competition. It must needs be that one was the prime victor; some were close upon him. He just got there, and we want to show our appreciation of this event. I now present to you this medal with the compliments of this Association. May you wear it long and always prove you are worthy of it.

Mr. Holmes: As a great many have asked me to tell how I made this tub of butter, and as Mr. Fulmer has suggested it, I will give you a brief account of how it was made. The milk was taken in at eight different points—one main plant and seven skimming stations; so that I had no special preparations, such as selecting the milk, only cautioning the men to be more careful in doing the work as they were ordered.

I told each man at the stations that I was going to make butter for the Wisconsin Buttermakers' contest, and asked them to take particular pains in sterilizing starter cans, and to get the milk that was used for the starter as much as possible from new milch cows, and not to put that milk into the receiving vat to warm at all, even if there was some fat lost in separating it; pour that milk direct from the can into the separator; and I think each man did his best.

I have been having a little trouble over the flavor of my butter,

so this day I skimmed the milk at a temperature of from 83 to 85 degrees, where before I had been skimming at 75 degrees.

The starter was added as soon as there was cream enough in the cream vat with which to mix it thoroughly.

The cream was started from the stations at the temperature of 85 degrees. The first cream came to us at the main plant at about 11 o'clock, and it was all there by one o'clock. As the cream from the stations was running over the cooler, or aerator, into the cream vat at the main plant, we kept putting warm water under the pan to bring the temperature of the cream to about 75 degrees. The average temperature of the cream when it arrived at the main plant was 68 degrees. At about 2:30 P. M. we had a 28 per cent. acid, Mann's acid test, and started cooling the cream by putting an Elgin cooler upon irons across the cream vat and opening the windows and door of cream room, and two men on either side kept dipping the cream up on the cream cooler. It was a very cold day, and by 4 o'clock the temperature of the cream was 55 degrees. I did not do much of the work of making the butter, but I gave them instructions to cool the cream to 50 degrees. When I took the temperature of this cream at 9 o'clock, it was 46 degrees, and we churned it at that temperature. The next morning at 6 o'clock it had a 34 per cent. acid. The cream being so cool, it took a long time to gather. It took two and three-fourths hours. The butter was worked once on a Mason worker.

Mr. Goodrich: How many times did you wash it?

Mr. Holmes: Once. I did not take the temperature of the water.

Question: When was the butter made?

Mr. Holmes: It was made Saturday and scored Thursday. I had been having trouble with my butter keeping, and I asked the judge, after scoring, what he thought of the keeping qualities of that butter. He said he did not score it from that point, but he went and looked and said it would not keep.

Question: What starter was used?

Mr. Holmes: Skim milk starter.

Mr. Michels: Just skim milk that soured naturally?

Mr. Holmes: Yes.

Mr. Goodrich: Have you any particular system in instructing your patrons who furnish you with milk?

Mr. Holmes: I have not. It would not do; there is too much competition. It is brought to us every other day, and I try to have them bring good milk, but we cannot insist on anything.

The President: In our rules that were drawn we decided that the prize winners in order to secure the medals would have to be here in attendance. The man that made the butter that scored second has not been in attendance here, Mr. VanDresser; his butter scored 97½.

Now, it is left to the Convention whether you want to change that rule and have this medal sent him, or whether to keep the medal to present to the man that made the next highest score.

Mr. Moore: I move that Mr. Van Dresser get the medal.

Mr. Tyler moved to lay motion on the table. Motion carried.

Prof. Farrington: What was the object in making this rule?

Mr. Goodrich: To induce a larger attendance at the meetings and a larger interest in the butter scoring. We want to get a larger attendance next year. The man who got third is in attendance, and I think under this rule he is entitled to this medal. I have no doubt Mr. VanDresser had a good excuse for not coming, but this rule was made and we thought it a good one.

A Member: The three tubs scored so near alike it is a pity we cannot give all three a gold medal. I, for my part, would like to give to the one here, according to the rules of the Association.

A Member: Was such a rule ever lived up to by any other association?

A Member: It was tried at the National Convention, but they gave to the man who was in attendance. I think it a good rule, and we ought to stand by it.

The President: What will you do with the medal? Keep it or give it to our Secretary?

A Member: Are you certain that this man who got third prize is present?

Secretary: There was a Mr. Erickson of Volga present.

It was moved and seconded that the second prize medal be awarded to the man who scored third, who was present. Motion carried.

Mr. Erickson called up.

The Chairman: It is with pleasure, in behalf of the Association, that I present this medal to you. You have honorably won it. I hope the next time you enter the contest you will arouse a great interest in your neighborhood and bring the buttermakers here to compete with you and give the first man a closer run.

Mr. Michels: I think it would be no more than proper to appoint a committee to look after the next National meeting. When I come to think it over, a better way would be, as we have a very able President and Secretary, to make a motion that we leave it to the President and Secretary of the Association to do as they think best.

Motion made and seconded that the officers of the Association consider the advisability of appointing a special committee to look after the interests of this state at the next National Convention. Motion carried.

Reading of the scores.

Prof. Farrington: I wish to ask for a vote of thanks of the Association for the President, Secretary, and other officers, who have, through their work, made this convention such a success, and will ask that those in favor of extending to the officers of the Association make it known by saying aye. Vote was unanimous in favor of same.

Secretary: There are some who have not had an opportunity to join, and any who wish to do so can have an opportunity now.

The President: Gentlemen, it is with pleasure that I look upon the happy meeting we have had here. I thank you cordially for your mutual support. It is an easy matter to preside over a meeting when the members are all considerate and try to help you; it is an unpleasant feature to preside over a meeting when the members are hostile.

You, as well as the officers, deserve all the praise for the success of the convention, and I believe we can truly say that there never has been a state association of any kind started out with such bright prospects as we have before us. It really is as strong today, and perhaps stronger than some of the state associations that have been in operation three, five and perhaps nine and ten years. We seem to have converged here into a tremendous force, and there is no reason why, if we band ourselves together, with a spirit of unity we cannot push forward to ultimate success and be a solid factor in the dairy interests of this state.

We have had an exceedingly regular attendance and very successful meetings, and I wish to extend my hearty thanks to the dairy students of the University of Wisconsin, who in no small measure contributed to this end. I am a dairy student myself, although I graduated from that institution ten years ago.

As we separate here after all our pleasant meetings perhaps a feeling of sadness will come over us. I trust that as we go to our various occupations and locations that each of you will have a most successful year of work before you. Remember the great calling we represent, and as you are dismissed may peace, prosperity and happiness abide with you.

I now declare this convention adjourned without date.

THE BUTTER EXHIBIT.

The 103 tubs of butter entered for competition were scored by Mr. Collyer, of Chicago, and a score card mailed to each exhibitor. Those scoring above 90 points received, pro rata, the premium fund of $250.00. These, together with those scoring 90, are given in the following table.

The new method of scoring each tub of butter in the presence of the buttermaker was tried at this meeting for the first time. It gave the buttermaker just the opportunity he wanted to talk back and forth to the judge.

The buttermakers present at the meeting were divided into lots of ten men each and assigned a certain time when they could enter the butter room with the judge. Each of the ten men were numbered, as were also the ten tubs, and when the judge called off and scored a certain number the maker recognized his number and questioned the judge *ad libitum*.

The system gave great satisfaction and was a success.

BUTTER EXHIBIT.

List of butter exhibitors scoring 90 points or more.

		Score.							For Special premium.				
		No. of exh.	Flavor	Grain or body.	Color.	Salt.	Package.	Total.	Sep. used.	Churn.	Color.	Salt.	Butter culture.
Andrus, H. B. J	Neillsville, Wis	1	39	25	14½	10	5	93½	Alph.	Vic	Ald.	D. C	
Ace, F. O	Story, Wis	3	36	24½	15	10	5	90½	Alex.	Box	W. & R.	D. C	Doug.
Brunner, Frank	Northrup, Minn	24	39	34	15	9	5	92	Alph.	Dis	Ald	Wor	Homemade.
Bowman, H. S	Sauk City, Wis	33	38	24½	14	10	5	91½	Alph.	Box	W. & R.	Wor.	
Blumenstein, Frank	Sullivan, Wis	28	38	23	15	9	5	90	Alph.	Vic	W. & R.	Wor.	Doug.
Boettchen, John E	Guthrie, Wiss	29	40	25	14	10	5	94	Tub.	Vic	Ald	D. C	Keith.
Buswell, L. E	Kendall, Wis	30	39	24	15	10	5	93	Tub.	Squeeze.	Ald	D. C	
Blauer, Dan	Omro, Wis	34	37	25	15	10	5	92	Russ	Fargo	Ald	Wor	Doug.
Bast, Jos	Stockbridge, Wis	35	38	25	13	10	5	91	Alph.	Dis.	W. & R.	Wor	Keith.
Bast, Frank	Elkhart, Wis	36	37½	25	14	10	5	91½	Alph.	Dis.	W. & R.	Wor.	Keith.
Boss, Frank	Fulton, Wis	37	36	25	14	10	5	95	Alph.	Box	W. & R.	Wor.	Doug.
Cornelinson, T	Cooksville, Wis	42	40½	25	14½	10	5	96	U. S.	Dis	Ald	D. C	Hans.
Chapin, C. J	Amherst, Wis	41	41½	25	15	10	5	96½	Alph.	Box	Ald	Wor.	Doug.
Cox, Wm. T	Black Earth, Wis	45	37	25	15	10	5	92					
Duxbury, E. L	Green Bay, Wis	61	38	25	14½	10	5	92½	Alph.	Dis	W. & R.	D. C	
Dabrainer, J. F	Jefferson, Wis	63	42½	25	14½	10	5	97	Alph.	Vic	Ald.	Wor.	Doug.
Erickson, Albert	Volga, Wis	81	42½	25	14¾	10	5	97¼	Alph.	Vic.	Ald.	D. C.	Hans.
Eastman, —	Saukville, Wis	259	38	24½	15	10	5	92½	U. S.	Vic.	W. & R.	D. C	
Gibson, D. I	Nelson, Wis.	122	36	25	14½	10	5	90½	Alph.	Vic.	W. & R.	Wor	
Grimm, Fred	Tustin, Wis	123	39	25	13	10	5	92	Russ	Vic.	Ald	Wor	Homemade.
Hart, Thos. H	Symco, Wis	142	38	24	14	10	5	91	Alph.	Vic.	W. & R.	D. C	Hans.
Huth, F. W	Troy, Wis	146	39	24½	14	9	5	91½	Alph.	Dis	W. & R.	Cad	Hans.
Holmes, Geo. H	Baraboo, Wis	148	43	25	15	10	5	98	Alph.	Box	W. & R.	Gen.	
Harbaugh, C. B	Hartland, Wis	150	37	25	15	10	5	92	U. S.	Squeeze.	Ald.	Wor.	
Hoiberg, H. B	Floyd, Wis	153	37	23	15	10	5	90	Alph.	Wiz.	Ald.	D. C	
Kates, Chas. M	Custer, Wis	181	38	21	15	10	5						
Kelling, F. H	Piperville, Wis	182	38	24	14½	10	5	91½	Alph.	Wiz.	Ald	Wor	Doug.

Koch, E. E.	McFarland, Wis.	183	36	24½	15	10	5	90½	Alph.	Box.	W. & R.	Wor.	O.
Likens, C. C.	Walworth, Wis.	198	40	24	15	10	5	94	Alph.	Wiz.	Ald.	Ash.	
Lawrence, Lewis.	Sundown, Minn.	199	37	25	14½	10	5	91½	Alph.	Winner.	Ald.	Wor.	Han.
Lund, W.	Forest City, Minn.	200	41	25	1	10	5	92	Alph.	Dis.	Ald.	Cad.	Doug.
Miller, Wm. E.	Marshall, Wis.	201	38	25	15	10	5	93	Alph.	Vic.	Ald.	Wor.	
McCormick, F. E.	Hetzel, Wis.	202	40½	25	14½	10	5	95	Alph.	Vic.	Ald.	D. C.	Doug.
Meracler, Asa L.	Whitewater, Wis.	205	38	25	14x	9x	5	91					
Moore, J. G.	Albion, Wis.	207	40	25	14	10	5	94					
Mennes, O. I.	Springf'ld Corn's Wis	210	40	24	15	9½	5	92½					
McIntyre, Geo. G.	Whitewater, Wis.	308	41	25	14½	10	5	95½	Alph.	Vic.	Ald.	Wor.	Han.
Orvald, O. M.	Stoughton, Wis.	221	36	25	14½	10	5	90½	Alph.	Box.	Ald.	Wor.	
Paulsen, C.	Verona, Wis.	238	40	25	15	10	5	95	Alph.	Vic.	W. & R.	Cad.	
Stratton, J. R.	Meridian, Wis.	261	41	25	12	10	5	93	Alph.	Vic.	Ald.	D. C.	
Smith, A. D.	Springfield, Wis.	267	41	24	14½	9	5	93½	Alph.	Box.	W. & R.	Wor.	
Safford, Orton	Vandyne, Wis.	268	39	23	15	10	5	92	Alph.	Vic.	W. & R.	Wor.	
Trager, Gust	Mazomanie, Wis.	264	40	25	14½	10	5	94½	Alph.	Box.	W. & R.	Wor.	Doug.
Titus, W. O.	Hustler, Wis.	277	38	24	14	10	5	90		Boz	Ald.	Gen.	Homemade.
Tingleff, C. P.	South Wayne, Wis.	279	38	24	15	10	5	92	Alex.	Box.	W. & R.	D. C.	Keith.
Tyler, Clay	Cobb, Wis.	280	38	25	14	10	5	92	Alph.	Vic.	W. & R.	Wor.	
Uehling, E. A.	Shopiere, Wis.	281	38	24½	14½	10	5	92					
Uehling, F. A. & Co.	Hanover, Wis.	282	39	24½	13x	9x	5	90½	Alph.	Box.	W. & R.	Cad.	
VanDresser, M. L.	Bloomer, Wis.	299	53½	25	14	10	5	97⅛	Alph.	Vic.	Ald.	Cad.	Hans.
VanDresser, James.	Hebron, Wis.	300	41	25	15	10	5	96	Alph.	Box.	Ald.	Cad.	Sk. milk.
Wuethrich, Fred	Mayville, Wis.	301	40	25	13	10	5	93	Alph.	Box.	W. & R	Wor.	Doug.
Wunoch, John	Steuben, Wis.	302	41	23	15	10	5	94	Alph.	Vic.	Ald.	Gen.	Hans.
Wollensok, S. C.	Grellton, Wis.	304	36	25	15	10	5	91	Alph.	Vic.	Ald.	Cad.	Hans.
Weber, Geo. H.	Beaver Dam, Wis.	305	37	24½	14½	10	5	91					
Wahler, L. O.	York, Wis.	307	3 1½	25	14½	10	5	94	Alph.	Vic.	Ald.	D. C.	Hans.
Wiggington, W. R.	Warrens, Wis.	310	40	24½	14½	10	5	94	Alph.	Vic.	Ald.	Gen.	Doug.
Weber, B.	Belleville, Wis.	311	39	24	14½	9½	5	92	Alph.	Vic.	W. & R.	D. C.	
Wolff, L. W.	Marshall, Wis.	212	38	23	15	10	5	90	Alph.	Box.	Ald.	D. C.	
		313	37	25	14½	9	5	90½	Alph.	Box.	Ald.	D. C.	Keith.

LIST OF PRIZES.

For the best package of butter the Association will give a solid gold medal suitably engraved. For the next best package a similar medal of silver.

In addition to the above, the subscribed fund, amounting from $200 to $300, will be divided pro rata among all entries scoring *above 90.*

THE FOLLOWING SPECIAL PREMIUMS

offered by different concerns.

We will give to the buttermaker scoring highest with W. & R. color a gold medal suitably engraved with winner's name and score and $10 extra in cash if same scores highest of all. Also $10 to buttermaker scoring second highest with W. & R. color, and in addition to above we will give to each buttermaker scoring 90 or over a fountain pen valued at $2.

E. SUDENDORF, Elgin.

To creamery buttermakers scoring 93 or over on butter entered as colored with Alderney butter color, a handsome gold watch valued at $12.50 (with winner's name, date and place of contest engraved). Guaranteed Elgin movement.

In addition to above we give $10 to buttermaker securing highest score on butter entered as colored with Alderney butter color. $5 to buttermaker securing second highest score on butter entered as colored with Alderney butter color; $20 will be added to above, provided butter as specified secures general sweepstakes.

THE HELLER & MERTZ CO., New York.

We will give six gallons of our butter color to the six exhibitors scoring highest at your convention.

PAUL OPPERMAN & CO., Milwaukee, Wis.

We will give to the first prize winner, if he is a regular user of Douglas' Improved Butter Culture, a gold watch. O. DOUGLAS, Boston, Mass.

CONTRIBUTORS TO PREMIUM FUND.

Vermont Farm Machine Co., Bellows Falls, Vt	$50 00
De Laval Separator Co	40 00
Cornish, Curtis & Greene, Ft. Atkinson, Wis	25 00
Heller & Mertz Co., New York	15 00
Wisconsin Dairy Supply Co., Whitewater, Wis	10 00
F. B. Fargo & Co., Lake Mills, Wis	10 00
Sturgis, Cornish & Burns, Chicago	10 00
Diamond Crystal Salt Co., St. Clair, Mich	10 00
Genesee Salt Co., New York	10 00
Worcester Salt Co	10 00
Chapin & Adams, Boston, Mass	$10 00
Francis D. Moulton and Co	5 00
John J. McDonnald, Philadelphia	5 00
H. B. Griffin & Co, Boston	5 00
University Hotel, Madison, Wis	5 00
Gallagher Bros., Chicago	5 00
Merrill & Eldridge, Chicago	5 00
Geo. W. Linn Co., Chicago	5 00
A. H. Barber Co., Chicago	5 00
W. S. Moore Co., Chicago	5 00
Orin Douglas, Boston, Mass	5 00
Total	$250 00

TREASURER'S REPORT.

RECEIPTS.

Membership fees	$234 00
Advertisements in programme	100 00
Premium fund	250 00
Miscellaneous receipts	30 00
Total	$614 00

EXPENSES.

Traveling and hotel expenses of president, secretary and treasurer	$64 53
Postage, printing, medals, express, etc.	86 88
Pro rata to exhibitors	246 24
Stenographer	50 00
Printing report, 500 copies	98 00
Balance toward mailing reports, etc.	68 35
Total	$614 00

BUTTER ACCOUNT.

Received for butter	$500 16
Paid express, membership fees, etc.	226 54
Balance to next premium fund	$273 62

MATHEW MICHELS,
Treasurer.