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Eighth annual report of the Wisconsin Dairymen's Association : held at Elkhorn, Wis., January, 14-15, 1880. Report of proceedings, annual address of the president, and interesting essays relating to t...

Wisconsin Dairymen's Association
Madison, Wis.: David Atwood, State Printer, 1880

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EIGHTH ANNUAL REPORT

OF THE

WISCONSIN

DAIRYMEN'S ASSOCIATION,

HELD AT

ELKHORN, WIS., JANUARY, 14-15, 1880.

REPORT OF PROCEEDINGS, ANNUAL ADDRESS OF THE PRESIDENT, AND INTERESTING ESSAYS

RELATING TO THE

DAIRY INTERESTS.

COMPILED BY
D. W. CURTIS, SECRETARY.

MADISON, WIS.:
DAVID ATWOOD, STATE PRINTER.
1880.

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OFFICERS, 1880.

PRESIDENT,

STEPHEN FAVILL,

DELAVAN, WALWORTH CO.

VICE PRESIDENTS,

CHESTER HAZEN, LADOGA, FOND DU LAC CO.

President Wisconsin Dairymen's Association from 1872-4.

HIRAM SMITH, SHEBOYGAN FALLS, SHEBOYGAN CO.

President Wisconsin Dairymen's Association from 1875-6.

A. D. DELAND, SHEBOYGAN FALLS, SHEBOYGAN CO.

President Wisconsin Dairymen's Association, 1877.

H. F. DOUSMAN, WATERVILLE, WAUKESHA CO.

President Wisconsin Dairymen's Association, 1878.

Z. G. SIMMONS, KENOSHA, KENOSHA CO.

President Wisconsin Dairymen's Association, 1879.

SECRETARY,

D. W. CURTIS,

FORT ATKINSON, JEFFERSON CO.

TREASURER,

O. P. CLINTON,

WAUKESHA, WAUKESHA CO.

ARTICLES OF ASSOCIATION.

[*Adopted in* 1872.]

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

ART. II. The officers of the association shall consist of a president, two vice presidents, and a secretary and treasurer.

ART. III. The president, vice president, secretary and treasurer shall constitute the executive board of the association.

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

ART. V. The regular annual meeting of the association shall occur on the second Tuesday of February in each year, at such place as the executive board shall designate.

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

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

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

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

MEMBERS FOR 1880.

A.

Ayer, H. M., Lodi.
Aldrich, A. M., Burlington.
Allen, Lucius, Elkhorn.
Allen, L. E., Elkhorn.
Allen, Geo., Geneva.
Agnus, O. J., Cascade.

B.

Boyd, John, Chicago, 199 Lake St.
Blair, Geo. B., Waukesha.
Baker, E. E., Troy.
Barber, A. S., Salem.
Beeson, Edward, Fond du Lac.
Babcock, Luman, Elkhorn.
Bragg, W. C., Milwaukee, 94 13th St.
Billett, George, Whitewater.
Barker, D. Y., Elkhorn.
Barker, J. M., Elkhorn.
Bradley, H., Elkhorn.
Brooks, Seymour, East Troy.
Bliss, A. J., Troy.
Bogardus, H. D., 33 South Water St., Chicago.
Boss, C., Clemansville.

C.

Clinton, O. P., Waukesha.
Curtis, D. W., Fort Atkinson.
Clark, A. C., Manchester, Iowa.
Chadsey, Albert, Sharon.
Child, R. R., Clinton.
Cole, Norman, Brodhead.
Curtis, F. C., Rocky Run.
Conger, Wm. H., Elkhorn.
Cole, John A., Elkhorn.
Chambers, R., Elkhorn.
Church, Cyrus, Walworth.
Cobb, V., Elkhorn.
Carswell, M., Elkhorn.
Carswell, O., Elkhorn.
Coman, J. W., Elkhorn.

D.

Davis, S. B., Chicago, 110 S. Water St.
Dey, A. V. B., Waukesha.
Dwinnell, J. B., Lodi.
Dey, A. B., Sheboygan Falls.
Davenport, D. L., Auroraville.
Dunlap, C., Elkhorn.
Dwinnell, Geo., Elkhorn.
Dunbar, Windsor, Elkhorn.
Drake & Henness, Elkhorn.
Dunbar, W. E., Elkhorn.
DeLand, A., Sheboygan Falls,
Davis & Fairlamb, 170 Lake Street, Chicago.

E.

Edwards, J. J., Juneau.
Evans, Frank, Springfield.
Ellsworth, S. E., Elkhorn.
Elderkin, E., Elkhorn.
Edwards, S. B., Whitewater.
Edwards, S. R., Elkhorn.
Edwards & Preston, Elkhorn.

F.

Favill, Stephen, Delavan.
Favill, R. E., Lake Mills.
Fink, Charles, Alden, Ill.
Field, W. W., Madison.
Fargo, E. B., Lake Mills.
Ferris, G. W., Elkhorn.
Flack, J. G., Elkhorn.
Flack, David, Elkhorn.
Fitch, Z. M., Elkhorn.
Foster, Asa, Elkhorn.
Fish, J. S., Springfield.
Foster, L. G., Lyons.

G.

Gale, Isaac, Waukesha.
Gray, Wm., Elkhorn.
Gibbs, C. R., Whitewater.
Goff, S. C., Elkhorn.
Geneva Lake Herald, Geneva Lake.

H.

Hoard, W. D., Fort Atkinson.
Hayden, Wm., Columbus.
Herrick, J. A., Geneva Lake.
Holcomb, A. L., Lone Rock.
Higgs, A. F., Chicago.
Horne, S. B., Geneva.
Hotch, S. N., Geneva.
Hart, J. L., Watertown.
Houston, R. S., Kenosha.
Hoyt, Frank E., Rochester.
Harris, A. D., Springfield.
Hodges, Wm., Mayhew.
Holton, H. M., Elkhorn.
Harriman & Latham, Elkhorn.
Harrington, D., Elkhorn.
Hollinghead, Wm., Elkhorn.
Hand, N. P., Elkhorn.
Hand, Jerod, Elkhorn.
Harrington, N. M., Delavan.
Hand, Nathaniel, Elkhorn.
Hazen, Chester, Ladoga.
Hinckley, Col. R. B., Oconomowoc.

I.

Ingersoll, J. B, Port Washington.
Ives, Edson, Fort Atkinson.

J.

Jones, E. H., Fond du Lac.
James, F., Delavan.
Johnson, Joseph, Hartland.

K.

Kemp, Geo., Fort Atkinson.
Keyes, J. C., Elkhorn.
Kelly, Mrs. R. Howard, 59 Major Block, Chicago.

L.

Lawrence, Geo., Jr., Waukesha.
Luther, M., Sharon.
Lathram, Hollis, Elkhorn.
Lyon Bros., Elkhorn.
Lyttle, ——, Elkhorn.
Lawrence, Geo. C., 128 Washington St., Chicago.
Lyttlefield, L., Plymouth.

M.

Morley, Fannie G., Baraboo.
Montgomery, D. M., Burlington.
McNair, S., Brodhead.
McKibbie, John, Hebron, Ill.
Morley, N. W., Baraboo.
Morfield, T. W., Elkhorn.
Moorhouse, Isaac, Elkhorn.
Metheron, John, Mayhew.
McAdams, Wm., Lyons.
McCutchan, R. L., Whitewater.
Morrison, Wm. H., Elkhorn.
Meiggs & Sanborn, Elkhorn.
McCanna, C. B., Springfield.
Merriman, R. D., Fort Atkinson.
Merriman, ——, Fort Atkinson.
Mihill, Dorlon, Fond du Lac.
Moorehouse & Warhurst, Springfield.
Meatard, Ed. B., Geneva Lake.

N.

Nourse, H. E., Troy.
Northrup, S. S., Clinton.

O.

Olin, O. Z., Waukesha.
Olin, Q. C., Fort Atkinson.
Olds, B. B., Clinton.
Ogden, Albert, Elkhorn.
Orvis, James, Oakfield.

P.

Parker, E. H., Short-hand Reporter, Room 15, Methodist Church Block, Chicago.
Parker, G. H., North Byron.
Pierson, W., Sharon.
Preston, O., Elkhorn.
Park, M. T., Elkhorn.
Potter, A., Elkhorn.
Potter, Joseph, Elkhorn.
Phelps, C. K., Springfield.
Padden, ——, Elkhorn.
Picket, J. G., Picket's Station.
Phelps, Jessie E., Short-hand Reporter, Evanston, Ill.

R.

Rood, Ira P., Sugar Creek.
Richmond, E. O., East Troy.
Reek, Joseph, Geneva Lake.
Ross, W., Geneva Lake.
Renner, C. E., Elkhorn.
Roberts, R. F., Woodworth.

S.

Smith, Hiram, Sheboygan Falls.
Shultis, Frank, Waukesha.
Sherman, J. N., Delavan.
Street, C. & Son, Hebron, Ill.
Smith, J. A., Sheboygan.
Somers, J. W., Rochester.
Swan, N. E., North Prairie.
Shultis, Nelson, North Prairie.

S.

Sheldon, E. E., Fort Atkinson.
Smith, J. M., Green Bay.
Stratton, J. W., Elkhorn.
Standish, O. P., Elkhorn.
Strong, John, Elkhorn.
Smith, James, Elkhorn.
Shepard, Ed., Elkhorn.
Seaver, James, Darien.
Stowe, W. D., Hart Prairie.
Snyder, J. H., Elkhorn.
Smith, Joe, Elkhorn.
Sherman, John, Elkhorn.
Snyder, B., Clinton.
Skidmore, C. P., Stockbridge.
Sweemer, Wm., Cedar Grove.
Smith, J. W., New Richmond.
Sarasay, Jacob, Crystal Lake, Ill.

T.

Taylor, Hiram, Sugar Creek.
Taylor, J., Springfield.
Travis, J. A., Lyons.
Thomas, J. M., Lone Rock.
Taylor, C. P., Springfield.

V.

Veedboom, H., Cedar Grove.
Vaughn, A. W., Lodi.
Von Rosenberg, J. C., Burlington.
Vanderpool, A., Elkhorn.
Vosburgh, Maj. J. B., Richmond, Ill.

W.

White, R. S., Fort Atkinson.
Weed, G. W., Waukesha.
Williams, J. W., Waukesha.
Walwood, H., Cedar Grove.
Wheaton, A. H., Auroraville.
White, F. L., Kenosha.
Willard, Chas. P., 20 La Salle St., Chicago.
West, H. P., Mayhew.
West, Nelson, Mayhew.
West, S. G., Elkhorn.
Wisewall, P. S., Elkhorn.
Webb, S. T., Spring Prairie.
Weed, B., Elkhorn.
Windsor, H. S., Elkhorn.
Wheeler, J. B., Elkhorn.
Wales, Chas., Elkhorn.
Wylie, G. W., Elkhorn.
Wilcox, George, Elkhorn.
Williams, Judson, Barton.
White, W. C., Kenosha.
Weeks, L. W., Oconomowoc.
Wilder, L. D., Markesan.

Y.

Young, J. H., Elkhorn.

WISCONSIN DAIRYMEN'S ASSOCIATION.

EIGHTH ANNUAL MEETING.

PROGRAMME.

WEDNESDAY — 10 A. M. Organization of Convention.

1. Address of Welcome, by S. G. West, Esq., of Elkhorn.
2. Response, by Hon. Hiram Smith, Sheboygan Falls.
3. Opening Address, by Vice President Chester Hazen.
4. Report of Secretary and Treasurer. Appointment of Committees.
5. Proper Management of a Dairy Farm, Chester Hazen, Ladoga; Judge Geo. E. Weeden, Sheboygan county; D. L. Flack, Geneva.
6. A Paper on Agriculture, by Hon. W. W. Field, of Madison.
7. The Wants and Woes of Dairymen, Robert McAdam, of Rome, N. Y.
8. Has Dairying been Profitable during the Season of 1879, and is it Advisable to Continue in the Business? Hon. Hiram Smith, Sheboygan Falls; S. Favill, Delavan.
9. Transportation of Dairy Products to the Sea Board, Geo. C. Lawrence, Chicago.
10. "A Talk on Sundry Subjects," by W. W. Daniells, M. S., Professor of Agriculture and Chemistry, State University, Madison.
11. Curing Cheese, H. J. Bamford, Plymouth.
12. A Paper on Horticulture, by J. M. Smith, President State Horticultural Society, Green Bay.
13. What Shall be Done to Promote Better Dairy Education Among our Farmers? W. D. Hoard, editor Jefferson County *Union;* W. H. Morrison, Elkhorn; W. T. Park, editor Elkhorn *Independent.*
14. What are the Faults of Wisconsin Butter? How to Remedy Them, F. Curtis, Rocky Run; C. R. Beach, Whitewater; Asa Foster, Sugar Creek.
15. A Uniform System in the Dairy, David Ward Wood, of the *Western Rural*, Chicago.
16. Wisconsin at the International Dairy Fair of 1879, Geo. Lawrence, Jr., Waukesha; Hiram Smith, W. D. Hoard, Chester Hazen.
17. Encillage — A Paper by L. P. Gilbert, Fort Atkinson.
18. For the best essay on the Construction of Cheese Curing Rooms, W. D. Hoard, President of the Northwestern Dairymen's Association, offers five dollars in gold.
19. W. N. Tivy, of St. Louis, offers five dollars in gold to the one who shall first give the true cause of bitter butter in the winter season.

The Association extends a cordial invitation to every one, both male and female, who have an interest in the dairy business, and desire to present their side of the question, to prepare short papers to be read at the convention.

THURSDAY EVENING — Dairy banquet and sociable.

PREMIUMS OFFERED ON WISCONSIN BUTTER AND CHEESE,

To be Exhibited during the Convention.

CLASS I.

Best cheese made at any time..... Silver medal
Second best $3 00
Third best, "The National Live Stock Journal" for one year.. 2 15

CLASS II.

Best butter made at any time ..... Silver medal
Second best $3 00
Third best, "The National Live Stock Journal" for one year.. 2 15

CLASS III.

Best specimen of butter made into fancy prints..... Silver medal
Second best $3 00
Third best, "The National Live Stock Journal" for one year.. 2 15

SPECIAL INDIVIDUAL PREMIUMS.

CLASS IV.

By JOHN BOYD, *manufacturer of the Cooley Creamer, Chicago:*
For the best tub of butter made at any time by the Cooley process, a No. 1 Cooley Creamer..... $30 00

CLASS V.

By THE RURAL NEW YORKER, 78 *Duane street, New York:*
For the best cheese made at any time, a silver cup valued at..... $25 00
For the best tub of butter made at any time, a silver cup valued at 25 00
The cups are manufactured by Reed & Burton, of New York, expressly for the *Rural New Yorker*, to be offered for premiums on butter and cheese to Wisconsin dairymen. They are of sterling silver, gold lined and inlaid, with an appropriate inscription engraved upon them.

CLASS VI.

By GEO. S. HART & HOWELL, *Produce Commission Merchants*, 38 *Pearl street, New York:*
Offer a prize silver cup, valued at $100, to the manufacturer of the finest quality of full cream made cheese.
Competition for same to include all makers of factory cheese complying with the rules of the association
Prize to be retained by the winner for one year, then to be returned to the association for renewed competition.
The maker who is awarded the cup on three successive seasons, to retain the same perma ently.
The prize cup is of sterling silver, satin finish, with gold border and lining. Upon one side of it is engraved the figure of a cow, and upon the reverse side, an appropriate inscription. The cup is also enclosed in an elegant satin lined case.

CLASS VII.

By W. N. TIVY, *Commission Merchant, butter and cheese, St. Louis, Mo.:*
For the best tub of butter made at any time, ten dollars in gold.
Second best, five dollars in gold.

CLASS VIII.

By BORDEN, SELLECK & CO., *Western Agents for the Improved Howe Scales, Chicago:*
For the best tub of butter made at any time. an improved Howe Scale, capacity one-half ounce to two hundred and forty pounds, price $15.

CLASS IX.

By CORNISH & CURTIS, *Fort Atkinson, Wis.:*
For the best tub of butter churned in the Rectangular Churn, a No. 3 Rectangular Churn, price $9.
For the second best, a No. 1 Lever Butter Worker, price $5.

CLASS X.

BY R. S. WHITE & CO., *manufacturers of the Natural Butter Color, Fort Atkinson, Wis.:*

For the best tub of butter made at any time, colored with the Natural Butter Color, five dollars in gold.

For the second best, two dollars and fifty cents in gold.

CLASS XI.

For the best record of a dairy cow giving the most milk in six consecutive days "The National Live Stock Journal" for one year.

Second best, "The Jefferson County Union" for one year.

CLASS XII.

For the best record of the largest amount of butter made in six days from one cow, "The National Live Stock Journal" for one year.

Second best, "The Jefferson County Union" for one year.

CLASS XIII.

Patron showing the best results per cow from his herd of not less than ten cows, a silver medal.

Second best, "The Jefferson County Union" for one year.

CLASS XIV.

BY E. E. SHELDON, *manufacturer of the Badger State Butter Color, Fort Atkinson, Wis.:*

For the best tub of butter colored with the Badger State Butter Color: first premium, $7.00; second premium, $5.00; third premium, $3.00.

RULES GOVERNING THE EXHIBITION.

1. Entrance fee to be fifty cents for each exhibitor, except in classes 11, 12 and 13.

2. Butter to be in packages of not less than twenty pounds, except in class 3.

3. No package of butter can be entered in more than one class.

4. Scale of points for judging cheese: flavor, 15; quality, 15; texture, 10; style, 6; color, 4; total, 50.

5. Scale of points for judging butter: flavor, 20; grain, 15; salting, 5; color, 5; style of package, 5; total, 50.

Inventors of and dealers in dairy utensils are invited to bring goods for exhibition, and a committee will be appointed to examine and report upon the same.

The citizens of Elkhorn, with characteristic liberality, will entertain all members of the convention free.

All persons whose names appear in the above programme are earnestly requested to prepare papers or deliver an address upon the subjects to which they are assigned.

Elkhorn is on the Racine and Southwestern (Western Union) division of the Chicago, Milwaukee & St. Paul Railroad. Trains leave Milwaukee for Elkhorn at 6:16 P. M., and 7:15 A. M. Connections are made at Clinton Junction on the Chicago & Northwestern Railroad. Trains leave Clinton Junction for Elkhorn at 5:55 A. M, and 3:10 P. M.

Members paying full fare one way, will be returned at one-fifth fare.

D. W. CURTIS,
Secretary, Fort Atkinson.

Z. G. SIMMONS,
President, Kenosha.

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Dairymen's Association,

AT THEIR

EIGHTH ANNUAL CONVENTION,

HELD AT

Elkhorn, January 14 *and* 15, 1880.

The Eighth Annual Convention of the Wisconsin Dairymen's Association convened at the court house in Elkhorn, Wednesday January 14, at 11 A. M., Vice President Hazen in the chair.

The convention was called to order, and Stephen Favill, of Delavan, moved that the chair appoint the several committees needed during the convention.

Hon. Hiram Smith, of Sheboygan Falls, said he would be glad to hear from W. W. Field, of Madison, while the chair was making out the committees.

ADDRESS BY W. W. FIELD.

I am proud that my friend Smith called for me, but I did not come here to make speeches. I did not come here to talk and take up your time; I came to hear others speak and to learn, and why I should be asked to talk on dairying is more than I can understand. It is true I have been indirectly connected with it for several years, but I have never met and talked with dairymen until recently.

My friend Favill says I have one cow. Well, this is true. I have but one cow, but I mean to have more in time, and it would have been better for me if I had had them long ago. I know men who

have recently gone into dairying; some more and some less, not only in this state but western Iowa, and they are finding it profitable. Some of them are here and can learn me something about the business; therefore I shall say nothing more about dairying, except that it is one of the most important branches of industry in this state, and it has been conducted in such a manner that Wisconsin is now known not only in the United States, but all over the world, as being a great dairy state, for making as good butter and as good cheese as are made in the world.

The word Wisconsin on our cheese and butter, instead of branding it as poor, as it once did, now carries the banner and takes the world's prize; and this improvement has been brought about through these meetings and conventions, the growth of which you all know.

I thank you for calling upon me, and will now listen to those who are more learned on the subject.

The president appointed the following

COMMITTEES.

On Nomination of Officers — Hiram Smith, Sheboygan Falls; A. H. Wheaton, Auroraville; A. W. Vaughn, Lodi; W. D. Hoard, Fort Atkinson; O. Z. Olin, Waukesha; J. B. Ingersoll, Port Washington.

On Resolutions — Hon. W. W. Field, Madison; J. A. Smith, Sheboygan; W. D. Hoard, Fort Atkinson.

On Membership — S. G. West, Elkhorn; W. H. Morrison, Elkhorn; Capt. J. Tuttle, Salem.

On Dairy Utensils — Hon. Hiram Smith, Sheboygan Falls; Stephen Favill, Delavan; Judge C. R. Gibbs, Whitewater.

On motion of Mr. Favill, convention adjourned until 2 P. M.

AFTERNOON SESSION.

Vice President Hazen called the convention to order and introduced S. G. WEST, Esq., of Elkhorn, who extended to the convention

THE HEARTIEST WELCOME.

Mr. President, and Members of the Wisconsin Dairymen's Association — Inasmuch as you were to be welcomed here by everybody, it has not been thought necessary that we appear officially. But the very pleasant duty of extending that greeting to you upon

this occasion has been accorded to me. When it was announced that you would hold your annual meeting here, there was no inquiry as to the objects and aims of the organization. This is an agricultural community, and we recognize your efforts to promote the dairy interests of our state as inseparable from the great interests that contribute to our prosperity as a commonwealth.

So general has been this feeling here of late, that professional men, bank officers and merchants, all have been inquiring what they could do to become dairymen. And we find here to-day some who have had more experience in cutting off coupons than they have in milking cows. The reason for this general sentiment is found in the fact that in the year 1872 certain gentlemen (less than a score in number), several of whom are here present to-day, met and counseled together as to what could be done to relieve the people from the embarrassment they were under in consequence of the low condition of the market for Wisconsin dairy products. Our butter and cheese was passed by in the market as necessarily inferior because it was made in Wisconsin. Jobbers would sometimes condescend to take some of our butter and brand it as "Orange County," and your cheese would slip in as "Ohio," because Wisconsin could not produce as good grass, hay, corn and water as some other place. Your association resolved to correct this state of things, and to that end science has been called in and made to explain of what *good* butter and cheese consist; and those factors have been found to exist in almost unlimited quantities in this semi-condemned state. The keen perception and great perseverance of one whom I need not now mention, placed your products on the tables of foreign consumers, in direct competition with the pets of more favored localities; thus at one bound leaping past jobbers, and putting your goods where their merit could be passed upon without prejudice. The results were such that the word "Wisconsin," on a cheese box, no longer condemned it. Thus giving an impetus to the business that has enabled you to exhibit Wisconsin products at the centennial and other exhibitions with gratifying results. And in the late international contest, where the exhibits from different states and countries were piled tons on tons, and subjected to a most thorough and critical examination, the awarding committee have been compelled to inscribe on Wisconsin's banner, "*The best butter in the world*," and "*The best cheese in the United States.*"

While I would not rob neighbor McCutchan of one iota of the glory of his well earned victory, I know his generous nature will pardon me when I say we all have a deep interest in the compliment paid him and his "Cold Spring" factory. These effects, so gratifying, are the result of that system of culture inaugurated and encouraged by your association, until we are all willing to acknowledge that *Grass is King*, and anxious to be counted as dutiful subjects.

Hoping that your present gathering may be no less interesting and profitable than those that have preceded it, on behalf of this entire community I extend to you the *heartiest welcome.*

RESPONSE TO ADDRESS OF WELCOME,

BY HON. HIRAM SMITH, of SHEBOYGAN FALLS.

I find myself appointed by this association to respond to this address of welcome; therefore, on behalf of each member of the enterprise in which we are engaged, I tender our hearty thanks for your generous welcome to this your beautiful town of Elkhorn.

The benefit of this association is shown by the large attendance of gentlemen and a fair proportion of ladies, who have shown their good sense in coming here to-day; and I am sure what you hear will not hurt you.

Our object is, as it has been, to lighten the burdens and lessen the toils of farmers. Some of you can remember when a young lady was required to spin and manufacture with her own hands a chest of linen before she could have any *serious* matrimonial thoughts, and public sentiment should now require her to know how to make good cheese and butter before she has such thoughts, as good bread is a thing of happiness and good butter a joy forever.

There has been much said in regard to the qualification of a farmer. It is as necessary that the right man should farm as it is that the right man be sent to the legislature. It is just as important that he understand his business as it is for the legislative individual to understand his. The old practice of making a lawyer out of the seventh son, regardless of his capacity, must give way to the more modern method of development.

There are people among us who have given their best efforts to

some special object. They have devoted themselves especially to one thing — and men who have devoted themselves to dairying may be proud to call themselves dairymen.

Some may desire to engage in the fruit raising business, and if these men wish to make it a success, there is a strip of land on the eastern shore of Lake Michigan, running from north to south, and extending back about twelve miles, especially adapted to fruit raising. The lake breezes keep an even mercury, and here fruit raising can be carried on successfully.

Others desire wheat raising, and for them there is land in the western portion of Minnesota, extending along the line of the Northern Pacific Railroad, that is said to be especially adapted to wheat raising, and that it can be produced for less than fifty cents per bushel.

There may be others who desire to raise stock, and for them there is the Indian Territory, where their stock can be turned out on the prairies, and where they can be raised and sold for $25.00, at a cost of 20 per cent.

I have named three of the great products of the United States. Products on which our farmers as a rule depend, but these three are practically driven from our state, but we have other advantages over them and eastern dairymen (of which I presume there are many here to-day, and will speak of them more fully). Therefore as men we should take advantage of this difference and make the most of it.

There may be people who will address you that will say that what I have told you about winter wheat will not apply to our state, as the last two or three years wheat raising has been profitable; but as the professor of agriculture of the state university will tell you here to-day, winter wheat cannot be raised year after year successfully in Wisconsin.

Hoping that this convention may be of interest to you, and profit to us all, I again thank you for the hearty welcome you have extended to us.

OPENING ADDRESS,

BY VICE PRESIDENT CHESTER HAZEN, LADOGA.

Mr. President, Ladies and Gentlemen — I am happy to see so many of the old acquaintances, members of the Wisconsin Dairymen's Association and co-workers in this great enterprise, here on this occasion. This eighth annual meeting of the Wisconsin dairymen has been looked forward to with a great deal of interest and much pleasure by me. But I must say that I am not very well pleased with the idea of my being required to try to make an opening address on this occasion, and it is much more embarrassing for me to attempt to supply the place of our worthy president, Mr. Simmons. At seven annual meetings of this society, addresses have been made and papers read on the various subjects pertaining to the dairy interests, and many very able writers and speakers have been present at all of those meetings. So thoroughly has this ground been plowed, cultivated and hoed, that it seems useless for me to attempt to entertain such an audience as we have here to-day. Perhaps I could say something about the organization of this association which might be of interest to some who have not been constant attendants at our annual meetings. It will be eight years next month since a meeting was called at the Lindon House, in Watertown, for the purpose of organizing a State Dairymen's Association. At that meeting there mere not more than a dozen men present; of that number, I see but — here to-day. There were two distinct objects in organizing such a society at that time. First and uppermost in our minds was, to defeat or overcome the unjust discriminations that were forced upon us by the eastern trade, where we soon expected to look for a market for our goods. The difference in prices of New York and western cheese being from one to two cents per pound, and on butter, several times that amount. Wisconsin butter and cheese were not known in New York market reports at that time. The second object was to give our dairymen and manufacturers of butter and cheese an opportunity of meeting together once a year at least, where they would feel free to relate their experiences in the manufacture of butter and cheese, the management of dairies, dairy farms, breeding of dairy stock, etc. Through the persistent efforts and co-operation of our Wisconsin dairymen, that have been in

attendance at the annual meetings of this association, and the valuable information sown broadcast throughout the state by a small machine known as the annual report of the Wisconsin Dairymen's Association, the first object of the founders of this association has been accomplished, namely, placing Wisconsin dairy products on an equal footing with those of New York, or any other state in the Union, as plainly appears by the New York market report, which quotes western creamery butter from one to two cents per pound higher than eastern butter, and Wisconsin cheese up to an equality with the best; and the results of the international dairy fair in New York, giving Wisconsin butter the first grand sweepstakes premium over butter made anywhere, and at any time, and giving Wisconsin cheese the second prize — not second to New York or any other state — but second to English Cheddar cheese, made in Canada. This is an honor we think fairly earned by our Wisconsin dairymen. But the winner of a prize like this, a prize cup, or a prize belt, as the champion pedestrian of the world, is subjected to many challenges for the prize or honor; and if another international dairy fair should be held next year, it is hoped that we shall not rest too secure on the honors bestowed on our dairy products, and by so doing, fail in the next effort. There is much to be accomplished yet in this direction. Progression is the law of the universe, and we shall never be too old to learn. The Wisconsin exhibit at the international dairy fair was a grand success. One very interesting feature was the display of cheese exhibited by Messrs. Smith & Underhill, of New York, through the efforts of their agent, W. W. Ingram, which consisted of a fine assortment of several varieties and styles of foreign cheese, or imitations of foreign cheese, in connection with Wisconsin factory, all of which was made under the supervision of Mr. Ingram, in Jefferson county, Wisconsin. This exhibit was awarded the second premium as a collection of cheese. I am of the opinion that we are running our factories too much on one style of cheese. More of a variety to suit the varied markets of the world seems to be necessary, and the manufacture of such styles as Mr. Ingram turned out the past season, appears to be a new departure, and a step in the right direction. It has been common talk at our previous meetings, that there was no danger of producing too much good cheese to supply the demand. I think a large majority of

American dairymen will be willing to admit the fact that cheese (and good cheese at that) had to be sold the past season at prices far below the cost of production. It can no longer be denied that the markets of the world have been overstocked with dairy products. On the whole, the past season has been a very unprofitable one. Still late in the season "hard times" appeared to have struck bed-rock, and a reaction commenced in the general business of the country, which gives encouragement in the near future. Are we not just as liable to overstock the market next season as we were in 1878 and 1879, with as favorable a season? I can see no reason why we are not, and I will give some of my reasons why. In the first place, the English markets have been overstocked, which proves that they may be again; the low prices of meats in this country, and large exports to Europe of beef, pork and bacon, putting it on the English market at prices below what it can be produced for there, will have its effect on the cheese market. While the manufacturing interest will have some effect, America is now a strong rival with the old world in nearly all the manufactured goods, and on many articles excels foreign manufactures. We are no longer dependent on foreign nations for a very large amount of our goods. On the contrary, the balance of trade in our favor is two hundred and fifty to three hundred million dollars annually. As the demand for England's manufactured goods decreases, the demand for dairy products will be affected. Where, then, are we to find market for our goods? Cultivate and work up a local demand, and that will help very much. Prof. X. A. Willard theorizes in this way: England is at present a heavy producer of dairy products, but American butter and cheese is destined to supply their markets at prices below cost of production in England; consequently they will turn their attention in other directions and grow such products as will not pay transportation, which will create a demand for a large amount of our goods. When such time does come, the northwest will go in for a full share of it. I am of the opinion that the northwest is as successful a rival of the eastern states as they are of England. It is no longer a question whether the northwest can produce good butter and cheese. The eastern dairymen acknowledge we have the advantage of them in feeds at least. We can raise our oats and corn at less than one-half the expense they can. We would include about six states as

the dairy section of the northwest — Indiana, Michigan, Illinois, Wisconsin, Iowa and Minnesota — each one capable of producing nearly as much butter and cheese as New York, and at a reasonable estimate more than five times the amount (yes, ten times what is now being produced). When people tell us that there will be a good demand for all the butter and cheese that can be produced, it seems like child's talk to me.

The question with our dairymen is, Will it pay? I am of the opinion that dairying will pay, and dairy farming is as reliable as any branch of agriculture; that is, the markets, as a rule, fluctuate as little as they do on any other farm products. Dairying is now down to a level with all other agricultural industries, and the only way that dairy farming will pay, is by the closest management in all its details. We have plenty of farms well adapted to the dairy, but the farmers in the northwest are but a small portion of them adapted to the dairy. The day that careless, slovenly dairy farming will pay, is past. What seems necessary to make dairying a success in Wisconsin, is all the knowledge and experience that can be attained through the papers that are to be presented on the different topics laid down in the programme, discussions, and all the new ideas that can be presented at our annual gatherings, which we expect to have published in our reports for general distribution. When this society was organized, the dairy interests of Wisconsin were so small, and our members so few, that it required much energy and perseverance to raise the necessary funds to pay for publishing our reports, and they were restricted to a very limited amount of printed matter.

In 1876, the dairy interests had become of considerable importance; so much so, that when application was made to the management of the funds appropriated by the state to aid in representing Wisconsin at the Centennial Exposition, $600 was appropriated to the Wisconsin Dairymen's Association to assist them in making an exhibit of dairy products. The following winter, the Wisconsin legislature appropriated the printing of our reports, which has assisted us in placing a valuable work in the hands of many of our Wisconsin farmers.

The signs of the times seem to indicate that 1880 will be a season of general prosperity, and I think American dairymen have

as good reason to feel encouraged as those of any other agricultural pursuit.

I now declare this convention open for the transaction of such business as may properly come before it.

ADDRESS

BY HON. W. W. FIELD, MADISON.

Mr. President, Ladies and Gentlemen — I came here to-day more in the interest of the Wisconsin State Agricultural Society than the dairymen, and so have prepared no paper. I did not expect to be called upon to make any remarks. I came here to learn, and have very little that I can impart to you that would be of benefit.

It was well said by President Hazen, in his opening address, that this was an enterprise for the promotion of dairymen's interests. Of course its leading feature is dairying, but its general feature is agriculture. This has been my leading pursuit through life, and one that I was brought up to, and have followed more or less up to this time. The thought occurred to me, as I heard Mr. West's address, that if this was agricultural in its interests, how many of you had ever thought who your representatives at Madison were to-day? Who are your representatives at Washington to-day? (Voice) — Lawyers. It is well said. Men of other branches of industry send men to write up and look after their interests; and here you are with men of just as much ability as are found in any other pursuit, and yet *your* interests are not represented; and I desire to ask right here, whose fault is it? (Voice) — Ours. Well said again. You all seem to know your business, but none of you seem to attend strictly to it, and as I cannot instruct you any on that point, I have said enough.

Agriculture is not a business in which we get rich immediately. It is not one of those speculations in which people invest their all, and become rich or poor in a few days. It is one of those things which we have got to follow all our life to get rich.

As I saw the young men at the hotel last night playing billiards and smoking cigars, I said to myself: I wonder if those young men know if they spend fifteen cents a day for cigars, billiards or

liquors (I hope those young men don't drink) for one year, that sum put at ten per cent. interest would amount to $7,000 by the time they are three score years and ten?

There is one other point which I want to mention right here, and that is on the subject of mortgaging farms. I don't think many in this locality have their farms mortgaged, but in western Iowa nearly every farm is incumbered with one drawing eight or ten per cent. interest, and it will ruin the best man in the world. If we could get money as cheap as the government does, we could afford to do business on borrowed capital; but there is a large difference between the rates of interest from three to ten per cent., and if a sum amounts to $300 in a year at three per cent. interest, what do you suppose it would amount to at ten per cent.? I will guarantee not one in the house can tell. It will amount to between $15,000 and $16,000.

Favill — Did you figure it?

I did.

Now, gentlemen, these are some of the things we should think of. Farmers must be saving, and above all things avoid getting into debt.

Mr. President, as there are others here who are better prepared to address these people, I will use no more of your valuable time.

HAS DAIRYING BEEN PROFITABLE DURING THE SEASON OF 1879, AND IS IT ADVISABLE TO CONTINUE IN THE BUSINESS?

By Hon. HIRAM SMITH, Sheboygan Falls.

In answering such a complicated question, the reply might be made both yes and no. Carried on as it has been, in such widely different methods, it would not be strange nor difficult to find one party earnestly asserting that it has been a losing business. I was in a factory last August during the darkest days for dairying ever known in this state, when cheese was selling at four and a half cents per pound, and the patrons were well nigh discouraged. They said they had been swopping new milk for whey all summer about even, and in order to make the loss certain, began to sell cows at twelve to fourteen dollars per head, cutting off all possibility to

recover apparent or real losses. Another class of dairymen that pursued the old method of making common dairy butter and selling it at eight to ten cents per pound at the store (all it was worth, no doubt), may be set down as among the losers. But those of larger faith in dairy products, that fed their cows extra during the dryest part of the season, and bought new milch cows at twenty to thirty dollars as they were freely offered in the first part of September, and pursued the dairy business with intelligence, reaping the benefits of new improvements, can truthfully say that it has been profitable, and there is ample encouragement to continue it.

THE SUBJECT OF BUTTER MAKING

is now receiving more earnest attention than ever before in our history, and more than any other branch of agriculture. Oleomargarine butter is now manufactured in large quantities, and as a rule is giving better satisfaction than most of the dairy butter as now made, and is largely used in boarding houses and hotels. This oleomargarine butter being neutral, neither good nor bad, it receives less condemnation than the great mass of store packed dairy butter, mainly for the reason that this dairy butter is not made in harmony with the laws of its creation. Great discoveries have been made in the method of raising cream, and butter making. We have been taught from time immemorial that milk set in open pans and kept at a temperature of sixty-two degrees for thirty-six or forty-eight hours was the best possible conditions to secure good results. While I do not deny that some good butter has been made under these conditions, yet it is lamentably true that large quantities of very poor butter are forced upon the market that has been made after the above method. The great trouble is that milk set in open pans is exposed to outside influences. In warm, muggy weather it is extremely difficult, by putting your finger in the milk at the edge of a pan of milk, and tasting it, to guess whether it is fit to skim or not. It may have been hastened by extreme heat, or retarded by cold winds, and although you may look wondrous wise while tasting it, yet it may have stood a day too long, and the cream already has commenced to decay, and will seriously affect the whole churning.

THE WHOLE PROCESS IS HAP-HAZARD,

uncertain guesswork. It is not governed by any rule that can be taught to others, but mainly depends upon a long and careful ex-

perience, that rarely develops with perfection. We have all been educated wrong in the art of raising cream, when we were taught to keep it in a warm atmosphere. A few days ago it was discovered that cream would all separate from the milk while submerged in ice water, at a temperature of forty-five degrees, in its greatest perfection, for the simple reason that rapid cooling makes the milk heavier and it seeks the bottom, sending up the lighter cream to the surface. It is simply a question of specific gravity. It used to be difficult to separate oats from wheat, but when a draft of air is given, just sufficient to lift a kernel of oats, and not strong enough to lift a kernel of the heavier wheat, a perfect separation is effected. The process is simple, easily understood, the law governing the case is inexorable, and the result uniform. A novice in the business can quickly learn, because it does not so much depend upon experience as it does upon the observance of rules plainly indicated. If milk warm from the cow is submerged in cold water, and sufficient ice added to reduce the temperature to forty-five degrees indicated by the thermometer fixed in the tank, a separation of the cream takes place in six to eight hours (or between milking). The weather does not have the slightest effect upon the result; it is the same. The coldest weather in winter or in the torpid heat of summer. The conditions being the same, the result is precisely the same.

Some may very properly say the theory looks plausible; now how is the practice? This is a very pertinent and correct question. No theories are of any value that are not susceptible of being reduced to practice. And in reply I will give my own experience, as I know more about that than others' experience. I have used this Cooley process since one year ago last November; churned every day in the summer and every two days in the winter, and in all that time we have not had a single poor churning, and none that has not brought the highest price of the market at the time of sale. It may be asked about the yield; is it equal to other methods? In answer, I have milked an average of fifty cows in the summer, much less in the fall and winter, and have sold an average of 214 pounds per cow, which sold for an average of 23½ cents per pound, an income of $50.29 average per cow. I do not mention this as a large yield, or high price. But my object was one year ago to see what an ordinary farmer, without reputation as a butter-maker,

could do, and the butter was sent to a commission house in New York or Chicago, and sold upon the market according to its merits. I do not see why almost any farmer cannot do the same thing. And if $50 per head per cow can be realized from butter, and $5 to $10 per head from the avails of the skimmed milk, then

DAIRY FARMING IN WISCONSIN CAN BE MADE PROFITABLE.

But many farmers think that there is some secret necromancy about making creamery butter, whereas the fact is, that making butter from good milk is as simple a process as to make good mortar from good lime, sand and water. All that is required in both cases is to work in harmony with demonstrated facts. The saving of labor is an important item. More than one-half of the work is saved. One young man can easily do the whole work of butter-making from seventy-five to one hundred cows. No intelligent dairyman will deny that the loss on poor dairy butter annually is a greater burden upon the farmer than the national debt, and I have no doubt that the labor wasted in its manufacture would build a double track railroad from New York to Chicago in five years. Yet, notwithstanding these facts, such is the strength of prejudice, and the attachment to early education, that the masses move slowly. But the intelligent observer plainly recognizes the revolution. It is seen in the prizes won at nearly all the dairy fairs, that it usually goes to some one of the many kinds of deep setting. It is seen in the implements exhibited at fairs. It was notable at the recent international dairy fair, in New York; not a single open setting pan on exhibition there. The nearest approach to it was what is called the bureau, which nearly resembles in principle the cold deep setting, as all these bureaus are provided with ice over the milk, so as to cool rapidly, acknowledging the fact that a cold temperature makes the most and best butter, with less than half the work expended than in the old method of jars on a shelf or rack.

The conclusion of the whole matter is becoming more and more apparent, that there is no profit in making common dairy butter. Oleomargarine is rapidly driving it to the wall in all large cities, and the farmer must either take his milk to the cheese factory or creamery, or greatly improve the quality of his home made butter. This convention is designed to aid all those who are earnestly seek-

ing knowledge, and we shall not have met in vain, if we contribute something to the general stock of knowledge already possessed.

PAPER BY S. FAVILL.

Remarks preceding the paper.— My friend Smith, who has just left the floor, has shown very conclusively that he has made some money dairying during 1879, and I stand here to say to you that I think Mr. Smith has done what almost any one can do, for I don't think he is a very intelligent looking man. I want to tell you a little story about him. I had the fortune, good or bad — place it as you please — to be at a convention with him last week, and there was another man there by the same name, and one was designated as *honest* Smith and the other as something else, and this is the one they called something else.

This is not a *fish* story, but it reminds me of one I heard my father tell. When he was a young man he had a friend call on him, and they went to an old-fashioned husking bee, and while there his friend told a story of a shark they once attempted to catch at sea. They first made a hook that weighed fifty pounds, and he would snap it off like wire, so they kept on making it heavier and heavier until it weighed two hundred and fifty pounds, and still he would break it. On their way home my father took him to task for telling such an unreasonable story, as he had introduced him. "Why," says he, "I didn't tell it half as big as it was, for I knew they wouldn't believe it."

Smith tells pretty big stories, but I didn't introduce him here.

Ladies and Gentlemen: After the very able manner in which my colleague has presented his part of this question, I feel there is but little more that need be said upon the subject.

It seems to me the arguments presented ought to convince the most skeptical that the dairy in the past has been a financial success, and were it not for the scriptural injunction to give line upon line, and precept upon precept, I should feel that I could with propriety leave the subject, after reminding you that history usually repeats itself, and I am quite certain the dairy will not prove an exception to this general rule. I feel warranted in saying that what it has done in the past, it is sure to do in the future, unless

there are some conditions expected in the future which will be less favorable than those it has encountered in the past. This will lead me to look a little at the future prospects for the sale of dairy goods. My limits will not allow me to go into a detailed examination of this subject, and I shall attempt only to glance at some of its more important features. England has been the market for our surplus cheese for the past fifteen years, and she has thus far been ready to take all our surplus at fairly paying prices. Then comes the question, Will she continue to do in the future what she has done in the past? I can see no reason why we may not expect her to do so. Indeed, the demand for our butter and cheese, particularly cheese, has been steadily increasing for several years past, until now we have almost revolutionized the cheese trade of that country; and if we continue to improve the quality of our goods for years to come as we have in the past few years, I think it entirely reasonable for us to retain our English neighbors as good paying customers.

And then, again, we are opening new markets. The low price of cheese the past season (the early part of it, I mean) has enabled some of our dealers in New York, with but little risk, to try Spain as a market, and, I am told, with the best of success; and further, other of our dealers have ascertained what kind of cheese could be safely sent to the West Indies, and they had them manufactured to some extent, and I understand that the prospects in that direction are most encouraging. Again, there is a chance for another market, one that at present is but poorly supplied, and one that if properly worked up, will yield us more satisfactory returns than any other we can find. I refer to our home trade.

To fully present this subject as its importance demands, would require an entire paper, so that in the brief time allowed me I can only glance at some of its more important features. It is a well known fact, that the consumption of cheese in this country is growing less every year, and the reason of this fact is obvious to those at all acquainted with the cheese trade. Our manufacturers have been giving their whole attention to producing such an article as was demanded by our English trade, wholly ignoring the wants of our people at home. They have been committing the folly of neglecting the market that was at their own door, and looking for one that is on the other side of the ocean.

This, in my opinion, has been a very great mistake. Of course it is all right to look after the English market, but we should not neglect our own while doing it. My criticism upon such a course would be, "the one ought ye to have done and not left the other undone." If we could educate our people up to the English standard of eating cheese, we should instead of being exporters, be importers, or at any rate we should have a home market for all we could make; and I am very sure that with proper attention to this matter, we can easily increase our home consumption so that it will take all the increase in our production for years to come.

The question I am to answer is, whether it is advisable to continue in the dairy business. I answer unequivocally, yes; and the reason I say so is, because there is more money to be made from the dairy, intelligently managed, than from any other kind of farming in this country; and as the profits of the business is what most of us are after, I feel like recommending that which yields us the best returns. It seems to me that it is hardly worth while to take your time to enumerate the advantages the dairy has over the grain farm. This matter has so often been discussed in address and essay that it seems to me that all that wish to be informed upon these matters have already all the information necessary to enable them to intelligently determine what is best for them. The experience of every one that has tried to live by raising grain in this state for the last eight or ten years must have satisfied them that it is a very uncertain business; and if they have been at all observing, they must know that the dairymen have been much more successful. The dairy is better than grain raising when both are successful, and besides it has the advantage of being much more certain. There has not been a bad failure in the dairy in the last fifteen years. The season through which we have just passed has come the nearest a failure of any one in the fifteen, and this has been only partial to all such as had sense enough to stay by their business. The dairymen that had nerve enough to hold on (I do not mean by this those that held their cheese, but held on to milking their cows, and tried some way because cheese was low to get a little more milk from them) got the benefit of the sharp advance that came to the fall cheese; and in the end they tell me they have about their usual amount of money; while the grain farmers have not had more than two or three successful years in

the fifteen. It only needs a little thought to understand the why of this.

The dairyman has the whole year in which to make his crop, while the grain farmer has, at best, only a few months in which to make his crop; and it often happens that a few days, just as the wheat, barley and oats are maturing, will greatly injure, and sometimes entirely destroy, the best crop prospects; and an untimely frost will ruin the best prospects for a crop of corn. There are other advantages the dairy has over grain raising — I mean raising grain and selling it in the market. (I am not now talking about the farmer that raises grain and feeds it to stock upon the farm.) The farmer that raises grain and sells it in the market, is simply selling his farm by the bushel, and in the end will find himself bankrupt; or, in other words, his capital wasted by the impoverishment of his soil; while the man that keeps stock upon the farm to eat up what he raises, will find his lands constantly growing better. This is an important item of profit that is too often overlooked by the farmers of this country. We came here, found a soil as rich as nature could make it, and instead of pursuing such a course of farming as would preserve intact the fertility of the soil, we have pursued just the opposite. We have pursued the taking from and returning nothing, until in many places there is but little left that can be taken from the soil. The farms have been sold by the bushel to be carried to Europe in the way of wheat and corn.

There is another reason why I advise to continue in the dairy. In these days of railroad monopolies, it is well for us to raise something that will not cost too much for the carrying. It is well known that most of our surplus products have to be sent to the seaboard, and some of it to Europe to find a consumer, but it is an important item to send as much value for the least money possible. I ask your careful attention while I give you some figures in regard to cost of transportation of some of the different products as compared with butter and cheese. These figures are made up from the present price of the products, and the present rates of freight. They of course would be changed by the variation in prices, but the principle remains the same. A car load of good butter in New York would to-day sell for (in round numbers) $7,000, and it would cost to get it carried there by rail, $280. A car load of good cheese would bring $3,200, and it would cost to get it carried, $240. A

car load of wheat would bring $600, and it would cost for transportation $96; and a car load of corn would bring $275, and the freight would be the same as wheat, viz., $96.

Now, if we send wheat enough to bring us as much money as one car of butter, we shall have to send 4,666 bushels, and the freight upon it will be $1,119, a difference in freight in favor of the butter of $851.

If we send wheat to net us as much as our car of cheese, we shall have to send 2,133 bushels, and the freight will be $511; a balance of freight in favor of cheese of $223. Again, if we send corn, to get the money that would come from the car of butter, we shall have to send 10,606 bushels, and the freight would amount to $2,375; leaving a balance of freight in favor of the butter of $2,087. And if we compare corn with cheese, we will send 4,848 bushels, and the freight would be $1,092; leaving a balance of freight in favor of the cheese of $852. Thus you will see the more condensed and valuable the product the greater the saving in getting it to market. You may ask, in view of the facts presented by these figures, what I would advise the farmers to do. I answer, not raise wheat at all, or not more than is wanted for consumption by your own families, and then raise all the corn and grass you can and put it through a condensing machine called the cow, and get from it a product largely condensed and much more valuable; in that way make a nice saving in freight. I am aware that some farms are not well adapted to the keeping of dairy stock, and that there are many more farmers than farms that are not adapted to butter and cheese dairying. They are not willing to submit to the confinement necessary to make the dairy a success. Franklin's motto that

> "He that by the plow would thrive,
> Himself must either hold or drive,"

will hardly answer for the dairyman. The couplet would need to be changed so as to read:

> He that by the cow would thrive,
> Himself must *feed*, *milk* and *drive*.

I mean by this that dairying (like any other legitimate business) will be much more of a success for the intelligent personal supervision of some one financially interested. One word more and I am done. I advise all such as have dairies (unless you have some

better reason for changing than a desire to make more money), to continue in the business. Improve your herds as fast as possible, by getting better breeds, if possible, and by selling off those that fall below the standard. Remember that the cow that fails to furnish a balance in her favor is a sure debtor, and the sooner you are rid of her the better for you. And then feed what you have left better, and give them better care and more kindly treatment. If you do this, I am sure I am not promising too much when I say you are more likely to be successful than you would be in any other kind of farming in this country.

TRANSPORTATION OF DAIRY PRODUCTS TO THE SEABOARD.

BY GEO. C. LAWRENCE, CHICAGO.

General Agent Merchants' Dispatch and Dairy Freight Line, 128 Washington St.

The subject on which I am invited to speak is well chosen. You no doubt expect me to digest it thoroughly. I should be able to do so, but unfortunately my gifts for speech making were sadly neglected. However I will make an attempt, remembering that I address an assembly of men whose business constitutes their pleasure and whose pleasure means business. We all remember the old days when we ate during half the year the butter and cheese made during the other half; when we hailed the advent of new butter as the epicure welcomes the arrival of the first shad of the season; when the old cheese was always strong and not always a strictly vegetarian diet. Then it was old cheese or none, old butter or nothing. But a change has come. The makers of dairy products have so modified their methods as to meet the almost exclusive demand from non-producing localities for fresh products, and at the present time old butter and cheese are things of the past, and there are none so poor to do them reverence.

The inhabitants of the older states are supplied at all seasons with the fresh products of the dairy, made a thousand miles from the consumer's table. It is impossible that this result could have been attained without the aid of improved methods of transportation. The necessities of the situation demanded it.

If necessity is the mother of invention, demand may be the father of supply, and so side by side with the development of the present

condition of this industry, and keeping even pace with its demands, has brought about the improvements of the methods of transportation until, wherever the locomotive or the ocean steamship goes, there may be found the products of the dairy, transported thousands of miles under artificial conditions of temperature, in practically unimpaired condition.

The restless American spirit of invention, which never will let well enough alone, and never will stop patenting *churns*, has produced twenty kinds of refrigerating cars, each better than any other, and there are more coming. There are probably in actual operation 3,000 refrigerating cars. A dozen years ago the amount of dairy products transported from the west was comparatively nothing, but since then it has increased each succeeding year with a ratio that is astonishing. The time in transit, care, and general attention given the business has resulted in less percentage of damage during the past year than in any former one.

Twelve years ago transportation at an artificial temperature was unknown. The non-producing localities were dependent as now on the producing sections for their supply. But with a thousand miles between producer and consumer, and the thermometer at eighty or ninety degrees, the producer or first-hand dealer had a choice of two evils, to hold the product with the certainty of twenty to seventy-five per cent. deterioration, or ship to market with the risk of similar amount of damages. This condition of things compelled every dealer to become a speculator, and to invest money in property, the value of which was as hard to determine as the worth of a sick mule, which might get well or die any time.

The results of the system of refrigerating transportation are before us in the form of a large movement in dairy products; a trade more surely founded on the laws of commerce, and consequently a more equitable distribution of values during the year 1879 than the business has ever known before. The present efficiency of refrigerating transportation has not been attained without costly experiment. Though trial and defeat causes all valuable success, and every principle determined, and best method settled by the watchful initial work of refrigerating lines, it has been a greater gain to dairy interests than to the carriers. The interests of both demand perfect work. If by imperfect service the shipper is dam-

aged a hundred dollars, the carrier may lose a thousand. There are frequent instances of small damages which through freight lines are not responsible for, yet held accountable by shippers and receivers. More care should be given by the shipper in selecting butter tubs with perfect fitting covers; fastenings to same are often put on in too much of a hurry, and not securely done, resulting in covers off and broken before delivery to transportation lines running east of Chicago.

THE SHORT-HORN — THE SHEET ANCHOR TO THE DAIRY.

BY SEYMOUR BROOKS, ELKHORN.

The name of Short-horn always strikes a chord in my composition, and if I should be silent when the opportunity is given me to speak in their behalf, I should prove recreant to my convictions of duty. My acquaintance with this breed of cattle dates back for nearly half a century. When I was a mere lad, my father purchased some Short-horns of the Powell importation into Philadelphia, the blood of which I have in my herd to-day. They have been crossed with new blood of the same families ever since. Through all these years, I have witnessed their performance at the pail, and if experience is rightfully the best teacher, I ought to know something of their dairy qualities; and as it is generally admitted by dairymen that the cow is a machine for making milk, it is of the utmost importance that this machine should be improved by all the appliances in the hands of the breeder.

Any particular characteristic can be strengthened and fixed, or, on the other hand, it can be weakened, and nearly disappear; and in this connection permit me to say that, in my opinion, the Durham cow as bred to-day, and as it has been for many years by most breeders, is the most abused cow (so far as their milking propensities go) on the face of God's footstool.

If the inherent principle of milk giving had not been so firmly established and strengthened in former years, the custom of most breeders for the last twenty years would have made them worthless at the pail. It would seem that Durham breeders, in the main, had left out or ignored that a perfect cow should have a conformation

and propensity for milk as well as beef; that stately proportions, symmetry and avoirdupois were the only elements of an ideal Durham cow, and almost totally ignored the fact that she is by nature, and should be much more so by judicious breeding, the sheet anchor of the dairy.

I will endeavor to explain how this process of exterminating the milking propensity of the Durham cow has been carried on for a number of years by most of the professional breeders.

I am happy to say there has been a few exceptions to this almost general rule. It is an acknowledged fact, or axiom, if you please, with stock breeders to-day, that like begets like, and an animal famous for a certain quality (and that quality has been strengthened for a term of years) will be most likely to transmit that quality in their offspring, circumstances being favorable, in the light of reason and experience. In order to establish and perpetuate that quality, animals which exhibit the quality sought in the greatest perfection should be mated together, to increase and perpetuate it.

In general intelligence, the Durham breeders will compare favorably with their fellow breeders in skill and art of breeding. But on this vital question, maintaining the Durham at the head of the dairy, where she properly belongs, they have failed to profit by the long-established usage of their forefathers, who, when selecting males to mate with their dairy cows, were most persistent in choosing from the best milking strain of blood in the herd; and, in so doing, they found they were increasing and strengthening to the greatest possible extent the propensity in that direction. And herein, in my opinion, lies the secret and problem of breeding, coupled with liberal keep while young, and a bountiful supply of milk-making food when in the dairy. But to notice more fully the one mistake in retaining and perpetuating the milking qualities of the Durham; in the contest for championship for stateliness of form and grand proportions, carried on and stimulated in a great degree by fashion and large premiums awarded at our public fairs, and the thousands of dollars for which they were sold, no wonder the insignificant pail was forgotten for a time in this multicaulis excitement.

The famous milker, who, in consequence of a large flow of milk, will generally thin in flesh, will be overshadowed by her more pon-

derous sister in the show-ring, and public opinion generally will acquiesce in the decision of the committee, that the ribbon goes onto the fat cow, although the society made mention in the rules that no encouragement be given to flesh. In my own experience, in the sales of bulls, I could count on my finger tips the names of all purchasers who inquired after the milking properties of their ancestors. The same pernicious course pursued with any other breed of cattle would have consigned them to the shambles. But in spite of this ruinous and mistaken policy, the Durham cow stands to-day, the world over, the standard dairy cow in England. The most contiguous to the islands of Jersey and Guernsey, and near access to Holland, the home of the famous Holsteins, the Durham leads the van; and in our own country, where this breeding out of the milking properties has not been practiced, her laurels are as green, and her escutcheon as perfect, as any of her sister tribes.

And let the same careful weeding out of poor milkers (and there are such in all breeds), as is practiced with the most noted dairy tribes, and the same discretion used in the mating of the Durham cows — only such bulls as are from standard dairy families — and then she will take her rightful place, the queen of the dairy, as she now stands queen of the meat-producing tribes.

I would not say anything to disparage any breed, but truth compels me to say this much: that the best breeds of cattle are those which best line the pocket. There is more of a cat than his skin; so, also, there is more of a cow than her milk. About half of her increase are males, and must soon go to the shambles; and no breed of cattle that I know of will give a more speedy or liberal return for the food consumed. And the remaining half of the increase will not all make profitable dairy cows. They are good property to convert into beef fit to feed a prince, and the world's market is now open for such meat.

And when the staid old Durham cow has done her full duty in rearing stock and at the pail, and comes down to the time of life when she will be translated to another sphere, when her teats will be pulled no more, and her powers of generation will no longer be taxed, let her be supplied with a liberal amount of flesh-forming food, and in a very short time she is ripe for the shambles and her flesh is fit for the lords of the realm, and her fat still doing dairy

service in the realm of oleomargarine. Truly she is the sheet anchor of the dairy.

DISCUSSIONS.

Foster — I would inquire if there is any difference in the breeds?

Brooks — It is thought the Short-horns are better for beef, but the Ayrshires are better milkers, though it depends very much on their breeding. If they have been bred for milkers, they will grow smaller and unfit for beef in time, while on the other hand, if bred for beef, they will grow large and unfit for milkers.

Bond — I wish to say that I agree with Mr. Brooks. I have seen cows of almost all breeds bred for beef until there was no milk left in them.

Hazen — What has been said may be true of the cows you call Short-horns, but I don't know where you would look for thoroughbred Short-horns.

Brooks — I would like to ask if Short-horns have not been more thoroughly bred here than any others? I have some that I call almost pure. I have taree of one family, one six years old, one five, and another four, and I think they will equal any other three cows in the state for milk; of course it depends very much on their treatment.

A. L. Holcomb — In the neighborhood of 1850, Mr. A. L. Fish (I think the report will be found in the records of an association held at Aurora between the years of 1850 and 1853) speaks of a certain breed of Durhams that averaged 800 pounds to the cow. I would like to ask if that has been exceeded by any other breed since then. He has been trying that stock crossed with Ayrshires, and has never come up to it by considerable.

Hazen — The cause of our having larger yields from Short-horn and Durham cows is very plain, from the fact that they are very much larger eaters than Ayrshires. What I consider the best milker, is a cow that will give the most and best milk from the amount fed her. There are the Short-horns, Herefords and Devons, that are bred for beef almost universally, and are not good milkers. On the other hand, the Ayrshires, Jerseys and Holsteins are the best milkers, and are too small for profitable beef stock.

Meeting adjourned until seven P. M.

EVENING SESSION.

ADDRESS

BY PROF. W. W. DANIELLS, OF THE STATE UNIVERSITY, MADISON.

The subject upon which I am to address you is not the raising of fine stock, nor the making of premium cheese and butter, but upon the results of experiments with different varieties of grains which have been conducted upon the University farm, and I especially wish to call your attention to experiments with winter wheat. You of course know that we have an agricultural department connected with the University of Wisconsin, and an experimental farm, where each year a series of experiments are conducted with different kinds of grains, to ascertain which is most prolific in yield, and which is best adapted to our somewhat peculiar climate. The results of these experiments are accurately obtained, and a complete record of each grain is published year after year for comparison.

I shall first call your attention to our experiments with wheat.

The first experiment was with what is called the Fultz wheat, sown upon clay loam soil. Twelve wagon loads of well rotted stable manure were put on the land before plowing, and one and a half bushels of seed was sown to the acre, and well rolled as soon as the frost was out of the ground in the spring.

This wheat has been raised upon the University farm for eight years, with the following result:

In 1872, 33 bushels per acre.
1873, 20 bushels per acre.
1874, 35 bushels per acre.
1875, 17½ bushels per acre.
1876, winter killed.
1877, 47.4 bushels per acre.
1878, 52.5 bushels per acre.
1879, 54.4 bushels per acre.

During this time, one year was a complete failure, but the average for the eight years was 32.4 bushels per acre.

During the same number of years, and with the same culture, our best variety of spring wheat — the Red Mammoth — yielded 18.4 bushels per acre. You can get some idea of the relative quality

of these two grains by the weight of one measured bushel, the Fultz weighing 61.5, and the Red Mammoth 56.2 lbs. per bushel, showing, as you see, a little over five pounds more to the bushel in winter wheat than in spring wheat. This gives you an idea of the superior quality of the winter wheat as compared with spring wheat.

We have raised this wheat eight years. In that time we can get an average of winters; and if we take it for granted that this is true, it is plain to see, from these experiments, that winter wheat will pay much better in the long run than spring wheat. Our average, you will see, is something over thirteen bushels more for eight years, and the quality is very much superior. Although a good quality of spring wheat sells for more in market than the same quality of winter, the average of thirteen bushels more per acre during the eight years makes the latter more profitable. Our land received only ordinary cultivation, except that we put twelve wagon loads of stable manure on each acre each year.

I presume that the average farm is not as highly manured as this, and consequently would not average as large a yield; but they should have the same proportionate yield.

We have raised the Clawson wheat for four years, the average being 41.8 bushels per acre. We have not experimented with it quite long enough yet to make a comparison, but if we leave out the year the winter killed the Fultz wheat, the average for seven years would be 41.5 bushels per acre, which I think shows it to be the hardier wheat of the two. Michigan farmers have raised this wheat very successfully during the past few years.

I think Mr. Olds has raised it, but with what success I cannot say. He was here to-day, and I think he remarked on his success.

It has been raised to a considerable extent around Madison, and no instance has come to my notice where the yield was not larger than that of spring wheat for the same season.

It is also raised about Sparta and in Clark county, and with equally good success.

We are now trying three other varieties, two of them new; one from Canada, the other from Tennessee; the other variety is called Silver Chaff. We received the seed from the Agricultural Department of the United States at Washington. It has only been tried one year, and we can give no results.

The reason we use so little ground is because we have a small farm and have to carry on sixty of these experiments yearly.

Smith — What are the characteristics of the wheat? Is it bald?

Answer — Yes, sir.

Smith — Is it red?

Answer — Yes, sir; but not so much so as the Mediterranean.

Question — As compared with the Clawson, is it stiffer straw, or more likely to get down?

Ans. Cannot say. It never went down on the University farm. It is a strong straw, and stands well.

We have also raised several varieties of barley. We have five varieties that we have raised since 1872. The Maushury has averaged during this time, 49.3 bushels per acre. Each year taken alone the average has been, in 1872, 32.7 per acre; 1873, 48 per acre; 1874, 20.3 per acre; 1875, 60 per acre; 1876, 49.6 per acre; 1877, 65 per acre; 1878, 66.8 per acre; 1879, 52.2 per acre.

The Chevalier, since 1871, except 1873 and '75, has averaged 30.7.

Common Scotch, since 1872, has averaged 36.6.

Saxonian, 45.4.

Probstier, 42.2.

During the years 1873, 1874, 1875 and 1876, we did not raise this barley, but now consider it one of the most valuable kinds we have.

We have experimented with a great many varieties of oats since 1875.

The White Schonen averaged for the five years 80½ bushels per acre.

The White Waterloo for three years, 84.

Somerset, during five years, 56½.

Canada, 68.1.

White Dutch, for the two years we raised it, averaged 64.6.

This year, the White Schonen yielded 96.2.

White Waterloo, 96.2.

Somerset, 93.2.

Canada, 89.

White Dutch, 83.8.

These all seem to be good varieties of oats. And any one of them, with right cultivation, would be a profitable crop for farmers.

Ques. — How much seed did you sow?

Ans.— Two and a half bushels to the acre.

Ques.— By weight?

Ans. — By measure.

E. H. JONES, of Fond du Lac, offered the following resolution:

WHEREAS, There is a great difference in the classification of butter and cheese on Wisconsin railroads, as compared with roads running east of Chicago, to wit: By the classification of Wisconsin roads, *butter* in tubs is rated as first class, and in jars as double first class; on the eastern roads, it is third class, and no mention made of style of package; and

WHEREAS, On *cheese* the classification on Wisconsin roads is second class on lots under fifty boxes, third class on larger lots, and fourth class on carloads; and

WHEREAS, On eastern roads it is twenty cents less per one hundred pounds than third class on all lots not in refrigerator cars, and ten cents less than third class when in refrigerator cars; therefore

Resolved, That the legislature now in session, and the railroad commissioner of the state, are hereby respectfully requested to examine into the facts as above set forth, and ascertain the cause of a want of uniformity in the classification of rates of freight upon dairy products, upon railways east of Chicago, and those running through Wisconsin.

On motion, the resolution was referred to committee on resolutions.

ADDRESS

BY W. D. HOARD, ESQ., EDITOR OF THE JEFFERSON COUNTY UNION, FORT ATKINSON.

I don't know that this is my put in. Why I was called upon now, I cannot say, as my name is not on the programme. I am very much pleased — I am always pleased to meet with the members and visitors of this association, but don't know that I will be able to say a word that will be profitable to you. I might tell you something of the early history of this association, but that you all know. I might tell you something of what it has accomplished, but that you all know.

It was only eight short years ago, when the word Wisconsin

branded all dairy products as inferior, and Wisconsin dairy products were sold at lower prices than any other in the country. Now she is acknowledged the banner state, and the word which once branded as inferior now brands as superior to all others. Has this not been a victory? Has not this association done well? The first meeting was held at Whitewater, in response to a call from Jefferson county, and the association was formed, and arrangements were then made, and the next meeting was called in about a month or so after that, and was attended by about twenty-five. We decided that something must be done to make our dairy products better, and to do this, the whole dairy interests must be brought together. I have attended every one of these meetings, and have watched its growth with great interest, and am glad to see the great improvement in our dairy products during the past eight years. To be sure, it is hard work; but tell me what business you will find that is not hard work? We have the best dairy state in the Union, and we want just such men as you are to run it; men who will get up early in the morning, and stay up late at night. I met a man the other day, who said: "I don't want to follow any business where I cannot put my crops to growing, and go down town and play pitch." Such men as these can never make successful dairymen. It has been tested and proven that we cannot raise wheat in Wisconsin, but we can raise good butter and good cheese, without killing our land, but rather enriching it. It is not a constant drain on the soil year after year, and without paying back anything, like wheat growing.

We have never asked the legislature to make us a rate on our products. If we were wheat growing farmers, we would get a special rate on our products, so we could ship to the New York market. We can regulate these matters, if we try.

We have raised our products from the lowest to the highest in the market. We have ten times the natural advantages that our brother dairymen east have, and I believe it is within the reach of our own personal exertions to bring railroad charges, etc., to a point where we can successfully compete with them in this export trade.

SHALL THE FARMER CONNECT HORTICULTURE WITH FARMING?

BY J. M. SMITH, of GREEN BAY.
President State Horticultural Society.

Mr. President, Ladies and Gentlemen—If you will turn with me through the dim and misty history of past ages of our race, you will find that the cultivators of the soil have not, as a general thing, been the ruling class. Far otherwise. Often the mere slaves of the soil, to be sold either with or without it, as the whims or caprice of the haughty lords and owners of it might choose to dictate.

The real owners of the land have always been held in respect by the rulers of nations, and in all ages. But it must be borne in mind that the owners and the cultivators of the soil have, in the past, and, in fact, do at the present time in most of even the civilized portions of the world, constitute two entirely distinct classes. Such is the case in Great Britain to-day. The British government is controlled by a rich land aristocracy. The same was true in France until the French revolution broke up the entire system of landed estates, and almost annihilated their then proud and haughty owners. In Russia, Germany, Austria, Italy, Spain, and, in fact, nearly all other European states, the same state of affairs or something very similar exists and prevents the real cultivators of the soil from becoming what they ought to be, and what, in this country, they certainly will be in the not distant future,—the great power that will dictate and control our country's destiny.

If this class are to control the future destinies of our country, and I think I need go into no argument to prove it, the question, What manner of men shall they be? is a very pertinent one.

Never in the recorded history of the human race has there been such an opportunity offered to the cultivators of the soil as has been, and now is, offered to the farmers of this country; and this remark is peculiarly true of those in the west and northwest. They compose a large majority of the entire population. They, in almost all cases, own the soil they cultivate. For fertility of soil, healthfulness of climate, and general capabilities for supporting an immense population in comfort and happiness, it may well be doubted whether there is another district of country of equal size

on the globe that is equal to our great northwest. With the ballot in their hands to either make or unmake men at their will, to improve or to ruin the government at their own will, the question again returns to us, What kind of men shall they be? Shall they be mere growers of wheat, corn, oats, horses, cattle and pork? Shall they be of the class who go upon a piece of rich land and impoverish it in the shortest possible time, and then leave it to repeat the operation elsewhere, as by far too many have done in the past, and are doing at present? Shall they be of the class who build their homes upon the open prairie, and live there for years with neither tree, shrub, bush, flower, or even a little lawn of God's green grass to relieve the monotony of the scene about them? No, my friends, not these. You may have barns overflowing with grain, and other produce of your fields, your horses may be of the most approved breeds for your circumstances, your cattle fat and well cared for, your pork of the best, your house large, and perhaps your parlors well furnished, but be without a home.

Homes, true homes, in the right sense of the term, are to-day one of the greatest wants of our western farmers. The farmers own their land, they own the buildings that stand upon them, yet it is an undisputed fact, that in hundreds and thousands of instances they will sell these so-called homes, gather together their household goods, and move away from them with about as little reluctance as the Bedouin of the Desert, who camps where night overtakes him, and leaves in the morning without a thought or care as to whether he has before, or ever shall again see the spot where he rested for the night. These things ought not so to be. Do you ask what shall be the remedy? I know of nothing that will be so likely to arrest this moving and changing from place to place, as to awaken an interest in horticulture upon every man's farm, no matter how large or how small it may be.

I do not propose it as a money-making scheme; the El Dorado where every man is to make his fortune. Neither do I believe it will be a scheme whereby the farmers are to lose money. I shall advocate it at this time only as a means of making homes more pleasant, more comfortable, and very much happier, and in every respect much more desirable. I advocate it as a means of making better and more refined men, women and children.

Suppose that two young men, with their wives, purchase a piece of

land near each other, and about equally good, with the intention of making homes for themselves and their families. We will suppose them to be fairly educated, honest, industrious, full of energy, and both of them determined to have good farms, and to be known as good and enterprising farmers. They are men of small means, as most of our new farmers are, and are obliged to run more or less in debt in making their necessary purchases. We will designate them as Mr. A. and Mr. B. Mr. A. says to his wife: "Limited as our means are, we must have a few plants and shrubs, a few fruit trees and vines, and you must have a few seeds for flowers and ornamental plants. I will go to the forest and get a few trees to set out for shade about our home in the future." Of course she agrees with him. A piece of land near the house is selected. It is laid out in such a manner that nearly all the cultivation may be done with a horse and plow or cultivator. Only a few of the most hardy varieties of apples are indulged in; the Tetofski and Red Astrachan for early; the Duchess of Oldenburg and Fall Orange for fall; the Fameuse and Golden Russet for a later supply. A few grape vines must be set, not less than eight feet apart each way, remembering, for the present, that land is cheaper than labor. Of these he needs a few Janesvilles, as they are very hardy, good bearers, and very early, ripening in the central portions of this state about the middle of August. Then come the delicious little Delaware, the Concord, the Massasoit, the Agawan, which, if properly cared for, will give our young friends a constant supply of this, the most noted and ancient of all fruits of recorded history, from the middle of August until New Year's, and if carefully kept, much later than that. A little spot must, of course, be devoted to strawberries. To be sure of a crop, he gets a few of Wilson's Albany Seedling, a variety that rarely fails to give a good crop when it has fair cultivation, and they are set three feet apart each way. This will give plenty of room for horse and cultivator. A few Kentuckys, to lengthen out the season, is all that he will risk until he has more of both time and money than he is likely to have for a few years to come at least. A few raspberries of the hardy varieties like the Doolittle and the Miami, set six feet apart each way, and a few Kittatinny blackberries set in the same manner, constitute his stock in this line. A few bushes each of the old red and white Dutch currant, set not less than six feet apart, will constitute his entire stock of currants. Then comes the garden.

This must be regularly laid out, and in such a manner that the greatest possible amount of cultivation can be done with the team. Still there are some things that must have the hand cultivation. In this list our young friend will find his early radishes, the French Breakfast and the Covent Garden, which will need to have a little sowing made of them as often as once every two weeks, as long as the family care for them; the Early Bassano beet for the first early and the Blood Turnip for a later and winter supply. The early peas may be sown in double rows, three to four feet apart, and cultivated with the horse and plow or cultivator. Parsnips may be sown in rows two feet apart, and cultivated in the same way, care being taken to put in a large supply, as no root crop is equal to it for milch cows in early spring. A few of the Jersey Wakefield cabbage for early, and plenty of either the Fottler or the Premium Flat Dutch for a late supply. If there is no hot-bed, and there probably is none, a few tomato and pepper plants must be started in a box by the window, with a second one containing a few nice Jersey Wakefield plants for the early cabbage just mentioned; a dozen Early York tomato plants, and as many as they choose of either the Trophy or the Acme, for the late supply. If there is an extra stock of them, they are worth all they cost for the cows that are giving milk. Some Early Rose potatoes must be planted as soon as the season will admit. For sweet corn, the Early Minnesota is for the first early, the Crosby or the Concord for the second, and the Stowell's Evergreen for the main crop. If all are planted at the same time, they will come on in such succession that there will be a constant supply the season through. All these they will plant in such a manner that the horse and cultivator will come again in play. The Early Cluster and the White Spine cucumber, the White Japan and the Hackensack nutmeg melons, and the Mountain Sweet watermelon, planted six feet apart each way, are easily cultivated. An asparagus bed must not be omitted, as this a crop which, if well prepared for in the first place, needs only reasonable care to make it a source of great pleasure to a family for many years. The place selected is one where it will be permanent, as removal is an extremely difficult thing to accomplish. It is about twelve feet wide and twenty-five feet long. It is well drained, deeply plowed, heavily manured, and one year old roots of Conover's Colossal are set not nearer than two

feet apart each way. They set them with the crown of the plant six inches beneath the surface, spreading the roots out in different directions, or in as near their natural position as is possible. Their garden is all planned at last, but where are the flowers to come in? And how in the wide world is time to be found to plant and care for a bed of flowers, even if they are only the common varieties, and such as any one can make grow?

Well, I will reply in the words of a lady friend, the wife of a farmer of limited means and many cares, and confined much of the time for a number of years to her sick bed: "Time must be found for a few flowers; we cannot get along without them," and while lying upon her sick bed, she selected the seeds and bulbs, and told her little sons how and where to plant them, and afterwards how to care for them. They grew, of course, and I never saw finer specimens of some varieties than grew about her house and home, although she was unable even to pick, much less to care for them. And so I will say here, our young friends must and will find time and a place for a few, a very few at first. A lilac bush, a snowball, a flowering almond, a few common roses, some tulips, also a little bed filled with pansies, portulacas, verbenas and phlox Drummondi, must constitute about their entire list for the present. But while all these things are being accomplished as best they can be, and not interfere with the good management of the farm, our friend Mr. B. comes along, and looks over the ornamental part of the place, as he terms it. He then remarks: "Well, neither you nor I have money at present to spare for this kind of work. It is true, it will make things look nicer about your place, and you will probably get some little fruit in time that will be pleasant to have; but you will make no money out of it. As for myself, I intend to put all my means and all my strength into the main business of the farm. I mean to have good crops of grain, good cattle, good hogs, and, in short, I intend to make some money just as quickly as possible. After I get out of debt, and get some money to spare, I shall build me a new and larger house, and then I will set out some fruit trees, and some shade and ornamental trees. I will then have some small fruits and flowers, as you are preparing for now, though I will have them on a larger scale than you have arranged for the present." Such is their commencement upon their farms.

The years roll by. Neither of them are exempt from the cares

and toils, or the ills and misfortunes that beset others in a like vocation, though both have worked hard, and are reasonably prosperous. But it soon becomes apparent to both, and more especially to the children of both families, that there are particular attractions about the home of our friend Mr. A. that do not exist upon the farm of Mr. B. This difference shows itself with great regularity about the commencement of the strawberry season, when they are sure to come with the word that "Mamma wants to buy a few nice strawberries, and will not Mrs. A. please let her have a few roses for a boquet, for mamma expects company to-day?" These errands continue to be made at short intervals, until Mr. B. comes and says, "Neighbor A., I wish you would let my family have berries and fruits as they need them, and when the season is over, I will let you have something from the farm that you need, or pay you for them in some way. I ought to have had such things myself, and always intended to have them, but when the season for setting plants, flowers, etc., comes around, I am always just as busy as I can be, and somehow I never find time to do it; but I must try and do it next spring." The next spring comes, and passes by as the preceding ones have done. He is again too busy to attend to fruits and flowers.

As the years go by, sickness comes to their families as well as misfortunes to their crops. The late spring frosts blast their tender plants. The summer droughts wither the wheat and the corn. It is hard times with our friends. We all know the meaning of the term. As their little ones suffer upon beds of pain, the supplies of fruits and flowers have a value that they have never before known.

To some, the idea of fruit in cases of sickness may seem strange, but it is now a well known fact, that good ripe fruit is in thousands of cases much more desirable, as well as more beneficial, than the most skillfully prepared medicine can possibly be. A few years since, after one of our own boys had been given back to us, as it seemed, from the very borders of the spirit land, he almost lived for weeks upon Delaware grapes. A year or two ago while visiting a friend who was dying with consumption, I asked him if I could do anything to make him more comfortable? He replied, "There is nothing in this wide world that would add so much to my comfort as a dish of strawberries, fresh from your beds." I

told him he should be remembered with the first dish of ripe berries that I could pick from them. Years ago, a friend who was recovering from a long fit of sickness, said to me in early spring: "Will you not do without your first dish of asparagus yourselves, and let me have it? Charge me whatever you like, only let me have it fresh from your beds."

Such cases might be multiplied almost indefinitely, but it seems not to be necessary. Our friend Mr. B., during the sickness in his family, receives another lesson regarding the great value of the things that he has never yet had time to plant or cultivate. Again he resolves that he must and will have the comforts of fruits and flowers. But now come purchasers for their farms. The prices offered are very fair, and our friend B. concludes to sell his farm and purchase a new and larger one. The wife does not seriously object, but stipulates that there shall be more attention paid to the comforts and adornments of their new home than has been bestowed upon their present one. Still tears of regret will come as she visits for the last time the place where some of her dear ones sleep in the silent city of the dead. She thinks of the brilliant hopes with which she first entered upon farm life, what a beautiful home she had hoped for, and how she had been disappointed. She resolves to make a renewed and vigorous effort to have their new home one that shall indeed be a place of rest and of beauty, for both herself and the children that remain to her. Still she can not help fearing for the result, for with her keen perceptions she has noticed that her husband is gradually becoming more and more devoted simply to making money, and, as a result, more indifferent to the real comforts of his home.

To our friends, Mr. A. and his family, the thought of leaving the home where they have toiled together for so many years; where they have shared each other's griefs and each other's joys; where the shade trees set by their own hands; where the fruits, and the flowers, and the beautiful lawn, are all speaking to them in their silent but expressive language, Do not turn us over to the hands of strangers — is indeed a serious question, and one not easy to decide. As they talk the matter over together, little Fred comes and says: "Papa, will we have nice strawberries and things in our new home? 'Cause if we don't, Joe and me are going to stay here, and pick some nice berries and take them over to Mrs. Pierson's,

and she will give us some biscuit and butter, and then we will have strawberry suppers along with her little Kate and Elsie, like we did last summer, and have lots of fun." Little Emma nestles close beside her mother, and says: "Mamma, if we go way off, who will take care of the white rose bushes over little Warren and little Mary's grave, and who will carry flowers and spread over them in the summer time?" Tears will come as they think of those sad days when they followed the little ones to their resting place. They take another walk over their farm, they speak together of the improvements of one field after another, and then return to the beautiful lawn and the shrubbery that surrounds their home. No; they will refuse the offer for their farm, and remain upon it, and try to make it a home of beauty and comfort, not only for themselves, but for the children that are still spared to them. Such is their resolve, and as year after year passes by, new and better improvements are added to their already pleasant home. A new house, larger and more commodious, takes the place of the old one. New and larger barns and outbuildings are built to accommodate the larger and constantly improving stock of cattle, horses, sheep and swine that are yearly adding not only to the value of his farm, but to his bank account as well. But no matter how much he may improve his general system of farming, you may be sure that he will by no means neglect to beautify and adorn his home with new and rarer plants, shrubs and fruits. A much larger annual income from his constantly improving farm, gives him the means of adding each year something not only new, but useful and ornamental as well, to the home to which they are yearly becoming more and more attached. Books, papers and magazines, treating upon these and kindred subjects, have become an absolute necessity. A modest library of useful books is found upon his shelves. In short, this addition of horticulture to the heavy and sometimes very exhausting labor of the farm, has not only elevated and refined the family in this one respect, but it has created a desire for refinement in other departments of life. They must study more, and read more; they must become better farmers, more progressive, more ready to adopt any improvement that will add to the value of the farm, or to the comfort and happiness of their now beautiful home.

It is sometimes said that the farmer can lead a life of independence; that he is not dependent upon any one for his bread; that

the financial storms that convulse the commercial world, and shake the strongest firms from their foundations, and scatter their fortunes to the winds, need not trouble him. I do not believe this is true; neither do I believe it would be well if it were true. But this much is undoubtedly true, that of all the occupations followed, either in this or any other country, there are none that are so well calculated to make a man and his family truly elevated and refined, in the broad sense of the term, and none that will make him so near independent in the world as this. "But," said the owner of a large farm to me not long since, "see how you live in the city. We farmers cannot afford it. We would be bankrupt the first year if we should attempt it." Let us see about this. We must again refer to our friend Mr. A. He is surprised at an intimation that himself and family do not live well, and replies in the following language: "It is true that in the early days of our farming we often felt that it was necessary to deny ourselves some things that we much desired. We occasionally sold some of our fruits and vegetables when it seemed to be an absolute necessity for the purpose of obtaining other much needed articles, and in this manner we have realized many dollars, although we never followed this as a means of making money. But for many years past we have believed, and acted upon the belief, that nothing that can be made to grow upon the farm is too good for our own family. The best of the grain, beef and pork, the best of the milk, butter, poultry, eggs, etc., are reserved for our own use. In addition to these, there is not a day in the year that we do not have a full supply of both fruits and vegetables, each fresh in its season, and then preserved fresh, or otherwise, for use, until another season brings with it another crop, and another year's supply. It is true that we have not a great many thousands drawing interest, but my farm, stock, orchards and fruits are all in splendid condition, our home is both beautiful and pleasant, and there is nothing that we need that we cannot have. In short, we have tried to take good care of our farm, and now we have no fears but that it will take good care of us in our old age."

Such is the condition of Mr. A. and his family, as old age overtakes him; but how about our friend Mr. B.? After his removal upon his new farm, he finds no more time to add to the beauties or the comforts of his home than he did upon the first one. He con-

demns both himself and all about him to an unceasing round of hard work. The new farm is to be put in good condition for crops in the shortest possible time, and, as a result, the labor is hard; often disagreeable. The boys begin to think of other and different homes, as soon as they get a little older. The wife is fast becoming discouraged, and is silently resigning herself to a life of unbroken and ceaseless toil, and a home the reverse of what she had once so fondly anticipated. The daughters, warned by the pale face and premature old age of the mother, have ere this decided that they will never marry farmers. The second farm is conducted in about the same manner as the first one was, and with the same result. A purchaser makes his appearance with the ready money, and the second farm is sold. The almost disheartened wife makes another and a last effort to have more of the comforts and luxuries of life, as they are now in good circumstances. She informs her husband that their children will surely leave their home unless something more than the ceaseless round of hard labor is prepared for them, and that they will be left alone in their old age, if indeed they are permitted to reach it. A vague promise that these things shall be attended to in the future, is all that can be obtained, and they move to another home. Of course no time is found for ornamental work until everything else has been well attended to, and such a time never comes. One by one the years pass by. Old age comes, and the weary wife lays down to die, with the sad feeling that though she was the wife of a man whom the world called a rich farmer, and one who had not intended to be either a bad citizen nor a poor husband, had been a success in neither. She had been his wife for many years, and had seen him grow more and more eager for money, and less disposed to use it for the comfort of his family or the adornment of his home, until she felt that she was dying without ever having had (in the true sense of the term) a home. Although a family of children had grown up about them, not one of them was present, either to care for her or to receive her parting blessing. The husband soon follows the wife, and they sleep side by side.

The children, with sad hearts and unpleasant memories of days that are past, return to the now dreary home. What shall they do? None of them want the farm. It is run down and out of repair. They say that father always let his farms run down on his hands,

and that he lived a life of such intense and continued hard labor that they do not like his example, and will sell the farm and try to make their living in other ways and places. The farm is sold, and the children are scattered, with many unpleasant recollections of a home that needed only suitable horticultural surroundings to have made it a source of delight to the weary, pale faced mother, as well as unmingled pleasure to themselves.

Once more, for a moment, let us turn to the home of our friend Mr. A. Old age finds him a grand and noble specimen of manhood. His many years of study of the good, the pure and the beautiful about his home have made him a better farmer, a better husband and father, a better citizen, and in all respects a better example of that noble class of men upon which our government and our new world must depend for its support. It is true that he has never been governor of his state, nor has he ever had a seat in congress. Still, he was better fitted for either position than the great majority of those who obtain them. But old age does its work, and kind friends bear his remains and lay them beside those of the wife, who went before, and whom he loved so well. The children, with their wives and little ones, return to the home of their childhood, but they feel that there is nothing to mourn over. Two beautiful lives have passed away. They were full of years and happiness. The results of their life work is, partially at least, spread out all about them. Shall the beautiful home of their young and happy days be sold to strangers? *No!* is the response from one and all. Fred and Joe are both ready to buy out their brothers and sisters, at its full value. Fred's wife, who is the little Kate for whom he threatened to leave both father and mother, even in early childhood, joins in the request that Fred and herself shall have the farm, saying that although their parents were not the ones who gave her birth, yet she loves them, and their memory will be as sacred to her as though she had never known any other. "Let us have the farm, and we will care for and protect these noble elms that our father planted before any of us were born. We will keep the orchard that cost so many efforts, and so many years, to get one that was adapted to our soil, situation and climate. The flowers that our mother tended shall be my care; the roses she loved so well shall still bloom over the spot where her body rests. At least once in each year, all the family shall gather at this dear

old home, and we will recount our joys and our sorrows together, and you shall tell us whether or not we are worthy to have the beautiful home of such worthy parents." Joe's wife, the little Elsie of whom we have heard once before, says that she will consent to this arrangement only upon one condition, and that is, that her husband shall have the liberty to come there every year and get strawberries for her, and they must be as good as those he used to bring her when she was a little girl, which, in her estimation, were much better than any she ever received from any one else, either before or since. All is amicably arranged, and Fred and Kate keep the old homestead. Originally, it was only an ordinary farm, but the early and constant care of the horticultural department, in connection with the general farm management, has made it a truly beautiful as well as a truly desirable home. In this sketch of a home, I have endeavored to draw only such a one as the common farmer might and ought to have.

Friends, which of them shall yours be most like in the future? If our northwest is to be truly prosperous for any considerable length of time in the future, it must be made so by having an almost countless number of moderate sized, well cultivated farms, with homes made beautiful by their surroundings, as well as comfortable by their home-like arrangements within; homes to which their owners will be attached, and from which they will not readily part. One of the greatest dangers that now threaten some portions of the northwest is the immense tracts of 20,000, 30,000, 50,000 or more acres of land swallowed up in single farms, and these being exhausted as fast as Yankee skill and ingenuity can invent ways and means of accomplishing the purpose. In such districts of country, they can have neither good roads, good schools, good churches, good society, nor comfortable homes. The land, rich as it is, will be impoverished, and left a comparative desert, and in the future, some good men must spend a large part of their lives in restoring to these places what has been unjustly taken from them. Gentlemen, is it right for a man thus to virtually destroy a township of land for the sake of enriching himself? I suppose there is no legal statute against it, but it seems to me that there ought to be at least a moral one. I have no right to dictate to others, but I should be very unwilling to have it said of me, when I am gone, that "he left his family rich, but he almost ruined

a whole township of land to do it." Rather let it be said: "He had a pleasant home, a pleasant family, and pleasant surroundings. It was made more and more home-like to friends and neighbors as time and means permitted, and we may truly say that there is at least one little spot on the earth that is better and more beautiful on account of his having lived upon it."

DISCUSSION.

Hiram Smith — My friend Smith has told us how nice asparagus is; now I would be very glad if he would inform us of a plan by which we can plant and raise it with any degree of success?

J. M. Smith — Sow early in a piece of rich ground in rows, about one inch deep, and twelve to fifteen inches apart, so that you can work them with a cultivator. The young plants grow very slowly. The first season they will grow from fifteen to eighteen inches high. If you want to make them bud when one year old, select a rich piece of ground that is well drained. If it is not well drained, drain it and manure very heavily. The heavier the better; there is no danger of getting it too rich; the richer you get it the larger your crop will be, other things being equal.

Plant them in rows about three feet apart if you have plenty of ground, and then they will be convenient to work with the cultivator; when they come up, cover with rich soil until they are buried about six inches deep; then all you will have to do with them will be to keep the tall weeds down. After your plants have been so for one year, cover them with straw completely. This will fall down and keep the snow off the plants. You will not get any good plants before the second year, and they will not be at their best before the fifth year, and then they will last a life time. They are a very easy plant to cultivate after you once get them started. Some people lose their beds by having the plants exposed to the sun. I would not set out plants that had been exposed to one hour's hot sun, as they never thrive.

Q. — Do you ever start them with salt?

A. — I have done it but failed to find any good results. One year I sprinkled salt over a portion of one of my beds. Completely covered another portion, and left another portion of the bed without any salt on, and I was never able to see any difference in the

plants whatever, and for that reason I believe there is nothing in the salt.

H. Smith — Will Mr. Smith tell us how to raise strawberries ?

Smith — If you want to raise good strawberries, get the Wilson. I have grown a great many different varieties, but to all who ask me, What kind of plants shall I get? I say, get the Wilson; they surpass all others both for yield and flavor. Set them in rows not less than two feet apart each way, so that you can cultivate them with your horse. Be sure and get Wilsons; there are a great many sold for Wilsons that are not genuine; I had some sent me from the Agricultural Department at Washington, a few years ago, and there was not a Wilson among them. Make your ground rich; I never saw it too rich. Get young plants; don't set out plants that have ever borne fruit, as they will bear but one season. You can tell this by the plant; after they have borne fruit there will be a little root about as large around as my little finger, and an inch long; they will not do well. Take young plants and set them two feet apart each way. Manure your ground well, and keep the weeds well cultivated out, and your crop of strawberries is almost as sure as summer. I have cultivated them for twenty years, and have never lost one crop.

Q. — How do you protect them?

A. — I cover them in winter, after the ground freezes, with some coarse hay (I like marsh hay better than straw) about an inch deep, and let them lay until the ground has quit freezing. Plants are mostly injured in the spring when the ground is freezing and thawing; in this way the roots are broken off and the plants are injured.

Q. — Which is the best time to set out plants, spring or fall?

A. — In the spring, although I have had some good ones that were set out in the fall.

Q.— What time?

A.— Well that depends upon the season; somewhere along the latter part of April or May. I set out a new bed of Wilsons every year, and always have good success.

Q.— How much would a big crop be?

A.— Two hundred bushels per acre would be a good crop. You can raise a good many more if you are careful.

Q.— Do you replant on same ground?

A.— No, sir; I change the ground every year.

Q.— Do you keep the runners off?

A.— No, sir; all the Wilsons I let run.

Q.— Do you keep boys off?

A.— Not always. I remember my oldest son watching some boys who were picking in one part of the field, and as I went over to another part I found a colored boy picking away; he had two pails nearly full. I said to him, "What are you picking berries here for?" He said, "Your son sent me here "— without stopping work. I went back and asked Frank what he sent him over there for? He said, "I did not send him; I have not seen him at all." I went back but the darkey and berries were gone.

N. W. MORLEY, of Baraboo, who won the sweepstakes at the International Dairy Fair for the best butter made in the world, was called upon to give his method of making butter.

Mr. Morley stated that he was very much surprised on receiving information that his butter had won the sweepstakes for the best butter made in the world. He did not expect a premium, but sent his butter to the International Dairy Fair to help represent the dairy interest of Wisconsin, as every dairyman ought to do.

Mr. Merriman wished to know how many cows he kept.

Morley — I make butter from about seventy, a good many of them Ayrshires and Durhams.

Q — What sort of pans do you use?

A.— I use a large pan.

Q.— Do you cool your milk quickly?

A.— Not very; just put it into the vat.

Q.— I would ask how much salt you use?

A.— I do not go by rule.

Q.— Did you wash your butter?

A.— Yes, sir.

Q.— In brine?

A.— I think it was.

Q.— Did you salt with brine?

A.— No, sir; I drain my butter well in the churn.

Q.— What kind of churn do you use?

A.— The Rectangular.

Q.— Do you work your butter over the same day?

A.— We let it set from six to eight hours in tubs to drain before working.

Q.— What kind of butter worker do you use?

A.— The Lever worker.

Q.— How long do you let your milk stand before skimming?

A.— Usually until it is thick. I do not skim it myself, but know about it; my daughter being the butter maker. We usually keep it twenty-four to thirty-six hours.

Q.— Do you set your milk in the cellar?

A.— No, sir.

Q.— How much butter did you send to the International Dairy Fair?

A.— A little over 200 pounds.

W. D. Hoard moved that the convention adjourn until 9 A. M., Thursday.

MORNING SESSION, *Thursday, Jan.* 15, 1880.

Convention called to order, Hon. Hiram Smith in the chair.

Chester Hazen moved that the chair appoint two committees to award the prizes offered for best essays by W. N. Tivy, of St. Louis, on Bitter Butter, and W. D. Hoard, editor of the *Jefferson County Union*, for Best Cheese Curing Rooms.

The chair appointed the following committees:

On Bitter Butter: — R. S. White, Fort Atkinson; F. C. Curtis, Rocky Run; A. Humphrey, Sheboygan county.

On Cheese Curing Rooms: — R. F. McCutchin, Cold Spring; Q. C. Olin, Oakland; J. B. Ingersoll, Port Washington.

E. Beeson, editor of the *Wisconsin Farmer*, Fond du Lac, said he desired to say that he would present a copy of the *Farmer* one year to those who were successful in receiving first premiums on butter and cheese on exhibition.

W. D. Hoard, editor of the *Jefferson County Union*, Fort Atkinson, said he did not wish to be behind his neighbors; he would do the same thing, and give a copy of the *Union* to the successful ones in getting first premiums.

WHAT SHALL BE DONE TO PROMOTE BETTER DAIRY EDUCATION AMONG THE FARMERS?

BY W. D. HOARD, ESQ., FORT ATKINSON.
President Northwestern Dairymen's Association.

Mr. President — I have had but little time to devote to a special consideration of this subject; consequently what I shall say will be in a general sort of a way.

The question is one that may be considered as underlying the whole dairy interest. The farmer is the milk producer. Good milk is the foundation of good butter and cheese. It is his business to study in every direction for a right understanding of the best means to accomplish this part of the work. Every mistake he makes is felt clear to the end of the line. Among all the agencies in promoting the full success of Wisconsin dairying, the farmer is the hardest to reach, the least ambitious to improve, and the slowest to accept the inevitable logic of the situation. He is the man of all others who is the hardest to educate. Had this association, which has done so much to advance his welfare and prosperity, depended upon him for its support, it would, long ere this, have gone out of existence. The manufacturers of cheese, as a rule, have been the men who have kept this association alive. This has been a lamentable fact, steadily maintained through all the years that we have been laboring together in this worthy cause. Here and there is found a milk producer who feels the need of placing himself in the line of current thought by attending our conventions and doing all he can to enrich his understanding concerning his own business. An illustration of the indifference which prevails may be gained when we consider that there are over three hundred cheese factories in the state, possessing an average of about sixty patrons each. In other words, there is not far from twenty thousand farmers in the state who make it a business to produce milk for cheese factories. There has never been a convention of this association where the attendance of patrons, outside of those living in the immediate vicinity, amounted to more than fifty. You can see for yourself what a tremendous job these fifty have had to educate the other nineteen thousand nine hundred and fifty. Now it is plain that

the great bulk of patrons do not care enough for their own education and advancement to attend these conventions. The question then is, "How shall Mahomet go to the mountain?" Better ideas on the profitable and proper production of milk they must have, or else the whole dairy interest, and all who live by it and in it, will suffer — themselves more than all the rest.

There are a variety of ways recommended, all of them more or less difficult of accomplishment. I have but a single recommendation to make. If we cannot get the patrons of our factories out to attend these conventions, then something must be done to reach them where they are. Each cheese factory and creamery is a dairy center. There the interest of all is centered.

Now if there was a united effort on the part of all the proprietors of these factories and creameries to institute a series of meetings during the winter months in the factory buildings, there would be set in operation a plan that would work wonders in the advancement of dairy knowledge among the farmers. The work is not arduous. Suppose Mr. Hiram Smith, for instance, calls his patrons together at the close of the season and says to them: "Here is the factory building, which I will warm and light for your use during the winter. Now let us have regular meetings weekly or once in two weeks. At these meetings we will take up the various topics of interest and importance to our pursuit. We will try and make our business connection of some service to us in the way of dairy education." The result would be of great value to the farmers, and further, such a plan, in my opinion, would go far to diminish the suspicion which, in too many cases, exists between factory man and patron. It would cement and harmonize their relations. Then we would have organization, and all that results from it. Where would the cause of general education be to-day without the organization of school districts? Every factory can be made a dairy school district. All that it needs is for the factory men to exhibit a little public spirit and try and live a little nearer to their possibilities for public good. Such a course would pay the richest kind of dividends. Under its benign and invigorating influence we would see Wisconsin dairy products take a new start; new triumphs would be achieved. The whole mass of dairy sentiment would become leavened with a live, progressive spirit.

Out of this would grow increased financial profit to all con-

cerned. It is only by the road of improvement on our products that we have made dairying pay in this state. And it is only by further travel in the same road that we can hope for future reward.

Factory men owe it to their own private interests to do more than they have done to promote dairy education. There is scarcely a man among them but will tell you that if he had better milk he would make better cheese. Now, this is either true or false. If false, he has uttered a false cry; if true, he owes it to himself, as well as others, to set in motion a train of right thinking among his constituents, in order that he may make better cheese, receive better prices, give better satisfaction to his patrons, and thereby increase the volume of his business and profits.

What is needed is agitation. By virtue of agitation, Sheboygan has become one of the greatest wealth producing counties in the state. The same is true of Jefferson county. Let me cite to you one illustration of the value of agitation. In 1871, the Jefferson County Dairymen's Association was formed. At that time, there were but two men in the whole county who sold their butter in a butter market, and on its merits. The rest paid but little attention how they sold it. The county association took up the question of marketing butter. The Jefferson County *Union* published the discussions, and sent them broadcast over the country. The firm of Smith & Dexter, of Chicago, were requested to prepare a paper on the best method of putting up butter for market. They did so, and it was published with the other proceedings. The question has been constantly agitated in the columns of the *Union* ever since, and to-day there are over 500 farmers in the county who, when they make a tub of butter, immediately ship it by express, some to Boston, some to New York, Philadelphia, New Orleans or Chicago. They have taken their business in their own hands, like sensible, energetic business men, and to-day they are thousands of dollars better off than their neighbors in adjoining counties even, who still adhere to the old way of selling butter to the country store, where it goes into one hodge-podge mass of good, bad and indifferent.

Another instance: Last fall there was to be a dairy fair at New York. The dairymen of Jefferson county, by virtue of previous agitation, had become accustomed to working together for the common good. The idea of a "county exhibit" was started, and

finally culminated in the sending of a car load of butter and cheese to that fair. It resulted in Jefferson county dairymen receiving more premiums than all the rest of the state. This was accomplished by *agitation*. "Jupiter helps only those who put their shoulder to the wheel" is as true in dairying as it was in Grecian mythology, and I think a good deal truer.

Something of the kind I have recommended, I am convinced, must be done. Our conventions are too remote from the great body of the people who most need their effect. I cannot leave this subject without once more appealing to you, gentlemen, to take hold of the matter, and consider that you have a work to do, each, in your respective localities. You cannot depend on this association alone, although it has served you nobly in the past. You must aid its efforts, by becoming the dispenser of the education you have received among your patrons.

DAIRY EDUCATION AMONG OUR FARMERS.

BY W. H. MORRISON, ELKHORN.

Secretary Walworth County Agricultural Society.

I think it was Susan B. Anthony that said that a man never forgot his position. Especially so if there were any honors or emoluments to be distributed. This was beautifully illustrated last evening by friend Hoard. You probably recollect, he was speaking of the little handful that met eight years ago, and what had been accomplished, and now Wisconsin stands proudly, preeminently at the head, and *we* (turning to the gentlemen) have accomplished it.

Now, gentlemen, I will wager this manuscript, although brief (which is its only merit), that Miss Morley, who was present, probably could tell more about that premium butter than any gentleman present.

As a wide latitude is allowed in the discussion of subjects, I will not promise to adhere very closely to the subject matter of the topic assigned me, but will endeavor to take a broader, more extensive view, and discuss some of the ways and means to promote and infuse more of the spirit of inquiry.

In a late address by Governor Seymour, who is a farmer, discuss-

ing the influence of farming, he said: "Agriculture has always been known as the basis of civilization with all people. But it has rarely happened in the world's history that it has wrought out such marked and rapid changes in the credit and prosperity of a government as those which we now witness in our land."

It is certainly very flattering that the claims of agriculture are admitted on all sides. That the solution of the question of finance, the adjustment of the relations of capital and labor, the prosperity of our nation, I might also say our credit, the reduction of interest, our large revenues, the abundant supply of food, are all the results of the industry of 6,000,000 farmers.

Farmers are emerging from their isolation and are awakening to the important fact that by comparisons, discussions and gatherings, like the present, progressive, practical agriculture is to become more general, and not the exception. The old hap-hazard, shiftless ways, that sits by the stove during the long winter evenings destitute of agricultural papers and other literature, and complains of hard times and how unremunerative farming has become, are fast giving way to the more intelligent methods and systems of the present. The spirit of inquiry and investigation is abroad, and the farmer who clings to ways that his father had is soon left in the background.

He who breeds only the best stock, uses the best fertilizers and profits by the best markets, is able to compete and make the farm pay.

The difference between the progressive farmer and he who scoffs and ridicules agricultural papers, and all improvements — book farming sneeringly called — is that one thinks, experiments, avails himself of facts already demonstrated by men of thought and practice, while the other is satisfied and content with things as he finds them. Life is not long enough to satisfy any intelligent person with the measure of present attainments. We must learn and profit by carefully observing the experiences and practices of those who are making a success in some chosen specialty. It may be dairying, sheep husbandry, wheat growing, or the production of some of the marvelous crops of corn. Who has not thought of the ideal herd or flock? The possibilities of the old farm? True it is in the future, but much of our pleasure in this life is derived by expectation, or anticipation, even more so than by the full realization.

The boy or man that is endowed with a love for horticulture, and plants the tiny seed, it may be potato, geranium or any plant that requires care and attention, as soon as the seed is deposited in the ground his expectation and pleasurable surprise commence, and I think that the full plant in bloom, whether it be flower or vegetable, will give as much satisfaction as the first bushel of seedling potatoes, and they to be equal and even superior to the Early Rose. Have we ever realized the herd, the abundant crop in field or garden, that we have planned and thought of and studied about? As we have countless herds and bonanza wheat and corn fields, We can produce cheap food, not only for home but for exportation, with no fear of competition.

Over thirty years ago, when Mr. Mechi first became prominent as a farmer, he advocated with all his powers the plan of inducing the capitalist to invest his money in land and agriculture, and the formation of companies whose object it should be to create channels for the profitable investment of surplus capital in agricultural improvement. This was his language: "Could we but produce food with as much skill as we do manufactures, we should indeed be a great nation; we have the means to do so had we but the method. Had such companies existed years ago, millions of our money, lent or wasted to strengthen other nations, would have been employed at home in adding to our happiness and welfare." Instead of this picture being realized, how is it with England and English farming to-day? Paying annually over $30,000,000 for foreign meat, and buying fully 300,000,000 bushels of wheat. While it is to our advantage that we supply England with the most of this deficiency and receive in return gold, let us also profit by the lesson that the employment of surplus capital in land improvement is the true way of establishing the stability and prosperity of the nation.

Our farmers, as a class, are yet in the primary school of co-operation. Only a comparative few avail themselves or are connected with farmers' clubs or associations. Each cultivator of the soil should know all that the wisdom and experience of others may teach. What would you think of a business man who never consulted a daily newspaper, or received no market reports? You have his counterpart in the farmer who takes no interest in the agricultural literature of the day; who takes no active part in

the club, grange, or gathering in the interest of agriculture. No farmer can afford to isolate himself. The discussions, ways and means that we shall take with us from this gathering will stimulate and encourage us to renewed efforts.

The great flood tide of agricultural prosperity that appears to permeate and energize every channel of industry, cannot be attributed to the harangues of politicians, or to the many financial departures, that were visionary and brought no relief, but to the persistent, ceaseless effort of our farmers, each working out the problem upon his own farm.

Every American, and especially Wisconsin dairymen, must feel a just pride in the enviable reputation that these products have created abroad. During the war, or, rather, previous to it, much was said about cotton being king; but the annual production of the dairy exceeds the vaunted crop of cotton, and yet it is but in its infancy; and as the watchword is ever "Forward," the future possibilities of the dairy are certainly full of hope and encouragement. A zealous desire to investigate improved methods of manufacture, and also an increased disposition to diversify its products so as to meet and encourage home consumption, as well as foreign, will give us some idea of the future of the dairy.

LIMBURGER CHEESE—ITS MANUFACTURE IN WISCONSIN.

By Hon. JOHN LUCHSINGER, Monroe.

As its name indicates, Limburger cheese had its origin in the province of Limburg, in Holland, where, with its peculiar shape, process of making and curing, and, above all, its world renowned smell, it has been made for centuries; and owing to the peculiar condition of the country, being low, moist, and withal rich in fine grasses, these all being conditions favorable to the production of the best Limburger cheese, this province had for a long time almost a monopoly in the manufacture and export of this cheese, of which immense quantities were sent to all portions of the world, never failing to sell at a handsome profit.

But during the last thirty years a change has taken place. The American, with his inevitable propensity to imitate old processes

and invent new ones where old ones are found inadequate, and where he finds that it will pay, has succeeded in making Limburger which in richness, flavor, and general excellence, is, to say the least, the peer of that formerly imported.

Most of you have heard or read of this cheese, many have doubtless smelled or tasted of it, and have declared they will have none of it; a few may have returned to the charge, and from tasting have acquired a relish for it, and now will declare that it is the best cheese made. To others, in spite of its powerful odor, which has been likened to everything offensive, a fondness for the cheese and its flavor is natural, and nothing could induce them to change for the best of other kinds.

With the large foreign population of this country the demand is great and increasing, yet but little is now imported. Thousands of tons are annually made in this country, mostly in New York and Wisconsin; in the latter state, mostly in Dodge, Jefferson and Green counties; in the latter county, at least twenty-five factories are engaged in its manufacture, which is mostly in the hands of Germans and Swiss; still the everlasting Yankee, with his eye on the profits, has in many instances closed his fastidious nostrils to the smell, and has permitted its manufacture on his premises.

It is usually, under favorable circumstances, more profitable to the maker than the standard American cheese, almost always bringing from ten to twenty-five per cent. more per pound in market, while the yield from a given quantity of milk is greater, the reason for which will be apparent when the process of making is explained.

As a short account of the process of manufacture will doubtless be of interest, the following will be in place:

Limburger is made in factories capable of working up the milk of from 100 to 400 cows, rarely exceeding the latter number, for the reason that the milk is brought and cheese is made twice a day, and a greater number of cows would require a larger area of country than would be convenient.

The milk is usually bought from farmers by the makers at a price agreed upon at the beginning of the season; the conditions to be observed on both sides being in form of a written contract.

Great care is taken that all milk brought to the factory be pure, fresh and free from taint. The milk is set in a vat in the usual

manner, nothing in the first stage of making being different from the same stage in making American cheese, except that the temperature is not so high and perhaps the rennet fluid a trifle stronger. Upon the curd being formed, it is cut slowly and carefully, so as to liberate as few as possible of the butter globules, into pieces about the size of dice; after the curd is properly stirred and slightly scalded, it is dipped out of the vat, without being salted, into perforated wooden moulds about five inches square, where it is left to drain, no pressure being applied at any stage of making. After a few hours it is carried into the curing cellar and placed edgeways on shelves precisely like bricks set to dry. The cellar should not be too dry, and kept at a temperature not above sixty degrees Fahrenheit. Every day the cheese, which are now about 5 x 2 inches, are rolled in salt and turned; they become salted by absorption.

When salted enough, the cheese are still turned each day, and all exuding moisture is rubbed with the hand evenly over the surface, and serves the double purpose of keeping it moist and closing all orifices into which insects might penetrate about this time, and in this slimy, exuding moisture, is developed that indescribable odor which ever afterwards accompanies, and more than anything else characterizes Limburger. It never forsakes it, and sticketh closer than a brother to all that touch or partake of it. After from eight weeks to three months it is ready for market. Each cheese is first packed in paper, over which comes a sheet of tin or lead foil, which are then packed in boxes containing from 60 to 120 pounds, and are sent forth to purchasers. Limburger cheese, in contents and nutrition the richest cheese that can be made; in flavor, a predetermined outrage upon the organs of smell.

DISCUSSION ON BUTTER MAKING.

Horatio Merriman, Fort Atkinson — This is new business to me, but I have been a butter maker all my life, as you would say. I used to make butter in Connecticut and sell it in New York, on the market. I make to-day in Wisconsin, and sell it in town at the stores. I used to get nine and ten cents a pound. I didn't know that I could ship it any other way. I didn't think much of

the Chicago market. At present I ship to Chicago and New York, and sell on the market every week. I am getting at present forty cents a pound for my butter, which is better than ten cents.

Mr. Hoard — I would like to hear from Mr. Robert Merriman, who took the first premium in this state on dairy butter.

Robert Merriman, Oakland — So far as I know, my cousin here has told about the same experience that I have had, and the price is about the same; twenty to thirty cents difference in the price.

Q.— What did you use to get for butter?

A.— Well, we used to get from eight to twelve cents. As Mr. Hoard says, it was put in a common box and sold for grease butter.

Q.— Did you make as good butter as you do to-day?

A.— I don't hardly think we did. We had not as much experience.

Q.— You thought you made it good enough for the price?

A.— Well, we didn't know of any other way.

Q.— (By Mr. Northup) — I would like to know how you ship it to New York; whether by express or freight?

A.— I ship mine in forty pound tubs, by freight.

Q.— Did you put it in the depot and ship it?

A.— Yes, we ship once a week in the summer time, in a refrigerator car.

Q.— How was this milk handled?

A.— I always set my milk in a common milk pan. The milk from which the butter was made that took the first prize, was set in a common milk pan for thirty-six hours; then it was skimmed, then churned, and then salted, one ounce to the pound; it stood about twelve hours and was then re-worked.

Q.— Salted in the churn or on the table?

A.— Salted it on the table and then worked it.

Q.— (By Mr. Fargo) — How many cows did you have?

A.— I had four fresh milch cows at that time, that the butter that took the first premium was made from?

Q.— Was this butter made from fresh milch cows?

A.— I had four fresh milch cows then; the rest were not.

Q.— What breed of cows had you?

A.— Mostly grade Durhams.

Q.— At what temperature was the milk?

A.— The usual temperature. I cannot tell just what I kept the room; about fifty-five or sixty.

Q.— What churn do you use?

A.— The Rectangular.

Q.— When you made this butter did you expect it to be exhibited?

A.— I made it for that purpose.

Q.— (By Mr. Field) — Can you tell me about what quantity of butter you can make from one cow?

A.— I can not.

Q.— (By Mr Davis) — I would like to ask the gentleman how long he lets his butter stand before re-working?

A.— This butter stood from twelve to fourteen hours.

Q.— (By Mr. Northup) — What kind of a pan did you use?

A.— My pans, as I said, are common small ten-inch milk pans.

Q.— What amount of butter do you get from one hundred pounds of milk?

A.— The butter I sent to New York, I made a pound of butter to eighteen pounds of milk.

Q.— What time of year was that?

A.— That was in November.

Q.— What were you feeding your cows at that time?

A.— Well, I fed my cows bran and hay, clover and timothy, and they had their run out in the pasture.

Q.— You stated that some of your cows were grade Durham and some common cows. What grade of Durham?

A.— Mostly half grade.

Q.— Perhaps you stated to us, but I did not hear, how much butter you get from one hundred pounds of milk.

A.— I stated that for the butter I made for the fair in New York it took eighteen pounds of milk for one pound of butter, although when I was carrying milk to the cheese factory, we did not carry the milk on Sunday, I weighed my milk three or four times, and the result was, that in the hottest weather it took thirty pounds of milk. The next weighing, I think, was twenty-two, and the next seventeen.

Q.— Was that in the summer season?

A.— Yes, the factory was making cheese.

Q.— Seventeen in hot weather?

A.— That was in summer. I think that was a full month, probably.

Q.— To what do you attribute the difference?

A.— The hot weather would make a difference, of course.

Q.— Did you ship on the market for private parties?

A.— I shipped to commission men. One of my neighbors has, within a week past, weighed his milk, and he found twenty-three and one-half pounds, in the Cooley creamer, made one pound of butter.

Q.— After you churned the butter, you say you simply draw off the buttermilk, and then put the salt right on the butter.

A.— Yes; the butter that I sent to the fair was not washed at all.

Q.— (By Mr. Hoard)— Mr. Merriman, do you practice this system of churning — stopping the churn when the butter has reached the condition of granulation, as some describe it, like old snow?

A.— I do not.

Q.— You churn the old-fashioned way.

A.— Yes, sir.

Q.— Is it your usual practice to salt your butter without washing, or is it your usual practice to wash?

A.— It is my usual practice to salt the butter without washing.

Q.— Does the butter keep well without washing, particularly in the summer months?

A.— Well, my experience is, that it keeps better.

Q.— Mr. Merriman, I really don't see any difference between the forty cent butter you described and the ten cent butter you made twenty years ago.

A.— There might not have been a difference; probably was not.

Mr. Hoard — I tell you one thing; twenty-five and thirty years ago, Mr. Merriman did not have an ice and butter house from which was excluded odors of all kinds — tobacco smoke and cabbage odors, and such things. Will you tell us whether your pastures are lowland or upland.

A.— Both.

Q.— What is the nature of the grass?

A.— Timothy and white clover, a combination, my summer pasture.

Q.— Brook running through?

A.— Yes, sir.

Q.— Do you feed grain to your cows in summer?

A.— No, I do not.

Q.— I want to know about this washing.

A.— Washing butter, as far as my experience goes, I think my plan better. You hold the quality of the butter.

Q.— Some have the idea that washing butter will whiten it.

A.— I could not say as to that. I have sometimes washed it, but not often. I never liked the plan.

Q.— (By Mr. O. Hand) — Do you think that coloring improves the sale of the butter?

A.— I think it does.

Q.— When do you put the coloring in?

A.— I put it in the cream.

Q.— Was this butter that took the first premium colored?

A.— It was, slightly. About half a spoonful to four gallons of cream.

Q.— Did you use Natural butter color?

A.— I do now, and I did at that time.

Q.— More natural than the butter itself?

A.— It is.

Q. — (By Mr. Brooks) — I want to inquire how much you realize from your butter, net, after paying freight charges, commissions, etc.?

A.— Well, now it is netting me from twenty-eight to thirty cents.

Q.— What were your lowest and highest receipts for the last year?

A.— From sixteen to thirty-eight cents.

Q.— Not lower than sixteen cents the last year?

A.— No, sir.

W. D. Hoard — I have been much interested in these questions, and you will remember that I called up both the gentlemen, Mr. Robert and Mr. H. Merriman, to answer the practical outcome of this old-fashioned system to the new. Now, then, these men have given the difference between the sale of butter in a helter-skelter, unmerchantable sort of a way, and the sale of butter in a common sense kind of a way. Now, then, that is the question that is before us. It is not how this butter is made. It is one part of the idea of dairy education that you are bringing out in asking these

questions. But the point I make is, that butter should be sold rightly. The farmer, to be a good dairyman, should not only be able to make butter, but he should be a commercial man, and know how to sell his butter. That very point should very nicely brought out here. These gentlemen are to-day getting more for their butter than they did under the old system. They are asked if they make as good butter, and there is the point of this whole discussion. You commence sending butter to New York or Chicago and you commence being criticised; you commence putting yourself in competition with others. Let Mrs. Thompson or Mrs. Johnson go to the man who runs the store, and he takes the butter without a question. And why? Because he don't want to lose the trade of Mrs. Johnson or Mrs. Thompson. That is a very unsatisfactory way of doing business, and I want to see things changed. In our town (in Fort Atkinson), we have parties who are established there that buy butter on its merits, and if a man don't bring good butter he can't get the price. It simply shows the necessity for dairy education among the people.

Prof. W. W. Daniells — In connection with this subject, I want to say just one word. My mind has been called to it by the questions which have been put here so earnestly. I have been somewhat struck to see the advocates of the different plans, the creamery system and the old system of shallow pans, to see how each one follows his own system and believes it to be the best. I have no doubt all are anxiously looking for light on this matter. But there is another thing you dairymen want to look to, and that is, how much butter are you getting for one thousand pounds of milk. No man could succeed in commercial business if he did not know better what returns his capital was bringing in than the ordinary farmer does; if he did not know better what his butter cost him, what he was getting in the market, and what percentage he was getting on the capital he had invested, after paying fair salaries for the labor in making the butter.

Now, these are things which you ought to know and look after. This is the way in which you will get to know which is the successful method. I know no other way by which you can surely base your calculations upon a commercial footing than by doing this one thing. The farmers complain — I don't know what the dairymen

do — the farmers complain that the commercial men are swindling them out of all the profits; and yet the farmers don't know what per cent. they are making on their money. They don't know what their produce costs them, and whether they are selling at a profit or a loss.

Now, what we want to have is not only skill in each of the men who go into the making of butter, but intelligence in another direction — in seeing that the results are satisfactory; that after paying the cost of the labor, the price of board, the interest of the money expended in all processes, there is a fair return to the man who makes the butter. These are essential things to every business man.

Now, who knows whether the Cooley creamer will make more butter from a given number of pounds of milk than the old system? Who knows whether the system that Mr. Morley uses in setting in the old-fashioned pan will bring more butter than the Cooley creamer? We can't move along in this way, guessing that this way or that way is the best. We need to *know* which is the best. Perhaps some other man's way is better and cheaper than yours, and you should find it out.

One more point I wish to call your attention to. You are rightly looking to higher prices. Yet in my opinion, your product will bring lower prices within a few years. More good butter will be put upon the market. Such butter as we call creamery butter will be less called for. I am a small consumer, and I pay twenty cents for my butter the year round. That price you will rather wink at; and yet my butter costs me more than my bread. Next year I will know what it costs me. By and by this will come back upon you. Your butter will bring a smaller price in the market, because the majority of people cannot afford to pay more for their butter than they do for bread. The thing you have got to look out for now, is how you can produce the same quality of butter for a less price. As Mr. Hoard says, the growth of the community depends always entirely upon the intelligence of the people, and the growth of the dairymen's interest depends on the intelligence they put forth in their work. Your prosperity will depend upon the efforts you put forth.

Q.— Would you have me measure my land to know how much I have, and the money invested, then count how many days' labor

I put on it, then the amount of hay, and estimate what that hay was worth, and go on that way, and by that means arrive at the worth of the butter as it costs — do you mean that?

A.— No, sir. I would not have you put one day's work or one dollar's worth of labor on anything where it would not bring its return; but you want some intelligent knowledge of what interest you receive on the money you have invested in your farm; some intelligent knowledge of what your cows are worth, and what it costs you to feed them per year; some intelligent knowledge of the value of your dairy utensils; some intelligent knowledge of the labor you put into your butter, so you may know you have a full return for all expenditures made by you; a fair return for the labor you have given, and a fair interest on your money and the diminished value of your farm utensils, that you may know whether you are losing money. Now, when a man does not know that, he is not managing his business. I think every man, whatever his profession, should know that.

UNIVERSITY OF WISCONSIN.

BY HON. HIRAM SMITH, SHEBOYGAN FALLS.

Chairman of the Farm Committee of the Board of Regents.

The representatives of the State Agricultural Society and the State Horticultural Society, and the representatives of the State University and State Board of Regents here in this state, are invited by the officers of this association to meet them in this convention. The Board of Regents feel their obligations somewhat to the officers of this state. While acting as the guardians of the funds of our state, they organized the agricultural college, and this grant being accepted by the state, this agricultural college has been carried on in connection with the State University, as a means of offering to the farmers an opportunity of deriving the benefits to be obtained from these institutions. For the purpose of calling the attention of farmers to these advantages, meetings are to be held. One was held in Galesburg, and two others will be held in the counties of Kenosha and Waushara, for the purpose of awakening among the farmers an interest in the better education of farmers and farmers' sons. This question that Mr. Hoard dis cusse

of the education of farmers, is one of which what little I have to say, should be said at this time.

The Board of Regents of the University of Wisconsin, recognizing their responsibility to the agricultural classes of the state while acting as guardians of the funds arising from a grant of land donated by the general government to the state for the establishment of an agricultural college, and as but few farmers' sons avail themselves of the benefits afforded by that institution, thought it advisable to hold a series of agricultural conventions, in co-operation with the various branches of agriculture, in different portions of the state, hoping to awaken an interest that will lead to a more general acceptance of the benefits offered by the agricultural department of the university. When we consider the vast responsibility resting upon the agricultural classes of the northwest, and that upon their prosperity and success depends the success and prosperity of all other enterprises in this community, the educational institutions of the country cannot long flourish and grow surrounded by ignorance and inattention. Our railroad systems cannot continue to be efficient, useful and accommodating when ignorant farming will not furnish fees for freight and travel sufficient for running expenses. Banking, commercial and manufacturing interests cannot remain sound and healthy when slothful farmers fail to meet their obligations. A just conception of the real position we occupy should stimulate us, not to generate egotism in ourselves, or suspicion and jealousy of others, but to the importance and dignity of our calling; a calling that perhaps many of us do not occupy so much from design, choice or desire, as from the logic of events that have floated us into our present positions. This, again, should stimulate us to seize upon all available means to achieve success.

It is not enough that we dredge and toil and strain every nerve to produce the greatest amount of surplus products at the expense of the comfort and education of our families, or at the ruinous expense of exhausting the fertility of the soil. A farmer that is so ignorant or unscrupulous as to neglect the happiness and elevation of his family, making a drudge of his wife and spies of his children, robbing the soil of its innate richness, in his eager grasp for present dollars, is a disgrace to the profession, a cheat and a sham, and is unconsciously (let us charitably hope) inviting the ruin that

ought to, and will, most certainly follow; for if there is one fact more certain than another in the physical, and, I doubt not, in the moral world, it is that there is no remission for sins.

Thoughtful and observing men have plainly shown that neglected youth, brought up in ignorance and groveling pursuits, like stunted fruit trees, seldom or never reach their highest possibilities. There is abundant cause for satisfaction that all our different state administrations, whether whig, democratic or republican, have recognized these facts, and have wisely and liberally provided that every child residing in the state can acquire at least the rudiments of an education that may lead up to respectable results. The normal schools of our state, that rapidly fit competent teachers for the common schools, secure that recognized bulwark of our liberties from decay.

In addition to these liberal provisions for the rudiments of education, the state has wisely provided a state university upon an enduring basis, that is the pride of our people, that is ably conducted and managed by President Bascom, assisted by his able professors, and is amply provided with every means to aid the aspiring youth to attain to the highest culture and refinement in the arts and sciences, languages and the law, philosophy and the mechanics, music and astronomy, not neglecting the practical knowledge and careful experiments in the common and higher branches of agricultural industry. This liberal university has been wisely secured against all sectarian influences, and aims only to teach the useful and practical. Where the farmer student can stand side by side on terms of perfect equality with the student of the law or any other department; where the young farmer will receive the same patient instruction upon the experimental farm in the raising of grain, in the composting of manures or the cultivation of fruit, as the pupil at the piano, the chemist in the laboratory, or the astronomer in the observatory. There is not a shadow of doubt but that it would be greatly to the advantage of the sons and daughters of many farmers in this state whose means will admit of it, to place their children for a few years in this university; and nothing would better please our worthy Prof. Daniells than to have a large class of farmers' sons and daughters (for they are admitted on equal terms) studying botany, chemistry and practical farming under his immediate supervision.

It is high time the farmers of this state were aroused upon this

subject, and that these prosperous times, of good crops and high prices, should not pass away without bringing some lasting benefit to our children; for be assured no expenditure of money will bring surer rewards or more pleasant remembrances in declining years than the reflection that you made some sacrifices to give your sons and daughters a fair start in the world. The benefits to be derived are far-reaching in their results, and will not all accrue to those in attendance, but will be indirectly felt by all those with whom they come in contact; for the great mass of mankind learn largely by example. We have frequently noticed that where an enterprising farmer puts up a good wire or board fence along the highway, or builds a good dairy barn, that it will not be long before the neighborhood is dotted with like improvements. So, in like manner, a few scholars in a neighborhood, attending the university, when they return home to spend their vacations, will be likely to influence others to do likewise.

I have mainly urged, in the foregoing remarks, that the rising generation be allowed to profit by the advantages easily within their reach, because I have more confidence in their permanent advancement than I have in men of mature years, who are, as a rule, wedded to the customs and prejudices of early life; and the time is rapidly approaching when Wisconsin agriculturists will stand in need of every help that education and science can furnish, to enable them to hold their own. It would be folly to close our eyes to the fact that we are now menaced with an almost unlimited area of rich, cheap land, that can pour productions into our market far below the cost of productions consistent with the present price of land in Wisconsin. We all know of the mighty revolution now being worked out by cheap food in the landed systems of England and Ireland — systems now tottering to their fall, which no edict of monarch or jugglery of statesmanship can long stay or stop. The same influence which now affects investments in land in England will in time affect investments in Wisconsin in the same manner. Just now Wisconsin farmers have a protection in what we please to call railroad extortions, in freights from the far west. As soon as forty-five cent wheat can be freighted from Dakota to Chicago as cheaply as from Chicago to New York, one of two things must take place: either raising wheat must be abandoned or farming land reduced in price. While passing through this transition state,

it will be wise for Wisconsin farmers to engage in such branches of agriculture that, while preserving the fertility of the soil, will furnish the largest return for investment and labor.

For the next few years, at least, everything seems to indicate that dairy farming in Wisconsin must prove the most remunerative. First, because we have no serious opposition west of us possessing superior advantages to ours. Second, because the large dairy districts in the eastern states that at present furnish us the bulk of supplies, and therefore establish the price, cannot compete successfully with Wisconsin farmers, for the reason that all our feed is much more cheaply raised or bought than it is at the east, and feed is the raw material out of which dairy products are manufactured. While it may not be profitable for a Wisconsin farmer to raise a crop of corn and oats, thresh them, and sell the grain upon the market, losing the stalks and straw for the want of proper stock to consume them, yet the same crop of corn and oats can be made profitable by grinding the grain and utilizing the stalks and straw, by working it into thirty cent butter or twelve cent cheese, the prices at present prevailing.

It would be no credit to our intelligence as farmers to disregard the many natural advantages we now possess, in soil, climate, cheap food and cheap freight to the seaboard, and remunerative prices for dairy products, and blindly pursue the cultivation of crops that can be produced to greater profit on the cheaper lands of the far west. A careful survey of the field, and a wise conclusion arrived at, at this time, may save us from regrets, poverty and disappointment.

WHAT ARE THE FAULTS OF WISCONSIN BUTTER? HOW TO REMEDY THEM.

BY F. C. CURTIS, ROCKY RUN, COLUMBIA CO.

1. Wisconsin butter may be faulty from impure milk, or milk from cows falling off in flesh.

2. Extracting the cream from the milk at too high or too low or uneven a temperature, and during this process the exposure of the milk and cream to cooking or other odors.

3. Churning sometimes when the cream has not developed suf-

ficient acid, but mainly when the cream has formed too much acid. When the cream is too warm or too cold; churning too fast or too slow, or in some churn that has a sort of grinding process, for the sake of quiet churning.

4. Getting out the buttermilk. Working the butter too much or too little, leaving in caseine in the form of buttermilk. Salting and packing.

The faults here enumerated are what I design to comment upon, and in doing so shall endeavor to point out "the remedy," or such remedies that are within the reach of the most humble, and in a manner to be understood by the most ignorant.

Milk is sometimes impure from the cows drinking stagnant water. Last season, a neighbor whose cows were supplied with water from a pond hole, commenced to fail in milk, not only in quantity, but the butter made from it was decidedly bad; the pond hole dried up entirely, and the cows were watered at the well; the result was the cows gave their usual quantity of milk, and the butter made from it was of good quality. Cows upon short feed sometimes devour objectionable weeds that affect the flavor of the butter; but this and the forage or feed of the cow I shall pass over.

Extracting the cream from the milk is the cause of more faults than any other part of the process of butter making, and the difficulty of remedying these faults is apparently very great. Mind, now, I am addressing those who make faulty butter, not those who make good butter — who understand the subject, and can command the necessary conveniences. I doubt not my audience is composed largely of the latter class, and to them doubtless my remarks will appear dry, but if they will give their attention, I hope to be able to drop some ideas of value to the most learned.

Our scientific instructors tell us that one hundred pounds of sweet milk contains one more pound of sugar than it does butter. Quite startling, perhaps; but we must consider the process of butter making is of a chemical nature as well as muscular. The first acid of the milk in its early stage or change destroys, in a measure, this sugar; the second, or lactic acid, destroys the oils that give butter its fine aroma or nutty flavor; the two acids destroyed, we have a butter comparatively oleomargarine, or tallow butter.

Butter made from sweet cream is of very fine flavor, but does

not seem to possess the keeping qualities of sour or slightly acid cream butter; hence, cream should be churned in its first, or sugar acid.

There are quite a number of *systems* by which cream is extracted from milk; the common tin pan, or shallow open sitting, is the system commonly in use that produces the faulty butter; that does also produce, I claim, as good butter as any other system when skillfully used in a pure atmosphere, and in a temperature of sixty to sixty-two degrees; but the great fault is, that there is not one butter maker in a hundred that knows the required temperature of this system, or the susceptibility of milk and cream in open vessels to absorb foul odors; not only that, but if they did fully understand the matter, they feel powerless to command the temperature and guard against the odors.

There is a system of raising cream coming into use that I call the shutting up process. Prominent among these is the Cooley, for which is claimed the best results by some of our best dairymen. Mr. Fairlamb exhibited at the last agricultural convention, at Madison, a patented can that would come under this head, and for which he claimed great advantages.

A company at Portage, Wisconsin, has patented a process for raising cream in a vacuum, and I understand they have perfected it so it is in practical use; and they claim for it, not only a perfect success in raising all the cream in a short space of time, but that it will extract animal odors or flavors in the milk caused by feeding upon rutabagas or other objectionable forage.

I have had in use, for some time past, a can I described at the last convention at Kenosha; and it seems to me, that if properly understood and judiciously used, it overcomes all the seemingly insurmountable obstacles of the small and medium farm dairies. The conveniences required are simple, and can be commanded at small expense, from the farm or at some near village, and the labor required to care for the milk is much less than the common shallow setting. My little dairy produces about four of these cans of milk at each milking. The milk is strained into these cans as soon as practicable after milking, the covers put on, and the cans removed and placed in the water tank — all done so far without carrying the milk to the house. If the water that surrounds the cans remains at from forty to forty-five degrees, nearly all the cream rises

between milkings, and the cream might be removed and the milk disposed of without removing to the house; but I prefer to remove it to the house, and let it stand twelve hours longer before removing the cream. The number of tin pans required for this amount of milk would be about twenty, and should be nicely cleansed every time they are used, while the cans would not require cleansing oftener than once a week, for the reason that the skimmed milk would be sweet when skimmed. I find the cans hold thirty-eight pounds of milk, and makes two pounds of butter, salted as it comes from the churn, which is nineteen pounds of milk to a pound of butter. This is more butter than I can get from the tin pans in the usual manner, from the same amount of milk. I claim for this process as much, or more butter, less labor, and as good butter as can be made by the best dairies by the common tin pan system. If it proves equal to my claim in respect to quality, it certainly may be used to great advantage by all small dairies. At this writing, I design to have upon exhibition a tub of butter made by this process, taken from a promiscuous lot, without special manufacture for this occasion. The committee will doubtless report upon its character without any knowledge of its process of manufacture. While I press the adoption of some of these shutting up processes, I must not omit to give due caution as to some of its requirements.

I spoke of the common shallow setting as requiring sixty to sixty-two degrees temperature; this you will notice is a system of itself. Now you will observe the necessity of a much colder temperature, if you shut up thirty-eight pounds of milk, at nearly blood heat, which is ninety-eight degrees. Water seems to be a better conductor or more effective than air, hence set the cans in cold water. Spring or well water, which is about fifty degrees, will answer, but unless the quantity of water is considerable, or changed often, the water will become too warm, and irremediable damage will be done to the milk. It will be much better to lay in a supply of ice in season, and then you can command the desired temperature with but little labor.

The advantages of this system will be particularly noticed in times of thunder storms. The process of raising the cream is shortened, or the property called ozone, which is said to be prevalent at these times, does not seem to sour the milk, as it does in

open settings. Cream from milk that has become loppered can never be made into gilt-edged butter; the much coveted nice flavor is lost past redemption.

Churning. — The old dasher churn makes good butter, but it is much more laborious than some of the late inventions, and does not churn all the cream as effectively as the revolving churn — I mean those that revolve, depending upon the falling of the cream for the necessary agitation, without inside paddles. I have used the rectangular churn seven years, and do not look for anything better. I consider sixty-two degrees the right temperature, and half an hour soon enough to bring the butter; if the churn is too full, a longer time will be required. Avoid all five minute churns; a fast grinding motion destroys the grain of the butter. When the butter has granulated to about the size of wheat kernels, draw off the buttermilk into a clean vessel, giving it a good chance to drain; skim from the buttermilk the escaped butter; wash the butter with good pure water. Now is just the time to add the salt, which should be good, and one ounce to the pound. Estimate the quantity, but do not get in too much; more can be added after the butter is taken from the churn and weighed.

The common turned butter bowl is made from porous wood, and has long been absorbing and manufacturing the germ of decay which is very damaging to butter, and its form is very unhandy, requiring great strength to work the butter. Where a good lever butter worker cannot be afforded, a tray with its sides made from ash lumber, will be found much more handy and easily freed from butter tainting impurities. When the salt is added to granulated butter in the churn, a slight rocking motion of the churn causes the salt to pass evenly through the butter, and no working is required. Some pack the butter at once, but I usually let it stand about twelve hours, and then with little working pack it solid in white ash tubs. The same butter, if made into nice rolls, each roll covered nicely with butter cloth, requiring three times as much labor, would sell for about twelve cents per pound less in the Milwaukee or Chicago markets. If the butter has been handled as I have described, very little working will be required; the buttermilk has drained out of itself. Solid packing is very desirable, but not to such an extent as to make the butter entirely free from brine; dealers like to see little sparkling tear drops on the back of the butter tryer.

Salt. — I have stated that one ounce to the pound should be used, and that to be good salt. Some customers require less and some a little more.

One of the most shameful and stupid faults of cheap priced butter is too much common barrel salt, in many instances put in to make it weigh. I am confident that I have seen butter with three ounces to the pound of this cheap fertilizer in its composition. There are doubtless several good brands of salt. I have used the Ashton factory filled salt for several years, and found it uniformly good.

DISCUSSION.

Curtis — This is all I have been able to write in this short time. I will now show this can; it is almost a simple tin pail; the only difference is that the flange of the cover is a little wider.

Q.— Why wider?

A.— I wished it to connect with the milk, and possibly the can might not be full. I wish to make it air tight. If the can is full we can't put on this cover without letting out the air. A little tube or hole can be made there after you have shut up so much milk. Then you must bring to bear so much amount of cooling property; water will do better than anything else, or in summer you can hang it in the well; but the better result is brought about by more cold — the colder temperature you can get in air or water.

Q.— How full do you fill it?

A.— Just as full as you can handle it.

Q.— What temperature is the best?

A.— From 45°, as I stated in the paper. You can't get it too cold. I have set those cans in one end of the water tank, where the cattle drink; this end of the tank is covered with several boards. I did so one of the coldest nights we had a little while ago, and during the night the ice froze about an inch thick around it. It warms the water around it, though.

Q.— In the winter time, if the milk does not freeze, you can't get it too cold.

A.— As I told you, the ice froze about an inch thick around it, and the milk was a little frozen.

Q.— I wish to ask you if you think the milk makes as good butter as if the temperature was about 45°?

A.— I made butter about a year ago. I hung the cans in my well; my well is very deep, and they were hung about twenty feet down.

Q.— What was the temperature?

A.— About 50°, perhaps a trifle warmer. Often my wife objected to skimming the sweet milk. We waited about twelve hours, when it got the right acidity, and then she removed the cream. I don't believe there is any animal odor in milk as it comes from the cow unless the cow has ate some vegetables that affects it. I don't believe that this animal odor is of any consequence, and I believe that any odors that go into that milk will stay there. The best way to get them out is not to let them in. I ain't able to perceive anything of that kind in this butter on exhibition. I have sold this butter in Chicago right along with that made from small milk pans and I find no difference.

Q.— Will not freezing the milk whiten the butter?

A.— It is my opinion that it will. I would avoid it.

Q.— I would like to ask the cost of those cans?

A.— I got that can made at Portage for $1.00, that is, with the hole here without the screw.

Q.— What is the difference in the price of production between this method and the shallow setting?

A.— Well, this can be strained right in the stable. The help in house need not occupy any time. The great trouble with the women is generally to learn them that these cans don't need washing more than once a week; it's hard to keep it away from them.

Q.— Why do you say once a week; why not once a year?

A.— We pour the milk out when it is sweet; if it got sour, I should say scald it.

Q.— As long as the milk is sweet it don't need washing?

A.— Certainly not.

Q.— Doesn't the milk stick to the cover when you pull it out?

A.— It does a trifle. It sticks to milk cans more than to these.

Q.— How do you skim?

A.— (Holding up a dipper) There is a cheap dipper; you will find on your milk about three inches of cream, and when you get that off you slide right over the top and it is easily taken off.

Q.— How long do you allow milk to stand in that can?

A.— As I remarked in my paper, it need not stand over twelve

hours, but I prefer to let it stand twenty-four if the weather is cold.

Q.— How much water?

A.— As high as the milk can is filled. Make this perfectly air tight and water tight; get all over it; but that would be infringing on Mr. Cooley's patent, his submerged can.

Q.— How often do you change the water?

A.— I would not change the water at all. One of those cans might do very well in a barrel of water coming as high as the milk, but if you put three of those cans into a cask and then nearly fill it, it will warm up very quickly, but put it in a large tank of water and the water would not require changing at all?

Q.— Do you use ice?

A.— I would recommend everybody to have ice that attempts to make butter.

Q.— Does the water ever smell?

A.— Oh, of course it will smell, after a little. In hot weather I change it.

Q.— How long would it take that water to turn?

A.— I wouldn't anticipate any trouble in a week.

Q.— In my submerged can, the Cooley, you go into the room after two or three days, and the water smells a good deal.

A.— I presume that in that amount of time there would be a change in the water necessary.

Q.— In the Cooley system it must be changed every forty-eight hours.

A.— I can't give the reason. By placing the warm milk in the water, the water begins to change, but I don't find any bad effect or any substance in the milk. I don't think it is necessary to extract anything from the milk.

Q.— Do you submerge right through the winter?

A.— As high as the milk in the can. Anyone can try this plan by taking a glass fruit jar and putting it in the well. They will find that cream will rise in about three hours. I can't tell what the reasons all are.

Q.— Would your cover under all circumstances?

A.— Yes; I told you the trouble is the odors.

Q.— But in a well built creamery, would you cover them?

A. — That is something I don't pretend to know anything about; am talking for the small dairymen, that cannot have creameries.

Q. — But many of us are not using water at all.

A. — Well, I have told you my plan, and have told you the results. The proof of the puddding is in chewing the string.

Q. — Do you let the cream remain in those cans until it is sour?

A. — No, sir; I would remove it.

Q. — Suppose you should let it remain until you put it in the churn; what would be the result?

A. — The can would require washing then every time.

Q. — It would be equally good?

A. — Yes; but I understand that if you allow the acid to go too far, and allow your milk to be curdled, you lose the fine aroma of the butter. I should like to hear from Mr. Morley. I understand that his milk is loppered in the can. We all understand that Mr. Morley makes good butter, and I understand it is allowed to stand in large, open pans, until the acid has gone so far as to produce agitation of the milk. I would like to hear from Miss Morley.

SWEEPSTAKES BUTTER OF THE WORLD AT THE INTERNATIONAL DAIRY FAIR — HOW MADE.

BY THE MAKER, MISS FANNIE MORLEY, BARABOO.

I have, as you will see, no new theories as regards butter making to advance, and this rehearsal of old methods will perhaps prove tiresome; nevertheless the sweepstakes butter was made after this manner, and for this reason, I suppose, the secretary of the Wisconsin Dairymen's Association requested me to write a full description of our way of making butter, our farm, spring, creamery, etc.

Situated about four miles northwest of Baraboo, a thriving town and county seat of Sauk county, is our farm, comprising some 240 acres of land, the greater part of which is on a hill or bluff north of the house, and the remainder consists of lower land designated flats. The soil is good, mostly clay or black loam.

Father also has a farm of eighty acres about two miles from this, but since no milch cows are kept on that place, I will confine my remarks to the old home, where we have lived nearly fourteen years.

Near the foot of the bluff and not more than twelve rods from our house is the clear, sparkling spring which supplies us and our nearest neighbor, Mr. Barker, with good cold water, year in and year out, sufficient both in quantity and quality for use in the house and creamery, also for watering stock. It is an established fact that good water is one of the most essential things requisite for making first-class butter.

The spring water is conveyed to the house, thence to a stone spring house, and from there to the watering place in the barn yard by means of iron pipes. In the spring house is a large tank through which the water is constantly running, and from this tank pump logs convey water to the creamery. At present these are not in running order, so the water used in the creamery is carried from the house. In the summer time, however, the water runs through these pump logs all the time into a large wooden tank in the milk room.

The building which for the past four years has been used for a creamery, is a three-story stone structure, originally intended for a cheese factory, and used for that purpose eight or nine seasons. The arrangement of things is not quite as good, perhaps, as they otherwise might have been, had the building been planned for a creamery in the first place instead of a cheese factory. Be that as it may, I think few of the many engaged in butter making have as convenient and well arranged apparatus as we.

The delivery room occupies part of the second story, and is directly over the milk room.

The milk is brought from the barn to the delivery room, and for the reason that we have a partner in the business, it is weighed, and the amount recorded. It is then poured into a can having a concave bottom, with a four-inch pipe, which extends through a small opening in the floor, thus transmitting the milk into a tin conductor, that can be so arranged as to run the milk into any one of the pans. The milk is strained twice; once at the barn, being poured through a cloth strainer fastened on a rack, and placed over the milk can, and again in the milk room, by means of a strainer at the lower end of the milk conductor, so that as the milk runs from the conductor into the pan, it passes through this second strainer.

The milk room occupies one-half of the lower story of the build-

ing, the northern side being under ground; is twenty feet by eighteen and a half, has a cement floor, and opposite each other, one on the east, the other on the west side of the room, are two large, deep windows. The atmosphere of this room is kept at the desired temperature by means of a large stove, the fire very seldom going out in cold weather.

In the middle part of the room, placed side by side on two wooden frames or tables, which are separated by a narrow aisle, are four large pans, each holding about 650 pounds of milk. Their shape is very much like that of ordinary cheese vats, being smaller at the bottom than at the top, and having an orifice at the lower edge of one end, through which the milk is run off. At this end of the milk pans, and a trifle below them, is a narrow tin trough, fixed in a slanting position on little supports, and containing a spout in the lower end. This little trough prevents the milk dripping on the floor, in case the corks in the pans are not driven in milk tight, and it also serves to conduct the milk a short distance when being run off.

We have a convenient way of feeding out the milk. Two long, narrow wooden troughs, that can be easily moved, are placed in such a position as to connect this tin trough I have been speaking about with some stationary ones, emptying into large pig troughs. So when I wish to feed out some milk, I simply fix these troughs in position, remove the cork from the pan of skimmed milk, and call the pigs.

Now the most of you who read this article have had much more experience in making butter than I have, hence I will make but few remarks on this subject.

Milk is skimmed after standing twenty-four to thirty-six hours. *Usually* it is not curdled, only slightly acid. My cream as I skim it from the milk is poured into a tin can holding thirty gallons, which, when full, constitutes a common sized churning. Churn by horse power, and usually four times a week. Because it is most convenient to do so, my cream stands over night and is churned early the next morning before the children go to school, as it requires some one to drive the horse. The cream is put into the churn at a temperature of about fifty-eight degrees, the butter color is added, and the churning begins. Think the better way is to churn slowly until the butter forms in little pellets the size of

wheat grains or smaller. Then draw off the buttermilk, add a bucket of strong brine made of cold spring water and Higgins' salt; wash the butter, draw off the brine, and salt while yet in the churn, at the rate of one ounce of salt to one pound of butter; work in the salt, remove the butter from the churn and let it stand eight or ten hours before working over and packing.

Our creamery has been in continual operation nearly four years, during which time few material changes have been made. We find that our churn, butter worker, and most of the other apparatus to be strong and durable, which I think is a good recommendation.

I have said nothing about cleanliness, except as regards the milk, and I see by reading such literature as dairy papers and reports of conventions, this subject is frequently discussed. Let me add, we cannot be too particular on this point. Pails, cans, strainers, pans, etc., must be kept clean and sweet. Besides this, we find it necessary to whitewash our milk room five or six times during the year, in order to maintain an untainted atmosphere.

Perhaps it might be interesting to the ladies who read this article, and who have milk and butter to take charge of, to know that nearly half my time is required to do the work in the creamery.

DISCUSSION.

Question—Miss Morley, is the milk loppered when skimmed?

Answer—The milk from which we made our butter that was sent to the International Dairy Fair, some of it loppered and some did not, and I cannot see much difference in the amount of cream in the two cases; that is, when milk is sour but not loppered. When milk is loppered, I haven't noticed any particular difference in the cream. I think you can get just as much cream from loppered milk as you can from sour milk. I want to say that I always let the milk sour before I skim it. After it is skimmed it usually stands, so that what was skimmed first was two days old. I usually skim about three times a week, and every time I skim I pour the cream into a can and stir it well, so that the whole will be pretty near of the same acidity. After that can is full, I pour the cream into a thirty gallon butter can. It takes about two days to get enough cream for a churning.

Q.—I would like to ask about what price you receive for your butter?

A.—I guess my father could tell you about that better than I can. He don't always keep me posted on that. He don't like to have me tell about our butter, because we have neighbors who make good butter, and they think they ought to get as much as we do. They would not be satisfied.

Q.—Miss Morley, suppose you made one churning from milk that was loppered before you skimmed it and one that was not; would you notice any difference?

A.—No, sir; no difference.

Q.—Have you made any such experiments—taken from loppered milk in one churning and from simply acid milk in another, to notice the difierence?

A.—No, sir; I have only given my impression about it. I have not made butter very long; only within the last nine months.

Q.—You made this premium butter?

A.—Yes, sir.

Q.—Was it made from cream that was sour?

A.—Yes, part of it loppered and part not. Mr. Curtis said in his paper that he salted his butter before it was in one compact lump.

Q.—What do you do?

A.—I don't do that; it is in a compact lump before it is washed. We always take off the buttermilk before washing and wash it in strong brine and in cold spring water and put in the salt. In washing the butter we revolve the churn twenty-four times; that brings the butter into one compact lump. We salt it; just take the paddle and scrape out the butter from the center and throw the salt in, and put the butter right over; then churn about forty-eight times round and the salt is worked into the butter. I take it out of the churn then, and let it stand six or eight hours before we work it.

Q.—What kind of a churn do you use?

A.—We use the rectangular churn, manufactured by Cornish & Curtis, of Fort Atkinson, and the lever butter worker, made by the same firm.

Mr. Hoard—I object to these questions being asked, because I think Mr. Curtis has got some man here to ask these questions.

Q.— Miss Morley, have you a room set apart for dairy purposes?

A.— Yes, we have a room in a building we formerly used for a cheese factory. I can't give the dimensions, but it is large enough to allow us to set the milk and do the churning in there.

Q.— You try to keep it in great cleanliness?

A.— Yes, sir; I think that is very important.

Q.— Is there a good deal of care taken in drawing the milk from the cow?

A.— Yes, sir; and the milk is strained into cans — just large cans — and brought to the factory. This room is partly underground. The milk is brought down into this room and strained again into the pans; so that makes twice. Of course the stables are arranged so that the milk is clean when drawn from the cow.

Q.— At what temperature do you churn?

A.— About fifty-eight or sixty degrees.

Q.— And you wash it in the churn?

A.— Yes, sir; we did not until last summer. We think the butter is ready to be worked sooner when we wash it in the churn.

Q.— How much salt do you use?

A.— I put in an ounce of salt to a pound of butter. I don't think there is as much as an ounce of salt in the butter after it is ready for packing. Of course the buttermilk that is worked out is very salty, and a good deal of salt works out that way.

Q.— Do you weigh the butter?

A.— No, sir, I don't weigh it; I guess at it.

Q.— Do you color your butter?

A.— Yes, sir. We use a preparation made by ourselves from annottoine. I can't give the receipt, but you will find it in most any of these dairymen's books and records of proceedings.

Q.— May I ask one question. What do you cut the annottoine with?

A.— We use potash and sal-soda and the annottoine. I don't know the proportions. I put the coloring in just before I begin to churn the cream.

Q.— Let me ask you if you allow any sour milk to go into the buttermilk, or do you insist upon putting in the clear cream?

A.— Well, there will be some milk, I presume, but I am very careful about not getting any more than I can help.

WHAT ARE THE FAULTS OF WISCONSIN BUTTER?

BY ASA FOSTER, SUGAR CREEK.

"What are the faults of Wisconsin butter?"

The faults are so varied, I hardly know where to commence.

Suppose we visit our neighbor farmers; we find their butter well manufactured, the wife doing her part with taste and skill; working hard early and late, there seems to be no fault on her part. Who is in the fault? Take a walk around the barn and over the farm, and we see some of the faults.

First, low, wet stable; too much ventilation around the door and sides of the barn; too cold; poor feed; late cut hay, and badly cured at that; bad water; poorly fed cow. Now, if the feed is poor, stable cold and wet and bad, the cow must of necessity be poor. Can we get pure water from an impure fountain? Who is in the fault in this case? It must be the husband. Over, a little way on, another farm — it may be the reverse?

Poor pastures in summer have much to do with the quality of butter made.

How to remedy short pastures, I will here give you my experience. Say we have one and one-half acres of pasture to each cow, which is generally abundant in the fore part of the season until about the first of July. I would fence off three or four acres of this pasture, where there are say twenty-five cows, manure it well, plough it late in the fall or early in the spring, fit the ground well; plant it to corn early, in rows about twenty inches apart, and hills one foot apart. In seven to eight weeks after planting, you can begin to feed this corn, and as the feed gets shorter in the pasture feed more corn and keep up the flow of milk. I have tried this for many years, and find it pays well in quality and quantity. Driving our cows to and from the pasture by dogs and inexperienced men is another fault with our butter.

How to remedy this? Let the owner drive them to and from the pasture himself.

How should we treat our cows in the yard and barn? Never let your hired men abuse them; have them understand from the beginning that the cows must be treated with kindness, and the farmer should live up to this rule strictly himself.

What treatment should the cow have in the fall and winter? I will simply give you my mode of feeding: Feed hay in the morning; after they have eaten the hay, give to each cow about half a bundle of oats. If the weather is fine, turn them out to pasture; if the pasture is short, feed corn in the shock at noon and night; as the season advances, add one feed of meal.

With this mode of treatment, our cows go into the winter in high flesh, and keep up a good flow of milk. Cows that are coming in, in the spring, usually let them go dry about two months and a half. When I wish to dry them, I take the grain all away from them, feed marsh hay for ten days, and see that they are thoroughly dried.

The farrow and new milch ones keep in the stable most of the time; feed high; keep warm, dry and clean. Now if we have a suitable place to set our milk, where it is kept at an even temperature, skim and churn at the proper time, there will be less fault with our butter.

What are the faults with Beach, Flack and King, and hosts of other farmers we might mention, who are making a fine quality of butter? Their faults are, they do not make enough to supply the demand for this quality of butter.

Now as we have gained a wide reputation abroad, in the last few years, we ought to maintain it by using our best endeavors. Our facilities for feeding our cows, and the superior quality of our feed, with the cheapness of our coarse grains, are all in our favor. Let us renew our energies, take new courage, and see if we cannot in the next year cure the last ailment of our butter. In my judgment, the greatest ailment now existing to our butter, is the loose way of making it. The fault is ours.

DISCUSSION.

Question — Was your milk loppered when skimmed?

Answer — We tried the experiment and we got better butter from milk that was slightly thickened, if it don't stand too long. We skimmed pretty well down in the sour milk, and we thought it added to the fineness of the butter. That is our experience.

Q.— I would like to ask the gentleman if he has ever fed any roots to the cows?

A.— Never have. I consider corn and oats cheaper and easier to raise.

Q.— Have you ever fed middlings?

A.— I have some. I believe a great deal in feeding corn in the ear, that is, in the shuck. I believe that makes the best butter; and while there is a little waste, there is less than any other way.

Q.— Have you any idea what corn is worth in the ear when butter is worth twenty-five cents a pound?

A.— I don't know. We are kind of mixed farmers; we guess at most all our things. The greatest trouble with us is, like everybody else, we have got too much land.

Q.— I think it about time we have done guessing.

A.— Yes, sir.

Q.— Wouldn't it be better if you knew you was getting twenty-five or thirty cents, or fifteen cents for your corn on the price of your butter?

A.— I have got cattle and must keep them. The idea is to feed them all they will eat, and let the hogs run with the cattle and eat it up clean. I have never tested this thing. I have on hogs, but never with cows.

I made a little experiment two years ago, I think. I had a large lot of parsnips in the spring, and I took an Ayrshire cow — full blooded Ayrshire — when hay cost me eight dollars a ton in the field and ten dollars a ton in the barn. I weighed it, and fed the cow a bushel of parsnips a day, that was twenty-five pounds, and I found I was getting, after charging the cow with feed and hay and crediting with skim milk and manure, just as many cents per bushel as my butter was worth per pound. I found I was getting a pound of butter for each bushel of parsnips. I had previously kept count of the cost of raising the parsnips; in the fall I had measured off one-eighth of an acre, and as near as I could find, I had on the one-eighth of an acre one hundred and seven bushels of parsnips, and those were worth, with butter at twenty-five cents per pound, twenty-five cents per bushel to feed to my Ayrshire cow. They had cost me — the absolute cost, as near as I could figure it, taking off the interest on the land, and the labor and manure — twelve and a half cents per bushel. So it was an interesting experiment.

Mr. F——. I have also experimented on corn, and to the best

of my knowledge, it cost me to raise it in the field twelve cents per bushel. So making experiments in feeding corn would be an interesting thing for you and your neighbors, perhaps.

Mr. Foster — I can tell you myself how to feed it. The book will show at the factory that I took forty-two pounds of milk on an average from each cow for two months.

Q.— How many cows?

A.— I believe we had fifteen in that drove; the rest of the cows did not do as well.

Q.— What months?

A.— The middle of May to the middle of July. The best yield I know of yet.

Q.— The cows were not running in pasture?

A.— They run in the pasture and they had a little feed. Well, it was a pretty good quantity of meal until the pasture was good. I tell you, gentlemen, I never fed anything yet to a good animal that I thought was lost. The trouble is, we don't feed enough; we are too stingy. This gill business is all played out.

Q.— How much is a good cow worth?

A.— All she will eat.

Q.— What kind of feed did you give?

A.— If you will sow half a bushel of clear clover seed to an acre —[a whistle]. Yes, you may whistle — it will grow just as fine as silk and just as pretty; and I say it is my practical experience. And men who were at my house said their horses and cattle refused corn to eat that hay.

Q.— When would you cut it?

A.— When it's not more than half in the blossom. It is my experience, when I have let hay go too long, it ain't worth half the price.

Mr. Favill — I want to state right here that I don't think there is any one branch of farming where farmers lose as much as they do in neglecting to get their hay in soon enough. We don't commence to get at it until we ought to be through. If you will make good, tight barns — if air tight all the better — but make them as close as you can, and let your clover hay be put in without any water excepting what juice there is in it, it won't spoil.

Q.— It will set the barn afire?

A.— No, sir; it won't; it will be blacker, and the cattle will eat it like fresh clover. I have tried it for years.

Q.— Put any salt on?

A.— No, sir; I don't want any salt on.

Prof. Daniells — Don't you believe it. You don't want to put your hay in an air tight barn; a barn in which the air circulates is better. You want to protect your hay from sunshine, and from dew and rain. Low clover hay that is dark, is not as good as clover hay that is green, other things being the same. White clover hay cut while green, or as Mr. Foster expresses it, just before it blossoms, is just the next thing to getting pasture and the best thing you can give your cows. Cure it green, but have it dry. Colored hay is not as good as green hay.

Mr. Favill — Now, gentlemen, he is a scientific man. I believe it, but I don't believe he has ever handled as much hay as I have. I don't believe he has ever seen half as much, because he ain't more than half as old. If you follow his advice and open your barn doors, your green hay will spoil, but if you will shut it up tight, it will kill dry, and it will retain all the goodness and the cattle will do finely on it.

Prof. Daniells — My experience has been that hay, as you suggest, will naturally burn up. I know of twice that it has.

A.— Manure will burn; that is because you leave it out doors. I was thinking of curing your hay. Of course if you shut it up wet it will spoil, but if it is only the natural juices of the hay, it won't hurt.

Q.— Won't that hay warm?

A.— It will warm; it must warm. Hay put in so dry it won't heat, isn't as good as straw. I would not believe it.

Q.— Should it be put in while in a damp condition?

A.— Yes; I want moisture enough in the hay so it will heat and pack together.

Q.— I know of two places where hay took fire and burned down.

A.— Was that in a tight barn?

Q.— No, it was stacked out doors.

A.— I wasn't talking about outdoors; I was talking about hay in the barn.

Moved to adjourn until 2 P. M.

Afternoon Session.

Convention called to order.
W. W. Field in the chair.

UNIFORM SYSTEM IN THE DAIRY.

BY DAVID WARD WOOD,
Of the *Western Rural*, Chicago.

It would be presumptuous in me to suppose for a moment that I shall be able to say anything new to a body of gentlemen, the most of whom have studied the dairy much longer than I have; but I may be pardoned for cherishing the hope, that I may call your attention to some matters, which though well known to you, do not receive a univeral practical consideration. Every man who is interested in this important and growing industry, if at all worthy to be considered an honor or an aid to the business, is aiming, or thinks he is, to perfect the methods and processes for securing the best and most uniform results. Many of this association have expended much time and money in the endeavor to achieve certainty of excellence, and many of you have succeeded; and while the motive which prompted you to such action was primarily and properly a selfish one, it insured a benefit to mankind, which is by no means averse to rewarding you for your patience, outlays and risks. The consumer is not devoid of gratitude to the dairyman who furnishes him good butter and cheese, and he is quite willing to show it by paying a decent price for an article which he can depend upon as being of prime quality. The average consumer never purposely buys a poor article of either cheese or butter. Rancid butter, or butter possessing other defects, finds a market because there are unprincipled dealers and ignorant buyers. Dishonesty and ignorance are the stays of the trade in poor butter. The vast amount of tasteless and apologetic cheese in the market is there because consumers do not know what cheese ought to be, and because there are always enough people to try the stuff to exhaust it, with the almost certain result, however, of disgusting them with cheese, and causing expressions of speech that would never answer in a Sunday

school. The consumer, as a rule, wants a good article, and unless he is an idiot or dishonest, expecting to get something for nothing, he is not surprised to be asked to pay a reasonably remunerative price for it.

You, gentlemen, who make a good quality of butter, and manufacture good cheese as the result of patient, persevering toil and study, and the expenditure of money, have the right to claim that you be properly rewarded by a consuming public; and the public is willing to reward you. Yet the reward does not come; you are compelled to set your creamery butter down in New York and Boston at a price which is not remunerative, and you see no prospect of a permanent improvement. Notwithstanding the public desire to get just such butter as you make, and is willing to pay for it, the fact that you do not get reasonable pay for your product, often leads you to think that you are casting pearls before swine. You hold to the lips of the hungry as tempting a morsel as nature and art are capable of creating; and they yawn in exasperating indifference, and perhaps turn from it. What is the difficulty? You will find it in New York city. There is a more prolific cow and a larger churn in New York than any of you gentlemen own. The product of that cow and that churn is caul-fat butter — oleomargarine. It sets beside your creamery butter in all of the eastern markets, and right under your noses, and in the shadow of your dairies and factories in the west. It is uniform in appearance, uniform in flavor, and to the popular and uneducated palate as fine a butter as any of you ever made. About a year ago we received at the *Western Rural* office a tub of this compound, and it was amusing, although terribly suggestive of the power it possessed to damage the dairy interests, to hear professed judges of butter pronounce it a fine specimen of genuine butter.

We had it examined under the microscope, and found it to be a delightful mixture of rags, chunks of meat, apparent tape-worm eggs, and enough life to have filled the ark, if it had been a little more mature, and hideous enough to have driven Noah to violate his pledge and jump overboard. But the microscope is not available to every consumer of butter, and as the vast majority of people — we dislike to admit it, but we are compelled to — do not take the *Western Rural*, they consequently did not see the only thorough expose of this fraud ever made. And not only is it dangerous be-

cause it is satisfactory to the taste of the uninitiated, but also, first, because it is cheaper than butter of apparently the same quality; second, because dealers are just as willing to sell the stuff as they are to sell butter, provided the profits are as great; third, because men who are high in the councils of our dairymen are steadily and extensively handling oleomargarine; and fourth, because a portion of the press which gets its support from those who are interested in rural industries, actually encourage the manufacture of and traffic in caul-fat butter. To these causes may be added the willingness of professed scientific gentlemen to lend their names and influence to impose upon the public by representing this combination of filth and living animalcula as the equal of the best dairy butter. Science has done a great deal for mankind, but it is not a remedy for a professor's avarice, and does not operate to cause a man to tell the truth when it is more profitable for him to tell a falsehood. Give these scientific gentlemen who find such a matchless degree of purity in oleomargarine a sufficient fee, and there would be grounds for a reasonable suspicion that they would be unable to find it if there were a whole ox or a boa constrictor in any specimen of oleomargarine that they might have under the microscope. Men are sometimes paid to look sharply and not see anything.

Now this is the state of affairs that confronts our butter makers, and why does it exist? Simply because there is so much inferior butter made and placed upon the market that the consumer becomes tired of being deceived, and wishes to fall back on something that is uniform in quality, appearance and flavor. He never has heard, perhaps, that there is anything unclean about oleomargarine, or that it contains living animalcula which may possibly be dangerous to health and life; or if he has, his fears may have been allayed by the scientific defense of an article by some New York professor. He wants something that he can rely upon, and as oleomargarine to all outward appearances fills the bill, he leaves your elegant creamery butter, and carries home a package of galvanized nastiness. If he paused to examine your butter, unless influenced by the difference in price, he would purchase your product. But it is possible that the last creamery butter he bought was not creamery at all, or if it was, that it was a wretchedly mean article; and it is possible that it might have borne your name, or one so similar to it that he fails to distinguish the difference. It is not very

honest for a dairyman to stamp his butter with a name resembling that of some other dairyman, or indeed to attempt in any way to sell bad butter for good, but there is so much of human nature displayed in such a course that it will probably always be done to some extent, at least while bad butter is made. People who are so unfortunate as to make bad butter will never get much in the habit of throwing it away or using it for wagon grease. They will sell it if they can, and unfortunately they find little difficulty in that direction. The only remedy against all these evils is to be found in having no poor butter to sell, and as visionary as a belief that that is a possibility may seem to be, it is really not unreasonable. There is a right way and a wrong way of making butter. The right way is based upon science, and is the practical application of scientific principles. The dairyman whose butter is uniform year in and year out, understands the science of making butter, or at least practices the science whether he understands it or not. That is all there is to it. If he really understands the true principles of the art, and is faithful in following them, a poor product is an utter impossibility. If, however, a dairyman is ignorant of these scientific principles, he may have good butter and he may not, but in either case the cause will be hidden from him. We are acquainted with prominent dairymen who complain of a lack of uniform quality in their butter, of the cause of which they are totally ignorant, and the matter assumes the character of a profound mystery when they allege and believe that all of their butter is made under the same conditions and by the same process; and so far as the matter of setting the milk, removing the cream, length of time that the cream is kept, temperature, the manner of churning and working is concerned — although there is often enough variance in some of these particulars to make great difference in the result — they may be correct. But the invariably successful butter maker goes farther back than the milk room to commence his preparations to produce good butter; and very much of the failure in the dairy can be traced to the improper management of the cow. The cow must lay the foundation for a perfect product, and she can never do this while neglected or abused. As to breed there will probably always be a diversity of opinion. But there can be no difference of opinion as to the necessity of kind and gentle treatment, protection as far as possible from excessive heat in

summer and against exposure to inclement weather in winter, and there should not be much as to food. In the main, the universal superiority of one kind of food over another is capable of demonstration; at least it is not difficult to determine what kinds will positively injure the flavor and quality of the milk. Yet there are differences of opinion upon these points. One man, where roots are largely fed, feeds turnips, and declares that if they are properly grown and properly fed, the most expert judge of butter cannot detect a turnipy flavor. Another says he knows better, and a hundred will oppose feeding turnips where one will favor it.

Yet we know dairymen who feed no other root, and who sell all their butter to private parties whose taste is supposed to be fastidious, and who would not permit a pound of "turnip" butter in their houses, if they knew it. While the question of turnips or no turnips is not very material anywhere, the dispute as to their utility illustrates the fact that almost at the first point of successful butter making, there is that lack of uniformity which is too suggestive of possible guesswork in feeding to make its contemplation pleasant. Now it is not impossible, but it is altogether likely, that the dairyman who makes good butter to-day and poor butter to-morrow will find upon investigation that he has been guessing and has not guessed rightly. One man feeds whole corn and believes it is as good as, and in some cases better, than meal. Others pursue an opposite course for a like reason; and yet it will not be claimed that it is impossible to demonstrate which is the better. A fundamental difficulty is the disposition to jump at conclusions. This is not peculiar to any calling or to any set of men, but is pretty universal. Under very favorable conditions an inferior food may produce better results than a superior food will produce under unfavorable conditions, and the conclusion is, therefore, sometimes arrived at that the inferior is better than the superior food. The cow is a machine. She takes food and converts it into milk. She is adapted to that work, as the corn-sheller is adapted to shelling corn. We would not expect the corn-sheller to thresh wheat; it was not made for that purpose; and we are foolish to expect the cow to convert a food into milk which has no milk-forming elements in it or which the animal machinery is unfitted to grind or assimilate. The selection of the right kind of food depends upon an accurate knowledge of the physiology of the animal and of the

component parts of the food, or a mechanical knowledge of the results of feeding certain kinds of food under certain conditions. This is the starting point after there has been a proper selection of the cow. Next comes a knowledge of the chemical changes which the milk and cream undergo, and nothing but an accurate knowledge of these will insure success. A distinguished agricultural writer, in ridiculing the claims of chemical science as regards the dairy, says: "All the genuine products of milk which we have were invented by old women who slept in unknown graves long anterior to the birth of science that has accomplished so much for civilization." That is true; but it must not be forgotten that they invented the bad products as well as the good, and that the good came from their stumbling upon the application of science and the bad from their failure to stumble upon it. It will not answer to ridicule science, and it will not do to attempt to run the dairy independent or in defiance of it. The more the dairyman is a chemist, in the true sense of the term, the better dairyman will he be. Scientific dairying is the only profitable kind of dairying, as scientific farming is the only profitable kind of farming. There never was a blade of grass or a crop of grain successfully grown that was not scientifically produced, although we be ignorant as to just what the principles underlying the success are or just how we have made the application. A farmer said to us recently that scientific farming was not profitable in his section, and he referred to a neighbor who had absolutely ruined himself by farming "scientifically," while he — the speaker — by farming without any regard for science had been successful. Now the truth was that he was really farming scientifically, while his neighbor, although professing to, was not. Science is truth, and whenever a man fails on the farm or in the dairy, he may conclude that he has not proceeded according to the rules of science. If the milk is properly set, allowed to remain undisturbed for a proper time, properly skimmed, the cream permitted to remain a proper time before churning, and rightly treated in the meantime, then properly churned, the temperature being kept at a proper degree throughout, and the butter properly worked, a uniformly good product must of course be the result; and we submit that it is pretty dangerous work to attempt to accomplish all this without a fair knowledge of the chemical changes which the milk and cream undergo. So much for butter for the present.

Now as to cheese. What we have said with reference to the expenditure of time and money to enable some of you to produce good butter, your right to demand a fair remuneration for your patience, labor and risks, and your failure to receive it, is also true with reference to cheese. And what is the trouble here? Oleomargarine cheese as well as oleomargarine butter is manufactured, but that is not the cause of your misfortune. There is a lack of consumption, however. There is not the demand for cheese that there should be or might be, and the reason is to be found largely in the fact that a large proportion of cheese in the market is an insult to the consumer, and an outrage upon every palate or stomach it touches. We are striving to increase the consumption, and were jubilant when we succeeded in getting cheese introduced into the army, and yet the lack of consumption, caused by the effect of inferior cheese, is found to exist in almost every community. We seem to work pretty much on the principle of some of our churches, which spend large sums of money to convert the heathen thousands of miles away, while there are thousands right in the shadow of their edifices who never heard the name of God spoken reverently. We are delighted to think that we have got the soldiers on the frontier to eating cheese, but seem oblivious to the fact that a hundred people at home are not eating cheese to every soldier that is. On the average boarding house and hotel table the cheese is not eaten because it is not fit to eat. Every time a consumer buys or eats poor cheese, the tendency is to induce him to let cheese alone in the future, and thus the consumption is lessened. How much of this inferior cheese gets into the market, it is not necessary to stop to explain. It is sufficient to know, as we all do, that it is purposely made and purposely put into the market. It is very short-sighted in any cheese manufacturer to pursue such a course, but so long as anyone who knows how to manufacture a good article, intentionally does not do it, there is little use in remonstrating with him, for there is none so blind as he who does not want to see.

But it is charitable to suppose that a great deal of the poor cheese that is made is the result of ignorance; but whether charitable or not, the supposition is correct. When a manufacturer will construct a curing room in such a manner that he has no control whatever of the temperature — and just such curing rooms exist — it is reasonable to conclude that he does not know any better. The

man who sticks to old methods and processes — and there are those who do — neglecting to examine the improvements and advance in the manufacture of cheese, is a fossil, and his product is the changeless material in which he has been imbedded for thirty or forty years. Some of the men persist in claiming an acknowledgment that they are actually alive, and as their friends neglect to bury them, the world has to bear their presence and the stomach has to bear their cheese — often once anyhow. It is not a sin to be ignorant; if it were we would all be in a bad predicament. But it is a rank crime to be determined to remain ignorant. There are those making cheese who do not know, and would like to be instructed; and it is with such that we all, manufacturers, dealers and consumers, can afford to be lenient. There are others who think they have adopted good methods, but are not sure that their way is the best. It is the best they know, but if there is a better, they are willing to adopt it. Both of these classes are no doubt here to-day. They are present at every dairymen's convention or dairy fair which it is practicable for them to attend. But very often they are not certain whether they have been benefited or not. The theories are frequently so conflicting that they are simply bewildering. The average convention of practical gentlemen in any calling is something of a Babel. Get half a dozen practical farmers together, and provoke a discussion upon some practical subject, and ten to one if any two of them will agree. Look over the reports of your dairy meetings, and see if this is not true of them. And there is good reason why it should be so.

One man may thoroughly understand the art of making cheese, and may properly describe the method. Another thinks that he has strictly followed that plan, when the fact is, as in making butter, he has neglected some trivial or important feature, and he pronounces the method a failure. "That plan does not work with us," is quite a familiar expression in most dairymen's meetings. Still, it is a pretty mean sort of a convention that has no one in it capable of stating a practical theory, and in an intelligent convention like yours, there must necessarily be many. And so there is really a great deal to be learned in almost every convention, although there may be a great deal that should not be learned. The only important question to decide is, Is the convention the best means of instruction, and if it is, is it the only means required? There

can be little doubt that the vast majority of you gentlemen will agree that the large amount of poor cheese in the market is a serious evil, and a detriment to the cheese interests. And if you agree to that, you will agree that in order to secure a higher standard and a uniformity, the ignorant must be instructed. What we will do with those who know how, and don't, is a matter that, perhaps, comes too near home for us to say anything about it. We will keep it in mind, however, that the demand for cheese will never be what it ought to be until the market is cleared of soft sole leather which is sold for cheese. It is sometimes claimed that there is an actual and intelligent demand for skim-milk cheese, and we confess that we have seen people who preferred it, but heaven pity the poor stomachs of such consumers, and pity, too, the manufacturer who looks in that direction for much of a market, for generally we have found the people who liked that kind of cheese to be among that class whose consumption of it consists in nibbling a piece the size of an oyster cracker with their pie at dinner. A man or woman who does not eat at one time as much cheese as would make a respectable meal for a mouse, does not cut much of a figure in the consideration of this subject, and the manufacturer who makes cheese for such a crowd, will find plenty of time to leave his business and look round for an opportunity to borrow money to pay interest on his mortgage, if he has one.

We will all agree, probably, to these points: 1. We have a great deal of poor butter in the market. 2. This large amount of poor butter gives an impulse to the sale of oleomargarine. 3. The sale of oleomargarine is damaging the sale of even good butter. 4. The most of the poor butter is made because the makers do not know how to make butter. 5. We have in the market an immense quantity of inferior cheese. 6. Inferior cheese operates to decrease the consumption, and consequently injures the sale of good cheese. 7. While much of this cheese is purposely made, a vast deal of it is the result of ignorance. 8. That it would be far better if everyone who makes butter or cheese, whether on the farm or in the factory, knew just how to do it. 9. That it would therefore be better, so far as circumstances and surroundings would permit, to have a uniform system of making butter and cheese.

Probably there is only one way by which such uniformity can be

attained, and that is through the practical teachings of some one in whom such associations as this have confidence, and whom they would be willing to pay for their services. Of course you know, or at least most of you must, that this plan is not original with us. But it is the best plan that we have seen suggested or can think of. The plan, as far as it has been carried out in Canada, is for Prof. Arnold to go to a central factory, of which he takes entire charge for a few days, doing or directing the work in the presence of those of the surrounding factories. Whether the plan there contemplates the instruction of farmers we do not know, but we would have it do so, and consider it profitable for professional dairymen to bear the expense, upon our theory that every pound of bad butter or bad cheese placed upon the market is an injury to good butter and good cheese.

Necessarily there would be considerable prejudice to overcome. The world hates to learn anything. Whatever it knows to-day that Adam did not know has been pummeled into it. Whatever it has to-day which the Garden of Eden didn't have, has been forced upon it against its will. Socrates attempted to teach it something, and it poisoned him. Gallileo was painting a sunrise upon the midnight, and the world tried to make him blot it out. Jesus Christ tried to make the world better, and it hastened to crucify him. It has met progress at every step, and disputed its right to advance.

But the world has been advancing, nevertheless, and the nineteenth century is ablaze with the harvest of genius and the triumphs of civilization. But we are still living in the soft glow of the morning, and there will be much hard fighting against our own prejudices and stubbornness and vanity before we find ourselves in the glare of the noonday. And every attempt to induce people to follow certain rules and apply certain principles in the making of butter and the manufacture of cheese, will be met with ridicule and some opposition. But opposition will not come from the majority of professional dairymen. It there is a set of men in all the world that strive to learn, it is our dairymen. So anxious are they for perfection, that there is sometimes room to doubt their judgment in adopting new implements and methods. But the dear old grandmother, God bless her, who has been making butter for the last fifty or a hundred years, and boiling cabbage and stewing

onions in the same room, will object to having any of our new-fangled notions imposed upon her. She knows how to make butter, and she has taught her daughter and son-in-law how to make it, and there is an "end on it." Still, we should be gentle but firm with the old lady, insisting upon her having a representative to see the process of the instructor, and this representative would have his prejudices considerably shaken, and he would be apt to shake the old lady's, when he saw that day after day a uniformity of product resulted from a uniform system based upon scientific principles. He would go home and tell the old lady that he had learned that to start with a good cow was a necessity, although the acceptance of the fact would, no doubt, often send every cow on the farm to the shambles, unless some of them were too old to walk there. He would explain to her that a good cow could not produce good milk if fed on sawdust, or if exposed to such treatment as would cause a disturbance of the animal functions; that milk and cream must be kept in certain temperatures, the milk skimmed at certain times, the cream treated in a certain way, the churning done according to a certain rule, and that the result day after day was the best butter. If that farm persisted after that in flavoring its butter with boiled cabbage, or in making grease, it is reasonable to suppose that there would be enough people to conquer their prejudices and acknowledge the truth to influence that reckless enemy to the dairy interest — the village grocer — to refuse to buy the butter of such a farm. Uniformity of system will produce a uniformity of results. We therefore need a good system, and then we will be assured of good results.

Perhaps we have not suggested the best plan to accomplish the desired object. As before said, we have suggested the best that we know. If any one has a better, he cannot present it earlier than now. We are all anxious to preserve our dairy interests from any possible harm. It is a grand industry, and we of the west, with our generally superior advantages, are crowding our mother east in the race for superiority. Here in Wisconsin there are counties and districts yet scarcely recognized as dairying sections, which are among the best in the world for the purpose. Out in the territories, where the Indian now crouches to waylay the brave advance guard of civilization, in a few years the dairy will cast its shadow upon the luxuriant bunch grass, and the crystal streams

that sing their songs through the valleys and down the hillsides. Even in far off Montana, it will not be long before the dairy cow will graze on the foot hills, and her butter and cheese will be in the Chicago and eastern markets. Isn't it worth our while, therefore, to conquer ourselves and perfect ourselves, that we may be in this great west, in the dairy, what we are politically and in general enterprise — the head and front of the American nation.

RELATIVE EFFECTS OF WHEAT RAISING AND OF DAIRYING UPON THE FERTILITY OF THE SOIL.

BY W. W. DANIELLS, MADISON.
Professor of Chemistry and Agriculture, University of Wisconsin.

Mr. President and Gentlemen of the Convention — It occurred to me that as you are engaged in dairy, rather than grain farming, you might like to know something in regard to the relative quantity of fertilizing material which is taken from the soil by dairying as compared with wheat raising. It is claimed, as you know, that the soil of Wisconsin will not grow nearly such a crop of wheat at the present time as it would when the state was first settled. Now, there can be only one reason why the soil will not raise as good crops now as it would then, provided the climate and other conditions remain the same. The fertility of the soil is that upon which the yield depends. We have been using this soil for a great many years. Three mineral substances which are necessary to the growth of crops are nitrogen, potash and phosphoric acid; these three ingredients plants take from the soil, and they are always present in the soil in small quantities. These three substances have been taken from the soil these many years by large crops of grain without being replaced. That is the only reason, it seems to me, why we don't get such crops at the present time as we formerly did.

We have been raising wheat on the university farm for the last ten years. We have not a very large tract of land, and we are obliged to cultivate that land over and over every year. The land on which we raised wheat last year has been used constantly for ten years for cereals. Yet the yield for the last two years has been

about fifty-two bushels per acre. The yield has gradually increased for the last few years. I attribute this increase very largely to fertilizing the soil. We put upon the land annually about twelve loads of stable manure per acre, and we have increased the yield very greatly. It may not all have been due to this cause; of course we cannot tell how much is due to mere climatic conditions from year to year. But largely I attribute this increased yield to the fact that we have manured the land well. As I said before, I ask you to bear in mind that these three substances to which I call your attention, nitrogen, potash and phosphoric acid, are essential to plant growth. Plants must have them. If plants cannot obtain them they will die, or at most they will make but a sickly growth. Nitrogen, of course, is not present in plants or in the soil as nitrogen. Four-fifths of the air is nitrogen; but it exists in the soil in some chemical compound, usually as nitrates or as ammonia. These three inorganic constituents of plants exist in soils, even in very fertile soils, only in very small quantities.

I have not called your attention to the organic materials required in plant growth because they are mostly obtained from the air, which contains an abundant supply of them. I have taken here for comparison what I supposed to be the average yield of a cow for a year — 4,000 pounds of milk. I don't know that it is, but I have taken the definite quantity. It contains:

Nitrogen	29.7 lbs.
Phosphoric acid	7.7 lbs.
Potash	8.5 lbs.

Now, I am supposing that the milk, or the material that is manufactured from the milk, is carried off from the farm. With each 4,000 pounds of milk taken from the farm, is taken this quantity of these various inorganic constituents of the soil. I have taken fifteen bushels of wheat to compare with this quantity of milk, considering that it is about the average yield, although it is a little more than the average yield for Wisconsin. I have taken 2,781 pounds of straw as the amount that would yield fifteen bushels of wheat. I have looked over our reports for seven or eight years, and taken just the proportion of straw to wheat that our crop has yielded. That is, from fifteen bushels of wheat we have obtained 2,781 pounds of straw — nearly three hundred of straw to one of wheat. Fifteen bushels of wheat contain 18.63 pounds of nitrogen;

the straw, 13.2 pounds; or a total of 31.8 pounds of nitrogen taken from an acre of land by this wheat crop.

Of phosphoric acid we have:

In wheat	6.34 lbs.
In straw	5.6 lbs.
Total	11.9 lbs.

Of potash we have:

In wheat	10.69 lbs.
In straw	7.6 lbs.
Total	18.3 lbs.

You see the nitrogen is only a little more than the nitrogen in the quantity of milk which I have taken, while the phosphoric acid is about forty per cent. greater, and the potash more than twice as great. Now this is not a fair comparison, of course, because the 4,000 pounds of milk could not be manufactured from an acre of soil, that is if 4,000 pounds of milk is the average quantity for a cow; as no man can by pasturing, the common method of feeding cows in summer, support a cow upon an acre of land. The number of acres of land required to support a cow that would give 4,000 pounds of milk would be two and a half, perhaps. Supposing it were two, we should have to double the quantity of phosphoric acid, nitrogen and potash contained in fifteen bushels of wheat and the accompanying straw, in order to get at a comparison of the relative amounts of these different fertilizing materials taken from the land by dairy farming and by wheat farming. More than this, in dairy farming you are all the time returning to your soil a large amount of fertilizing material. The food that you take from your farm, and the grass and the grain that you grow, which contain a large amount of fertilizing material, are fed to your stock, and the refuse is returned in large quantities to the soil. In wheat farming, the straw is usually returned to the soil, but the material found in the grain is carried off the farm, the quantity of which is considerably greater, as you will see by the papers before you. When you compare the relative quantity of these valuable fertilizing materials found in the milk with that found in the grain, you see that grain growing takes from the soil much the larger amount. Here is one of the reasons, it seems to me, why the dairymen of Wisconsin are better off than grain farmers. They, instead of dimin-

ishing the fertility of their farms, are making them more fertile from year to year, by the return of nearly all the fertilizing material taken from them by the crops they grow. Your bank deposit lies in your soil. You can draw on it only until your bank account is exhausted. The plant food in the soil is your bank account. You can only draw on it until this material is taken from the soil and returned to you in plant growth. Just as the cashier of the bank will refuse to pay money on your checks after your bank account is exhausted, so the soil will refuse to honor your drafts for plant food. As you draw out of the bank you have to put money back to keep your account running, so you have to add to your soil as you make requisitions on its vaults. It is not generally necessary to return to the soil as much plant food as you take from it, in order that it may retain its original fertility. There is a large amount of plant food in your soils which is not in the form in which plants may assimilate it, but by the stirring up of the soil in the various operations of cultivation, by sunshine, rain, etc., it will be gradually decomposed and brought into a condition in which plants may feed upon it. So you may keep the fertility of your soil intact without returning to it as much plant food as you take from it. But you cannot retain its fertility without keeping as much material required for the growth of plants as it originally contained. The moment you reduce this amount so that plants cannot get all they need, that moment you begin to diminish the yield of your crops; for the plant growth under such conditions cannot be as great as it otherwise would be. I shall not occupy your attention longer with this subject.

ECONOMY IN STOCK FEEDING.

I had the honor, several years ago, of reading a paper before your association, in regard to the feeding of stock, calling your attention to some facts in regard to the relation which exists between different ingredients of various foods, and to some experiments which have been performed by German agricultural chemists in regard to the relative quantity of these different food ingredients which animals would digest, and which gave the best returns for food consumed. When I first learned that I was to address you on this occasion, it was my intention to still further continue this subject, but on account of my professional work at home, I was

not able to spend the time necessary in preparation. But I thought, perhaps it might be profitable for me again to call your attention, for a few moments, to this matter. I desire to call your attention to the relative value of some of the more common kinds of food, as has been proved by actual experiment by agricultural chemists. As you may already know, the chemists of Germany, in carrying on these food experiments, accurately weigh the quantity of food given, and samples of all the food are analyzed. All the offal of the animal is weighed, and samples of it analyzed. This enables them to know the whole quantity of food that has been digested, and the relative quantity of each food ingredient which an animal may digest.

I have in this table,* the amount of digestible material in several of the more common varieties of food. This table, I would say, is taken from the work of a German agricultural chemist named Wolff, who has paid more attention to this matter than any other living man. In the left hand column the variety of fodder is given. In the second column the percentage of digestible albuminoids, next the quantity of digestible carbhydrates; these would comprise woody fibre and starch; the third column the quantity of fat; the fat and carbhydrates take the same part in the nutrition of the animal, and are consequently estimated together as total carbhydrates, the fat being first multiplied by two and a half, as one part of fat is considered to be equal to that quantity of the carbhydrates. In the next column is what is called the nutritive ratio, or the number of parts of carbhydrates to one of the nitrogenous material; in the last column is the value per 100 pounds of these different kinds of feed. This value per 100 pounds of course can only be relative, and it is obtained by giving to each one of these constituents of the food a certain money value. These figures are made in Europe, and they can only apply here approximately. It gives the relative values, and that is all that is essential for our present wants. Here red clover is given, and it contains of the digestible albuminoids 7 per cent.; digestible carbhydrates, 38.1 per cent.; of the nitrogenous material we have 5.99 per cent. According to the basis of money value here taken it is worth 70 cents per 100 pounds. We can call this .70, comparing the others with it. The next is white clover, in which we get the value as com-

*The short hand reporter has omitted the table from his report of the paper.

pared with the clover hay, that being taken at .70, this would be taken as .76, a little more than 8 per cent. greater. In the case of timothy, we have albuminoids, 5.8, carbhydrates 43.4, fat 1.4, the digestible albuminoids considerably less than in the red clover, and the digestible carbhydrates are greater, and 1.4 per cent. fat. Thus timothy contains more fat than red clover hay, and the nutritive ratio is not as great. The money value would be .70, the same as red clover. Wheat straw would be worth .37, though in my opinion that would not hold true. However, it is found to be true by this method of valuation. Next comes oat straw; the percentage of albuminoids is 1.4; of carbhydrates 40.1, and of fat, 0.7. It has been found that for every one pound of digestible nitrogenous material in food given milch cows, there should be 5.4 pounds of carbhydrates.

The best results have been obtained from a given quantity of food when the various digestible ingredients are contained in this proportion. The digestion is then more complete. Whenever we have food that contains more than 5.4 pounds of carbhydrates to one of albuminoids, the carbhydrates will not be as well digested as they would be were they present only in that proportion. For instance, we find here in wheat straw there is only one-eighth of one per cent. of digestible nitrogenous matter and 35.6 per cent. of digestible carbhydrates. Now, the carbhydrates would not be completely digested if the straw were fed alone; while all the carbhydrates would be digested when enough albuminoids is put in the feed to raise the ratio to one to 5.4. Let us take some of the other feeds and see what we learn. Take the linseed cake meal that contains 24.8 per cent. of digestible albuminoids to 27.5 per cent. of digestible carbhydrates and 8.9 per cent. of fat. Now if we should feed with this wheat straw which is poor in nitrogenous material, this linseed meal which is rich in nitrogenous material, a much larger proportion of the straw would be digested by the animal. As I said before, the proportions of each of these food ingredients best adapted to complete digestion, is one of albuminoids to 5.4 of carbhydrates. By experiments with milch cows, in which the animals were weighed and the food was weighed and the quantity of food that was digested was found by analysis, Wolff found that for every one thousand pounds of live weight the cow needed daily food that contained 2.5 pounds digestible albuminoids, 12.5

pounds digestible carbhydrates and four-tenths pounds digestible fats. The ration should contain about 24 pounds of dry organic material, and have this ratio between the albuminoids and carbhydrates.

From these experiments much can be learned, with a little study, in regard to feeding animals. We cannot rely, probably, upon figures giving exact values to the different varieties of foods, as these do, with absolute certainty, but we can rely upon the general truth that there is a definite proportion between the amount of nitrogenous ingredients and the carbhydrates in food which animals completely digest. To feed a given number of milch cows in the most economical manner, the food given should contain these different ingredients somewhere near in the proportion of 5.4 carbhydrates to one of albuminoids. From these tables, giving the percentages of digestible material in the various kinds of food, much information may be obtained in regard to the economical feeding of stock. Another thing has been proved. Mr. Foster says he wants to give his cows all they can eat, meaning, I suppose, all they will digest. That is, he looks upon his cow as a machine for converting fodder into a more concentrated product, milk; and he wishes to work this machine up to its full capacity, because by so doing he diminishes the cost of production of a given quantity of milk. This is the principle upon which every manufacturer must work. But there is another principle involved in feeding cows. The food should be given them so that they will make the most milk from a dollar's worth of material. Now it has been proved, that in order to do this, there should be between the digestible albuminoids of the food and the digestible carbhydrates, a ratio of about 1 to 5.4.

Allow me to call your attention to the paper read by me at the Appleton meeting of this association in 1877, in which I gave the results of an experiment with four cows, which was made by Dr. Kuehn, director of the German Agricultural Experiment Station, at Moeckern. These cows were first fed upon a ration composed of green clover and barley straw, the digestible ingredients of which were in the proportion above stated. During a second period, they were fed upon a ration of green clover only, in which there was a much larger proportion of albuminoids than in the mixture of clover and straw. Now, while the cows gave as much

and as rich milk, while fed upon the mixture, as while fed upon the pure clover, the milk cost about fifty per cent. more in the latter case. The albuminoid portion of the ration was greater than the cows could digest, and there was consequently a loss of a part of it.

This experiment shows that it is not always profitable to give cows all they will eat, unless care is taken that the albuminoid and carbhydrate portion of the food exist in the proportion in which the animals will digest them; one of the former to five and four-tenths of the latter. On the other hand, it is profitable to feed a cow all she will digest, because all the food digested will be converted into useful products, meat or milk. So that you will see at once that while the measure of a cow's usefulness depends directly upon the quantity of food she can digest, the measure of profit we may obtain from a cow will depend to a considerable extent upon whether she is given food of such composition that she can completely digest it.

Question (By Mr. Smith)— I would like to ask Professor Daniells if all animals are constituted alike; whether one animal will digest equal portions of food with another?

Answer — No, I do not suppose so. I suppose there is a difference in the digesting powers of animals the same as there is in men. Probably it may not be true that animals differ as greatly in this respect as men do.

Q. — Has it been proved that any one grade of animals has a greater power in that direction than others?

A. — It is true in regard to the habits of different breeds of animals that animals of one breed will convert food into meat, as is the case with the Short-horns; another breed will convert it into milk, as the Ayrshires; but all the food that an animal digests will, I suppose, be converted into some useful product.

Q.— Is there not some food that is no good?

A.— Not if the animal digests it. If the animal is getting too much food, of course it will not digest it, just as it is with men. Experiments similar to these to which I have called your attention were made under different circumstances. An ox, for instance, was taken, and the quantity of food required to keep the animal at rest was determined, then the quantity of food required to keep

the animal at moderate work, then the quantity of food required to keep the animal at full work. Similar experiments have been made with horses. I have not, however, thought best to speak of them. I have desired to call your attention to the things which I thought would be particularly interesting to you as dairymen in reference to the digestibility of common food-materials by your cows.

Q.— How is it with corn cobs ground with the corn?

A.— Prof. Wolff gives in his tables the digestible ingredients of corn cobs, but I don't remember the percentage; the value, as computed from his results, is greater than I supposed it would be.

ENSILAGE.

BY L. P. GILBERT, FORT ATKINSON.

AS MR. GILBERT was not present the paper was read by W. D. HOARD.

Before reading this paper of Mr. Gilbert's, I would like to preface it by saying that he is a very thoughtful, careful man, and one of the finest butter makers in our county. He is also a man of wide reading, and has become interested in the system of ensilage, and commenced working at it in this state, and he has become convinced that no dairyman can afford to do without it.

Ensilage — This term, derived from the French word *silo*, a pit or trench, indicates the process of storing green forage plants in the soil. We are told the French imported it from Germany, where Mr. Adolphe Reihlier, the proprietor of a large beet sugar factory near Stuttgardt, had been making some very successful experiments in the preservation of sugar beet pulp. This man very unexpectedly had a very large quantity of green maize fall to him, which he subjected to this process with wonderful success, and the practice was continued for fifteen years with increasing satisfaction. Then the practice was adopted by the French, and from them it has spread over a large part of the old world, with the exception of Great Britain.

The process of curing fodder in this way is quite simple, and perhaps I can describe it best by giving my own experience. In the summer of 1877 I commenced, although the *American Agri-*

culturist says the "first silo in America, built on the French plan of M. A. Goffart, was opened at 'Winning Farm,' Billerica, Mass., on December 3d last," at least two full years after my first experiment, in which I followed the teachings of said Goffart. I dug a trench six feet wide, six feet deep and thirty feet long, which was filled with green corn cut in blossom and pitted with alternate layers of rye straw, protected from the earth on all sides by straw.

The fodder was pitted the full length of stalk. The trench was filled and the fodder piled up above the ground to a height equal to its depth below the surface, so that when compressed by the three feet of earth thrown over it, it settled but little below the surface of the ground. The silo was filled in August, and opened in February following. The straw upon the top was mouldy, and also a little of the fodder; otherwise it was found to be in an excellent state of preservation, being at first a little sour and having a strong alcoholic smell. The cows ate it with relish, and it produced the same effects as green feed just from the field. In 1878 I filled the same silo with two-thirds green corn and one-third Hungarian grass, cut in blossom, with straw about the outside for protection. Being short of help, I was four days filling it; consequently it became heated before it was covered, which injured the color and quality somewhat.

This last year it was filled with sweet corn, cut in the milk, with layers of oat straw between.

It is estimated that corn fodder cured in the ordinary way shrinks four-fifths, with great loss of butts and breakage in handling; while by the ensilage process, there is only the loss of from thirty to forty per cent. of the *water* contained in the fodder. The butts being soft are mostly eaten by the cattle, the hogs greedily taking all that is left.

To those who would like to experiment, I would say: Dig your silos from six to twelve feet wide, and from six to eight feet deep — if you get much deeper it will require too much labor to throw it out. The sides of the pit may be bricked or walled up, and it should be so located that the surface water will be kept out.

This year mine was closely covered with planks, upon which a quantity of stones were placed to press it down and exclude the air. This is much cheaper than to cover with earth, and can be opened without difficulty in cold weather. It *must be sheltered*,

and another year I propose to enlarge mine and cover it with a sort of barracks for coarse fodder. It may be put in in sections, to save cutting down when taking it out.

I think, gentlemen, if any of you will try this system of ensilage, you will not be disappointed.

DISCUSSION.

Mr. Hoard — I should say in addition, that my impression is he put into his cellar something like six inches of straw. I do not know much of the details, but any person who will address Mr. L. P. Gilbert, Fort Atkinson, Wis., and inclose a stamp, will receive a very prompt answer. In my estimation it is a very good thing for a man to do, who is carrying on a winter dairy. It enables him to feed his cattle in the winter with succulent, juicy food. If a man reflects, he will remember that a cow always gives the best milk, and is in the best condition, when she is feeding on succulent, juicy food, and in the winter time it is particularly difficult for us to realize that the cow wants something juicy — as we want our apples. We put the cow in the stable and give her dry, heating food, and tell her to go and drink; that is not according to nature; we see with what avidity cattle eat apples or anything of that character. This ensilage seems to show us the way to do it, to give her something juicy. There is, as he says, quite a strong alcoholic smell. You would think it would rot, but it does not; it ferments, and the cattle eat it with avidity.

Q. — You were speaking about this having an alcholic smell; is it intoxicating?

A. — I never saw a cow drunk on it yet.

Q. — You say it ferments; is that the reason the cows like it?

A. — I think so. I suppose the natural taste in all kinds of life is for something a little stimulating.

Q. — (By Mr. Childs) — How would a cellar under a barn serve the purpose?

A. — I don't know. I am a novice in this matter. All I know is what I have observed. I wish Mr. Gilbert was here. I think he has looked into the question more than any man in America.

Q. — I should think that some tight place well boarded would serve the same purpose as going into the earth. Some tight stone wall or brick wall?

A. — My idea is that it is more subject to freezing. You put up a brick or stone wall and it is more likely to freeze through in cold weather.

Mr. Foster — Mr. President, this matter of ensilage has been investigated by several parties at the east during the last three years, and from the reports which I have lately seen in regard to the matter, the manner of filling them is somewhat different from that described in the paper just read. After the cellars are prepared, the planks or boards are placed in the bottom, and to facilitate the use of it a scoop shovel is used in taking out the food. Green corn is then cut with a cutting machine in short pieces and run right into the pit and firmly trod down; it should be packed down as firmly as possible; then cover it over with doors or something of that sort, weighted with dirt or stone, a sufficient amount of dirt to exclude the frost or air; then it may be opened in sections at the time it is required for feeding, and taken out, it leaves a firm standing wall, and you can cut it down with your shovel and take it from the bottom, so that the air does not work into it to hurt it, and it being lined with straw protects the ensilage from being fouled. These courses of straw are not necessary, as I understand.

Mr. Hoard — Mr. Gilbert did not cut it; he put it in full length; but I suppose it don't make any difference in the action of the ensilage whether it is put in short or full length. Mr. Gilbert is very certain that all that is necessary is to put it into a trench, press it down, and cover it with earth or plank.

Q.— Is there any reason why clover hay should not be kept in the same way?

A.— I don't see any reason.

Q.— (By Mr. McNair)— Do we understand that process of feeding does away with the feeding of bran?

A.— No, sir. It is additional to the bran and dry feeding; the cow seems to thrive better and to be better in tone.

Vice President Hazen in the chair.

REPORT OF COMMITTEE ON RESOLUTIONS.

Mr. President — Your committee on resolutions beg leave to report as follows:

Resolved, That the sincere and heartfelt thanks of this association are due and are hereby cordially tendered to the large hearted and generous citizens of Elkhorn, for their unbounded hospitality in entertaining its members, and making their visit so agreeable and pleasant.

Resolved, That this association fully appreciates the favor shown by Messrs. H. K. and F. B. Thurber, commission merchants of New York, in donating to the society the cheese taking the highest premium at the International Dairy Fair recently held in New York, and hereby tender to this firm the sincere thanks of each individual member present.

Resolved, That the association is under obligations to W. D. Hoard, president of the Northwestern Dairymen's Association, and W. N. Tivy, of St. Louis, for premiums offered by them respectively, upon the best essay on the Construction of Cheese Curing Rooms, and the True Cause of Bitter Butter in Winter, and take this occasion to thank them most sincerely.

Resolved, That the association hereby acknowledges the value of the special individual premiums offered by John Boyd, of the Cooley creamer, Chicago; *The Rural New Yorker*, New York; Geo. S. Hart and Howell, produce commission merchants, New York; W. N. Tivy, butter and cheese commission merchant, St. Louis; Borden, Sellick & Co., Chicago, western agents for the improved Howe scales; Cornish & Curtis, Rectangular churn and Lever butter worker manufacturers, Fort Atkinson; R. S. White & Co., manufacturers of the Natural butter color, Fort Atkinson; *National Live Stock Journal; Jefferson County Union;* E. Beesom, editor *Wisconsin Farmer*, and E. E. Sheldon, Fort Atkinson, manufacturer of the Badger State butter color, and tender hearty and sincere thanks for the same, and believe these liberal premiums will stimulate and advance this important branch of industry.

Resolved, That the heartfelt thanks of the association are due

and are hereby extended to the Chicago & Northwestern, Chicago, Milwaukee and St. Paul, Wisconsin Central, and Milwaukee, Lake Shore and Western railways for their generous and magnanimous reduction of fare to those attending the conventions.

Resolved, That the Wisconsin Dairymen's Association appreciate the enterprise of the metropolitan press of Chicago — notably the *Tribune*, *Times* and *Evening Wisconsin* — in being represented by reporters in our convention, and for their efforts to give ample reports are entitled to our most cordial thanks.

Resolved, That this association deem it eminently proper to give expression to the deep respect it entertains for the memory of Geo. D. Curtis, of Rosendale, and J. J. Smith, of Ripon, who were among the early members of this body. By their earnest and intelligent efforts they contributed much to the grand result of making Wisconsin a leading dairy state of the nation. By their genial spirit and integrity of character they endeared themselves to their fellow laborers in this worthy cause, and in their death this association has met with a great and irreparable loss.

Resolved, That the Board of Regents of the University of Wisconsin are entitled to great credit for the experiment they are making to stimulate and advance the general interests of the state, by using a small portion of the funds at their disposal in paying the expenses of representatives from their board, from the University of Wisconsin, and the State Dairymen's, State Agricultural and State Historical Societies. We sincerely thank the board for this action, and think it a timely and wise appropriation.

Resolved, That we take occasion to express the thanks of this association to its officers for the past year, and especially to Secretary Curtis, for the zeal and discretion which has been manifested in promoting dairy objects and interests in Wisconsin.

Respectfully submitted,

W. W. FIELD,
J. A. SMITH,
W. D. HOARD,
Committee.

J. M. Smith, of Green Bay, moved the adoption of the resolutions. Adopted.

REPORT OF COMMITTEE ON NOMINATION OF OFFICERS.

Mr. President — The committee appointed to make nominations for officers for the ensuing year, would respectfully recommend the following:

For President — Stephen Favill, Delavan.
For Secretary — D. W. Curtis, Fort Atkinson.
For Treasurer — O. P. Clinton, Waukesha.
The vice presidents to be all the ex-presidents.

HIRAM SMITH,
O. Z. OLIN,
A. W. VAUGHN,
J. B. INGERSOLL,
W. D. HOARD.

W. W. Field moved that the report be received and adopted. Carried.

Mr. Favill — If I will not be called upon to serve any other parties than those who voted for me, I think I will accept the office. I can wait upon these two fellows over here and give them all the information they need. I can run those two gentlemen.

Chairman — I will correct the gentleman; the vote was unanimous.

Mr. Favill — The vote was more unaniminous than unanimous.

Vote taken over again.

Mr. Favill — I have not anything to say. That is what is the matter with me. I suppose you will advise me to sit down, and I will very soon. I just wanted to say this, ladies and gentlemen, that I had an intimation yesterday of what was going on, and I said positively that I would not do it; I had spent all the time and all the money, and I thought I had got all the glory there was in the office of president of this association, and I should object to it. I said so yesterday. If it was not for one thing I have said publicly, I should still say so; and the thing I have said which will hold me is this: When any man or any woman becomes a member of an organization, and does it voluntarily, they surrender their right to say "will" or "will not," in matters of this kind. Of

course in matters of right and wrong their will must control. But when this association asks me to serve them in the capacity of president, I have not any right to say I will not. I think we will let it stand. I will do what I can. I will try to make you the best president I can, with the aid of this good secretary.

WISCONSIN AT THE INTERNATIONAL DAIRY FAIR.

By GEORGE LAWRENCE, Jr., Waukesha.

Mr. President and Gentlemen—I think at this time comments are unnecessary and excuses uncalled for, and I hope you will forbear with me while I try to show you what Wisconsin did at the late International Dairy Fair. It is not my intention to give a long, detailed account, but to state a few facts.

We scarcely realize what we may attain, or the possibilities of Wisconsin dairymen, until we become more and more convinced of the results of the labor and exertions used at the International Dairy Fair. The best dairy products and the most enterprising dairymen from all parts of the globe were brought together.

It is gratifying to note that our dairymen are showing a rapid and increasing disposition to rise to the level of their opportunities; and it is not too much to say, that the character of our dairy products has been large redeemed by the results of this fair.

But a few years since, our butter was scouted by dealers, and commanded only the price of grease. Now our butter is sought for, and commands the highest market price, especially in the New York market. The result of our labors at this time is wonderful, and must be gratifying to every person within our borders.

Competition was very close and the honors hotly contested for. Wisconsin butter took the sweepstakes, and Wisconsin cheese captured the honors for the best cheese made in the United States.

The mere stating these facts in words is inadequate to express the fact. When we consider the class of goods we contested with, and the men that manufactured them, we are still more startled.

Veteran dairymen of the east have grown grey, their eyes dimmed by age, in hard and close attention to the manufacture of butter and cheese, studying the art with all the scrutiny of science and practical

knowledge that could be obtained. Then to have us Badgers from the western wilds, in our infancy in dairying, come down on their own soil and headquarters and capture the honor and reputation they so long worked for. This is no mere idle curiosity.

The results are marvelous. We felt well pleased with our success the year previous. The first year we asserted our rights, and the last year stated the fact, that Wisconsin is the champion dairy state.

The designation "western" attached to butter and cheese will no longer be regarded as a stigma. On the contrary, it will demand a premium; and we hope our state will be largely benefited by its use.

The Wisconsin exhibit, as a whole, was one of the best and finest shown. It attracted the attention and admiration of all in attendance at the fair. Our display of cheese was awarded the second prize. We feel well satisfied with this, as the display which took first premium was mostly, if not wholly, composed of fancy foreign cheese. We are assured that size of pyramid did not win, for ours looked like an infant alongside of Thurber & Co.'s, which towered some forty feet high. While ours was fair sized, it was composed of western cheese, neatly arranged and tastefully decorated, showing conclusively that we have enterprising minds in Wisconsin as well as prize butter and prize cheese.

Let us consider briefly, or try to consider, what brought about these results.

Was it the dairyman that dried up his cow and sold out the past season?

Was it the factoryman that turned the key in his factory door on account of the pressure of hard times and low prices?

Was it the dairyman that was satisfied with staying at home with his goods?

Was it these who brought about the results obtained at the fair?

On the contrary, the credit is due to the enterprising dairyman who expended his time and money; willingly showing his goods; competing, perchance, with the best on the globe.

It was owing to the factoryman of Wisconsin that proposed to show his goods on their merits, and the dairyman that stuck to his business, and kept his cows through thick and thin. When once we establish ourselves in a branch of business, it is not well to

change when a little pressure is brought to bear like we dairymen have had to undergo the past two seasons.

Probably no one thing has injured our farming community as much as shiftlessness — shifting from one undertaking to another. The dairyman that stuck to his business and produced the best goods he could, was a means to that end, and helped our results at the fair.

We well know our climate is beautiful and well calculated to produce the desired effects on dairying. The clear running spring water that abounds throughout our state, will contribute to the health of the cow. Our grasses, such as we find on hill and dale, from early spring till late in the fall, are rich, sweet and nutritious. And the cow that lives in Wisconsin's climate, drinks Wisconsin spring water, and eats Wisconsin grasses, cannot help but turn out pure, rich milk. And we well know that from pure, rich milk we obtain rich cream, and from good cream, we turn out sweepstakes butter.

We may say the same of our cheese produced from this source. These natural resources, with our artificial labors, brought about the results at the late International Fair.

While we boast of natural resources, let us be on our guard, for we have to but look to our sister states adjoining. They, too, were richly rewarded at the fair. Their natural resources are probably equal to ours. Let us look well to our laurels, that they are not captured from us.

How are we to retain our honors? A question not easily answered, but a question that must be solved.

In the first place, let the factorymen look to their implements; let us have nothing but the best. Let our churns, our butter workers, our cheese vats, our curd sinks, our cheese presses, etc., be nothing but the best.

And right here, let me eulogize our dairy patentees. We find manufactured in our state the best churn, or I may say it was awarded the second prize at the New York dairy fair, and was especially mentioned by the judges as an extra good one. Then we find the best butter color, or, in other words, it was so mentioned by the judges at first. Afterwards, an appeal was made by other butter color men, and they captured the first; but to show how very closely these were contested, I mention the facts. Then we

have the new process of buying the cream, and cans to set the milk in; to purchase the cream by the week from farmers, and the factory men to have their agents collect it, and many more devices.

I think if we only had a salt mine, we would be eternal. Salt seemed to prevail at the International Fair. Salt men were at the head of matters. The thing worked admirably. Competition prevailed there as everywhere else.

As we were saying, use nothing but the best of implements. Use the best salt, provided you can find it. Let cleanliness prevail in every department. Hire none but responsible cheese makers and butter makers. Let our products be as uniform as possible. Then let us have *competition* among ourselves.

Now we are at the top of the ladder, how to stay there is the question.

We have made a few suggestions, but have not entertained an answering. To rise to the level of our opportunities is not enough, but to rise to our possibilities is what we should entertain.

Evolutions never go backwards, but ever forward. Let it so be with Wisconsin dairymen.

INTERNATIONAL DAIRY FAIR OF 1879.

W. D. Hoard was requested to address the convention on this topic, which he did in the following remarks:

Mr. President—In the course of the remarks I have made at this convention, I have spoken quite often of the lessons to be derived from the International Dairy Fair. I think that I have previously said all that is practicable or profitable for me to say on that subject. Those lessons must be worked out before they will sink into popular conviction.

There recurs to me, however, one or two points that I would like to make. In connection with that fair, I have heard considerable complaint from dairymen about Thurber, the Higgins salt man, and about Moulton, who champions the Ashton salt. Men have complained that these men, who are not dairymen, were running the Dairy Fair.

Now I call that getting a little too thin skinned.

In the first place, in takes a large sum of money to conduct such a fair; and more than that, it takes men who are accustomed to the management of large operations of that kind. Where are you going to find the money and the right kind of a man? Will the dairymen come forward and plank down the cash? I fear not. It takes a tremendous amount of urging even to get them to exhibit their goods. Now to accomplish a large job of this kind, you must be as gods, knowing good from evil; you must harness a variety of interests to the undertaking. If Mr. Thurber and Mr. Moulton and the commission men of New York are willing to go down into their pockets and bring up twelve to fifteen thousand dollars, and expend their time and labor to give the dairymen of this country the grandest fair of the kind the world ever saw, I should say for one: "Gentlemen, go ahead. Don't, for heaven's sake, stop on my account. Expend yourselves when and where you please. Pile salt mountain high. It is all right. Help yourselves all you can, so long as you help me." That's about the way I figure human nature. Those New York men paid out money like water to help the fair along.

Are we not "looking a gift horse in the mouth," if we stand and carp at them for trying to help themselves a little amid it all?

Those men may have had an axe to grind. What of it? I don't know of a Christian dairyman in the land but when he prays for the final salvation of mankind does not include himself with the rest. The Lord would lose all respect for him if he didn't. All things were not lovely about that fair; but do you know where everything is lovely? But there were some grand results that came to you dairymen out of it all. Those men put their shoulders together and built a theatre wherein Wisconsin could play a star part; and she did it, too.

Another lesson is this: Every dairyman in this state was benefited by the proud distinction won by Wisconsin butter and cheese at that fair. Now, who were the men that worked out that proud result for you? Was it the ignorant, the careless, the lazy or indifferent dairymen? Not much; it was the representative men in the pursuit. Look over this convention to-day and you will find the most of them here. They attend conventions; they read, study, and strive to improve by every means in their power. That's a lesson the rear rank dairymen may well heed.

I spoke to you last year, at Kenosha, about oleomargarine, and the danger it portends to your interests. As I said then, so say I now. Oleomargarine is after the ordinary butter maker in a pitiless way. I meant to have brought a package of it along for your inspection. Some of the best of it is vastly superior to the common run of dairy butter here in Wisconsin. It can be produced cheaper than you can make butter. It costs you just as much to make poor butter as good. Soon there will be no market for your ordinary butter. Oleomargarine will have driven you out of the market. What will you do then? My advice is, combine together and make first-class creamery butter. These dairy exhibitions and fairs have been productive of great good. The first dairy fair held in the United States was held under the auspices of this association and the State Agricultural Society, in 1875, in Milwaukee. Great good grew out of that. Then came the centennial, and Wisconsin took a grand stride to the front. Since has followed the Chicago dairy fair, and the international. What we have gained has been by vigilance and energy. We must continue the same practice. "Eternal vigilance is the price of good butter and cheese."

DISCUSSION.

S. B. Davis, butter and cheese dealer, 110 South Water street, Chicago — Mr. President: I should like to hear from Mr. Hiram Smith, and also Mr. Hazen, their views as to whether the cheap butter made here in this country is in competition with the butter they say was on the table at the hotel in New York.

I will just state that I went to the landlord at the hotel and asked him what kind of butter it was on the table. He said it was creamery. I told him he was laboring under a misrepresentation. He said he had paid forty cents a pound for it, and they had bought it at one of the best butter houses in New York. I found out the firm and called there the next day, and in the course of conversation asked him if he was selling the hotel where I was stopping, their butter. The salesman remarked, "Yes, we do at times." I asked him, "What grade of butter do they buy for their table?" He took the blotter laying on the desk and turned page after page and came to an entry of "5 tubs Oleo. @ 26c."

Hiram Smith — This is additional evidence to what we have

already. We were discussing the question of whether that was butter or oleomargarine. We did not have much trouble in deciding, most of us, that it was not butter. In reply to the question of Mr. Davis, whether that comes in competition with dairy butter, I will say it was preferable to the great mass of butter made. That hotel men will prefer this oleomargarine to the great mass of butter that comes on the market. There are no doubt people who are brought up to eat creamery butter, and would rather go without than eat poor butter. There was at the table eight or ten, and not less than four or five selected butter and cheese men, and yet it was a disputed question whether it was oleomargarine or not. Not Mr. Davis, however; he was sure of it from the first. It was finally left to Mr. X. A. Willard, the greatest authority on butter in the United States. After looking at it and satisfying himself, he stated that if that was butter it was not good butter, and we all know that when butter ceases to be good it goes rapidly to the bad. But this butter was neither good nor bad, therefore he pronounced it oleomargarine. That class of butter will be preferred to any ordinary class of butter. It is used on the dining cars, and also in large cities.

One of the dealers in New York told me, that for a great many years, five or ten years ago, he had been in the habit of laying in large stores of dairy butter, and now this butter is in the market at much less price than ordinary dairy butter. That is the reason dairy butter has so rapidly depreciated; dealers dared not store up very much of it. Creamery butter does not come in competition with it all, that is taken every week by men who are willing to pay high prices.

Another thing we learned at this dairy fair was the confidence in western men among the eastern. One prominent dairyman of the state of New York asked me, with a great deal of anxiety, whether the low prices which have existed during the last summer will not discourage dairymen from pursuing the business. He said, "You men like to make money fast; if there is not any money in it now, won't you go out of it? What are you going to do?" And I told him this, that we should quietly work at the business until we heard that all the prominent dairymen in New York had gone out of the business. He said very rapidly, "You can do it; you have all the advantages; you have

that fresh, virgin soil; you are not stinted for proper feed; you have already driven us out of the market for high priced butter, and this is the condition the New York dairymen are now in." There is undoubtedly a harvest in store in the future for us. We are working under many natural advantages, therefore we are in a prosperous condition, and if we continue to deserve our reputation for full creamery cheese, we will keep so; but if we are foolish and deluded, and commence manufacturing skim milk cheese, we will thereby lose the reputation we have built up. We can lose all the reputation we have gathered for the last nineteen years, during the next summer; so I hope that instead of foolishly supposing that we will make a few dollars more by making cheese and butter out of skim milk, Wisconsin men will look at this matter carefully, for much is at stake.

Mr. Hoard — I wish to ask Mr. Davis if the report is true which I heard, that the Illinois cheese drew no premiums?

A.—(Mr. Davis) — I will state there was but one allowed them; they were ruled out; but one entry made any competition.

Q.— I saw a statement in the Elgin *Advocate* that the cheese from Illinois was of a very poor character.

A.— (Mr. Davis) — That would be without foundation, because they were not brought in competition; but I will admit that most of the cheese made in Illinois is made by people who skim on both sides of the milk.

Q.— Have you not seen a steady deterioration in the character of Illinois cheese for the last three years?

A.— (Mr. Davis) — Yes, sir. The fact is, the goods are made to supply the wants of a certain class of people. The south takes poor cheese, the east takes the butter and the good cheese. But in reference to the butter question. There is a class of people who want medium butter. The question is, whether we want to continue to put the same amount of labor and expense that are necessary, and which bring small profit, or with a little more expense it can be made to bring twice or three times as much. I went to an oleomargarine factory in New York where they were making 500 tubs containing sixty pounds each, in a day. In the process of making, I tell you that it comes in competition with the very best of our butter.

They manufacture at this place in cans surrounded by steam

pipes brought to a temperature of 100. By that time the oil is just coming, and it is taken then and put in pans wrapped in linen cloths. Then there is a weight of 160,000 tons pressure put on it and that extracts the oil; then of that oil they take sixty pounds, and twenty pounds of medium priced butter; then put it in a churn with about twenty per cent. of good butter, and it is all churned. When this has come to a granulated condition, it is taken out, salted and put in the refrigerators. Mr. Thieben had spoken of the sales of the butter, so I went and spent several hours over there and saw the whole process. Now, their first grade of butter, for instance, they commence in the morning and close at six o'clock, and during the heavy months make ten thousand pounds a day, and they close their doors without a pound on hand; it was sold for cash right there. That butter does not come into competition with our cheap butter, because it brings nearly as much as our pretty good grades of dairy butter. My idea is that we have to appreciate the quality of our dairy butter to supersede the oleomargarine.

Q.— Where did they get the cream to use?

A.— They use the milk of fifty cows. They have a contract with dairymen in the country to ship them cream; but where they don't use cream they use a better quality of butter, and churn the whole thing in new milk.

Q.— They don't make all of it that way; that is only the best grades.

A.— Of course, where they make a lower grade they use more of the oil and a cheaper quality of butter.

Q.— They use a portion of cream or butter with all of it?

A.— Yes, sir. A portion of butter or cream with all of it. It comes granulated just like butter in your cream.

FULL CREAM CHEESE.

Hiram Smith, of Sheboygan Falls, offered the following resolution, which was unanimously adopted:

WHEREAS, The recent active demand for skim and other medium qualities of cheese will be likely to stimulate the manufacture of skim cheese, greatly to the injury of the reputation of Wisconsin cheese; therefore

Resolved, That we advise all patrons of cheese factories to demand of the proprietors of the factories they patronize, to deliver to them one pound of good full cream cheese, or the avails thereof, for each ten pounds of milk accepted by such factory, delivered for the full season.

Mr. Hoard — I wish to ask Mr. Davis whether this skim cheese that is made in Illinois so much, and in some portions of Wisconsin, does not almost entirely find its market in the south, or does it go to England? Where does it go?

Mr. S. B. Davis — As far as my knowledge goes, I am inclined to think that the skim cheese I buy (and there is some skim cheese in Wisconsin), I find just as poor as Illinois skim cheese; the difference is that most of our Illinois factory men make their cheese weigh from twenty-eight to thirty-five pounds, because the western trade prefers that kind. Last week I sold about 1,000 skim cheese that I shipped direct from Chicago to Liverpool; sold them to experts for this reason: I supposed that we were asking 12½ cents for Wisconsin cream cheese, and we sold the other for 11½ cents. On Tuesday last at Elgin, they sold their cheese at 11½ cents.

My impressions are that there is a demand there, and always will be a demand for cheese, and the medium quality more than the best. You may take it on the continent; people cannot afford to eat the best cheese at 77 shillings when they can buy something a little strong in quality for 50 or 54. I know that rule will hold in any city. I have customers that won't buy anything but the best; then again I have customers that feed upon spoiled meats, and spoiled everything, and I am sometimes surprised that they don't spoil themselves. There seems to be a demand for almost every quality and in any condition.

Question — How safe is it to make for that demand; how much will it take?

Answer — Well, I can answer that question by saying that all the cheese factories in Northern Illinois dealing in that kind of cheese, sell all they can make.

Q.— Do you believe that the reputation that Wisconsin has had heretofore of making No. 1 fine cheese, has been worth a cent to Wisconsin?

A.— Yes, it has, because you can to-day get more money for Wisconsin cheese than Ohio dairymen can.

Q.— Is it your judgment, Mr. Davis, that it is worth anything to make good goods, more than it is worth to make poor goods?

A.— My opinion is, that in the long run, good goods will tell the best for a series of years. There is always a market for a perfect thing, when an imperfect one has to labor for itself.

Q.— What sort of showing did skim cheese make last year?

A.— The skim cheese of Illinois?

Q.— Yes.

A.— I believe they all got pretty badly bled on that; I know I did.

Q.— Is not the present high price of cheese owing to the less production — a great many going out of the business and making less cheese?

A.— I think that is not entirely the case. I have been in the packing business for a number of years in Chicago, and last year we sold shoulders, for instance, at 3¾ to 4 cents per pound. At that time, we could get it delivered in Liverpool for about 65 cents per hundred pounds; now you put those cheese in competition with this cheap meat, and they will eat the pork. Shoulders to-day are worth $6.25, delivered in Liverpool. I had a chemical analysis made of a pound of cheese made at the factory close to Whitewater, and it proved to me that there is more real solid nutriment in a pound of cheese than there is in two pounds of the very best sirloin steak. Now, you take cheese; there is a class of people who cannot eat the best; there has been an unprecedented demand for cheese of that quality, because it is in competition with the higher priced meat. When meat is cheap, they eat it once or twice a day; when meat gets higher, they eat it once a week. On the other side of the water, people use cheese as an article of food, and they eat it three times a day. The low grade of cheese that is selling here for six or seven cents a pound, is to-day worth eleven cents over there, because there is an active demand for it at eleven cents, while the better class of goods, I have a telegram to-day saying, are worth 71 shillings, that is in Liverpool, being equal to about fourteen cents with us. The low grades of cheese at the prices they are bringing, are relatively higher than the best. I don't think there has been as much cheese made, because, according to the best information, they are 194,000 boxes short in New York, in Liverpool 7,000, and in London about 80,000. The cor-

responding year before in New York, it was three hundred and odd thousands, in Liverpool one hundred and odd, and London one hundred and eighty. That would give us no credit at all for Ohio, Pennsylvania, Iowa, Wisconsin and Illinois having any cheese. This year they give us credit for 154,000. I think that last year they tried to make our stocks as small as possible, and this year as large as possible. In allowing that we had as much cheese last year as we have this year, I say we are 300,000 short of what we were this time a year ago. I don't know that I can believe that. I would not make it that much less, but I believe there has been a greater demand for it. I believe it has gone into consumption, on account of the low prices.

Q. — Have the dealers in Chicago handled anything like the amount of cheese they did last year?

A. — I have. I now call to mind what my friend Hoard said last night about the time of the commencement of these conventions in this state. He spoke about this being eight years, and I called to memory having been in this business since that time. I have been in Chicago since 1859. In 1868, we carried a stock of cheese through the winter of over 30,000 boxes; in 1869, something considerable more; in 1870, over 50,000 boxes; and the winter of the fire we had 54,000 burned up. Chicago has been a pretty good cheese market, to my knowledge, since 1868. We have been exporters of cheese since 1872. Then it would take more than five car loads a month to supply our demand. At that time we bought a great many cheese in Wisconsin, and a great many more in Ohio and New York state. I make this statement on account of Mr. Hoard's remark that two or three car loads of cheese at that time would overstock the Chicago market, in which I think he is very much mistaken.

Q. — Do you think it pays better to make skim cheese and butter than to make full cream cheese?

Mr. Davis — I think, as to a matter of dollars and cents, it does, as some of our Illinois factorymen have paid dividends for fall months as high as $1.56 per 100 pounds of milk, and I am of opinion that none of the Wisconsin full cream cheese factories have done that. Illinois beats you on dividends. At the same time, I am strongly in favor of making fine cheese. The cheese exhibited here to-day by W. S. Baker, owner and proprietor of the Myrick

factory, at Cold Spring, were very fine; and I am of opinion that if they had been in New York, at the international fair, Canada would not have carried off the grand sweepstakes on cheese, but that Wisconsin would have done so on cheese, as well as she did for the best butter.

PLAN FOR CONSTRUCTING CHEESE CURING ROOMS.

By J. A. SMITH, SHEBOYGAN.

[W. D. HOARD, President of the Northwestern Dairymen's Association, offered five dollars for the best essay on the Construction of Cheese Curing Rooms. It was awarded to Mr. Smith by the committee of judges.]

The object, as I suppose, in obtaining the views of those who may have distinctive plans for the curing of cheese, is to get suggestions that may aid those who either have buildings already erected for the purpose, that may be cheaply modified in their construction so as to secure better results, or design to build in accordance with plans less costly and elaborate than are involved in the construction of factories fitted for, and supplied with sub-earth ducts. In a word, something practical for the common cheese maker; an advanced conservatism that will lead up and on, rather than so radical a change as to deter any change at all.

With this view, while conceding that if the known best alone was called for we should have to accord it to a plan that would have both the sub-earth duct to cool, and steam or hot air pipes to heat, I will offer suggestions in regard to making the most effective use of means less costly and elaborate.

The end and aim should be to construct a curing room capable of good ventilation, in which cheese can be placed when taken from the hoop, that has a temperature of from 65 to 70, and which can be maintained night and day, with very little variation, till the cheese are boxed and shipped. To do this it is necessary for the room to be constructed so that the cheese maker can work in harmony with the universal law that heated air will rise easily, rapidly and freely, if it has a chance, and that cold air will fall by the operation of the same law. It moves most naturally in perpendicular lines. To moved heated air in a lateral direction requires far more force, as it has to struggle against the natural law that

makes it rise. Hence the positive heat force should be in the base of the building, and the escape, or ventilation, at the top. So if I was going to build a cheese curing room, to be heated either with wood or coal stoves, I would make the stone or brick base walls six and one-half feet high, put the heating stove at one end of the room, the chimney at the other, and run the pipe the whole length of the room, enough below the joists to make it safe in regard to fire. The superstructure I would have only one high story in height, so that one or more sky-light ventilators having an orifice of thirty square feet, could be easily made without running them through a second story; but I would have a double air space between the ceiling and the roof, to the end that the hot rays of the sun could not penetrate, as they will through a roof and one ceiling. The floor of the curing room, instead of being laid with matched stuff, I would have of one and a half eight-inch boards, laid far enough apart to let through the warm air below, making the interstices wider as the floor was laid from the stove to the chimney end of the building, for the reason that as the air would be warmest at the stove end the interstices should be less, to let it through. The windows should be double, and have blinds. The walls of the superstructure, if made of brick, should have an air space within, or be furrowed and plastered, so as to give an air space. If made of wood, the studding should be six inches wide, papered and sealed, both sides, and the space filled with sawdust, shavings well packed down, or grout. What is wanted is to make and retain the whole air of the room warm so as to mark seventy degrees on the thermometer when the outside air is below that point, and when it is hotter than that outside, shut out the influence of the heat as much as possible. There will be a few hot days each season when the heat will rise above seventy in such a building, but the influence of those days may be very much modified by throwing wide open the basement door and windows, and the sky-lights at night, and at times in the day when the sun is not pouring down its hottest rays. While the plan will not keep the temperature where it ought to be during a very few of the very hottest days, yet it has complete control of the room to make it as warm as required at any time, and that time embraces nineteen-twentieths of the time, or more, of making and curing the cheese, during the time our factories are usually operated.

In regard to the size of a curing room, it should be made to accord with the probable patronage of the factory. A building 20x40 feet, having three rows of double racks running lengthwise of the building, each rack being four shelves in height, would make storing room plenty for a four thousand pound vat worked full each day. This would admit of the cheese being kept till the oldest were about seventy days old, and would store the contents of near two vats full, if sales were made as fast as the cheese were thirty days old. After cheese are thirty days old, if kept well curing in the meantime, they should be put in a cooler room than is essential for new cheese, and so I would have a partition two-thirds the distance from the stove end, across the room, and have it made with large folding doors in it, and the floor so arranged with stops that the heat from below could be shut off from that portion of the curing room. Into this room I would put the older cheese till time of shipment. I have used "turners" and cheese box covers to set cheese on, but have not found anything so satisfactory as about one and one-half inch boards planed on both sides, and about one inch wider than the diameter of the hoops used.

On the question of curing cheese, I will say that I believe it is the point most neglected and abused of any of the stupidities we practice in the whole range of the outrages we commit on unoffending cheese, that are comparatively perfect when they come from the hoop. There is far less difference in the quality of cheese at that time than there is after that. If all the cheese of a county like Jefferson or Sheboygan were taken from the factories, say twice a week, and put into suitable curing rooms, where they would have the best care in addition to being in the right kind of an atmosphere, the product would sell for tens of thousands of dollars more per annum than it does now.

If we had curing rooms to give even as much control of high heat as I have suggested, we could save much in the matter of weight, and for most tastes make an improvement in quality; for now to make them proof against the combined power of heat and skippers, we have to develop acid enough for them to resist the disintegrating force of heat, and we have to pay for that acid in lessened yield. The excess of heat also shrinks the weight while the cheese is on the shelves. An excess of acid also decreases richness as well as weight. So that curing rooms that will enable

us to dispense with a very little acid in the curd, will make our summer-made cheese more nearly like those made in autumn, from sweeter curd than we dare press till the hot weather is past. In support of this view, I will state that I have several times taken cheese that were dipped too sweet, and gave indication they would puff to the point of cracking, if left in a very hot room, to a colder room, and that they cured into good, if not first class cheese. They had not the power to withstand high heat, and were saved from developing into early decay by cooler air.

CAUSE OF BITTER BUTTER IN WINTER.

BY HON. JOHN LUCHSINGER, MONROE.

[W. N. Tivy, commission merchant of butter and cheese, St. Louis, Mo., offered five dollars to the first one who should give the true cause of bitter butter in the winter. It was awarded to Mr. Luchsinger by the committee of judges.]

Cows that have calved the previous spring, and are fed on the ordinary food of hay and straw in winter, will almost invariably give milk which produces butter that is not only bitter, but which is dry and without consistence, the parts crumbling when being cut. If there is added a more generous diet, rich in oil or sugar, as corn meal, stalks or roots, the evil will be lessened greatly, but not entirely removed.

After many years' observation and experience, I have come to the conclusion that bitter butter in winter is produced not altogether because of the absence of the rich, juicy grass of spring and summer, and instead the mostly dry winter food, although the last makes the matter no better. The evil may be greatly lessened, of course, by feeding succulent sweet food, and a much better article is produced than without such food.

But the principal and foremost reason is, that the cows having calved more or less early in the spring are by the approach of winter again far gone with calf — often are within three months of calving. The advanced and more rapid growth of the fœtus necessitates a greater supply of secretions to that source, which are mainly abstracted from the blood, which is also the source of

the milk. Consequently milk is lessened in quantity, and in a measure loses in some of its best constituents. This loss may, to a great extent, be supplied by rich, generous food.

But rarely any trouble because of bitter butter is experienced even in winter, *and on ordinary food*, wherever the cows are fresh, or even when they are farrow, except in rare instances where from various causes the cows are feverish or otherwise unhealthy.

Doubtless many dairymen have often noticed that when the milk of even one or two new milch cows was mixed with that of eight or ten old ones, the effect has been to correct the bitterness, and improve the color and consistency of the butter.

The conclusions arrived at are, that in order to obtain good, *sweet* butter in winter, the following are requisites:

First. Healthy cows that have calved not to exceed two months.

Second. Plenty of sweet, fine hay, corn meal, stalks, roots, and good water, with regular times for feeding and watering.

Third. Clean and comfortable stables.

Last and not least. *Utmost* cleanliness in milking, and in the care of all dishes, utensils, churns and rooms in which milk, cream or butter is placed.

REPORT OF COMMITTEE ON DAIRY GOODS AND MANUFACTURES.

The committee appointed to examine dairy utensils and supplies, would report as follows:

We have examined the Rectangular churn offered by Cornish & Curtis, and find it of good manufacture, and are well satisfied that it is one of the best in use. Also the Lever butter maker, offered by the same firm, is of great value.

We have examined the various specimens of butter color, and find them apparently of good quality. With the facilities afforded, the committee were unable to discover if one was more valuable than another, but we have no hesitation in saying, either would add to the value of butter made in winter.

We also examined three kinds of creamers, and award the merit to the Cooley creamer, offered by John Boyd, of Chicago.

The committee take great pleasure in speaking in high praise of

some Amber cane sugar presented by E. Kent — a fine specimen of grained sugar. This enterprise, we have much confidence, will be of great value to Wisconsin farmers.

HIRAM SMITH,
CHAS. R. GIBBS,
S. FAVILL.

REPORT OF SECRETARY.

MR. PRESIDENT:

The expenses of the secretary's office for the past year, for paper envelopes, printing and postage, have been $70.78. A bill of items furnished the executive committee.

Respectfully submitted,

D. W. CURTIS,
Secretary.

TREASURER'S REPORT.

1879.	RECEIPTS.	*Dr.*	*Cr.*
Jan. 22.	To cash on hand from last year	$1 14	.....
	Received from membership fees	234 00	.....
	DISBURSEMENTS.		
Jan. 23.	By paid W. D. Hoard, express charges on Cheddar and Stilton cheese	.....	$9 05
	By paid W. D. Hoard, printing bill	.....	16 25
	Prof. L. B. Arnold	.....	75 00
	Miss Etta Phelps, reporter	.....	17 80
	Hotel bills for Prof. Arnold and Miss Phelps	.....	5 00
	Chas. Learned, for medals	.....	22 00
Jan. 27.	By paid D. W. Curtis, office expenses	.....	70 78
	Total disbursements	.....	$215 88
	Total receipts for 1879	$235 14	
		215 88	
	Leaving balance in treasury	.....	$19 26

Respectfully submitted,

O. P. CLINTON,
Treasurer.

On motion, the reports were accepted.

RECORD OF R. S. HOUSTON'S COWS.

KENOSHA, WIS., January 12, 1880.

Statement of milk given by cow Dimp, half-breed Jersey, eight years old, dropped her calf January 15, 1879; saved milk 21st.

	lbs.		lbs.
January, 11 days	424	July, 31 days	893
February, 28 days	1,078	August, 31 days	731
March, 31 days	1,042	September, 30 days	621
April, 30 days	1,012	October, 31 days	617
May, 31 days	1,114	November, 30 days	434
June, 30 days	1,017	December, 7 days	77
161 days	5,687	160 days	3,373

Total, 321 days ..... 9,060 lbs.

Account kept in Ward's Dairy and Breeding Calendar, every milking correctly weighed and amount noted. Due to calve January 20; kept same as rest of herd of 50 cows.

Weighed the milk of 6 cows 7 days, from the 6th to 12th inclusive:

	lbs.
Broadhorn, ¾ Jersey, 4 years old, dropped calf Nov. 14	228
Twinny, ½ Jersey, 8 years old, dropped calf Nov. 20	284
Yellow, ½ Jersey, 8 years old, dropped calf Dec. 23	238
Mary, ½ Jersey, 7 years old, dropped calf Dec. 21	256
Brockle, ½ Jersey, 7 years old, dropped calf Dec. 23	284
Black Bess, ¾ Jersey, 5 years old, dropped calf Dec. 27	229

The above cows named were given (no extra) feed same as the rest of the herd; 18 lbs. milk will make 1 lb. butter from the herd; we have no conveniences for handling the milk by itself.

REPORT OF COMMITTEE ON BUTTER AND CHEESE.

Your committee who were appointed to examine the butter and cheese entered for competition for the different premiums, beg leave to submit the following report:

CLASS 1.

Best cheese made at any time.

First Premium — Silver medal, *Wisconsin Farmer* and *Jefferson County Union* one year. Awarded to No. 1, W. S. Baker, Cold Spring, Jefferson County (Merrick's factory).

Second Premium — $3.00. Awarded to No. 4, Hiram Smith, Sheboygan Falls, Sheboygan county.

Third Premium — *The National Live Stock Journal* one year. Awarded to No. 3, Olin & Clinton, Waukesha, Waukesha county.

CLASS 5.

Special Premium offered by the Rural New Yorker, 78 Duane St., N. Y.

For the best cheese made at any time. A silver cup valued at $25.00. Awarded to No. 14, W. S. Baker, Cold Spring.

CLASS 6.

Special Premium offered by Geo. S. Hart and Howell, New York.

Best cheese made at any time. Silver cup valued at $100.00. Awarded to W. S. Baker, Cold Spring.

NOTE.—This cup must be won three years in succession by one person, to retain the same permanently.

It has been won by A. H. Wheaton, Auroraville, and Olin & Clinton, Waukesha.

CLASS 2.

Best butter made at any time.

First Premium — Silver medal, *Wisconsin Farmer* and *Jefferson County Union* one year. Awarded to No 44, N. W. Morley, Baraboo.

Second Premium — $3.00. Awarded to No. 41, J. L. Taylor, Elkhorn.

Third Premium — *The National Live Stock Journal* one year. Awarded to No. 43, A. Knapp, Palmyra.

CLASS 3.

Best specimen of butter made into fancy prints.

First Premium — Silver medal, *Wisconsin Farmer* and *Jefferson County Union* one year. Awarded to No. 49, J. A. Cowles, Elkhorn.
Second Premium — $3.00. Awarded to No. 50, J. A. Cowles, Elkhorn.

CLASS 4.

Special premium offered by John Boyd, 199 Lake St., Chicago, a No. 1 Cooler Creamer, price $30.00.

For the best tub of butter made by the Cooley process. Awarded to No. 61, E. B. Meatyard, Geneva Lake.

CLASS 5.

Special premium offered by the Rural New Yorker.

Best butter made at any time. A silver cup valued at $25.00. Awarded to No. 86, L. Lytle, Elkhorn.

CLASS 7.

Special premium offered by W. N. Tivy, Commission Merchant, Butter and Cheese, St. Louis, Mo.

Best butter made at any time.

First Premium — $10.00. Awarded to No. 103, A. Potter, Elkhorn.
Second Premium — $5.00. Awarded to No. 100, J. N. Sherman, Delavan.

CLASS 8.

Special premium offered by Messrs. Borden, Selleck & Co., Chicago, western agents for the Improved Howe Scales.

Best butter made at any time.

First Premium — An improved Howe scale, capacity one-half ounce to two hundred and forty pounds. Awarded to No. 123, A. Potter, Elkhorn.

CLASS 9.

Special premium offered by Cornish & Curtis.

Best butter churned in the Rectangular churn.

First Premium — A Rectangular churn, price $9.00. Awarded to No. 133, A. Potter, Elkhorn.

CLASS 10.

Special premium offered by Messrs. R. S. White & Co., manufacturers of the Natural Butter Color, Fort Atkinson.

Best butter colored with Natural Butter Color.

First Premium — $5.00. Awarded to No. 149, F. C. Curtis, Rocky Run.
Second Premium — $2.50. Awarded to No. 147, Moses Powers, Oakland.

CLASS 11.

Special premium offered by E. E. Sheldon, manufacturer of the Badger State Butter Color, Fort Atkinson.

Best butter colored with Badger State Butter Color.

First Premium — $7.00. Awarded to No. 170, R. McIntyre, Fort Atkinson.
Second Premium — $5.00. Awarded to No. 172, L. Lytle, Elkhorn.
Third Premium — $3.00. Awarded to No. 166, James McPherson, Fort Atkinson.

Your committee would state that the entries were made by number, and judged by samples brought to them by Chester Hazen, Esq., of Ladoga, and they had no means of knowing the name of the exhibitor until furnished with the entry book by the secretary.

SAMUEL B. DAVIS, Chicago.
GEORGE LAWRENCE, JR., Waukesha.
WM. HAYDEN, Columbus.

TABLES OF BUTTER AND CHEESE.*

TABLE *showing the entries of cheese in class* 1, *and the award of the judges, on a scale of* 50.

NAME OF EXHIBITOR.	Number of Package.	Flavor, 15.	Quality, 15.	Texture, 10.	Style, 6.	Color, 4.	Total, 50.	Grand total.	Average judgment.
W. S. Baker.....	1	13	12	8	5	3	41	122	40⅔
		12	12	9	6	4	43		
		13	12	7	4	2	38		
Asa Foster.....	2	10	12	6	5	3	36	103	34⅓
		9	10	5	4	3	31		
		10	10	8	5	3	36		
Olin & Clinton	3	11	12	7	5	3	38	116	38⅔
		12	12	8	6	4	42		
		10	10	8	5	3	36		
Hiram Smith.....	4	12	11	8	5	3	39	117	39
		12	11	8	7	3	41		
		11	12	7	4	3	37		

TABLE *showing the entries of cheese in class* 5, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 15.	Quality, 15.	Texture, 10.	Style, 6.	Color, 4.	Total, 50.	Grand total.	Average judgment.
W. S. Baker	13	14	14	9	5	3	45	132	44
		12	12	10	6	4	44		
		13	12	9	5	4	43		
W. S. Baker.....	14	14	14	9	5	3	45	135	45
		13	13	10	6	4	46		
		14	12	9	5	4	44		
Olin & Clinton.....	15	13	13	8	5	3	42	129	43
		13	12	9	6	4	44		
		13	12	9	5	4	43		
A. H. Wheaton.....	16	13	12	9	5	2	41	127	42⅓
		12	12	9	6	4	43		
		13	12	9	5	4	43		

NOTE.— The marking of each judge is put down in the tables in the order in which they are named, Davis first, Lawrence second, and Hayden third. To get the average judgment, the grand total is divided by three, the number of judges, which shows how near each entry gets to fifty, or perfection.

TABLE *showing the entries of cheese in class* 6, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 15.	Quality, 15.	Texture, 10.	Style, 6.	Color, 4.	Total, 50.	Grand total.	Average judgment.
W. S. Baker	25	15	15	9	6	3	48	138	46
		13	13	10	6	4	46		
		13	14	8	5	4	44		
Olin & Clinton	26	13	13	8	6	3	43	127	42⅓
		12	12	10	6	3	43		
		12	13	7	5	4	41		
A. H. Wheaton	27	14	13	9	6	3	45	132	44
		12	14	10	6	4	46		
		10	13	8	6	4	41		
H. Veldboom	28	13	14	9	6	3	45	136	45⅓
		12	14	10	6	4	46		
		12	14	9	6	4	45		

TABLE *showing the entries of butter in class* 2, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Average judgment.
M. W. Chapman	37	15	14	4	4	5	42	116	38⅔
		12	10	3	5	3	33		
		16	12	4	4	5	41		
Asa Foster	38	13	13	3	2	5	36	112	37⅓
		15	12	4	5	4	40		
		15	10	3	3	5	36		
Byron Snyder	39	12	10	3	3	5	33	100	33⅓
		9	8	3	5	4	29		
		16	10	4	3	5	38		
J. C. Keyes	40	15	14	3	4	5	41	120	40
		12	13	3	5	5	38		
		17	12	3	4	5	41		
J. C. Taylor	41	15	14	4	4	5	42	125	41⅔
		14	12	4	5	4	39		
		18	12	5	4	5	44		
A. Knapp	43	15	14	4	4	5	42	121	40⅓
		13	11	4	5	4	37		
		15	13	5	4	5	42		
N. W. Morley	44	16	14	4	4	5	43	127	42⅓
		16	13	4	5	5	43		
		16	12	4	4	5	41		

TABLE *showing the entries of butter in class* 4, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Average judgment.
E. B. Meatyard.....	61	15	14	4	4	5	42	125	41⅓
		16	14	4	3	5	42		
		16	12	4	4	5	41		
D. S. Damuth.....	62	14	13	3	4	5	39	115	38⅓
		10	14	4	4	5	37		
		15	11	4	4	5	39		
Hiram Smith..... ...	63	13	13	4	3	5	38	107	35⅔
		10	14	4	2	5	35		
		13	10	3	3	5	34		

TABLE *showing the entries of butter in class* 5, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Average judgment.
C. P. Goodrich.....	85	15	13	4	4	5	41	120	40
		15	12	3	5	5	40		
		16	11	3	4	5	39		
L. Lytle	86	18	14	5	5	5	47	134	44⅔
		15	15	5	5	5	45		
		17	12	3	5	5	42		
H. Merriman	87	14	13	4	3	5	39	108	36
		12	12	3	3	5	35		
		14	10	3	2	5	34		
M. W. Naraboo.....	88	15	14	4	4	5	42	133	44⅓
		17	16	5	5	5	48		
		17	13	4	4	5	43		
J. A. Cowles.....	89	14	13	4	4	5	40	129	43
		17	16	5	4	5	47		
		16	13	4	4	5	42		
Hiram Smith.....	90	13	13	4	3	5	38	115	38⅓
		18	10	5	2	5	40		
		15	10	4	3	5	37		
J. G. Flack	91	15	14	4	4	5	42	131	43⅔
		15	15	5	5	5	45		
		15	15	5	4	5	44		

TABLE *showing the entries of butter in class* 7, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5	Total, 50.	Grand total.	Average judgment.
J. G. Flack	97	15	14	4	4	5	42	122	40⅔
		15	10	4	5	5	39		
		16	12	4	4	5	41		
H. Merriman	98	14	13	4	4	5	40	111	37
		15	8	4	4	5	35		
		14	10	4	3	5	36		
J. A. Cowles	99	15	14	4	4	5	42	119	39⅔
		12	10	4	3	5	34		
		16	13	5	4	5	43		
J. N. Sherman	100	15	14	5	4	5	43	123	41
		12	10	5	5	5	37		
		17	13	4	4	5	43		
W. D. Stowe	101	14	13	4	4	5	40	116	38⅔
		12	9	5	5	5	36		
		16	12	4	3	5	40		
C. P. Goodrich	102	15	14	4	3	5	41	118	39⅓
		15	10	5	5	5	40		
		15	10	4	3	5	37		
A. Potter	103	16	14	4	4	5	43	126	42
		15	10	5	4	5	39		
		17	13	5	4	5	44		
Moses Powers	104	16	14	5	4	5	44		
		15	10	4	3	5	37		
		16	10	4	4	5	39		
Hiram Smith	105	15	14	3	4	5	41	116	38⅔
		15	9	4	2	5	35		
		15	12	4	4	5	40		

TABLE *showing the entries of butter in class* 8, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Averag judgment.
J. G. Flack	121	15	14	4	4	5	42	122	40⅔
		15	10	5	5	5	40		
		15	11	5	4	5	40		
J. A. Cowles	122	16	14	4	4	5	43	120	40
		12	10	5	3	5	35		
		16	13	5	3	5	42		
A. Potter	123	17	14	4	4	5	44	132	44
		17	12	5	5	5	44		
		16	14	5	4	5	44		
Moses Powers	124	16	13	4	4	5	42	123	41
		15	12	5	5	5	42		
		15	11	4	4	5	39		
E. B. Meatyard	125	14	13	4	4	5	40	120	40
		15	14	3	3	5	40		
		16	12	4	3	5	40		

TABLE *showing the entries of butter in class* 10, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Average judgment.
J. A. Cowles	145	15	14	4	4	5	42	113	37⅔
		12	10	4	3	5	34		
		15	10	3	4	5	37		
Moses Powers	147	15	13	4	4	5	41	118	39⅓
		13	10	3	4	5	35		
		17	12	4	4	5	42		
R. Merriman	148	14	12	3	3	5	37	106	35⅓
		9	12	3	3	5	32		
		15	11	3	3	5	37		
F. C. Curtis	149	15	14	4	4	5	42	120	40
		14	11	4	4	5	38		
		16	12	3	4	5	40		
Hiram Smith	150	13	14	3	3	5	38	107	35⅔
		8	12	4	2	5	31		
		15	11	3	4	5	38		

TABLE *showing the entries of butter in class* 14, *and the award of the judges.*

NAME OF EXHIBITOR.	Number of package.	Flavor, 20.	Grain, 15.	Salting, 5.	Color, 5.	Style of package, 5.	Total, 50.	Grand total.	Average judgment.
J. A. Cowles	158	15	13	3	3	5	39	115	38⅓
		14	10	4	4	5	37		
		14	12	4	4	5	39		
W. D. Stowe	159	12	12	3	3	5	35	105	35⅓
		10	8	3	2	5	28		
		16	14	4	4	5	43		
C. P. Goodrich	160	16	13	4	3	5	41	125	41⅔
		16	12	4	4	5	41		
		17	13	4	4	5	43		
J. L. Taylor	161	14	13	3	3	5	38	119	39⅔
		13	10	3	4	5	35		
		17	10	4	4	5	46		
Moses Powers	162	15	14	3	3	5	40	119	39⅔
		15	12	4	3	5	39		
		16	11	4	4	5	40		
C. Church	163	13	13	4	3	5	38	114	38
		12	10	3	4	5	34		
		17	12	4	4	5	42		
S. N. Hatch	164	15	13	4	3	5	40	116	38⅔
		15	12	4	4	5	40		
		13	12	3	3	5	36		
Henry Delano	165	14	12	3	3	5	37	105	35
		10	10	3	4	5	32		
		14	11	3	3	5	36		

Class 6.— continued.

NAME OF EXHIBITOR.	Number of package.	Flavor.	Grain.	Salting.	Color.	Style of package.	Total.	Grand total.	Average judgment.
James McPherson.....	166	14	13	4	4	5	40	122	40⅔
		16	11	4	3	5	39		
		17	13	4	4	5	43		
Charles Hutchins	168	14	12	3	3	5	37	109	36⅓
		12	12	4	3	5	36		
		13	11	4	3	5	36		
J. F. Morrison	169	14	13	4	3	5	39	119	39⅔
		17	12	3	4	5	41		
		14	12	4	4	5	39		
R. McIntyre	170	15	14	4	4	5	42	129	43
		18	13	4	3	5	43		
		17	13	5	4	5	44		
R. Merriman.....	171	15	14	4	3	5	41	118	39⅓
		14	10	3	3	5	35		
		17	12	5	3	5	42		
L. Lytle	172	15	12	4	4	5	40	126	42
		17	12	4	4	5	42		
		16	13	5	5	5	44		

THURBER'S LETTER.

[The following letter from Messrs. Thurber was read by the secretary:]

WEST BROADWAY, READE AND HUDSON STS.,
NEW YORK, *January* 9, 1880.

D. W. CURTIS, Secretary:

DEAR SIR: — We ship you to-day per express, specimens of premium cheese, as per memorandum enclosed, and trust that they will prove acceptable and interesting to the dairymen attending your meeting. We are convinced that a careful inspection by dairymen of premium lots of dairy produce will be profitable, and tend to improve the quality of American dairy products, thus increasing the amount received by this country for its produce.

There is no good reason why the ordinary style of American cheese should not be made equal in quality, and command an equal price with the best English, and we also believe that with proper effort foreign varieties, such as Stilton, Gruyere, and Edam, for which there is a good demand abroad, can be made in this country to good advantage.

In a paper read by our Mr. F. B. Thurber at the recent International Dairy Fair, formulas for manufacturing different varieties of cheese are given, copies of which will be sent you, and we hope to see attempts made by American dairymen to diversify their product and improve its quality. Hoping that you will have a successful meeting, and wishing your association all prosperity, we remain,

Very respectfully yours,

H. K. & F. B. THURBER & CO.

Hiram Smith moved that the secretary be paid fifty dollars for services as secretary. Carried.

President Hazen — We will now adjourn to Warning's Hall, where the ladies of the Congregational church have prepared a banquet for us. The band is in waiting to escort us over.

Evening Session.

The eight annual banquet of the association was held at Warning's hall, which was brilliantly lighted and appropriately decorated for the occasion, at 7 P. M., which was attended by as jovial a crowd as ever assembled at their superbly generous spreads. The cream of the entertainment was the heavily laden tables, laid with crystal and silver, and ornamented with a a profusion of flowers.

The ladies of Elkhorn showed themselves to be fully equal to the occasion, and provided for about 300 guests in a capital manner, and never were entertainers or entertained in better humor with each other and the "rest of mankind." Not only was every want of the inner man supplied, but what with splendid singing, speeches, quips, quirks, and hits of all sorts, the evening was passed in a most enjoyable manner.

The following toasts were given and happily responded to:

Our Distinguished Guests: May they ever have good Bread as well as good Butter and Cheese.
Our Worthy Hosts: The People of Elkhorn.
The Jersey Cow: Small but Precious.
The Short-Horn: The Sheet Anchor of the Dairy.
The Dairy Cow: Select the Best, Irrespective of Breed.
The Dairy Maid: The Greatest Attraction about the business.
Water: Extremely Handy to have around Milk Cans.
The Mulley Cow: To be preferred to Oleomargarine.
Dairy Stock should be *Preferred* because it requires less Watering.
Dairying: Fun for Dad, but Terrible for the Boys.
The More Cows the More Work. Ought not the Girls to help?
A Dairymen's Banquet: More Interesting than going after Cows in the rain.
Whey: Not very Nourishing but Preferable to Whisky.

The members of the Association will have occasion to long remember the good people of Elkhorn, not only for the excellent meeting held there, but for their kind and generous hospitality which was heartily extended and correspondingly enjoyed, and members of the association will be glad to see another dairymen's convention at the seat of justice in Walworth county.

APPENDIX.

PREMIUMS AWARDED WISCONSIN DAIRYMEN AT THE INTERNATIONAL DAIRY FAIR,

Held in December, 1879, at the American Institute, New York City.

CLASS G. — SWEEPSTAKES. BUTTER.

For best butter of any kind, made at any time or place:
First prize — N. W. Morley, Baraboo, Sauk county $100 00

CLASS K. — SWEEPSTAKES. CHEESE.

For best cheese made anywhere:
Second prize — R. F. McCutchin, Cold Spring, Jefferson Co.. $90 00

CLASS J. — SWEEPSTAKES. FANCY CHEESE.

For best fancy shapes made anywhere:
Second prize — W. W. Ingram, Jefferson, Jefferson county... $25 00

CLASS C. — CREAMERY BUTTER.

Made in Wisconsin.

First prize — N. W. Morley, Baraboo, Sauk county..... $50 00
Second prize — George Lawrence & Son, Waukesha, Waukesha county 25 00
Third prize — W. D. Stowe, Hart Prairie, Walworth county Diploma.

CLASS D. — DAIRY BUTTER.

Made in Wisconsin.

First prize — R. D. Merriman, Oakland, Jefferson county.... $50 00
Second prize — Moses Powers, Oakland, Jefferson county.... 25 00
Third prize — R. S. Houston, Kenosha, Kenosha county .....Diploma.

PREMIUMS AWARDED AT THE WISCONSIN STATE FAIR,

Held at Madison, September, 1879.

FACTORY CHEESE.

For each exhibit of 3 cheese, or not less than 150 pounds, made at any time, and awarded 40 points and over in a scale of 50 points or perfection, shall be designated "Grade No. 1," and draw a pro rata share of $120 00

A pro rata share was awarded to Charles Gibson, Lind; W. D. Stowe, Hart Prairie; C. F. F. Karsted, Mosel; Juckem Co., Sheboygan; Adam Kastra, Sheboygan; Caroline Grover, Sheboygan; Loomis & Lever, Sheboygan; Pierce Bros., Sheboygan Falls; Mather Bros., Sheboygan Falls; A. D. Deland, Sheboygan Falls; L. Graves, Sheboygan Falls; G. W. Weeden, Sheboygan Falls; F. Lueck, Sheboygan Falls; S. Remiking, Sheboygan Falls; S. Littlefield, Plymouth; Jo. Glenn, Dayton; C. Hazen, Ladoga Factory; C. Hazen, Brandon Factory.

SWEEPSTAKES.

For best cheese, factory or dairy, not less than 150 lbs., made at any time, Juckem Co..... $25 00

SPECIAL PREMIUMS.

Cornish & Curtis, Fort Atkinson, Wis., offer a Rectangular Churn worth $12, for the best tub of butter churned in the Rectangular Churn, of not less than 20 pounds. For the second best, a Common Sense Butter Worker, worth..... 5 00

1st, H. Merriman, Fort Atkinson.
2nd, Hiram Smith, Sheboygan Falls.

SPECIAL PREMIUMS.

Of H. K. & F. B. Thurber & Co.: "Believing that the use of the best English salt will tend to improve the quality and especially the *keeping properties* of American cheese and butter, we, for the purpose of inducing dairymen generally to try "Higgins' Eureka Salt," beg to offer through your organization one Gold, one Silver, and one Bronze Medal, to be awarded at your State Agricultural Fair of 1879, for the first, second and third best package of butter, of not less than 50 pounds, made in your state during the present year, and salted with said salt (which took the highest premium at the Centennial Exhibition, 1876, and the Paris Exposition, 1878). We also extend to cheese makers the same offer of one Gold, one Silver, and one Bronze Medal for the first, second and third best cheese.

1st — Butter, medal — Hiram Smith, Sheboygan Falls.
2d — R. S. Houston, Kenosha.
3d — A. Boyce, Dane.
1st — Cheese, medal — Mather Bros., Sheboygan Falls.
2d — A. D. Deland, Sheboygan Falls.
3d — W. D. Stowe, Hart Prairie.

CREAMERY BUTTER.

For each exhibit not less than 100 pounds made at any time, and awarded 40 points or over in a scale of 50 or perfection, shall be designated "Gilt Edge," and draw a pro rata share of..... $100 00
A pro rata share was awarded to Hiram Smith, Sheboygan Falls.... 20 00
To C. P. Goodrich, Fort Atkinson 20 00
To R. S. Houston, Kenosha..... 20 00
To Mt. Horeb Creamery and Cheese Co 20 00
To W. D. Stowe, Hart Prairie..... 20 00

DAIRY BUTTER.

For best roll, print or package, not less than 20 pounds..... $10 00
2d..... 5 00
Horatio Merriman, Fort Atkinson, $10.00.
A. Chipman, Sun Prairie, $5.00.

SWEEPSTAKES.

For best exhibit not less than 100 pounds, made at any time in any factory or dairy..... $25 00
R. S. Houston, Kenosha, $25 00.

STATISTICAL REVIEW OF THE MARKET FOR BUTTER AND CHEESE,

For the year ending January 1, 1880.

[From the American Dairyman.]

The year has been characterized by, first, a general decline in both butter and cheese, extending from January to the early part of August; and, second, by a sharp advance of more than 100 per cent. from August to December, inclusive. The export clearances of butter during the year 1879 were unprecedentedly large, being upward of 13,000,000 lbs. in excess of those for 1878. The estimated stock of cheese in store on January 1, 1880, compared with previous two years, is as follows:

	1880.	1879.	1878.
New York city, boxes.....	194,758	396,467	218,032
Liverpool, boxes.....	63,510	180,000	89,000
London, boxes.....	70,300	70,000	45,000

TABLE SHOWING THE RECEIPTS AND EXPORTS OF CHEESE *at and from New York city, by months, for* 1879, *together with the range of prices obtained for choicest grades.*

MONTH.	Receipts, Packages.	Exports, Pounds.	RANGE OF PRICES OBTAINED FOR FINEST GRADES.		
			State Factory.	State Farm Dairy.	Western Factory.
January	74,251	6,402,364	9 to 9½c.	8 to 8¼c.	8½ to 9 c.
February	91,626	9,778,417	9¼ to 9½c.	8 to 8¼c.	8½ to 9 c.
March	121,210	9,650,593	8½ to 9¼c.	8 to 8¼c.	8½ to 9 c.
April	42,742	4,335,572	8 to 8½c.	.. to .. c.	7 to 8½c.
May (old cheese)	113,893	7,034,598	6 to 8 c.	.. to .. c.	6 to 7¾c.
May (new cheese)			7 to 8¼c.	7 to 7½c.	7 to 7½c.
June	308,614	15,355,979	6¼ to 7¼c.	6 to 6½c.	6 to 6½c.
July	565,233	25,283,165	6 to 6⅜c.	5¾ to 6 c.	5½ to 6¼c.
August	324,318	15,450,321	5¼ to 5¾c.	5 to 5½c.	5 to 5½c.
September	360,025	14,416,251	6 to 11 c.	5¾ to 10½c.	5¾ to 10¾c.
October	250,000	8,153,027	11 to 13 c.	10½ to 12½c	10½ to 13 c.
November	172,536	3,919,278	12¾ to 13 c.	12 to 12½c.	12¾ to 13 c.
December	175,388	9,844,695	13 to 13¼c.	11½ to 12 c.	12¾ to 13 c.

COMPARATIVE RECEIPTS AND EXPORTS OF CHEESE, *from* 1874 *to* 1879, *inclusive.*

YEAR.	Receipts, Packages.	Exports, Pounds.	YEAR.	Receipts, Packages.	Exports, Pounds.
1879	2,600,242	129,624,260	1876	2,171,617	93,475,659
1878	3,172,767	136,384,523	1875	2,322,331	92,840,086
1877	2,420,601	106,371,454	1874	2,036,468	94,717,810

TABLE SHOWING THE RECEIPTS AND EXPORTS OF BUTTER, *at and from New York City, by months, for* 1879, *together with the range of prices obtained for choicest grades:*

MONTH.	Receipts, Packages.	Exports, Pounds.	RANGE OF PRICES OBTAINED FOR FINEST GRADES.				
			Western Creamery.	State Creamery.	State Dairy.	Western Dairy.	Western Factory.
January	122,902	2,459,763	30 to 33 c.	25 to 28 c.	23 to 25 c.	19 to 20 c.	16½ to 18 c.
February	113,016	3,146,856	27 to 30 c.	25 to 26 c.	22 to 25 c.	19 to 20 c.	16 to 17½ c.
March	93,591	2,630,561	28 to 29 c.	20 to 25 c.	18 to 23 c.	17 to 18 c.	14 to 15 c.
April (old butter)	90,540	1,820,120		14 to 18 c.	12 to 15 c.	15 to 16 c.	14 to 14½ c.
April (new butter)			19 to 26 c.	19 to 24 c.	16 to 20 c.	14 to 15 c.	13 to 14 c.
May	136,361	2,868,307	18 to 20 c.	18 to 19 c.	15 to 17 c.	14 to 15 c.	12 to 14 c.
June	183,990	3,793,831	16 to 17 c.	16 to 17 c.	14 to 15 c.	11 to 12½ c.	10 to 11 c.
July	158,527	2,551,421	15½ to 16½ c.	15½ to 17 c.	14 to 15 c.	11 to 12½ c.	9½ to 10½ c.
August	127,961	2,414,632	17 to 18½ c.	17 to 18½ c.	15 to 16 c.	12½ to 13 c.	10½ to 11 c.
September	167,810	6,290,558	19½ to 28 c.	20 to 28 c.	18 to 24 c.	13½ to 18 c.	11 to 13 c.
October	154,944	4,586,184	26 to 31 c.	26 to 31 c.	23 to 28 c.	17 to 23 c.	14 to 19 c.
November	141,518	1,999,393	33 to 38 c.	33 to 38 c.	31 to 35 c.	25 to 28 c.	20 to 24 c.
December	90,665	1,591,818	35 to 37 c.	35 to 37 c.	29 to 30 c.	25 to 26 c.	22 to 23 c.

COMPARATIVE RECEIPTS AND EXPORTS OF BUTTER, *from* 1874 *to* 1879, *inclusive.*

YEAR.	Receipts, Packages.	Exports	YEAR.	Receipts, Packages.	Exports.
1879	1,581,825	36,153,444	1876	1,292,577	10,045,434
1878	1,277,863	23,029,732	1875	1,080,899	4,216,548
1877	1,269,759	19,686,447	1874	994,430	4,695,111

EXPORTS OF BUTTER AND CHEESE,

As obtained from the Hon. EDWARD YOUNG, *Chief of the Bureau of Statistics, Washington.*

	Quantities.		Values.	
	Three months ended December 31—		Three months ended December 31—	
	1877.	1876.	1877.	1876.
			Dollars.	*Dollars.*
Butter.....lbs.	3,789,096	4,401,357	723,794	1,003,473
Cheese .....lbs	21,763,929	15,997,121	2,743,373	2,076,993
	Three months ended March 31 —		Three months ended March 31 —	
	1878.	1877.	1878.	1877.
Butter.....lbs	2,792,047	4,979,541	503,106	1,085,460
Cheese .....lbs.	14,605,266	9,474,615	1,844,269	1,320,924
	Three months ended June 30—		Three months ended June 30—	
	1878.	1877.	1878.	1877.
Butter.....lbs	5,549,728	4,547,411	822,428	822,447
Cheese .....lbs.	37,260,102	31,174,371	3,753,128	3,717,988
	Three months ended September 30—		Three months ended September 30—	
	1878.	1877.	1878.	1877.
Butter.....lbs	11,973,317	9,698,220	1,620,184	1,880,872
Cheese .....lbs.	60,715,293	50,154,439	5,513,117	5,762,759

EXPORTS OF BUTTER AND CHEESE—continued.

	Quantities.		Values.	
	Three months ended December 31—		Three months ended December 31—	
	1878.	1877.	1878.	1877.
			Dollars.	*Dollars.*
Butter.....lbs	6,333,080	3,789,096	947,826	723,794
Cheese.....lbs.	26,668,615	21,763,929	2,650,951	2,743,573

	Three months ended March 31—		Three months ended March 31—	
	1879.	1878.	1879.	1878.
Butter.....lbs.	10,132,518	2,797,097	1,559,320	503,746
Cheese.....lbs.	27,213,839	14,605,266	2,280,428	1,844,269

	Three months ended June 30—		Three months ended June 30—	
	1879.	1878.	1879.	1878.
Butter.....lbs.	9,809,101	5,552,704	1,293,875	823,410
Cheese.....lbs.	27,056,727	37,260,102	2,135,472	3,753,128

	Three months ended September 30—		Three months ended September 30—	
	1879.	1878.	1879.	1878.
Butter.....lbs.	12,654,073	11,973,317	1,708,014	1,620,184
Cheese.....lbs.	58,306,260	60,715,293	4,040,009	5,513,117

EXPORTS OF BUTTER AND CHEESE—continued.

	Quantities.		Values.	
	Month ended January 31—		Month ended January 31—	
	1879.	1878.	1879.	1878.
			Dollars.	*Dollars.*
Butter .....lbs.	2,628,401	727,639	414,569	137,868
Cheese.....lbs.	6,577,277	6,166,808	587,243	772,948
	Month ended February 28—		Month ended February 28—	
	1879.	1878.	1879.	1878.
Butter .....lbs.	3,928,306	771,500	620,130	148,869
Cheese.....lbs.	10,098,241	3,366,952	855,244	463,778
	Month ended March 31—		Month ended March 31—	
	1879.	1878.	1879.	1878.
Butter ..... lbs.	3,575,811	1,297,958	524,621	217,009
Cheese.....lbs.	10,538,321	5,071,506	837,941	667,543
	Month ended June 30—		Month ended June 30—	
	1879.	1878.	1879.	1878.
Butter .....lbs.	4,099,973	3,011,461	531,285	448,224
Cheese.....lbs.	14,436,005	24,797,199	1,139,010	2,365,605
	Month ended September 30—		Month ended September 30—	
	1879.	1878.	1879.	1878.
Butter .....lbs.	6,909,440	3,572,216	996,420	492,195
Cheese.....lbs.	14,128,785	9,930,905	1,067,945	892,200

EXPORTS OF BUTTER AND CHEESE—continued.

	Quantities.		Values.	
	Seven months ended January 31—		Seven months ended January 31—	
	1879.	1878.	1879.	1878.
			Dollars.	*Dollars.*
Butter ..... lbs.	20,934,798	14,214,955	2,982,579	2,742,534
Cheese ..... lbs.	93,961,185	78,085,176	8,751,311	9,279,080
	Eight months ended February 28—		Eight months ended February 28—	
	1879.	1878.	1879.	1878.
Butter ..... lbs.	24,863,104	14,986,455	3,602,709	2,891,403
Cheese ..... lbs.	104,059,426	81,452,128	9,606,555	9,742,858
	Nine months ended March 31—		Nine months ended March 31—	
	1879.	1878.	1879.	1878.
Butter ..... lbs.	28,438,915	16,284,413	4,127,330	3,108,412
Cheese ..... lbs.	114,597,747	86,523,634	10,444,496	10,350,401
	Twelve months ended June 30—		Twelve months ended June 30—	
	1879.	1878.	1879.	1878.
Butter ..... lbs.	38,248,016	21,837,117	5,421,205	3,931,822
Cheese ..... lbs.	141,654,474	123,783,736	12,579,968	14,103,529
	Nine months ended September 30—		Nine months ended September 30—	
	1879.	1878.	1879.	1878.
Butter ..... lbs.	32,595,692	20,323,118	4,561,209	2,947,340
Cheese ..... lbs.	112,576,826	112,580,661	8,455,909	11,110,514

BUTTER AND CHEESE MADE IN WISCONSIN,

During the year 1870, *as taken from the census report, also the amount made in* 1876, 1877, 1878 and 1879.

	1870.	1876.	1877.	1878.	1879.
	lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*
Butter..	22,473,036	50,130,000	62,662,500	2,213,187,500	2,434,506,250
Cheese .	1,591,798	17,000,000	21,250,000	708,333,300	743,749,965

From the best information to be obtained from prominent dairymen in all parts of the state, the estimate of 1879 is made.

The assessment of 1877 shows that there was 389,380 cows in the state at that time.

FORMULAS.*

Through the kindness of Messrs. H. K. & F. B. Thurber & Co., New York, the following formulas are published for the benefit of dairymen who wish to engage in the manufacture of Gruyere, Stilton, Edam, Bondon or Camembert cheese.

GRUYERE.

Of all foreign kinds of cheese, the Gruyere is probably the best known. The familiarity of the consumer with the product is not, however, accompanied by an exact knowledge of the process of its manufacture; and I have heard the most amusing descriptions given by people who assumed the air of being well informed on such subjects. As an illustration of the prevailing ignorance, I may quote the following description of Gruyere from one of the favorite text-books still used in the elementary private schools: "Gruyere, made in a small town in Switzerland, in the canton of Friburg. It is a mixture of goats' and ewes' milk, and very strong in flavor."

Although the Gruyere is of Swiss origin, is in many places known as "Swiss cheese," and is still manufactured extensively in Switzerland, in France alone the value of the Gruyere cheese made annually is estimated at more than 600,000*l* ($3,000,000). Owing to differences in the physical and economical conditions of the districts in which it is manufactured, there are many variations in the size and quality of the cheese, as well as in the arrangements under which it is made, cured and marketed. It would require a lengthy treatise to enter into all these details, and I therefore propose to confine myself to a brief description of the making of the cheese, as I saw it done at M. Lecomte's factory, near Montereau, about fifty miles south of Paris.

Gruyere cheeses have a sort of cart-wheel shape, that is to say,

*From the report of H. M. Jenkins, Esq., Secretary of the Royal Agricultural Society, upon the dairy farming of the northwest of France; also from *La Laiterie*, a French work on dairy farming and manufactures, by A. F. Pouriau.

they are thin cylinders of large diameter. In weight they vary from under half a hundred-weight to more than three times as much.

M. Lecomte has four cheese tubs placed round a central pillar in the middle of his cheese room. Each of these tubs holds nearly seventy gallons of milk, and is heated by means of steam injected into a coil of pipes in the space beneath the false bottom. The whey is drawn off by means of a syphon, and runs through pipes into one of the three whey tanks, which have a total capacity of nearly nine thousand gallons. One man has charge of each tub, and if the supply of milk is sufficient he can make five cheeses per day; and at the time I visited the factory, seventeen cheeses per day were being made. Each cheese is numbered, and is also branded with the distinguishing mark of the dairyman, who receives a bonus for each really good cheese that he makes, in addition to his daily wages. Considering the rapidity with which such heavy cheeses — weighing at M. Lecomte's about sixty-six pounds each — can be turned off by one man without any attendant, the following brief sketch of the *modus operandi* may be interesting:

The milk, measuring as nearly as possible sixty-six gallons, having been put into the tub, the temperature is raised to 95 degrees Fahr., when about twenty-one ounces of rennet are added and carefully mixed with it, and the tub is covered. The curd comes in about forty minutes, and the whey is then raised to a temperature of 138 to 140 degrees, at which it is kept for another forty minutes to cook the curd. Towards the end of this period, a large flat wooden shovel is placed carefully upon the top of the curd, the progress of which is now and then tested by the attendant gently moving the shovel over its surface. If the shovel sticks or hangs to the curd, the cooking process is still incomplete; but when it glides smoothly along, the attendant commences cutting the curd gently into horizontal slices which he removes toward the rim of the tub. After this has been done sufficiently, in his judgment, he uses one of various forms for curd-breakers. Amongst others, I noticed a wooden pole armed with a number of projecting slanting spikes, which cross one another along about two feet of its length; also a hoop and band arrangement.

Great practice appears to be necessary in order to acquire skill in this part of the operation, and the object in view appears to be to break up the curd as evenly but as ruggedly as possible.

Towards the end of the breaking, the dairyman, by varying the movement of the breaker, collects all the curd into the center of the vat, and then allows a few moments for the rotatory movement of the whey to subside. He then takes a cloth, puts one corner between his teeth, holds the lateral corners in each hand, holding at the same time a curved iron wire over which the remaining corner of the cloth is folded. He then bends over the cheese tub, and by deftly passing the wire completely under the heap of curd, collects it all in the cloth. The clothful of curd is then taken out and placed in a frame of the size and shape of the cheese, the ends are carefully folded over the top of the mass of curd, a board is put on, and the cheese submitted to pressure for twenty-four hours, in the course of which it is turned seven or eight times. After pressure it is rubbed with salt and transferred to a cellar, where it is turned and rubbed every other day for about three months, when it is fit for market.

It may not be out of place to add that M. Lecomte, making as he does over 1000 gallons of milk per day into Gruyere cheese, necessarily has a large pig-feeding establishment. Between 400 and 500 pigs are fattened annually, a large number being bred by himself, and the remainder bought in as required. Their food consists of crushed maize, more or less cooked and mixed with whey. It is given them three times a day in a series of small yards, where each pig knows his own trough. They eat as much as they like at the fixed hours, but have nothing in the intervals.

STILTON CHEESE.

Stilton cheese — manufactured chiefly in Leicestershire — is made from full milk sometimes enriched by the addition of cream, and the curd hardens into cheese without pressure. The cream of the night's milk is added to the new milk of the morning and the rennet is mixed with it when the whole is at the temperature of 84° Fahr., enough being used to make it coagulate in an hour and a half. If it comes sooner it will be too tough. The curd is not drained of its whey in the ordinary manner, but is removed in slices with a skimming-dish, and placed upon a canvas strainer, the ends of which when it is full, are tied up and the whey gently pressed out.

It is then allowed to drain until next morning, when it is removed and placed in a cool dish, whence, cut in thin slices, it is put in a hoop made of tin, about 10 inches high and 8 inches across, and pierced with holes. A clean cloth is placed within the hoop, and as the slices are laid in, a small quantity of salt is sprinkled between the alternate layers. It remains in the hoop, covered up, but without pressure. Next day the cheese is taken out of the hoop and clean cloths are applied; after which it is inverted and replaced, and pricked with skewers through the holes of the tin hoop, to facilitate the extraction of the whey. In four or five days the curd becomes firm. During this consolidating process the cheeses are kept in a place where the temperature can be maintained at about 100°. When the cheese has become firm enough, it is firmly bound up in a strong fillet of canvas, wrapping it round several times. The binders and cloths are removed every morning; cracks are filled up with curd; and ultimately the coat becomes hardened, and the cheese is removed to the curing room.

Here they remain for several months, during which time they are turned frequently and acquire a rough, firm rind or exterior, different from any other variety. A Stilton cheese when ripe and in condition for use, is rich, soft, creamy, and generally becomes slightly moldy, the molding evenly being facilitated by pricking them in several places with a sharp-pointed bodkin a little larger than a knitting-needle, about twice a week; this is to admit the air a little, and in these places it soon begins to mold. The curing room or cellar should have an equitable and uniform temperature, and the cheese should be kept carefully brushed to keep out the mites which are apt to infest the rough coat or rind. Stilton cheese sell readily at high prices in England, wholesale quotations ranging from 20 to 25 cents per pound, and it would probably pay some of our enterprising American dairymen to experiment in making Stiltons until they succeed in turning out an article as closely resembling the original as they have in the Cheshire and Cheddar styles.

EDAM CHEESE.

The small round Dutch cheeses known to the trade as "Edam," are called after the place of that name, a small but flourishing town near Amsterdam, in Holland. In size and shape resembling cannon balls, and when dry nearly as hard, they have perhaps been

more widely known by the story which has passed into the literature of the age, that during the siege of one of the cities of Holland, the supply of cannon balls gave out, and Edam cheeses were used as a substitute.

This variety of cheese is chiefly remarkable for its keeping qualities, which are due to the relatively small proportion of fatty matter contained in same, as a too large quantity of butter would prevent its keeping long in hot climates, where it is principally used.

In consequence, Mr. Senechal, who successfully undertook its manufacture in France, found it necessary to skim the milk from one quarter to one half, according to the season.

Coagulation.— The milk is strained and poured into the tub, where the rennet is to be added. The temperature at the time the rennet is added, should be 85 deg. to 90 deg. in summer, and 94 deg. to 96 deg. in winter. The quantity of rennet varies somewhat, but coagulation usually takes place in from ten to fifteen minutes. As Edam cheese must have a light yellow color, a small quantity of annatto is mixed with the rennet, which is then poured into the tub with the milk, stirred for a moment, and left alone.

Making the Curd.— When it is evident that the coagulation of milk is complete, the curd is separated by means of a brass divisor or curd knife (Fig. 158), which the workman puts vertically into

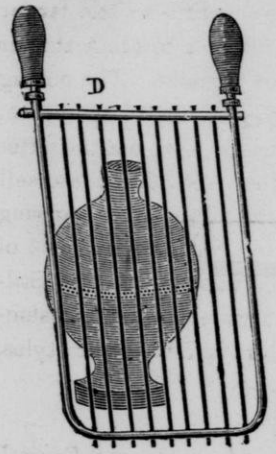

Fig. 158.

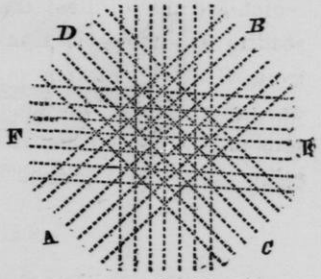

Fig. 159.

the tub, thus making a series of parallel sections (Fig. 159), first following *A B*, then following *C D*, *E F*, etc., until the division is considerable.

This operation, although simple, is nevertheless very delicate, for if it is done too roughly the larger part of the butter will pass into the whey, and you can lose a good portion of it. The tub is then again covered for two or three minutes, in order to let the clods of curd settle at the bottom, when it is agglomerated into a single mass, the whey poured off, and the workman unites the whole curd with his hands into one single mass.

Putting in Forms.— The operations as described so far are nearly the same as in common use in most countries where rich, pressed, uncooked cheese is produced. With the curd thus prepared it

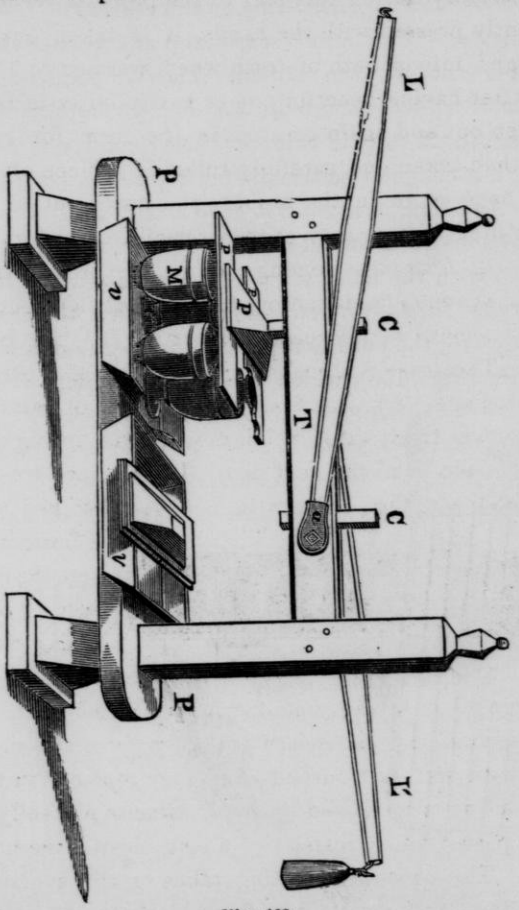

Fig. 162.

would be possible to make almost any kind of cheese; but the following operations are a specialty of northern Holland. For put-

ting the curd into forms, the workman commences by taking in each hand a quantity of it, and kneading it until it becomes a sweet, fine paste, presses it into round, wooden moulds (Fig. 162), perforated with small holes to allow the whey remaining in the curd to escape when pressure is applied. The cap is placed upon the top and pressed down upon the curd with the hands, being careful to take it out and replace it three or four times in the mould, and to keep the holes for the whey to escape open.

It is necessary to have the forming done quickly, and to avoid a cooling down — always injurious to good manufacture. Sufficient help is necessary during this part of the process. When the cheese is sufficiently pressed with the hands, it is taken out of its form and plunged into a bath of fresh whey, warmed to 120 or 125 degrees. After having been for one or two minutes in the bath, it is again taken out and again pressed in the form for two or three minutes, then taken out, carefully rolled in a piece of clean linen, replaced once more in the mould, the cover put on and brought under the press, where they usually remain ten to twelve hours.

Salting the Cheese.— Coming out of the press the cheese are taken from the moulds, taken out of the cloth, and put naked in a somewhat different mould (Fig. 163) for being salted. These are designed to give the cheese a perfectly round shape. On the first day a pinch of salt is sprinkled over them, after which they are put in big cases and set aside until the next day. These cases are rectangular, slightly inclined (Fig. 164), with a cover fastened with hinges, the bottom of which — where the moulds stand — has four grooves running into one, so as to let the salt-water flowing out of the moulds run into a recipient.

Fig. 163.

Fig. 164.

On the second day the cheese are taken from the moulds, rolled in a bowl with wet salt, turned over, and replaced in their forms. Thus the salting is continued until the salt has perfectly penetrated the whole paste, which instead of a soft, elastic mass, has become very hard. The process of salting takes on the average from ten to twelve days, and results in making perhaps the saltest variety of cheese known. After the process of salting is completed they

are taken out of the cases and bathed in salt-water during some hours, then dried and deposited naked on the shelves of the factory, taking care to classify them according to age.

Final Treatment.— Once on the shelves the cheese must still be the object of scrupulous care, indispensable for their preservation. They must be turned over once a day during the first month, every two days during the second month, and once a week after the third month; but during damp and stormy weather it becomes necessary to turn all of them, without distinction, once a day. During the curing they are also treated as follows: When they are about four weeks old they are soaked in water of about 70° to 75° for an hour, and then washed, brushed, dried (in the sun, when the weather permits); and when well dried are put back on the shelves. Two weeks afterward they are again washed, dried, then oiled with linseed oil, and put back in their places, where nothing more except turning is done with them until they are shipped.

In Holland the cheese are often sold, when six weeks old, to merchants, who complete the curing process and supply the wants of the market. In France, where there is not always an early outlet for these cheese, it is especially necessary that they are made with a view of a long and perfect keeping, which requires some simple "finishing touches," as follows :

Cheese Destined for Export. — First, they are scraped off with a sharp knife, so as to make disappear any marks that the mould, the cloth, or any other cause may have left. If they are destined for England or Spain, they are colored orange-yellow on the outside, which is done by rubbing them with linseed oil, to which a very small quantity of annatto has been added. But if, on the contrary, they are for France or for shipping, they are given two coats of the following preparation:

Tournesol (Croton tinctorium), say	13 lbs.
Berlin Red	1 lb.
Water	22 lbs.
Total	36 lbs.

For 1,000 cheese.

Value of this tincture in Europe, two to three dollars.

When the color on the surface of the cheese is well dried, they only have to be rubbed off with a little butter colored red with a

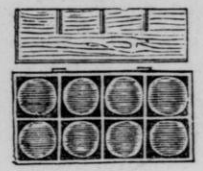

Fig. 166.

few pinches of Berlin red, and to be shipped in boxes with compartments (Fig. 166). These cheese, if well prepared, will keep for several years even in tropical climates; and they are nearly the only ones known in the tropics. Notwithstanding they are not a full milk cheese, they usually bring in the English market as much as the best American cheese.

Observations.— The curing rooms for Edam cheese must be dry, well ventilated and very clean. The inside temperature should not exceed 70 deg. in summer, nor should it be below 45 deg. in winter. Cold and damp winds should be avoided during the curing period. The milk of cows for the first nine days after calving is not used in making Edam cheese, and during hot weather milk from cows which may have become over-heated, is rejected; indeed, every care is taken to have the cheese uniform and good in quality.

BONDON — (SOFT CREAM CHEESES).

The headquarters of this class of cheese may be regarded as the district of Bray in the Seine-Inferieure, having the little town of Neufchatel as its capital. In fact it is known in England better as "Neufchatel" than as "Bondon," and many people are under the impression that the little cylindrical cheeses are imported from the town of Neufchatel in Switzerland. This delusion has been fostered by the fact that the variety of the cheese which has a certain proportion of cream added to the curd, is called in Paris "Suisse double creme;" but the epithet no more indicates the nationality of the cheese than it does that of the Paris Beadle, who is also known as "le Suisse."

The process of manufacture, as I saw it near Monterolier, under the guidance of M. Rasset, fils, the mayor of that commune, is as follows: The rennet is added to the milk, in pots holding about three gallons, at its natural temperature as it comes from the cow. Various devices are resorted to in the winter to preserve this temperature, without actually warming the milk. The pots may be warmed by immersion in scalding water; a number may be placed in a case, and the inter-spaces filled up with straw and chaff, well packed in; or they may be wrapped up in the linen cloths which are afterwards used to receive the curd. The rennet being added to the milk, it is left for many hours, even as many as forty-eight,

for the curd to be fully deposited. The curd is afterwards placed in a linen cloth, which is suspended from the four corners of a skeleton box, and is there left for several hours, to enable the whey to drain off. It is then transferred to a clean cloth, in which it is carefully folded up, and is submitted to pressure for about twelve hours, or at least until the whey ceases to run out, but the pressure is neither very great nor very even. The curd is next passed through cylindrical moulds, and the small cylindrical cheeses thus formed are at once salted on the outside. The cheeses, being then made, are put into a cellar on boards, each one being quite separate from its neighbors. In a few days, more or less, according to the temperature, the first mold, thick and white, makes its appearance, and soon afterwards, especially in summer, the cheeses are sold fresh. At other times, the process of "curing" is continued longer, and the cheeses are sold later at higher prices. On the whole, a fairly good maker will realize an average of ten centimes (1 *d*, or 2 cents) each, and it is reckoned that the milk of an average Norman cow (say 400 gallons), in a comparatively poor district like that of Monterolier, will make 4,000 cheeses; this gives an average return of 16 *l*, or $80, per cow per annum, without reckoning the value of the whey and the calf.

The much richer quality of cheese for immediate consumption already referred to as "Suisse" and "Suisse double creme," is made near Gourney, and largely in Paris, from curd sent from the same district. For the manufacture of the former a greater or less quantity of cream is mixed with the milk, before adding the rennet; and for the latter a large quantity of cream is mixed with the curd after the whey has been expressed, either on the farm or in Paris. The mixture of cream and curd, whether made in the country or in Paris, is rolled in cylindrical lumps, weighing about three ounces each, in paper bearing the name, address, etc., of the maker. These little cheeses are carefully packed in boxes lined with clean, well-cut lengths of straw, which are also used to keep the rows of cheese in the box from impinging upon each other. The price realized for the cheese very much depends upon its appearance when sold to the *restaurateur*, or the private consumer; therefore great care is bestowed upon all the details of the packing. The straw is carefully combed to get out all leaves and adventitious matter, and is then cut, by means of a fixed sharp knife, into the exact lengths required.

CAMEMBERT.

Of all the soft kinds of cheese made in France, the Camembert, when properly manufactured, is no doubt the king. Its rivals are the Brie and Coulommiers, but the more unwieldy shape and shorter season of the former, and the restricted manufacture of the latter, deprive their competition of any serious importance. On the other hand, the popularity of the Camembert has so increased the demand, that many of the smaller, and especially the newer, makers take too much toll in the shape of cream before they commence the process of cheese making, and thus tend to kill the goose that lays the golden eggs. When properly made, the Camembert quite deserves the eulogium passed upon it by the reporter of the jury, at the Paris Dairy Show in 1874: "It surpasses in delicacy everything that the ingenuity of the cheese manufacturer has been able to invent to flatter the most fastidious palate." This result cannot, however, be obtained without great care, some experience, and especially a most watchful attention to the details of the process of curing. Many of the successful makers of this kind of cheese believe that they possess a valuable secret in their method of procedure, and not unnaturally are averse from giving technical information to a possible competitor, or even to an outsider. I visited several Camembert dairies, which are generally situated in the Pays d'Auge, although there are some also in Le Bessin; but I have found it necessary to discard my notes on all but three dairies, namely, one in Le Bessin, near Isigny (that of the Marquis de Cussey de Jucoville), and two in the Pays d'Auge, that of M. Paynel at Mesnil Mauger, near Lisieux (whose grandmother first made this kind of cheese, in 1791, at Camembert, in Orne), and one near Livarot, where I was taken by that disinterested and enthusiastic pioneer of agricultural progress, the Viscount de Neuville, president of the Societe d'Encouragement de Lisieux.

The cows are generally milked three times a day, namely, at 4:30 A. M., 11:30 A. M., and 6 P. M. In most dairies the evening's milk is lightly skimmed in the morning, after having stood twelve hours, and butter is made with the cream. The skimmed milk is divided into two portions, one of which is added to the morning's milk and the other to the mid-day's milking.

When ready, the curd is carefully transferred, without breaking it more than is possible, to perforated moulds, of the same diameter as a Camembert cheese (say four inches), but about three times the

height (or say three inches*). The moulds are placed on reed mats resting on slightly inclined slabs made of slate, cement, or other hard material, and having a gutter near the outer edge. The curd remains in the moulds about twenty-four to even forty-eight hours, according to the season, being turned upside down after an interval of twelve to twenty-four hours, that is to say, when sufficiently drained at the bottom. After the turning, the face of the cheese that is then inside the moulds is sprinkled with salt, and about twelve hours afterwards the opposite face and the rim of the cheese are also salted. The cheeses are then placed on movable shelves round the walls of the dairy for a day or two, according to the season and to the capacity of the room in relation to the number of cheeses made daily; and thus ends the first stage in the manufacture of this renowned dairy product. It must be understood, however, that the above description is merely general, and that each maker knows by experience how much rennet of an ascertained strength he should add to the milk, how long the curd takes, under different circumstances of weather, to become fit for putting into the moulds, how large the perforations in the moulds should be, how long the cheeses should be left to drain in the moulds, how often they should be turned, how much salt should be used, and so on through the whole of the processes which constitute the manufacture and the curing of the cheese.

The curing of Camembert cheese consists of two distinct stages. In the first stage, the cheese are placed in a thoroughly well ventilated room ("drying room"), on shelves made of narrow strips of wood, having narrow intervals between them, or of ordinary planks, covered with reed mats or clean rye straw. The great point is to secure as dry an atmosphere and as equable temperature as possible, and the greatest ingenuity is exercised in efforts to attain these objects. Generally the windows are numerous and small, placed at different heights, and furnished with three fittings, viz., with glass, to exclude air, but not light, when the glass is shut; with a wooden shutter, to enable both light and air to be excluded; and with a wire-gauze fitting, which will admit both light and air, but will exclude flies and all kinds of winged insects, which are the great bane of the curer of soft cheese. The cheeses, as a rule,

* Practice differs considerably at this stage of the process. Some makers prefer to add new curd from time to time, as the first shrinks in consequence of the drainage of the whey; others prefer high moulds and putting as much curd in them at first as will allow for probable shrinkage.

are turned every day at the commencement of their curing, and every other day afterwards while they are in the drying-room, except in damp weather, when daily turning is absolutely necessary. During the sojourn in the drying room the cheeses show the following succession of appearances: After an interval of three or four days they become speckled, in another week they are covered with a thick crop of white mold; by degrees the color of this mold deepens to a dark yellow, while the outside of the cheese becomes less and less sticky. At the end of about a month when the cheese no longer sticks to the fingers, it is taken to the finishing room, where light is nearly excluded, and where the atmosphere is kept very still and slightly damp. Here they remain for three or four weeks, being turned every day or every two days, according to the season, and carefully examined periodically. When ready for market — that is to say, in winter when they are ripe and in summer when they are about half ripe — they are made up into packets of six, by means of straw and paper, with a skill and tidiness worthy of the reputation of the cheese.

The prices of Camembert cheese vary very much according to quality and season. A really good cheese should have a mottled external appearance, the colors being a reddish brown and a dirty yellow, the former predominating. If the color is too bright it betokens a skim-cheese; as also does an elasticity or toughness when the cheese is pressed on the face with the finger. The quantity of milk required to make a Camembert cheese varies a little, according to its richness in cream when used for cheese making. Thus the Marquis de Cussey de Jucoville, who has a dairy of thirty cows, near Isigny, makes eight cheeses from twenty-four and a half pints of milk, or about three pints of milk to a cheese; but he takes off no cream. He sells them at from seven and a half to eight francs ($1.50 to $1.60) the dozen; and assuming that his cows, which are remarkably good ones, and graze on some of the best pastures in Normandy, having a rent value there of nearly 5*l* ($25 per acre), give an average of 550 gallons, their gross return in cheese alone would be 36*l*, $180 per head per annum, if it were all made into Camembert.

LIST OF CHEESE FACTORIES AND CREAMERIES,

With their Post Office Address.

COUNTIES AND NAME OF FACTORY OR PROPRIETOR.	P. O. ADDRESS.
BROWN.	
Jas. Bitchie Lawrence	West Depere.
A. Vander Heiden & Co	Wrightstown.
D. Benecke	Fontenoy.
BUFFALO.	
William Fisher	Mondovia.
T. W. Bailey	Gilmanton.
A. Mosher	Gilmanton.
CALUMET.	
C. P. Skidmore	Stockbridge.
M. S. W. Scott	Brant.
O. R. Potter	Potter's Mills.
Wirtz Cheese Company	Hilbert.
Platt Cheese Company	Hilbert.
CLARK.	
G. & J. Heuntzicher Factory	Greenwood.
COLUMBIA.	
Arlington Cheese Association	Dixon.
COLUMBIA — continued.	
Wyocena Cheese Association	Wyocena.
Lodi Cheese Association	Lodi.
West Point Cheese Association	West Point.
Chas. Baker Cheese Association	Portage.
O. B. Prime & Co	Fall River.
Caledonia Cheese Company	Portage.
A. Chapman	Columbus.
Poynette Cheese Factory	Poynette.
H. M. Chapman's Creamery	———.
J. Whiting	Port Hope.
Randolph Cheese Factory	Randolph.
DANE.	
C. C. Pease	Belleville.
Wm. Fischer	Paoli.
Humphrey & Sherman	Mazomanie.
Black Earth Cheese Factory	Black Earth.
Dane Cheese Factory	Dane.
A. S. Noyes' Cheese Factory	Waunakee.
W. J. Donald Cheese Factory	Mount Vernon.
Brooklyn Cheese Factory	Brooklyn.
John Fasher Cheese Factory	Mount Vernon.
John Ole & Co. Cheese Factory	Primrose.

DANE — continued.	
John Arian's Cheese Factory	North Bristol.
A Chipman's Cheese Factory	Sun Prairie.
Sherman Bros. Cheese Factory	Windsor.
Olin, Crossfield & Co	Cambridge.
Kittle, Torguson & Co	Utica.
C. M. Prentice	Dane.

DODGE.	
Stapleton Cheese Co	Fox Lake.
R. F. Ellis	Beaver Dam.
J. B. Cochrane Cheese Co	Beaver Dam.
F. S. Jacobs	Atwater.
Wm. B. McDonald	Danville.
G. R. Talbot	Juneau.
G. R. Talbot	Rolling Prairie.
G. R. Talbot	Emmett.
John Hoffman	Hustisford.
B. Bross	Hustisford
H. Brue	Hustisford.
Mr. von Grunigen	Hustisford.
M. E. von Grunigen	Hustisford.
A. Graniger	Hustisford.
J. Graniger	Hustisford.
C. Wellow (3 factories)	Hustisford.
J. Seelgidurey	Hustisford.
Mr. Chrunkny	Hustisford.
S. Boss	Watertown.
Jacob Joss	Woodland.
J. Ealing	Woodland.
M. S. Barrett's Factory	Burnett.
S. Hammond	Lowell.
R. D. Calkins	Randolph.
Lebanon Cheese Co	Lebanon.
Lake Emily Cheese Co	Fox Lake.

FOND DU LAC.	
C. Hazen	Ladoga.
C. Hazen, Brandon Factory	Ladoga.
E. S. Jenkins' Factory	Rosendale.
E. Peebles	Peebles.
D. S. Treleven	Byron.
Wm. Berry	Peebles.
Fayette Bude	Oakfield.
M. Wookey	Oakfield.
Willis Lang	Waupun.
John Howard	Waupun.
H. C. Williams	Waupun.
Bradley's Cheese Co	Waupun.
M. R. Stapleton	Waupun.
R. M. Stevens	Ripon.
J. H. Downing	Waupun.
J. Cronks	Waupun.
B. Bennett	Lamertine.
O. G. Parker	North Byron.
Fountain City, Wm. Berg	Peebles.
Ira Brown	New Cassel.
Bristol & Orvis	Oakfield.
L. F. Beedee	Oakfield.
Simon Arthur	Fond du Lac.
H. G. Parker	Fond du Lac.
J. A. Chitterling	Fond du Lac.
Ira Brown	Campbellsport.

GRANT.	
A. E. Moorse	Bloomington.
Delos Abrahams	Bloomington.
Morse & Welch Factory	Bloomington.

LIST OF CHEESE FACTORIES AND CREAMERIES—continued.

COUNTIES AND NAME OF FACTORY OR PROPRIETOR.	P. O. ADDRESS.
GREEN.	
C. Hazen	Ladoga.
Melvin, Blair & Co	Brooklyn.
Hoesley & Lenhar	New Glarus.
G. O. Stearns	Monroe.
E. W. Cheesbro	Monroe.
Postville Factory	Stewart.
W. C. Gorham	Monroe.
W. S. Wescott	Monroe.
Dayton Factory	Dayton.
Chris. Karlan	Juda and Nevada.
Jack Karlan (4 fac.)	Farmers Grove.
Nic Garber (7 fac.)	New Glarus.
John Boss (2 fac.)	Monroe.
Zumbrunnen & Wittwer (2 fac)	Monroe.
Miller & Frautschy	Monroe.
Gottlieb Wittwer	Monroe.
Jac. Kegetz	Monroe.
Jac. Stauffacher	Monroe.
J. U. Elmer	Monroe.
Anton Stauffacher	Monroe.
John Marty	Monroe.
Fred Neuenscheunder	Monroe.
G. Draschler	Monroe.
Frank Hafner	Monroe.
Paul Kundert	Monroe.
G. Beller	Monroe.
G. Karlan	Monroe.
GREEN — continued.	
Jac. Kundert	Monroe.
Geo. Figi	Monroe.
Weiss & Babler	Monroe.
Norman Cole	Brodhead.
GREEN LAKE.	
C. Hazen	Ladoga.
IOWA.	
Bloomfield Factory	Mineral Point.
JEFFERSON.	
Olin, Crossfield & Co	Oakland.
Fort Atkinson Factory	Oakland.
Clark & Reynolds	Hebron.
Whitney's Factory	Ft. Atkinson.
Wright's Mill Factory	Hebron.
Cold Spring Cheese Co	Whitewater.
Old Cold Spring Factory	Whitewater.
New Cold Spring Factory	Whitewater.
Hebron Factory	Whitewater.
Palmyra Factory	Whitewater.
Oak Hill Factory	Oak Hill.
M. N. Seward	Harvey.
Seward & Skinner	Aztalan.
Riverside Factory	Jefferson.
Faville Grove Factory	Lake Mills.
E. P. Ingalls	Milford.

JEFFERSON — continued.

Wm. Galloway	Whitewater.
Thos. Bussey	Busseyville.
Greene's Corner Factory	Fort Atkinson.
Z. Wilson	Palmyra.
Concordia Cheese Company	Concord.
C. H. Hosington	Farmington.
H. C. Drake	Lake Mills.
Merrick's Factory	Whitewater.
H. A. Hoffman, Creamery	Jefferson.
S. G. Westphall, Creamery	Fort Atkinson.
H. Merriman, Creamery	Fort Atkinson.
M. C. Jones, Creamery	Fort Atkinson.
Rock Lake Creamery	Lake Mills.
Edmund King, Creamery	Whitewater.
Star Creamery	Lake Mills.
Krogville Cheese Company	Krogville.
Union Cheese Company	Lake Mills.
Koshkonong Cheese Company	Koshkonong.
Wm. P. Phillips	Lake Mills.
C. S. Cartwright, Cheese	Rome.
H. E. Humphrey	Ixonia Center.
Burr Oak Creamery	Fort Atkinson.
L. B. Root	Whitewater.

JUNEAU.

D. C. Robinson	Mauston.
Wm. Kimball	Union Center.
F. O. Galla	Elroy.
Wm. Hale & Co	Mauston.
Robert Camp	Mauston.

JUNEAU — continued.

F. O. Galla	Elroy.
John Sharf	Union Center.
Andrew Mills	Elroy.
I. Fleno	Elroy.
Wm. Robinson	New Lisbon.
J. J. Smith	Melvina.
J. J. Smith	Burns.
J. J. Smith	Mauston.
George Curtis & Co	Elroy.
Millard's Prairie Factory	Mauston.
D. C. Robinson & Co	

KENOSHA.

E. S. Stanard	Woodworth.
South Bristol Cheese Factory	Bristol.
J. M. Kellogg's Factory	Woodworth.
J. M. Wilbur	Wilmot.
O. C. Stonebreaker	Bristol.
J. V. Vosburgh	Richmond, Ill.
Maynard & Stevens	Salem.
George H. Booth	Salem.
J. M. Kellogg	Woodworth.
Henry G. Blackman	Kenosha.
C. C. Holt	Kenosha.
Simmons & Co	Kenosha.
W. C. White	Kenosha.
M. B. Hubbard	Pleasant Prairie.
Eureka Creamery	Salem.
C. Williams	Bristol.
O. C. Stonebreaker	Bristol.

LIST OF FACTORIES AND CREAMERIES — continued.

COUNTIES AND NAME OF FACTORY OR PROPRIETOR.	P. O. ADDRESS.
LA CROSSE.	
L. R. Bowen	Bangor.
LA FAYETTE.	
Darlington Cheese Co	Darlington.
MANITOWOC.	
Lilloffe & Ecke	Kiel.
A. Ecke	Meemee.
Daniel Kuentz	Newtonberry.
Pierce Bros	Hika.
Nelson Darling	Cato.
MILWAUKEE.	
Wauwatosa Cheese Co	Wauwatosa.
F. A. Yankee	Northern Junction.
A. Thomas & Son	Good Hope.
MONROE.	
Cataract Factory	Cataract.
N. W. Creamery	Tomah.
Charles E. Bell	Tomah.
Sparta Factory	Sparta.
Leon Valley	Leon.
Hunt's Mills	Medina.
OUTAGAMIE	
Louis Perrott	Granville.
E. M. Gowell	Granville.
H. Brockway	Appleton.
H. M. Armstrong	Fredonia.
Edward Nye	Fredonia.
OZAUKEE.	
Ingersol & Eckle	Port Washington.
Butter made in the county	
RICHLAND.	
G. J. Carswell & Son	Lone Rock.
H. L. Eaton	Lone Rock.
A. Shaunce	Bear Valley.
Geo. Turner	Sexto nville.
A. & D. Beckwith	Lone Rock.
Barker's Factory	Bear Valley.
ROCK.	
Bent, Cheever & Pierce	Clinton.
B. S. Hoxie	Cooksville.
Wm. Zimmerman	Edgerton.
James Clough	Edgerton.
E. Devereux	Evansville.

ROCK — continued.

Clover Dale Factory	Lima Center.
Godfrey's Factory	Lima Center.

SHEBOYGAN.

J. A. Smith	Sheboygan.
H. Habighurst	Sheboygan.
G. W. Weeden	Sheboygan.
F. Widder	Sheboygan.
J. Sieber	Sheboygan.
W. Springborn	Sheboygan.
J. G Peacock	Sheboygan Falls.
A. & A. B. Dye	Sheboygan Falls.
D. Kuentz	Sheboygan Falls.
Mrs. C. Strong	Sheboygan Falls.
S H. Conover	Plymouth.
S. A. Rickmeier	Plymouth.
H. Graef	Plymouth.
Gilman Factory	Plymouth.
A. Kuentz	Howard's Grove.
W. Siemers	Howard's Grove.
J. Ochs	Howard's Grove.
C. Grœne	Johnsonville.
J. Kæstner	Johnsonville.
Wm. Hutman	Sheboygan.
Karl Reich	Sheboygan.
Wm. Koch (3 factories)	Plymouth.
Pierce Bros	Sheboygan Falls.
John Kalstiner	Johnsonville.
G. W. Bradley	Scott.
Slyfield & Thompson	Hingham.
Hiram Conover	Plymouth.
Hiram Smith	Sheboygan Falls.
E. Montgomery	Greenbush.

SHEBOYGAN — continued.

H. Eiche	Mosel.
G. W. Bradley	Scott.
Harmons' Factory	Winooski.
M. Lemmin	Edwards.
R. M. Johnson	Rathbun.
W. Crosby & Co	Cascade.
W. Berkle	Howard's Grove.
M. Maher	Sheboygan Falls.
John Dessau	Sheboygan Falls.
C. Altrop	Mosel.
Wilson J. Stock	Sheboygan.
Wilson Six Corners	Sheboygan.
C. Rockwell	Hingham.
H. Feldman	E khart.
J. Negler	Russell.
A. D. De Land	Sheboygan Falls.
Wm. Stronko	Cedar Grove.
Robt. A. Swann	Cascade.
Holden Bros	Sheboygan Falls.
J. Littlefield	Plymouth.
J. Misselink	Gibbsville.
S. Reiniking	Gibbsville.
Mather Bros	Sheboygan Falls.
Jas. Slyfilla	Hingham.
C. F. F. Karstaedt	Mosel.
A. Dye	Waldo.
S. A. Rickmeier	Plymouth.
F. A. Streblow	Johnsonville.
A. D. Hanson	Sheboygan Falls.
L. Hills	Glenbeulah.
J. A. Smith	Glenbeulah.
H. J. Bamford	Plymouth.
F. C. Joems	Winooski.
M. L. Yoemans	Scott.

LIST OF CHEESE FACTORIES AND CREAMERIES — continued.

COUNTIES AND NAME OF FACTORY OR PROPRIETOR.	P. O. ADDRESS.
SAUK.	
Tuckerville Cheese Co	Logansville.
VERNON.	
Wm. F. Satto	Hillsborough.
WAUKESHA.	
Olin & Clinton	Waukesha.
T. C. Dousman	Waterville.
B. R. Hinckley	Oconomowoc.
Monterey Factory	Monterey.
Frank Shultis	Waukesha.
Thomas Steele	Genesee.
Richard Milton	Eagle.
Frank Shultis	Mukwonago.
Waterville Factory	Waterville.
Rose Glen Creamery	Waukesha.
Dell Ostrander	Monterey.
M. Rowell	Hartland.
Wacwatosa Cheese Co	Elm Grove.
WAUSHARA.	
A. H. Wheaton	Auroraville.
R. P. Colt	Poysippi.
WAUPACA.	
Weyauwega Cheese Factory	Weyauwega.
S. A. Oaks	Ogdensburg.
Charles Gibson	Lind.
Wm. Hamilton	Clintonville.
Thomas W. Rhodes	Weyauwega.
Craig & McCord	Royalton.
New London Factory	New London.
WALWORTH.	
Pearson Brothers	Sharon.
S. G. Nichols	Geneva Lake.
S. Lytle, Oak Ridge Creamery	Elkhorn.
D. L. Flack	Elkhorn.
J. G. Flack	Elkhorn.
J. A. Chase	Elkhorn.
Chase, Berner & Caswell	Elkhorn.
C. R. Beach	Whitewater.
H. A. Conger	Whitewater.
R. Springsteen	Whitewater.
R. S. Benson	Geneva Junction.
Cheever & Pierce	Delavan.
C. B. McCanna	Springfield.
C. B. McCanna	Spring Prairie.
C. B. McCanna	Rochester.
H. & J. D. Godfrey	Whitewater.
Westville Cheese Co	Elkhorn.

WASHINGTON.	
Jacob Hamm	Kohlsville.
WINNEBAGO.	
John Ryfe	Oshkosh.
Christ. Perrin	Oshkosh.
Crist. Boss	Oshkosh.
C. Bellinger	Oshkosh.
Mr. Kettle	Oshkosh.
George Rogers	Oshkosh.

WINNEBAGO — continued.	
Charles Vedder	Eureka.
F. Stune	Waukau.
D. Grossman	Omro.
S. S. Walter	Eureka.
Bishop's Cheese Factory	Omro.
J. G. Picket	Picket's Station.
F. W. Wheeler	Neenah.
Henry Searl's Factory	Picket's Station.
Emery Davis' Factory	Picket's Station.
Peas' Factory	

Miss Morley was born June 10, 1859, near Baraboo, Sauk county, Wisconsin, where she now resides, and had the usual experience and success of farmers' daughters in attending and teaching schools, until March, 1879, when she quit the schoolroom to take charge of her father's dairy, and from that time to the present has had the care of the milk from about seventy cows. In November, 1879, she made the butter which was awarded the Sweepstakes Prize at the International Dairy Fair in New York City the following December, in competition with the world, for the best butter made at any time or place.