Twelfth annual report of the Wisconsin Dairymen's Association : held at Lake Mills, Wis., January 16, 17 and 18, 1884. Report of the proceedings, annual address of the president, and interesting essay...

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TWELFTH ANNUAL REPORT

OF THE

WISCONSIN

DAIRYMEN'S ASSOCIATION,

HELD AT

Lake Mills, Wis., January 16, 17 and 18, 1884.

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

COMPILED BY

D. W. CURTIS, SECRETARY.

MADISON, WIS.:
DEMOCRAT PRINTING CO., STATE PRINTERS.
1884.

OFFICE OF THE SECRETARY,

Wisconsin Dairymen's Association.

FORT ATKINSON, March 10, 1884.

To His Excellency, J. M. RUSK,

Governor of the State of Wisconsin:

I have the honor to submit the Twelfth Annual Report of the Wisconsin Dairymen's Association, showing the receipts and disbursements the past year, also papers relating to the dairy interest, read at the Annual Convention held at Lake Mills.

Respectfully submitted,

D. W. CURTIS,

Secretary.

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OFFICERS, 1884.

PRESIDENT.

W. H. MORRISON,

ELKHORN, WALWORTH COUNTY.

VICE PRESIDENTS.

CHESTER HAZEN, LADOGA, FOND DU LAC COUNTY.

President Wisconsin Dairymen's Association from 1872-4.

HIRAM SMITH, SHEBOYGAN FALLS, SHEBOYGAN COUNTY.

President Wisconsin Dairymen's Association from 1875-6.

A. D. DELAND, SHEBOYGAN FALLS, SHEBOYGAN COUNTY.

President Wisconsin Dairymen's Association, 1877.

H. F. DOUSMAN, WATERVILLE, WAUKESHA COUNTY.

President Wisconsin Dairymen's Association, 1878.

Z. G. SIMMONS, KENOSHA, KENOSHA COUNTY.

President Wisconsin Dairymen's Association, 1879.

STEPHEN FAVILL, DELAVAN, WALWORTH COUNTY.

President Wisconsin Dairymen's Association, 1880.

C. R. BEACH, WHITEWATER, WALWORTH COUNTY.

President Wisconsin Dairymen's Association, 1881-2.

SECRETARY.

D. W. CURTIS,

FORT ATKINSON, JEFFERSON COUNTY.

TREASURER.

H. K. LOOMIS,

SHEBOYGAN FALLS, SHEBOYGAN COUNTY.

ARTICLES OF ASSOCIATION.

[*Adopted February* 15, 1872]

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

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

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

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

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

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

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

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

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

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

LIST OF MEMBERS, 1884.

A.

Alcott, William, Brodhead, Wis.
Allen, J. J., Rio, Wis.
Adams, B. F., Madison, Wis.
Allen, George, Milford, Wis.

B.

Beach, C. R., Whitewater, Wis.
Bragg, W. C., Lake Mills, Wis.
Brown, Solon, Jefferson, Wis.
Blackmer, N. B., 617 Grand Avenue, Milwaukee, Wis.
Buckley, J. L., Lake Mills, Wis.
Black, George, Lake Mills, Wis.
Bishop, G. W., Lake Mills, Wis.
Breitkrentz, W. C., Elgin, Ill.
Boot, L. B., Whitewater, Wis.
Brooks, M. W., Dartford, Wis.
Babbitt, Clinton, Madison, Wis.
Bliss, S. R., Lake Mills, Wis.
Boyd, John, 199 Lake St., Chicago.
Bean & Perry, Rockford, Ill.

C.

Curtis, D. W., Fort Atkinson, Wis.
Curtis, D. T., Syracuse, N. Y.
Cass, Oliver, Lake Mills, Wis.
Clapp, Richard, Milford, Wis.
Cump, Ed., Lake Mills, Wis.
Cump, Wm., Lake Mills, Wis.
Comby, O. B., Lake Mills, Wis.
Calkins, C. L., Palmyra, Wis.
Cump, James, Lake Mills, Wis.
Chadsey, Albert, Sharon, Wis.
Corbett, W. W., *Prairie Farmer*, Chicago.
Crump, Charles, Lake Mills, Wis.
Crossfield, C. B., Fort Atkinson, Wis.
Cump, L. C., Harvey, Wis.

D.

Deveraux, E., Evansville, Wis.
Drake, H. C., Lake Mills, Wis.
Douglass, E. G., Elgin, Ill.

E.

Everson, Wm., Lake Mills, Wis.
Entwistle, Robert, Lake Mills, Wis.
Everson, George, Lake Mills, Wis.

F.

Fish, H. L., Lone Rock, Wis.
Flack, H. C., Elkhorn, Wis.
Fowler, J. B., Baraboo, Wis.
Favill, Stephen, Delavan, Wis
Favill, A. D., Lake Mills, Wis.
Favill, Cash., Lake Mills, Wis.
Favill, Rush, Lake Mills, Wis.
Favill, Stote, Lake Mills, Wis.
Fargo, Robert, Lake Mills, Wis.
Fargo, F. B., Lake Mills, Wis.
Fargo, E. B., Lake Mills, Wis.
Fargo, L. D., Lake Mills, Wis.
Frazier, D. G., Lake Mills, Wis.
Fleming, Andrew, Lake Mills, Wis.

G.

Greene, W. S., Fort Atkinson, Wis.
Guild, W. G. A. & Son, Lake Mills.
Goodrich, C. P., Fort Atkinson, Wis.
Ganes, J. W., Lowell, Mass.
Griswold, G. S., Lake Mills, Wis.
Gardner, David, Milford, Wis.
Greenwood, C. F., Harvey, Wis.

H.

Hazen, Chester, Brandon, Wis.
Hoocker, N. J., Lake Mills, Wis.
Haight, Stephen, Christiana, Wis.
Herndon, Wm., Lake Mills, Wis.
Hubbs, C. L., Lake Mills, Wis.
Hoskins, W. L., Lake Mills, Wis.
Hosley, Charles, Lake Mills, Wis.
Howe, Bert, Lake Mills, Wis.
Hitt, H. D., Oakfield, Wis.
Hatch, Eugene, Jefferson, Wis.
Henderson, G. W., Hartland, Wis.
Harvey, E. N., Lake Mills, Wis.
Hemmingway, E. C., Milford, Wis.
Harris, J. B., Antwerp, N. Y.
Henry, Prof. W. A., Madison, Wis.
Hoard, W. D., Fort Atkinson, Wis.

I.

Ives, Edson, Fort Atkinson, Wis.
Ingalls, E. P. Milford, Wis.

J.

Jones, W. F., Waterloo, Wis.

K.

King, H. H., Whitewater, Wis.
King, C. E., Whitewater, Wis.
Kreutz, Breit, Lake Mills, Wis.
Kellogg, Henry, Ripon, Wis.

L.

Loomis, H. K., Sheboygan Falls, Wis.
Loyd, Lewis, Cambria, Wis.
Leonard, L. B., Milford, Wis.
Lilly, George, Waterloo, Wis.
Lusk, George, Lake Mills, Wis.
Leonard, S. F., Chicago, Ill.

M.

Morrison, W. H., Elkhorn, Wis.
Murphy, Miss Anna, Waterloo, Wis.
Montague, P. B., Farmington, Wis.
Millard, C. J., Lake Mills, Wis.
Montgomery, E., Ripon, Wis.
McKinzie, A., Milford, Wis.
McGlincy, Col. R. P., Elgin, Ill.
Mansfield, Geo. C., Johnson's Creek, Wis.
McCutchan, R. F., Whitewater, Wis.
Marshall, Wm., Whitewater, Wis.

N.

Northrop, S. S., Clinton, Wis.
Noyes, H. J., Lone Rock, Wis.
Nickerbocker, J. H., Fort Atkinson, Wis.

O.

Olin, Q. C., Oakland, Wis.
Oehler, Cal., Lake Mills, Wis.

P.

Palmer, A. N., Brodhead, Wis.
Passolt, C. F., Pewaukee, Wis.
Pixley, Oscar, Lake Mills, Wis.
Phillips, Wm. P., Lake Mills, Wis.
Perrot, Louis, Greenville, Wis.
Porter, J. K. P., Cooksville, Wis.

R.

Rutherford, Thos., Lake Mills, Wis.
Roach, A. J., Waterloo, Wis.
Raynor, W. L., Lake Mills, Wis.
Ray, Capt. O. L., Lake Mills, Wis.
Reik, J. A., Hartford, Wis.
Robertson, Robt., Oakland, Wis.
Rosenberg, Chas., Lake Mills, Wis.
Robertson, J. H., Viroqua, Wis.

S.

Smith, Hiram, Sheboygan Falls, Wis.
Smith, J. A., Cedarburg, Wis.
Smith, J. M., Green Bay, Wis.
Stone, W. D., Whitewater, Wis.
Strebalow, F. A., Plymouth, Wis.
Schuyler, John, Fort Atkinson, Wis.
Schuyler, E., Aztalan, Wis.
Sheldon, J. D., Fort Atkinson, Wis.
Stiles, W. D., Lake Mills, Wis.
Smith, S. N. D., Lake Mills, Wis.
Sickles, M. A., Lake Mills, Wis.
Stetson, L. L., Lake Mills, Wis.
Stone, J. B., Milford, Wis.
Snow, E. M., Waterloo, Wis.
Seward, J. L., Harvey, Wis.
Seward, N. M., Harvey, Wis.
Snyder, A. L., Mt. Hope, Wis.
Springston, R., Lima Center, Wis.

T.

Tasher, John, Mt. Vernon, Wis.
Taylor, Elias, Harvey, Wis.

V.

Van Slyke, R., Lake Mills, Wis.

W.

Wait, G. E., Milford, Wis.
Wyman, D. A., Juneau, Wis.
Williams, G. R., Pipersville, Wis.
Wolvert, Aug., Lake Mills, Wis.
Wolvert, H., Kroghville, Wis.
Whittet, John, Busseyville, Wis.
Warner, E., Milford, Wis.
Wilson, J. H., Milford, Wis.
Widman, J. C., Fort Atkinson, Wis.
Williams, J. M., Whitewater, Wis.
Waterbury, J. D., Aztalan, Wis.
Walker, W. A., Racine, Wis.

Y.

Young, John, Milford, Wis.

TWELFTH ANNUAL MEETING

OF THE

WISCONSIN DAIRYMEN'S ASSOCIATION.

PROGRAMME.

WEDNESDAY.

11 A. M.—Entry of Butter and Cheese and articles for exhibition.
2 P. M.—Organization of Convention.
Address of Welcome by Wm. P. Phillips, Esq., Lake Mills.
Response by W. D. Hoard, Fort Atkinson.
Opening Address, by President Morrison.
Appointment of Committees.
Report of Secretary and Treasurer.

"Dairy Experiments"—W. A. Henry, Prof. of Agriculture, Wisconsin State University.

For the past two years Prof. Henry has been engaged upon a series of exhaustive experiments in the feed and care of cows. The results of his study are of vital importance to every man who keeps a cow. Be sure and hear him.

"Milk and Management of Factories"—J. B. Harris, Esq., Antwerp, N. Y.

Mr. Harris has been employed during the past summer by the cheese factories of Canada, in the important work of visiting and inspecting factories, as well as the farms and dairies of patrons, for the purpose of correcting errors of management and manufacture. The Canada dairymen speak of the results of his labors in the highest terms, and the experience he has thus gained can but be of great value to western factorymen.

"Does Rich Food Enrich the Quality of Milk,"—Dr. H. P. Armsby, of Agricultural Chemistry, Wisconsin State University.

This question has been discussed pro and con for years, yet it is greatly misunderstood by a vast number who call themselves skillful dairymen. Let us hear what practical science has to say concerning it.

"The Education of the Farmer,"—T. D. Curtis, Esq., Syracuse, N. Y.

Mr. Curtis never fails to interest and instruct. Himself a practical farmer and dairyman, his views upon so important a subject should meet with general attention and study.

"The Private Dairyman and Farmer,"—Col. R. P. McGlincy, Secretary Elgin Board of Trade, Elgin, Ill.

Col. McGlincy's familiarity with the best methods practiced by the successful dairymen of Elgin will give to this topic a large degree of interest.

"Does it Pay to Give Cows Ground Feed During the Pasture Season,"—Hon. Hiram Smith, Sheboygan Falls, Wis.

Mr. Smith is one of the most successful dairy farmers in Wisconsin. Every farmer, who is not keeping cows for the fun of it, should not fail to hear what Mr. Smith has to say on this important subject of farm practice.

"What Shall be Done With the Calf,"—W. D. Hoard, President of the N. W. Dairymen's Association, Fort Atkinson, Wis.

This topic deals with a vast waste of the productive energies of the farm. It should meet with serious attention and full discussion.

"Some of the Neglected Opportunities of Dairymen,"—J. A. Smith, Cedarburg, Wis.

"Are the Dairymen of Wisconsin doing as well as they know how; if not, why not?"—C. R. Beach, Whitewater, Wis.

Mr. Beach is a close, analytical reasoner on farm topics, and his treatment of this question cannot fail to be of profit to every man with brains enough to be a farmer.

"The Farmer's Garden,"—J. M. Smith, Green Bay, Wis.

This much neglected part of farm life will receive at Mr. Smith's hands broad and thorough treatment. The ladies are especially invited to hear what he has to say.

"The value of Pure Milk,"—Geo. C. Mansfield, Johnson's Creek, Wis.

No manufacturer in the state knows better the value of pure milk than Mr. Mansfield, for he is engaged in the production of fancy cheese which cannot be made from unsound milk. His address should be heard by every factoryman and patron.

"The road to the factory."—Robert Fargo, Lake Mills, Wis.

At present, altogether too hard a road to travel for the profit of the dairymen, it is to be hoped Mr. Fargo's presentation of this subject will awaken interest and energy on the question of our country roads and too *frequent watering places.*

PRIZES.

For the best Essay on Butter Making of not more than 250 words.. $15 00
For the best Essay on Cheese Making of not more than 250 words.. 15 00

A committee of practical butter and cheese makers will decide to whom these prizes belong.

THURSDAY EVENING.

Dairy Banquet and Sociable.

PREMIUMS OFFERED ON BUTTER AND CHEESE TO BE EXHIBITED DURING THE CONVENTION.

CLASS I — PREMIUMS ON BUTTER.

The Association offers the following premiums on butter:

For the best tub or pail of butter	$10 00
For second best	5 00

CLASS II. — PRINT BUTTER.

Best specimen or plate of butter made into fancy prints	$5 00
Second best	3 00

CLASS III. — GRANULATED BUTTER.

For the best sample of granulated butter	$3 00
Second best	2 00

Granulated butter m ited in fruit jars.

CLASS IV. — PREMIUMS ON CHEESE.

For the best cheese, Young America or Cheddar	$10 00
For the second best	5 00

CLASS V. — "HIGGINS' CHALLENGE CUP."

Thomas Higgins & Co., Liverpool, offer a Silver Cup valued at $50 for the best tub or pail of butter made at any time in Wisconsin, salted with "Higgins' Eureka Salt." The Cup will be retained by the winner for one year, then to be returned to the Association for renewed competition. The party winning the cup two years in succession, to retain the same permanently. It was won last year by Harris Bros., Spring Prairie.

CLASS VI.

Geo. S. Hart & Co., 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 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 for three successive seasons, to retain the same permanently.

The Prize Cup is of Sterling Silver, satin finish, with gold border and lining. Upon one side of it is engraved the figure of a cow, and upon the reverse side an appropriate inscription. This cup is also inclosed in an elegant satin lined case.

It has been won by A. H. Wheaton, Auroraville; Olin & Clinton, Waukesha; H. A. Congar & Son, Whitewater; August Klessig, Centerville, and Marr & Dyer, Whitewater.

RULES GOVERNING THE EXHIBITION.

1. Entrance fee to be fifty cents for each.

2. Butter made at any time, and to be in packages of not less than eight pounds — a small pail — except in classes 2 and 3.

3. Butter in *stone jars* not allowed to compete for premiums.

4. No package can compete for more than one premium.

5. Scale of points for judging cheese: flavor, 15; quality, 15; texture, 10; salting, 5; color, 5. Total, 50.

6. Scale of points for judging butter: flavor, 20; grain, 15; salting, 6; color, 6; style of package, 3. Total, 50.

Manufacturers, dealers and inventors are invited to make an exhibit of dairy goods in which they are interested. A committee will be appointed to examine and report upon the same.

Parties wanting cheese or butter makers for next season, and those wishing situations, will find books for register, that the wants of each may be known.

Lake Mills is in Jefferson county, on the C. & N. W. Ry., running from Milwaukee to Madison. Three passenger trains each way, daily.

Members paying full fare one way, will be returned at reduced rates.

W. H. MORRISON, President, Elkhorn.
H. K. LOOMIS, Treasurer, Sheboygan Falls.
D. W. CURTIS, Secretary, Fort Atkinson.

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS,

OF THE

WISCONSIN DAIRYMEN'S ASSOCIATION,

AT THEIR

TWELFTH ANNUAL CONVENTION,

Held at Lake Mills, January 16th, 17th and 18th, 1884.

The Twelfth Annual Convention of the Wisconsin Dairymen's Association convened at Hassam's Hall, in Lake Mills, January 16, at 2:30 P. M., President Morrison in the chair. President Morrison introduced Wm. P. Phillips, Esq., who welcomed the convention to Lake Mills in the heartiest manner.

Mr. President, Ladies and Gentlemen of the Wisconsin State Dairymen's Association: I am delegated by the citizens of Lake Mills to welcome you to their midst.

Though this is the first time since your organization you have honored them by meeting here, the character of your body is not unknown to them. The industry you are organized to promote is one of their leading industries. It has wholly supplanted the business of wheat growing, once their almost exclusive industry.

Many of you remember that for thirty years after her first settlement Wisconsin was famous for her wheat product, and for a time she ranked high among the great wheat producing states. It was her great staple crop. Then a change came. The fields refused to yield their wonted har-

vest. The chinch bug appeared and, favored by a continuous production on the same fields of its favorite forage plant, it became numerous and destructive. Yet so strong is the force of habit, so difficult is it for farmers especially, to work up out of the ruts of custom, that many continued to sow wheat long after they found it unprofitable.

A farm unincumbered by a mortgage debt bearing ten per cent. interest was an exceptional case. In fact mortgages were growing more luxuriantly than wheat, and people began to speak disparagingly of the country.

At this time of general distress and impending bankruptcy, it was our good fortune to find among us some citizens who in their youth had learned something of a system of agriculture, of which wheat raising was not an important part.

They "remembered the days of their youth" and their old homes among the green hills and fertile valleys of Herkimer county, New York. They had not forgotten the herds of gentle cows, that during the whole year had required so much care and labor from them as boys; that they had gladly left them for the wheat fields of Wisconsin, in which, as they imagined, the work of a few days during the pleasant days of summer would give them greater wealth than the whole year's drudgery among the cows had given them.

Now that the fallacy of these dreams was realized, *they* were ready to "return to the ways of their fathers."

I think it was in the spring of the year 1867, that one of them, your honored ex-president, Mr. Stephen Faville, after visiting the most noted dairy regions of the east, and informing himself of the improved methods of conducting the dairy business in operation there, opened the first regular modern, co-operative cheese factory in Jefferson county, if not the first in this state.

Its remunerative character is shown by the general prosperity and increased wealth of those engaged in it.

The rapid development of the dairy business in the fifteen ensuing years is attested by the numerous factories erected, making every farm in this county, and most of the improved farms in this great state conveniently near some cheese or butter factory.

The citizens of Lake Mills and surrounding country, particularly those of them who are engaged in the dairy business, are not unmindful of the valuable aid your association has rendered this industry, in which they are so much interested.

They remember the many obstacles encountered in its early development; the injury to their reputations as producers and manufacturers, by the prevalent custom in all the great markets of assorting and selling all inferior dairy goods as of *western* manufacture, and all the better grades as of *eastern* manufacture.

The frequent losses incurred under the prevalent system of giving credit to irresponsible purchasers; inadequate facilities for transportation, and generally the many disadvantages arising from a deficiency of knowledge and inexperience in the business.

All these evils your association has done much to remedy. They appreciate the work you have already done for the country and for them, and they perceive the great advantages to be derived from *organization.*

They recognize the fact that industrial organization is rapidly developing throughout the country, and that it is one of the most noticeable and important features of the age. That it is an unmistakable evidence of increased intelligence among the masses. That it so individualizes a great number of people of a similar vocation, that they are enabled to be mutually helpful, and to assert and *command* a recognition of their rights. It is the only means by which the industrial classes can ever hope to make themselves known to the world as a power or to obtain any degree of supremacy.

Power and supremacy have ever been, and are likely ever to be, the great ambition pervading all living forms. All species of animals strive for it and recognize it. The trees of the forest and the grasses of the field, appear to rejoice in being able to outgrow and overshadow living forms around them.

Among men, this supremacy has generally come through organization. By political, military, or ecclesiastical organ-

ization — or combinations of them — the few have ever been able to exact tribute from the many.

With rare exceptions, history records but a succession of the most cruel and relentless exactions and oppressions by these organizations on the one side, and almost beastly degredation, ignorance and slavery of the industrial masses, on the other.

Eighteen hundred years of christian precept have hardly sufficed to teach men the wickedness of aggressive human warfare and the unprofitableness of maintaining great *military* organizations.

The United States present the only example of a christian power of any magnitude, that does not maintain, at the public expense, an immense standing army, for offensive or defensive operations, mainly with other christian powers.

The impositions and infamies of organized *religious superstitions* have done much to retard human progress in morals, science, and a correct understanding of natural laws.

The success of republican government in the United States has inaugurated a new era in *political* organization.

Universal suffrage and exact equality under self-imposed law, has simplified political administration and is reducing political burdens. Self-imposed service is not likely to long continue oppressive.

While we rejoice in the superiority of our political institutions, and exult in our freedom and unequalled prosperity, it may not be uninteresting to note the fact that the *founders* of a government (which we are pleased to call "the best in the world," and to which the oppressed of all nations are hopefully looking and rapidly fleeing) were mostly men reared in rural homes — men engaged in agricultural pursuits — back woodsmen — men who had fewer opportunities for mental culture than the farmers or dairymen of the present time.

In the estimation of the prominent European statesmen of that day, the American revolution was a matter of very little political importance; and had the founders of this unequalled government been living in any of the older or European countries, it is probable they would have lived and died

without ever having been suspected of having any talents as statesmen. Perhaps if they were living as farmers among you to-day, you would fail to appreciate them, and select for your governor or representatives in the state and national legislatures, *not them* but some lawyer or professional politician, more interested in his own personal aggrandizement than your political needs.

Mr. Herbert Spencer, the great English scholar and philosopher, when asked to give some of his impressions of our republican institutions, is reported to have said that "the perpetuity of our republican form of government might be endangered by the increasing power and influence of political demagogues, and the general disposition of our people — engrossed as they are in their own private business — to silently allow encroachments on their political rights."

A return to the principles and practices of the fathers of our country, would doubtless remedy the impending evil. Let more of our representative men be selected from the industrial classes. Integrity of purpose is a better qualification for statesmanship, than either legal learning or oratory.

Men who have obtained a competency by the slow process of manual labor understand the importance of both domestic and political economy, and are patriotic from self interest. Let every industry in the whole land have its local, state and national organization. Let them be a tangible, living, active power. Let them make their influence felt in the formation and administration of government, in promoting moral, educational and social advancement, in fostering literature, science and the arts.

The ascendant star of this power is already visible above the horizon, and, though perhaps now unheeded, the destinies of nations and the general welfare of humanity are dependent upon it.

Ladies and gentlemen of this convention. The citizens of Lake Mills recognize you as representative of one of the most important divisions of their rapidly developing industrial power, and as such cordially welcome you here, and wish you a pleasant and profitable session.

RESPONSE TO ADDRESS OF WELCOME.

By W. D. HOARD, President Northwestern Dairymen's Association.

Mr. President: It affords me great pleasure to respond to the eloquent and instructive welcome we have received, and while sitting here and endeavoring to gather a few thoughts pertinent to this occasion, I could but run back in my mind, to twelve years ago this winter, when, in a little gathering at Jefferson, your humble servant offered a resolution, looking to the establishment of the Wisconsin State Dairymen's Association. Ably backed up by that old veteran, Mr. Faville, we pushed it through. A call was issued and about a dozen men met in Watertown to form the Wisconsin Dairymen's Association. The thing, for it was nothing more than that, and a dubious thing, grew apace, and to-day it is known and recognized by all of the material industrial forces of the Union, by the agricultural department at Washington, and by the governor of our state, as one of the forces that has taken the home of the depressed agriculturist of Wisconsin and worked for its good, salvation to the people. It is a commendable thing when we can see communities embracing not only the farmer, but the lawyer and the doctor and the merchant, yea, whole communities like this, taking hold of interests like this and advancing the material interests upon which all must rest. Agriculture is the solid foundation upon which are built all of the material interests of this nation. It needs not certificates, it needs not sentiment, it needs not statement to fasten this conviction in the minds of all. Trusting that our deliberations here may be harmonious and instructive on the part of this association, I thank Mr. Phillips, and through him the good people of Lake Mills, for their kind, hearty and pleasant welcome that has been extended to us.

Hon. Hiram Smith in the chair.

The President, introduced by Mr. Smith, read the following

OPENING ADDRESS.

Members of the Wisconsin Dairymens' Association, Ladies and Gentlemen: Custom has made it obligatory upon your President to deliver an address at the opening of your annual convention. Allow me to congratulate you upon the growth and prosperity of the dairy industry during the past year, not only throughout our own state, but throughout the entire country.

Let us, for a moment, make a few figures of the magnitude of this industry, whose product is an essential necessity of every home. The money value of the butter and cheese of the United States is fifty millions of dollars more than our entire wheat crop; one-seventh more than the hay crop; one-third more than the cotton crop, and only one-fifth less than the corn crop. Add to this the value of the milk consumed and you have some idea of the important part that the business of the dairy occupies among the many industries of the day. Can it not be called the sheet anchor of American farming?

The growth and advancement of an industry is sometimes so well illustrated by comparison, that you will permit me for a few moments to review briefly the twelve years that this association has been in existence, and the marvelous improvement in systematic dairying, which has been the result of the effort and earnest work of this and kindred associations. At the birth of this organization in 1872, it required much moral courage to be a Wisconsin dairyman. Success was a vision that only the future might reveal, and the most sanguine never conceived of the prosperity that has attended your constant and intelligent efforts. By your perseverance and enterprise manifested in the exhibitions you have made, first at Milwaukee in 1875, Philadelphia in 1876, Chicago in 1877, at the International in New York in 1878, and finally, at the National Dairy Fair in Milwaukee in 1882. The prizes won at these several displays, where

competition was open to the world, tells a story that well repays you for all your labor.

What more can I say of the past? it is full and replete with success and victory, and I can not refrain from saying all honor to the pioneers of The Wisconsin Dairymen's Association. Occupying as I do to-day the position of new recruit, sharing in none of your achievements, but proud of the marvelous work accomplished by the organizers of this association, it is but meet and proper that these words of praise should come from my lips.

In all of the vocations of life, the thinking, earnest, intelligent and successful man is constantly on the outlook for pointers. The index finger that tells of the wants and wishes of the public. The future developments of his chosen vocation. I shall note a few of the possibilities that are attainable and which are essential to success.

In the first you have remuneration, a profit; in the latter none, but very often loss. The selection of the *best* in every step of dairying should be our watchword and motto.

The use of pure blood sires of milking strain. The raising of the most promising heifer calves from his best milkers.

Improved dairy stock is of the utmost importance; a few superior cows will give more satisfactory results than a large number of inferior animals. Shelter, feed and care, are very important. Improved conditions are always necessary, not only to the improvement of stock, but to accomplish the best results in the dairy. Ascertaining all that a cow will appropriate to properly balance the fat, flesh and milk, farmers, is a study of great interest and profit. Prof. Henry, of our State University, will in the course of this convention, give his experiments in this line, which will be of great benefit to our dairymen.

Our committee has given us a programme that appears to embrace every topic that should engage our attention at the present time, and it is optional with each of us, whether this shall be our convention, and that each and all of us shall endeavor to have the time fully occupied by papers and discussions. Let us have the mistakes as well as the successes.

I am a thorough believer in experience meetings, protracted or revival meetings, if you like the term better; it is not the theory and practice they teach, but the inspiration and life they impart. We trust that our discussions after each paper or address shall be general, participated in by all. *All* are welcome! The greatest good to the greatest number.

One thought more and I close. Where on God's broad footstool can you find a class of men who have so much to be thankful for, so much to be proud of, as the farmer—the dairymen of Wisconsin? Nature has been bountiful with her advantages. Comparatively we have a home market, that demands and consumes the *best*, at remunerative prices.

Let us respect and bestow earnest thought and study upon our vocation. Let us bring to it the best powers of our mind, and success is sure.

There is progress, and he who runs can see it. The plow with the wooden mold-board has given place to the improved sulky. The sickle and busy crowd of harvesters are with the past, the labor of all is performed by the twine-binder. The sheep that shore 2½ lbs. The cow that produced 250 lbs. annually of milk. The steer that would weigh 600 or 700 pounds at four years and the pig 300 lbs. at eighteen months or two years are all in the past. *We do move.* Science and practice applied to our different farming operations are leading us up to a higher plane. There is room higher up and farther on.

Prof. W. A. Henry, Madison—*Farmers of Wisconsin:* I want to say to you now, do not measure the success of this meeting by the very first effort. We have had things already that have led us in a thoughtful direction, but you say there wasn't any money in it; don't get in a hurry to measure the success of a meeting by the money you are going to make out of it. Farmers will very often run away from a convention, saying, "it is all theory; those men cannot, any of them, make any better butter then I can, or get any more money for it—it is no good." You know that, as farmers, you follow the practical, and, as people from the state, from the county, let us all hang together and hold

this meeting up. Sometimes in watching a meeting like this, I notice a farmer sitting back, who will keep as mum as an oyster, while some of us know that if that man would only open up he can enlighten every man in the house; I say to such men, let us open up. I was at a convention last winter, and there was a man sat there all the way through, and he afterwards took me to the depot. On the way there we got to talking. And I found out that there was one of the most successful dairymen at the convention, and not a word had he said. I say to the farmers, help us in the meetings. If those who are called on to speak say the best they can, and you say nothing, you can hardly go away and blame them. There is nothing striking us harder this year than what to feed. If we have to buy to keep up our herds, what shall we buy? For years we have been talking and preaching about carb-hydrates and albuminoids, and you thought that was something that would never come near you. But this year we are talking about corn from Kansas and oil meal from Minnesota. Have you ever thought of the stuff you are feeding, and what you are paying for it? Are you prepared to hear of the different foods, and see whether you would rather join with your neighbors in getting a car load of corn from Kansas, or a car load of oil meal from St. Paul. In this convention there will be some men that will help you about these things. This convention will go into the science of right feeding as one of the questions that will come up.

Then take the question of breeding. We hear of cows that give 8,000 pounds of milk and six or seven hundred pounds of butter. How near can we approach that? How many men that have been in the business eight or ten years, can give an accurate record of their milk aud butter? Can not we in this meeting arrange certain matters so that by the next convention, we can get at a few facts. Have you ever read the railroad statistics and found out how many million tons of freight the railroads claim they move in a year? The New York Central says they move 200,000,000,000 tons every mile, and it costs 2 8-10ths cents to move a ton of freight on that railroad. That is what it did cost.

now it costs 8-10ths of a cent. How did they find out about this? They kept figures. Now, if the New York Central railroad or the Northwestern, can keep all those figures, and pay clerks high salaries as they do, isn't it possible for us to keep notes, records, butter records; keep account of the cow in the same way? The practicability of these things I think we should discuss here.

There is, perhaps, one farm in ten that keeps records; but I think the practice ought to be increased until all farms do. How many farmers keep a scale in the barn, and weigh the milk? I know some men that are doing that and I know that the sorting that is going on in these herds is very rapid, and having a good effect. These are things we should discuss in this meeting. If we, that you think belong to the platform, are going to run this meeting, it is because you don't run it. I know that the people of Lake Mills can have a grand good meeting.

THE PRIVATE DAIRYMAN AND FARMER.

By COL. R. P. MCGLINCY, Secretary Elgin Board of Trade, Elgin, Illinois.

Mr. President, Ladies and Gentlemen: — The subject which the Secretary has assigned me is rather a difficult one. There are a great many private dairymen all through this state, as we have them in Illinois, and as we have them all through the northwest; and the question with me, is, are the private dairymen conducting their business so as to make the most money out of it? Now, it is a well-known fact, that all of us who are engaged in any business whatever, are doing it solely for the money. We are not in it for "our health," nor for the pleasure it affords. Every private dairyman or every man that owns a cow or a herd of cows, should so conduct his business, as to get the best results *out* of that business. There are very many important things to be considered, and doubtless the gentlemen and the ladies also, in this audience, have considered many of these things. This is not an audience such as I have been accustomed to address during the past two or three

years, because these people here know more about this business than I do. Consequently, it is a little difficult to talk to such an audience. You have been engaged in dairying here in Wisconsin for years, and have achieved a success that is commensurate with the labors you have expended upon this work, and I hardly know what to say to you.

But there are many who need to learn many lessons; there should be very careful attention paid in the selection of the cow and of the stock, and in the raising of the heifer calf. The foundation starts with the herd; afterwards follows the necessity of feeding, watering and caring for the stock in a systematic manner, and I apprehend that without system, there will be little accomplished. I have paid, within the last few years, especial attention to the management of farmers of Iowa and Minnesota, where they were beginning dairying; and I have seen some of the most hap-hazard work you can imagine, even taking people who have a reasonable amount of intelligence, with a great amount of intelligence and a great desire to learn, yet, they haven't the first idea of the business. Careless, shiftless, negligent, paying no attention to anything that is expected of them and expecting their business is going to run itself, and that they are going to get the benefits of it.

During last season, at one county fair, I found a great deal of butter, made on the farms and exhibited where large premiums were offered. Some of that butter would hardly be called wagon grease, brought down here into Jefferson county, and compared with some of the butter made here. Some of the butter that I saw on exhibition was as white as any lard that was ever made, and some of it was as salty as any fish that ever swam in the ocean. Some of it was as ring-streaked and striped as a barber's pole, and some was as tasteless as sawdust; and the greater the variety the more claims there were that the butter was of the best. In the matter of salt, they used all kinds, and all sorts of quantities. There was no system or science about it. Some said they salted according to their taste. Some of them salted according to a theory, which was to put in about three ounces of salt to a pound of butter. There was one man said he

didn't weigh his salt at all—he guessed at it, and he generally *guessed* he had salt enough. Well, I thought he did. There was some salt that was used that was positively ruinous to the butter. And let me say, right here, in this county, I inspected some butter at the county fair, and I found one lot of dairy butter that had been salted with fish salt. The butter had a peculiar flavor, and the other judges in examining it, said, "What is the matter with it?" And finally, after careful examination, it was concluded that they had used some kind of salt that had injured the butter and given it a fishy flavor. That butter was exhibited in this county, but I hope that the man or woman that made it was not present and heard what the judges said about it.

Another thing, a great many of the private dairymen are careless in regard to their feeding. They don't feed with any regularity—they don't milk with any regularity or water their herds with any regularity. Here sits my friend Hiram Smith, who is just as regular as clock-work, in feeding, watering and milking his herd, and he is the man that can show more profit from his herd of cows, than any other man in the state, I think, and it all comes because he acts by science and intelligence. He is systematic; I believe that common intelligence properly applied will enable the farmers at all times to better their condition, to get larger yields from their cows, to make better products, and to put it on the market and sell it to better advantage. You all know that it was but a few years ago that it was almost a matter of impossibility to place the western products in the New York market and sell them for anything like what they are worth. And it was because there was a prejudice existing between eastern dealers, and western producers; after a while, by constant striving to better their products, the people of the west were able to compete with the people of the east in all the markets, and receive a better price, and to-day, western butter is quoted at higher prices in the city of New York, than butter made anywhere else. Monday, it was "western butter, 42 cts.; eastern butter, 38 to 40." And this is because the people of the west have discovered that intelligence in dairying is as necessary as it is in carrying on a

railroad or a bank; they have applied this intelligence in a careful manner so as to produce a better article of butter than they produced before, and the result is shown in the price they receive.

It was at one time almost an impossibility to sell a pound of butter in the New York market that was made west. I know when we began to make butter in Elgin, we had to play a little trick in order to sell the butter in the east. And, as all tricks are legitimate in this trade, I will tell you the trick. Orange county creamery butter was in demand largely in excess of the supply; we put our butter into Orange county pails, and gradually they worked in some of this Elgin butter in the place of the Orange county creamery, until the Elgin butter had come also to be in demand. By simply placing our butter in the Orange county pails, we were enabled to sell it at the best price without any question being raised. Of course you people are well aware of the fact that the best butter that was ever exhibited in New York, or anywhere, was manufactured right in the state of Wisconsin, in 1879. In the manufacture of that butter, there was simply that intelligence applied which enabled the person who made it, Miss Fannie Morley, to make a good article of butter and place it in competition with thousands of entries. And it was pronounced by competent judges to be the very best butter that could be made anywhere. If Miss Morley, on a dairy farm, could make butter that could carry off the sweepstakes, why could not any other dairy woman or dairy man, make butter of that kind too? If a person, by careful intelligence, using the proper instruments can do this in one case, there are plenty of others that can do the same thing.

In some parts of the country they pay no attention whatever to regularity on their dairy farms. I know of a farm in Iowa where, in haying time, one morning, they would milk the cows early, be in the field all day and come in and milk the cows again about half-past eight o'clock. Then the next day it would rain, and he would come up and milk the cows about five or six o'clock. One farmer said to me, "It is more important to me to get in the hay than to milk

these cows, and get the milk off to the creamery; we will sell just as much milk as if we milked them different." On a good many of these farms there is great irregularity; they leave the whole matter to the children and women folks and go off to the fields, and they expect to get as good results as we have in this state or in Illinois, where we attend to these matters as if it were our sole dependence. Another thing: a farmer will often provide himself with all the necessary improved farm machinery and leave the women folks in the house to get along as well as they can, with the old churn, instead of buying the RECTANGULAR CHURN as they ought to. These fellows provide themselves with sulky plows, and harvesters, and all machinery necessary; but they never think about the house. One good plan for the private dairyman, if he doesn't know how to do these things, is to get a little bit of enthusiasm, and do as brother Hoard did a few years ago. Get a half dozen fellows together and organize a club and have meetings.

I remember the growth of all these dairy organizations; the Northwestern, the Illinois State, the Wisconsin State, the Iowa and the Minnesota; in fact every dairy convention in the west is an outgrowth of the Farmer's club that met in Elgin in 1865, and discussed matters pertaining to the farm and dairy. It is not necessary to have a great number; it is not necessary he should have a great scientific light come to address you, but get up and tell in your own way your experience and results. Tell of the benefit you received in feeding a certain line of feed and conducting your experiments in a certain way. Another thing, a great many private dairymen are engrossed, too much, engrossed in their business to take care of their cows. Nine times out of ten you will find the cows sheltered on the south side of a barbed wire fence, instead of being in a good barn, and you all know that it cannot result as it should.

Again, in preparing for the butter market, there is not that carefulness which is manifested by a creamery man; he knows that the cloth must be nicely adjusted, and it must be nicely salted. It must be attractive in every way. Down in Missouri last summer, I found the butter placed in all

sorts of packages and sent in to the market. Some of it comes in in pretty fair shape, but I have seen butter come into market where the cloth that was covering the butter looked as if it was used for some other purpose; it was full of buttons and button holes — I don't know what it was used for. (Laughter.) How many people do you suppose would want to buy that butter, after they had seen that cloth, even if the butter itself looked nice. The private dairyman must study the wants of the business he is engaged in. He must so arrange his affairs as to meet the wants of the people he is going to supply, and if they want a certain kind of butter, *make it for them.* If they want ring streaked and striped butter, make it; but if they want good wholesome butter, *make it.* If these people want to buy butter that is salted with fish salt, give them all the fish salt you can put in the butter. I don't care if you put pound for pound; and if you can get thirty cents for it — so much more profit to you.

Down in our country, they have introduced cotton seed meal for feed, and I think likely the results are going to be good. We have had trouble during the past three or four months because the soft, sour corn we have been using won't make firm, aromatic butter, and we have got to feed something else. In feeding this corn we have been at a loss; our butter has not commanded as high a price as it has before. The highest price this winter has been forty-one cents when we ought to have had forty-five; and it is on account of this food. Our farmers thought this soft corn would be as good as anything else. But the result has been a poorer g rade of butter and lower prices. In this convention, I hope we will discuss these questions, endeavor to ascertain which is the best feed, and which will produce the best milk and butter; if we can bring these things about by attending these conventions, they are not in vain. I thank you for your attention.

AMBER SUGAR CANE.

By T. D. CURTIS, Syracuse, New York.

Mr. President, Ladies and Gentlemen: I can cordially indorse all that Col. McGlincy has said, salt and all. Allusion has been made to the fact of your corn crop being cut off this year. You have been growing for the last few years some amber sugar cane; that, I presume, was also cut off; but I suppose you will not stop growing corn because the frost cut it off last year, nor amber sugar cane. As far as I can ascertain you can grow this sugar cane anywhere you can grow common corn; I recently had some inquiries about it, and as I had no very accurate statistics about the matter, I wrote to Commissioner Loring, at Washington, asking if he had any statistics, printed or otherwise, that he would let me have, and he very promptly sent me this reply:

WASHINGTON, D. C., January 3, 1884.

SIR — The inquiry of Mr. T. D. Curtis for statistics of the sugar industry, referred to this division, is answered as follows:

As a fair present average, the annual consumption of sugar is 40 pounds per capita. It will be seen that the requirement is about 1,000,000 tons per annum. The sugar of commerce from cane amounts to only about 2,000,000 tons, and that from beet in Europe to about as much more. There is the palm sugar of Africa, sugar in India, China, etc., of which we have no very definite statistics. It is seen that we use about a fourth part of what may be called the sugar of commerce.

In 1879–80, as reported by the census, the cane sugar amounted to 178,872 hogsheads (about 1,170 pounds each); the maple, 35,576,061 pounds; sorghum, 12,792 pounds.

The molasses reported was: Cane, 16,573,273 gallons; maple, 1,796,048 gallons; sorghum, 28,442,202 gallons.

The commercial report of Louisiana sugar in 1882–3 was 241,220 hogsheads; molasses, 15,716,755 gallons.

Enclosed will be found a statement of the imports of last year.

Accompanying also is forwarded a copy of the November report, containing a history of sorghum.

Respectfully, J. R. DODGE, *Statistician.*

Hon. GEO. B. LORING, *Commissioner.*

SUGAR AND MOLASSES IMPORTED INTO THE UNITED STATES IN 1882.

	Quantity.	Value.
Brown sugar, lbs.	1,873,546,056	$83,147,135
Refined sugar, lbs	79,286	6,830
Molasses, gals.	27,116,122	10,015,254
Melada and sirup of sugar cane, gals.	10,345,174	344,755
Candy and confectionery, lbs.	82,151	11,708
NOT ENUMERATED.		
Sugar drainings and sweepings, lbs.	.....	3,354
Sugar, maple, lbs.	297,235	22,872
FREE OF DUTY.		
Sugar, lbs.	106,181,858	6,918,083
Molasses, gals.	152,708	25,257
		$100,495,248

It appears that all our failures at sugar-making in the past have been caused by our lack of scientific knowledge, improper culture of sorghum and the beet, attempts at manufacture on too small a scale, and want of system and economy in all the operations. But science has in the last two or three years supplied the lack of knowledge, and all the other defects are easily remedied. We are paying out over $100,000,000 a year for sweetening, and the demand is rapidly increasing. We already consume one-quarter of the commercial sugar of the world, and before twenty-five years roll around we shall want the other three-quarters.

With these facts before us, will any one tell us what good reason there is for our continuing to grow surplus grain crops to sell abroad cheap, instead of turning a part of our producing and manufacturing energies into supplying ourselves with sugars and sirups, and saving the enormous sum which we annually send abroad for these articles?

If England wants cheap breadstuffs, let her aristocracy convert their hunting parks into wheat fields, and stop the infernal business of trampling down the Irish. We are under no obligations to furnish her breadstuffs. We incur a dead loss on every bushel of grain that we send abroad—

loss to the producer in unpaid labor, and loss to the soil of fertilizing ingredients. It is the most unprofitable business that we can engage in. Let us cease to be longer made the tools of foreign commerce, and turn our attention to producing and manufacturing what we need instead of buying abroad by selling surplusses cheaply, as we always must. Let us develop our own resources and skill, and make ourselves truly independent and self-supporting. Then our industries will become so balanced that we shall have no large surplusses in any branch, our markets will be steady, and our exchanges equitable.

WHAT SHALL BE DONE WITH THE CALF?

By W. D. HOARD, President N. W. Dairymen's Association, Fort Atkinson, Wisconsin.

Mr. President: Secretary Curtis, in his pithy way, put this question before you in its true light, when, in announcing the topic in the programme, he said:

"This question deals with a vast waste of the productive energies of the farm. It should meet with serious attention and full discussion."

In treating it, I can hope to do but little more than call your attention to some of the more prominent matters to be considered.

While in Chicago the other day I ran across two crayon pictures in a print shop, which arrested my attention. The first presented a farmer boy trying the old familiar task of breaking a pair of calves. His father, a sturdy old farmer, stood by criticizing the way the boy was doing the work. "My son," says the old man, "that is not the proper way to break calves; you shouldn't yoke up two young green things together. The best way is to yoke up one at a time and take the other end of the yoke yourself, and show the calf what you want him to do. Now I'll show you, my boy." And so suiting his action to his advice, the old man inserted his head in the yoke. The next picture represents the strangely yoked pair tearing down the road, the calf

with his tail flung wildly to the breeze, while the old man is shouting with all the energy of despair: "Here we come — blast our fool souls — somebody stop us."

Please consider that last sentence as our text. "Somebody stop us." Let us see what this waste amounts to.

Taking the rate of increase of cows in Wisconsin to be the same in 1883 as it was in 1882, the state may be said to contain 542,720 cows. I think it safe to say that fully 85 per cent. of these cows bore calves last spring. This would give us 461,312 as the increase of the year. Allowing that half of these calves were females we would have 230,656 heifers. We will make no account whatever of the males, although the profit of their growth is justly entitled to consideration. Now, supposing we allow a loss, for the sake of round numbers, of 30,656 from disease or other contingencies, and place the number to start the year with at 200,000, which would be an annual increase of 37 per cent. The annual increase of cows in Wisconsin for the last decade has been only about six per cent. Here we see, gentlemen, that we have been destroying the cow-producing energies of the state at the rate of 31 per cent. annually. In 1882 we added to the cows of the state 30,720 and butchered 170,000 heifer calves, and that too, in the face of a demand for cows that has been unprecedented in the history of the state. In 1882, with six per cent. increase, we will have 575,293 cows. Were it 37 per cent. we would have 743,426. In 1882 we had 512,000 cows as reported to the agricultural department at Washington. Had the farmers of the state added 37 per cent. to the increase of that year instead of six per cent. as they did, we would have had for the spring of 1884, 189,440 two year old heifers to add to the productive energies of the state. Supposing these heifers to be worth $25 apiece, the sum total of their value would be $4,736,000. Instead of this we have 30,720, worth at the same rate of valuation $768,000, or a loss of $3,968,000 from the actual assets of 1884.

These figures are startling, yet I believe them to be far below the truth.

My farmer friend, is it not about time for you to stop talking about the grinding effects of monopolies and tariffs, and

a few outside evils, and turn your attention to the enormous cost you are yourself. It makes me groan in spirit when I think of the mighty stream of wealth which is thus foolishly arrested at its very source.

Now let us turn our attention from a general view of the case to the farm where the calves are produced, and see if there is any practical way out of this waste, that promises better results.

I take it that it needs no argument to convince you gentlemen who attend conventions, that it is a profitable employment of the resources of the farm to raise cows that will command from $25 to $30, when they are two years old. Up to that time they require but little else than ordinary care, plenty to eat, and good housing. If we consider what sort of cows they are to make, breed is of greater value than anything else. Blood is winning the race, gentlemen, whether on the trotting course or in the cow stable.

To start with, every dairyman should see to it that he breeds calves that, from a dairy stand-point alone, are worth raising. Get this idea of beef out of your heads as soon as possible. Breed only from the best strains of dairy blood. If butter is to be your object, then turn the forces of your herd towards the Jerseys or Guernsey. Get a pure bred bull to start with, and you will wake up to an enlarged idea of the value of his calves, for cows, not for the slaughter house. If cheese is your object, breed from a Holstein or Ayrshire. These four families, the Jersey, Guernsey, Holstein and Ayrshire, are the solid cows of the world. If you are a dairyman let the Durhams, Herefords, Polled Angus and Galloways alone.

The sooner you take a sensible view of this question of breed, as do the horsemen, the sooner will you have calves that it will pay to keep. You can't make a cent fighting the laws of nature. Get into the channel of her manifest teachings and act in obedience thereto, and she will further your purposes.

FEED.

Here comes the tug. The cheese factory patron asks, "how am I to raise my calves with no milk to feed them?"

My friend, it can be done, and done successfully, too. Let me give a bit of personal experience. Twenty-eight years ago I had the good fortune to enter the employ of a thorough going farmer in New York, as a farm hand and cheese maker. My employer kept a dairy of forty very fine cows, and made cheese. That season he raised fifteen as fine heifer calves as can be found in this county, on sweet whey and finely ground oat-meal, with what grass they cropped. The cost of their feed, aside from their pasturage, for the entire summer did not exceed $2, and such calves as they were in November, would sell in this county quickly for $12.

Calves can easily be raised on skim milk and oat-meal porridge. We should always remember to adapt the food as closely as possible to the nature of the calf's stomach and the *demand* of growth. There is no grain that analyzes in its constituent character so closely to milk as do oats. The demand of growth in a calf is for bone and muscle, not fat, and hence we should avoid oil meal, cotton seed meal, and all fat-producing foods.

I have myself raised fine calves on skim milk and oat-meal porridge, allowing two calves the milk of one cow. Treated in this way, I am satisfied that three calves can be raised on the milk of one good cow. Let us see what the skim milk of such a cow would amount to. The three calves can be bought when a week old for $1.50 each, or $4.50. Five and a half dollars' worth of oat-meal will suffice for the season. Here is an outlay of $10. When six months old these calves will sell in this county at $30, which leaves $20 for the skim milk and pasturage. H. B. Gurler, one of the best dairymen in Illinois, who has a choice dairy of cows, estimates the value of his skim milk at twenty-five cents a hundred, or $13.50 per cow for the season, when fed to hogs. Considering the prospective value of cows for some time to come, I believe the calf much the most profitable recipient of the skim milk.

But there are men who are raising calves without milk or whey. Let me read you the experience of Henry Stewart, of Bergen, N. J., one of the most intelligent and practical dairymen in the United States. He says:

I have sold a good many spare calves when a few days old to neighbors, at times, and have always advised them to use my method when they have been short of milk, and some of these calves are now good family cows, which never tasted milk from the time they left my stable, when they were ten days old. The method is as follows: A few pounds of whole rye flour, that is unbolted, is tied in a cloth tightly and boiled for ten hours. It is then put away in the cloth to cool. When it is cool it is grated into flour on a large grater made of a piece of sheet iron punched full of holes with the end of a file. Put this coarse powder away for use.

One quart of corn-meal, one pint of oat-meal and one pint of rye bran are put into a kettle with two gallons of water, and boiled slowly two hours. This is put away in the kettle. To prepare a meal the kettle with the thin mush is put on the range and gradually warmed. Half a pint of the flour powder is put into a pot with a quart of water, and boiled until it is dissolved; a quart of the warmed mush, not stirred up, is added to it, and cold water added to make four quarts; a teaspoon of sugar and one of salt are stirred in, and the drink is given to the calf, milk warm. For a very young calf two quarts is enough for a meal, and it is better to give three meals a day than to overfeed it twice. The thorough cooking prevents scouring.

One cannot give raw meal to a young calf safely, as the young stomach cannot digest it. Nor would I give oil meal of any kind, as it is too rich to be digested. I have now a fine calf reared in this way, with about one-third skimmed milk added, milk being scarce because some is sold, which is two months old. The calf has never been scoured or had any set back, and by actual training looks for its little mess of cut hay and meal—a small handful—when the cows are fed, and eats it well and healthily, and thrives and grows well, too. I have one cow with her second calf, which was raised in this way, and she is as good as any I now have. And not a cow which I now have, and I reared all of them, has ever tasted any milk but skimmed, after she was five days old. One of them made 675 pounds of butter from May, 1882, to December, 1883, and between two calves, now being about to calve again. This cow now has a heifer calf a week old, and is giving eighteen quarts of milk daily, and is not yet up to her best. So that not only can good cows be reared without cream, but even without milk.

Now, if Henry Stewart can do this, and thereby save to the world so cheaply, a cow that will make 675 pounds of butter in 19 months, what is to hinder every farmer in this state from doing what he can, at least, to stop this wicked and senseless slaughter and destruction of our calves? All that he needs to do is to commence to try. It is time we endeavored to look this question fairly in the face. The percentage of increase of value in young animals is enormous. I will give you a few examples:

Mr. Burnham, of Hebron, this county, sold this last summer 15 heifers 15 months old, for $300. When a week old they, or calves just as good as they, could have been bought of our dairymen, who never raise calves, for $30. Yet in 15 months they had increased in value 1000 per cent. Is there no profit in raising calves? An acquaintance of mine went into Colorado in 1873, and bought a ranch and small stock of cattle for $10,000. He settled down with the purpose of holding the same for ten years, turning all sales into the purchase of young stock, and at the expiration of the decade he would sell out the whole plant and see what he had made. He did so, selling the plant, stock and all, for $180,000, or a net profit of 180 per cent. annually. When our farmers, and particularly our dairymen, learn to stop this great leakage that is wasting their energies so rapidly, they will have added immensely to the profits of dairying and the wealth of the state.

Mr. Chester Hazen — Mr. President, I consider myself a pioneer dairyman. I made cheese on my farm in 1860, and we have been making cheese ever since. I think, in 1864, I started the first cheese factory in Wisconsin, but I think Isaac Wanzer started one that same summer in Illinois. I would like to indorse the remarks Brother Hoard has made in regard to raising calves and making dairy cows. I think it is time the dairy farmers were working up; it is an impossibility to get dairy and beef stock out of the same animal.

I was present at the organization of our State Dairymen's Association, and was the first president, for two years. I have attended every meeting from that time to this, and it is a source of great pleasure to me to meet with our Wisconsin dairymen on this occasion.

Mr. Stephen Favill — I made cheese in Wisconsin from 1845 on, for several years.

Convention adjourned, to meet at 7: 30 P. M.

EVENING SESSION, January 16th.

Convention met pursuant to adjournment, at 7:30 P. M.
President Morrison in the chair.
Song—J. G. Lumbard.

THE EDUCATION OF THE FARMER.

By T. D. CURTIS, Syracuse, New York.

I will not discuss the question of the importance of education. It will be conceded by all that right education is of prime importance. Perhaps wrong education is worse than none, as it cumbers the mind and must first be removed before the useful can take its place. One of our humorists has said, that "the worst thing about getting an education is that we learn so many things that ain't so." To be miseducated, is like taking the wrong road, which leads you farther away instead of nearer to the place you want to reach. There is nothing left but to retrace your steps, and this is a loss of time never to be regained. It is all-important, therefore, to begin aright, and to be educated in the best way, in the right direction. It is only thus that we become most useful to ourselves and to the world.

The education should be such as to draw out, in harmonious proportions, all the faculties of the mind, giving the lead to the strongest, which should govern, if not determine, the life-work of the man. But in the present state of society, and with our present facilities, such an education is not possible for all. Few, if any, are more than partially educated, and the many get but a slight smattering beyond what pertains to the daily occupation whereby the individual gains a livelihood. It is doubly important, therefore, that the education which is given should be truthful and useful, and do the most possible to fit the individual to meet successfully the demands and exigencies of life.

But if we cannot secure the best education for all, duty plainly dictates that we should do the best we can. If we cannot give a full education, we must give a partial one; and this education, so far as it goes, should aim to prepare the individual for the discharge of the duties of life that

are before him. It may, indeed, be based largely on theory, but it should be practical, and more or less widely open the doors to the stores of knowledge, facts and principles which science, discovery and invention have placed before the intelligent world. These everyone should be qualified, to the fullest extent of his God-given faculties, to appropriate and devote to human uses.

Our common school system, beyond reading, writing and arithmetic, is woefully deficient in practical instruction. It gives no knowledge, or next to none, of any of the sciences. When the advance or high school is reached, the text-books used are very superficial, and calculated to give an ornamental rather than a useful education. The teachers are even worse. They are parrots who got their ideas from these same superficial text-books, and recited their verbal lessons to the same kind of parrot-like teachers that they are themselves. I have known teachers to go so far, when interrogated about lessons by pupils, as to declare it not their business to teach, but to hear scholars recite! Thus the scholar is left to do the best he could with the bare verbal lesson printed in the book. There is no lack of text-books. Indeed, they are thick as leaves in autumn, and as worthless. Every crack-brain engaged in teaching imagines he can compile a text-book superior to anything in existence. The result is one dwindled still more to suit his own weak mind; and the worst of it is, that mercenary school officials are ready to engage in a little speculation by introducing this new text-book and compelling parents to buy one for every scholar. Instead of one sound text-book upon any branch, beginning with clear elementary explanations and advancing progressively to the end, we have a series of little smattering volumes, running repeatedly over the same ground. On these the pupil fritters away his energies, and when he gets through he is only a scatter-brain smatter, with a lot of text-books in his hands not fit to keep for reference, but most appropriately consigned to the rag-bag, if happily some other poor wretch is not doomed to pour over them as second-hand. The result is years uselessly spent and few sound scholars. While we have progressed in

almost everything else — except in agricultural education — we have lagged sadly in our common school system. Some progress in buildings and appliances has indeed been made, but the same old Bourbonish spirit of sacrifice to the classics remains, and the popular mind, by its innate natural force, has outgrown its educational environment.

Does the farmer need a different education from men of other callings? In general he does not; but in the line of his occupation, like those engaged in the professions, he does. His calling is not only the basis of civilization and of all other industries, but it has a broader, deeper and higher scope, and calls for more varied information and more versatile judgment. Agriculture, like the roots of the tree, draws the nutriment from the soil and sends it coursing through all the branches, and to the very extremities of society. In its course the sap of knowledge is elaborated and vivified, and it returns to nourish and strengthen agriculture, as the roots of the tree are nourished and strengthened for further and more efficient service. The action and reaction are equal, but the base of all action is the soil. Through this, we draw our physical sustenance, and the time has come when we must consider the best methods of making the soil yield up its bounties.

Time was, when man first forsook the chase, that very rude methods served his purpose of bare subsistence. But he has gradually progressed, until the more enlightened nations stand in the dawn of a new era. Every avenue of human development now returns a tributary current to the aid of agriculture, and the farmer of the future must needs be so educated that he may readily avail himself of these aids. He must be educated in all directions, and be able to command all the elements of power at will. But, strange to say, there is no efficient means for such an education now open to him. Our agricultural colleges are inchoate, and our experiment stations are still embryotic. Both, however, are beginning to send out rays of knowledge, but those for whose special use they are intended are incapable of imbibing and appropriating them. They cannot understand the meaning of the necessary technical terms in use, because

they never have learned them. They have had no opportunity to learn, and the means of education are not now within their reach. There are neither the schools nor the text-books for their use or for that of their children. Few can go to the college, and other occupations than farming command the services of most of these. The average farmer boy can seldom go beyond the common school. This does not qualify him for college. So he is barred out, and his education for farm work stops in the old ruts of tradition and routinism. Furthermore, one central college in a state cannot educate all the farmer boys and girls, even if they could attend, which is impossible. There is, therefore, need of some connecting link between the farm and college that is accessible to all. What shall it be?

At present, the colleges have no agricultural text-books. The works now in existence are too diffuse, crude and incomplete. Somebody must take up each branch of agriculture and reduce it to systematic order, and concise and plain language. Who is to do this work if not those who have had the advantages of an education in our agricultural colleges? Perhaps the teachers in these colleges will do it. Whoever does it must see and feel the need of the work before him, as well as be qualified for the task, and he must come down to the comprehension of the millions, even of children. It is no easy task that I would set him. But there is an urgent demand for agricultural text-books, and every demand sooner or later finds a supply. In time, we shall have our text-books and our teachers; but they are all yet to be made with the exception of a few teachers, who now find themselves in the face of a new and urgent demand, with a wilderness of weeds and rubbish around them and great public expectations awaiting their efforts.

Plainly, we need preparatory institutions or training schools, that shall stand to the agricultural college as the high school or academy stands to the present classic college course. We need at least one of these in every county; and in time, perhaps, one in every town would not be too many. These schools, as was suggested to me by Prof. Knapp, of Iowa, should be self-sustaining. They would not be for ex-

perimental purposes, but for practical results. With each training school should be connected a suitable farm; and on this farm the pupils should be taught the practical application of the scientific principles evolved by our colleges and experiment stations, and made familiar with the best and most advanced methods of cultivation. Working in connection, and in harmony with the colleges and stations, on the farm would be demonstrated the truthfulness and value of the teachings of these more advanced institutions, or their falsity and worthlessness. To this extent, they would be in a sense experimental; but the end arrived at in all farm operations would be the production of the best and largest crops, and the rearing of the best and most profitable stock. The superintendent of the farm must be a thoroughly practical man, and be given to understand that he is expected to do the most profitable farming and make everything return the largest net amount.

A course of practical agriculture should be arranged for the pursuit of the attending pupils. These should be divided into squads or phalanxes, and have their regular hours, in turn, for work and for study, so that the farm would at all times be provided with the requisite number of efficient laborers to carry on successfully the farm work. Each pupil should be charged for what he receives, including instruction, and credited with what he does; but the course of alternate labor and study should be so adjusted that the two will balance at the end of the course; and the labor should in some measure correspond with and be illustrative of the studies pursued. In this way nearly all the work on the farm would be performed by the students, and the farm be made not only to pay, but to yield a profit, which should be mainly devoted to improvement and the purchase of books for a library, and apparatus for illustrative purposes in the recitation and lecture rooms.

These suggestions are not altogether hypothetical and speculative. In their main features of associated labor and study, they are already carried out at the agricultural college, in Ames, Iowa. Prof. Knapp told me that he found his pupils willing and most efficient help, vieing with each other

in the excellence of their work. Prof. Henry, of the Wisconsin State University, told me he had often felt the need of some sort of preparatory course, to be given on a farm devoted exclusively to practical agriculture. The agricultural academy or training school, as I have suggested it, would seem to meet all the necessities of the situation in an efficient and economical manner. And this school would include not only the sons of the farmers, but the daughters also, who could attend and be instructed in all the household duties, paying their way by doing practical work in the kitchen, dormitories and other departments devoted to the uses of the scholars—for all would live on the farm, and the school would be as one large, well-regulated family, during the period of instruction. This feature of female education is also being successfully illustrated at Ames.

To organize and establish agricultural training schools, as I have suggested, it would only be necessary for the legislature to pass a general statute for the purpose, under which the county could levy a tax and appropriate money for the purchase of lands, and the erection and fitting up of the buildings, etc. On the raising of a certain sum, the state might be authorized to supplement it with a corresponding amount, possibly to be refunded in the future from the surplus profits of the farm, as might also be the sum drawn from the county treasury. But if not a cent should be refunded, and even additional appropriations should be made to stock and furnish the farm in the best modern manner, the impetus that the schools would give to agriculture would be felt as an ample return before a single generation would have passed away.

In a short time, I believe agricultural training schools would become as popular as the common school is now, and the wonder would be expressed that they were not thought of and established sooner. It seems to me that the need of them must be patent to every reasoning mind that duly considers the subject. But much sound thinking and hard mental work must be done before these schools can be launched on a successful career. Our agricultural colleges and experiment stations must prepare and furnish the

needed text-books, and largely the properly qualified teachers. However, we will not refuse aid from any source; and I believe that, the scheme once resolved and entered upon, it would receive such support and backing from the best minds of the country as would greatly exceed our present expectations, and remove many obstacles now seen, as well as unseen ones that would naturally arise.

The training schools would not be only institutions of instruction for the boys and girls of the farm — making farm life more intelligent, refined and beautiful — but, as it were, a light set on a hill to guide the farmers of the country. The training school farm would be a model farm, in the highest acceptation of the term, and its practices and methods would be examples for all intelligent farmers to follow.

No such benefit can be derived from our agricultural colleges, which are purely educational, nor from our experiment stations, which are devoted to scientific ends. The practices here are to test hypotheses, establish or upset theories, discover principles, and critically review methods. Profitable culture cannot be expected. Much that is done is pure outlay, without any expected pecuniary return. The benefit to be derived from these institutions is not a money profit, but knowledge, which in the end is far more valuable than money. Like all other educational institutions, they are a source of pecuniary expense — mills that convert sordid money into brain power for the better uses of the human family.

Not so the farm of the training school. On this and in the training school, the student would have the opportunity for transmuting muscular force into brain force, and by his acquired superior mental energy, enable himself to reduce muscular drudgery to the minimum, and increase the rewards of toil to the maximum. Meantime no additional expenditure of money would be imposed upon the community. With efficient management, it is believed the farm could be made to return a handsome profit, after paying all expenses. Could this profit be divided among the students *pro rata*, according to the amount of work with

which each is credited, it would be an excellent and encouraging feature. Once the training school and farm should become a fixed fact, I believe this division of profits would be feasible, and it certainly would be a great stimulus to the student to perform full, faithful and efficient labor. It would involve a money reward beyond the higher one of the acquisition of knowledge.

I have thus briefly, and as I am aware, imperfectly set forth what I deem a great desideratum in the line of agricultural education, and the next efficient step to be taken. My aim is at present to call attention to it and stimulate thought on the subject. I am sure my suggestions will meet with some favor from the leading agricultural educators of the western states, where the people are wide awake and almost on the verge of new enterprises for the promotion of agriculture. I should feel highly gratified to see my own state wake up and become imbued with new life and energy, and most of all to see our farmers give evidence of knowing their rights and of daring to take and enjoy them.

DISCUSSION.

Prof. Henry — *Mr. President:* In a paper of this character, there are so many ways you can branch off, that it is hard for me to tell which branch it is best to take up. For three years I have been traveling about the state, sitting before the people, as I have been sitting to-night, and asking that the young men should come to the agricultural college, and in a very small measure only have I been successful. Am I to blame, or are those who have the boys to send, to blame? I keep revolving these questions over and over in my mind. Has this gentleman, Mr. Curtis, struck the right line? If so, are the people ready to fall into line? Are you ready to ask the legislature to vote you such a school? Would your county of Jefferson vote you any money, if the legislature passed such an act? You see, before we get many agricultural students for such schools, or for our State University, public sentiment must be thoroughly aroused. I think before many boys educate themselves in agriculture,

at the State University there will be hundreds of thousands of young men to educate themselves, more or less perfectly at home on the farms.

I received a letter last Friday from a young man up north, who says: "I am running my father's farm. I have no time to go to school, but I want to know what books you would advise me to buy to keep on studying here at home." The letter was well written; probably much better than a good many young men of his age. It showed that he was capable of carrying on business, so far as ordinary accomplishments were concerned; but he was not satisfied. Now, we teachers find that there are a great many young men scattered over our states in that condition; circumstances have prevented their spending two or three, or four years in college; still they want to learn. There are to-night, in Madison, two or three hundred young men sitting at their books, some of them suffering for the necessities of life, almost, to work their way through college. Those young men are largely to be professional men, as we call it, lawyers, ministers, teachers, doctors, etc. These young men know that they cannot be either of these without long study and long practice. But in agriculture it is differently regarded. Some way or other, we had the idea, a few years ago, that book learning would not do with agriculture. Very rapidly we have given that up. We know now that the farmer that reads books and takes papers is the farmer generally, that makes money. The farmer that reads papers has the advantage. And if this is so now, it is a hundred times more so in the future. There may be some young men in the audience who would like to ask me such a question regarding the books. We have a great dearth of good agricultural works, but gradually they are being evolved as the times demand it. The question of stock feeding is one that interests people a great deal. Out of that has grown recently a most excellent work. I refer to "Stewart's Cattle Feeding." It is a book that will cost you $2.00, and you can get it from any book dealer, or through your agricultural paper. It is practical, and will pay you for reading.

Again, there is a work on stock-breeding called "Miles'

Stock-Breeding," a book which will cost you a dollar and a half or two dollars. There is another, "Darwin's Animals and Plants, Under Domestication." Why not, young men, take up some such line as that? You say circumstances prevent your going to college. That is no reason why you should not be a thoughtful reader and student of agriculture. How can you be intelligent, happy farmers without having books? I go into the intellectual side of these things. I want to see the farmers intellectualized. I say, if a man has a Jersey animal on the farm, he ought to know where they came from. I know people who think they came from New Jersey. How did the people get such a breed? Is it best to get such a breed in Wisconsin? Or if we have them, or any other, how should we use them to keep up the standard they have in the old country. These are laws which we should study over. We could just as well sit on the fences and whittle, or in a grocery and talk over those things, as some of the things we discuss. Now, when we get into thinking about these things, and talking about feeds, and soils and crops, we won't hear anything about the ignorance of the agricultural communities. We have these long winter evenings that give us time for reflection. We have time for gatherings. We have our evenings to ourselves. Time for thought, for reading and reflection, and rapidly we are lifting ourselves. I think I have told it before, that the paper that has held me to agriculture was the "American Agriculturist." The second gold dollar I ever had, when I was ten years old, after studying six months how I should spend it, I spent for the "American Agriculturist," and I managed to get it the next year. You know papers offer a combination by which, in taking a number, you get them cheaper. I was sitting in the office of the "Western Rural," and a farmer came in. He said, "I wish to take your paper." The editor seemed happy at once. Then he says, "I want 'Godey's Lady's Book.'" I took a second look at that man. He says, "I want 'Harper's Young People.'" Then he named one or two other papers, and there is going to be plenty of reading in that family that is going to suit all classes. Now,

let us have good papers and good books and we can get an agricultural education right at home. Let us have these papers freely and abundantly. Let us take our local papers, our agricultural papers, our home papers and papers published abroad. I believe that our rising generation are going to fill all our hopes; that our agricultural colleges in some way will be a success as soon as your young men that are reading and studying on our farms get to be the men we are expecting them to be.

W. D. Hoard—*Mr. President:* I was very glad to hear Prof. Henry say one thing, that I believe is the key to all progress in this matter, and that is that he hoped to see the farmer intellectualized. Now, by that he meant that he hoped to see more attention paid to the intellectual side of the question, and less to the horny-handed side of the question. Now, it is a fact, that this is a pretty hard rule, that there is any quantity of conflict in it. You may take the newspaper business, and the man that succeeds in it comes to the right of his position through severe conflict. He finds himself shaped and moulded in his mind by the hard attrition and grinding of the conflict of forces. So it is in any profession. Why is it to-day that the dairymen of Wisconsin maintain and keep up a system of education called the "Wisconsin Dairymen's Association?" Why do they get together in annual convention, and instruct us, publishing reports, sending out broadcast throughout the state this educating element upon the minds of the farmers of this state? Simply for this reason, that as a rule, the dairymen are the most intellectual of all the farmers of Wisconsin. They have bigger brains and better brains, on the average, and that is the reason they are so successful. They have intellectualized their business. They see this great, big verdict written on the wall, "With a hard hand and a soft head, wo-betide that man, where'er his bed." Now, then, if we can get the business of agriculture intellectualized, so that the farmers of Wisconsin would have a clear, sharp, bright understanding of their interests, what would that do? They would lead in politics, lead in the law, lead in the enactment of law, in our legislature. Let any man look back down

along the track of life, and see if these two words won't fit it — knowledge and training. A man with a head jammed full of knowledge, and that knowledge untrained, is not educated. The man with the powers of his body trained, but without knowledge, is not educated — he is a machine man.

I stood on the deck of the steamer "Milwaukee," last summer, as she was crossing Lake Michigan in a heavy storm, and the captain was standing there facing the storm and the rain: and I approached him and said, "Captain, I always take off my hat to a man who knows his business, and the way you handle this steamer convinces me of that point — that down into your nature is the growth of strong, solid experience, and I like to talk to such a man. I would like to have you tell me how you know you are right." He gazed down upon me with that benign expression, which said, "It is not unusual for fools to ask questions." Finally he says, "Why, my dear sir, I don't know that I am right. No man steers on the water, or on the land and knows he is right to a Godly certainty. But," he says, "I know I am mighty close to it." Well now, I thought of that a good deal; I thought of my own business. I thought of other matters occupying my mind, and I said, "It is a great comfort, if a man knows he is mighty close to being right." Old John Brown said, when they led him out to die, as he gazed upon the sun, "It is a mighty great thing to do the best you can." And it is. When I heard Mr. Curtis talk about these schools, I thought of the hard, barren life, that, as a boy, I led on those bare hills in New York. I thought of the little chance I had to read, and how hungry I was for knowledge. I thought of the little country library of my old grandfather, in which was Buckin's History of Animals, and Rollin's History of the World, and Plutarch's Lives — those solid, old, hard-headed works. And there wasn't a single dime novel in the whole collection. If I read, I had to read solid books. My father's theological library furnished me with Watson's Institutes, where I read the doctrine of total depravity. But that little library has ever been to me a source of inspiration and encouragement. Now-a-days, my house is crowded with reading; my three boys are given an abundance of

everything, yet I doubt whether they seek with that avidity that I did, that comes from an unsatisfied appetite. My friends, this question of education applies to all of us, and we need only to remember that just in proportion as we intellectualize our business, increase the width and depth of our thinking powers, and just in proportion as this is done, will we prosper in it.

The boys often come into my office and talk with me, and I try to bring them out a little. One young man spoke to me about a month ago; he said, "Hoard, a fellow would think, if he read your stuff, that farming was as nice as a western sunset; but you ain't doing much of it yourself, I guess." Well, it was not a rebuke, it was a fact. I asked him what was the matter, and he said, "Well, it is grind, grind, grind all day long." "What does your father say about it?" "Oh, he says that we must work and mother says we must work. Indeed, I don't see anything else to do but work." Now, the fact about that boy was, there was a hunger of the mind, that his surroundings did not satisfy. I says, "There is my library; you go to it, and if there is anything there that will satisfy you, take it." He went and looked over the books, and I saw his eye brighten, and he says, "I would like to read this one." I looked at it, and it was one of the series of the agricultural reports at Washington. I says, "Have you ever seen that book?" "No." "Well," I says, "God bless your brave heart—you may have a good armful of them; you may have all there is there." Well, he took the book and went home, and came back in about three or four days, and said he liked it and wanted to borrow another. Well, that young man has commenced to feed his mind. His father is a hard-headed old German that don't understand the aspirations of the boy's mind—he don't have any sympathy. The boy came in about a week ago, and wanted to sit down and consult a copy of Appleton's Encyclopedia. He looked at that library, and I was touched, my friends. He says, "I would work just as hard as I could jump, all day long, if I could just get a look at those books in the evening." There are a good many such boys. I sent out A. H. Porter around this county, and

had him call on every single subscriber of my paper, and ask certain questions. And you will understand the ignorance among those farmers when I tell you, that there are five hundred farmers in Jefferson county, that do not take any paper, but mine. It was enough to satisfy me that the boys and girls in those families were starving — their minds were starving.

Mr. Hiram Smith — *Mr. President:* I was a little fearful that a wrong impression might be made of the paper read by my friend, Mr. Curtis. That paper attacks the whole educational system, and criticises it pretty sharply. Not unjustly, but for fear we should consider he was making a tirade against the great educational system of this state and other states, I wish to remark, that the educational system now in use is an institution of growth. It did not spring up like Jonah's gourd, but it grew up from the best thoughts of the people, of the best days and ages. To cut it down now, would be like cutting down your orchard, because you had heard some one say there were better fruits other places. Now, this institution of growth may be improved by grafting upon it some newer elements, and by planting the new seed, perhaps. But preserve the old orchard all the while, until you can get the better fruit. I do not look upon our educational system as a failure all the way through. It was the best possible system that the best minds of years past could produce. If we can produce better, and I think we can, it is our most bounden duty to do so. But we are looking for the causes why we cannot get agricultural scholars in our institutions. I know it is difficult. I have tried faithfully to do so, but with very poor success, and have been looking for the causes. And I think I have discovered one cause, in the position which agriculture takes throughout the country, which is not inviting to a young man. His hard history at home, makes him study to the best of his ability, to escape the thraldom in which he has been brought up. Is this necessary? If it was, I should keep silent. But the father and mother, in my opinion, are to blame. Not deliberately and maliciously, but ignorantly, to blame. How many of the farmers of this state are doing the best they

can for the future community? We are all ignorant of what we don't know, but we should be striving to catch every glimpse of life that comes within our range. Take a case out of a large majority of the farmers of this state, and what are they doing? I had a conversation last week with a man who is called a prosperous farmer — well-to-do; owns eighty acres of land; out of debt; has ten cows, a team, buggy and a few of the very common things that are necessary; nothing extra or inviting, but as good as three-quarters of the farmers of this state are using every day. There are four of them — himself, wife, son and daughter. The son and daughter are about twenty-two and twenty-four years of age. They live at home on the farm and do all the work. His annual sales are about $700 — all the milk from his cows and what little grain he sells. His farm cost $6,000. The stock, teams, etc., cost at least another thousand. He has $7,000 invested and he turns off $700. He has this son to pay his wages, $200, and his daughter, $100, leaving $400 for himself and wife to board and clothe, pay his taxes and support his position in society.

I know plenty and plenty of advanced farmers, that will give him $400 for himself and wife, and board them, to take charge of a farm. Therefore he is getting nothing on his investment. The son is looking for a chance to get away, and he ought to. It is not an inviting condition for a young, growing, ambitious young man. Now, how can we remove this? I hardly can tell. If I could, I would be wiser than my age. I don't know but one positive thing that will get rid of this class of farmers, and that is a funeral.

Mr. Lumbard — I believe one reason why the farmers are rather behind in the matter of education, and in making their homes attractive, is because they are isolated. There is no occasion, except on Sundays, for church, and on election days, to assemble together, and so they don't assemble. And therefore, the chief incentive, competition and society, is lacking in their case. The farmers can only be educated by subscribing to the public press, or by forming little societies in which each shall cultivate a spirit of knowledge. You must remember, the agricultural history of this country

is young. Now is the time when education will disseminate itself.

L. B. Hibbard—When Col. Curtis suggested that he wanted certain things arranged in these agricultural schools, I think he stole that from Vermont. I heard the same thing advanced there years ago. I believe I advanced it myself at that time. I presume he subscribed for my paper at that time. If he didn't he ought to.

I am going to put in my plea for the young men and women on these farms. I was talking the other day with a lady from Vermont and she said it seemed to her sometimes as if her life had been wasted for the reason that the aspirations and desire she had had for learning and culture in the old home were simply drowned out. I don't say the fathers and mothers do that intentionally. I don't think they do. They do it ignorantly, but they often do it very thoroughly.

Song—"America"—J. G. Lombard.
Adjourned to 9:30 A. M. next day.

MORNING SESSION.

JANUARY 17.

Met pursuant to adjournment at 10 o'clock A. M.
President Morrison in the chair.

COMMITTEES.

The president appointed the following committees:

On Resolutions—
W. D. Hoard,
Col. R. P. McGlincy,
J. G. Lumbard.

On Nomination of Officers—
Hiram Smith,
F. B. Fargo,
E. Montgomery.

On Dairy Utensils and Manufactures—
Prof. W. A. Henry,
Chester Hazen,
Stephen Faville.

On Finance—
W. H. Raynor,
C. D. Fargo,
C. J. Willard,
H. J. Anderson,
J. E. Harvey,
W. L. Hoskins, Treasurer.

Judges on Butter and Cheese—
C. F. Dexter,
R. P. McGlincy,
R. F. McCutchan.

Judges on Essays—
Hiram Smith,
W. D. Hoard,
J. B. Harris.

CO-OPERATIVE CHEESE MAKING.

By J. B. HARRIS, Antwerp, New York.

In all human efforts, grand results have been attained chiefly by *concert of action.* The men who reared the magnificent temples of Palmyra, the pantheon of Agrippia, or the temple of Mount Zion, understood this fact; and, standing alone, grand and solitary, amid the sands of the desert, the pyramids of the Ptolmas will remain while time lasts, an evidence of what may be accomplished by human co-operation.

In our own time, everything is done by co-operation. Railways across continents, canals uniting oceans and seas, bridges almost of fabulous proportions, enterprises in engineering and commerce, never before known, evince the extent to which modern genius is availing itself of concert of effort in testing human capability.

On more than one occasion in my life have I listened to the tones of a well drilled orchestra, of perhaps twenty pieces. At such times, while listening with delight to the swelling grandeur of the strain, I am always in doubt from which source comes the greatest satisfaction — the harmony of sound to the ear, or the evident *harmony* of *action*, *unity* of *understanding*, and *singleness* of *purpose* on the

part of the players, manifesting themselves to the eye as well as to the ear in the time and movement of the pieces. The hands and *hearts* of twenty men beating in unison, at the beck and nod of the skillful director, are made to move the sympathies and arouse to quicker action the life current in the veins of the listening thousands. There is a visible tendency in all branches of business toward co-operation and centralization.

In looking down upon a large city, the unity visible even in the diversity of human affairs manifests itself in a manner truly wonderful. The air is literally filled with a vast net-work of wire, crossing and re-crossing in every conceivable direction, and over these, backward and forward, the thoughts of men are made to vibrate with the speed of lightning, in the elaboration and consummation of thousands of business schemes, and the air, as well as the buildings and streets, is full of human activity and enterprise. The lawyer sitting comfortably at his desk in his office, talks with his banker, physician, grocer, a hundred clients and his family, all seated like himself at home, or at their various places of business. Thus is the telephone made the instrument of human co-operation and concert of action.

It is now less than thirty years since dairymen stumbled into the practice of co-operation in the business of making cheese. Previous to that time cheese making in this country was, to say the least, a crude affair. Every farmer ran his own factory, according to his own peculiar notion, and disposed of his products as he could "light on" chaps. In that day cheese making was guess work and hap-hazard. To-day it is a science. Then there were as many rules and methods as there were men. To-day the laws which nature has enacted, to govern the process of converting milk into cheese, are codified, and cheese making has become a profession. In that day the accumulated results of the cheese industry of a neighborhood or township was a sight to behold—all manner of circular blocks, of concentrated error, large and small, thick and thin, when heaped together presented a spectacle that would now bring a smile upon the

countenance of the most sober and dignified cheese maker in the state.

The condition of the market at that time was quite as crude and irregular as the system, or rather the want of system, in manufacturing. There was no cable, no regular reports from the great business centres of the land, no regularly organized boards of trade, railroads not as numerous, less daily papers were in circulation, and many other circumstances which left the seller comparatively at the mercy of the buyer, and the purchase and sale of a dairy was conducted upon principles similar to those usually practiced in a horse trade.

The great changes which since that day have taken place in the dairying world are due chiefly to a division of labor, the introduction of system and co-operation. Our machinery, we are sorry to say, is not yet quite perfect in all its parts, and does not move with the precision and harmony of the orchestra, to which we have already alluded. Yet, although still in its infancy, it has already produced and does annually produce results grand indeed.

If we take a glance at the various industries at which men are to-day engaged, intellectual, commercial and mechanical, the painstaking exactitude everywhere practiced will be found to be a growing subject of wonder and admiration. The secret of this lies in the fact that perfection in any department of business not only enlarges that business, but also enriches those engaged in it. For example: there are, perhaps, ten times as many watches manufactured in the world to-day as at any other period in its history. It is a profitable business, or men would not engage in it, and the superhuman effort that is being continually put forth to increase the value, by making as perfect an article as human power can produce, establishes conclusively the assertion that there is always a profit in doing well.

I am glad to observe in the cheese industry of the United States and Canada the light of this truth has to some extent aroused the slumbering dairymen. I quote from the *Utica Herald* of Dec. 11, 1883: "It is estimated that about 700,000 men are employed in this business, in one capacity

or another, and that about 15,000,000 cows are used to furnish the one product of milk. The returns from this product are over $800,000,000. The total amount of capital invested in dairying in the United States is estimated to reach the enormous sum of $2,000,000,000." In considering these figures we hope there is no person so dense of understanding as to entertain for a moment the idea that had the old system of every man his own cheese maker prevailed that anything approaching this grand result would ever have been attained. Never. The concert of effort attained in the factory system is the key note to this grand soul-inspiring chorus.

But an experience of twenty-five years in the dairy industry leads me to the conclusion that in the music of our business there is yet much discord. The dairymen and factorymen fail to understand the spirit of the piece we are attempting to perform, and fail to catch the idea that individual profit and prosperity depends upon the success of the business as a whole. No chain is stronger than its weakest link, and so long as there remains a slovenly dairyman in the business just so long our system will be incomplete and the working of co-operation remain imperfect. Perfect concert of effort, unbroken unity of hand with hand, in all the various details of the business, reaching down to the most unimportant items in the production of milk and the making of cheese, will produce in the long run the most profitable and permanent results to the individual as well as to the community.

"But," say some, "there is too much of the millennium, too much of theory, too much of the unattainable, in all this." To such I answer that there is much of the millennium, much of theory, and much of the unattainable in the Sermon on the Mount, and yet our Divine Master preached it, nevertheless.

It may, perhaps, be considered chimerical and theorizing to talk of a time when there will be no such persons among dairymen as what is known to the cheese maker as a skimmer or stripper, but we hope such a time will come, nevertheless.

To what purpose do A, B and C, and a score of other

industrious, honest, painstaking fellows, exert themselves to collect a model dairy — sparing neither time nor expense in providing themselves with perfect sets of improved appurtenances for those dairies, from rich, well watered pastures down to good, substantial three-legged milking stools, and labor incessantly from sunrise until sundown, that their barns may be in perfect order and everything connected with the business neat and clean, in order that their material may come into the hands of the manufacturer in a perfect condition — if heedless, lazy, shiftless, dishonest, ignorant, good-for-nothing D keeps about him a herd of sick, disconsolated racks-of-bones, to wander over his arid and desolate fields, in search of food and drink in summer, or, with backs humped up, hover together for shelter under the lee of a wheat straw stack, their only food in winter, and using a kit of dairying tools, the very best article of which is an old, water-soaked, dirty wooden pail, drawing his whey from the factory in old, rusty, time-embattled milk cans, in which it is allowed to stand until the next milking, and which, after an imperfect washing, are refilled and returned to the factory, freighted with a compound sufficiently poisoned to nullify and undo the best efforts of a hundred A, B and C's. It may be theorizing and visionary to talk of a time when the spirit of co-operation shall have driven such fellows out of the dairying business, to betake themselves with a pick-ax and spade to the ditch, but that such a time may come ought to be the earnest prayer of every thorough-going friend of co-operation in the land.

It may seem like castle building and unprofitable waste of time to indulge in theories and construct plans by which the rivalry among factorymen may be kept within a limit sufficiently circumscribed to prevent the fear of loss of patronage from interfering with and lowering the standard of our cheese. It is too often the case, now-a-days that factorymen are deterred from a full and complete discharge of their duty to themselves, their patrons and the world in general, by a fear, by no means groundless, that a bold and upright course with regard to the material brought them will result in a damaging if not entire loss of their occupation.

The unwise extent to which men have gone in the erection of cheese factories has increased competition to an extent decidedly prejudicial to the interest of the cheese-consuming world. A, having invested his entire capital in the construction and equipment of a factory, will be quite likely when B, C and D erect factories in his immediate neighborhood, to hold his peace when sundry varieties of swill milk are offered at his door, instead of speaking out an unequivocal protest against the insult thus offered to his professional pride and sense of decency.

To the dairyman naturally given to slovenly and careless habits the restraint to which he might otherwise be subjected, is practically removed when nearly equi-distant from his place of abode there are three or four factories instead of one, and he knows that if rejected at one place he can without inconvenience go to another, and thus it transpires that at five factories in every ten there will be found a conspicuous absence of that care and inexorable discrimination which ought always to prevail in the receipt of milk for factory purposes.

For this abuse there is, in our estimation, a remedy, however theoretical and visionary it may appear, and that is concert of action and co-operation among factorymen. Men in all branches of business now-a-days associate with each other and form themselves into bodies for the purpose of closer union and mutual protection, and when this is done for the general good, as well as individual advancement, the purpose is laudable and universally successful.

With these facts in view, how can it be expected that any amount of diligence on the part of a cheese-maker can atone for the unpardonable sin committed, day after day, by the heedless and unobserving patrons, of leaving a can of freshly drawn milk standing all night in an unwholesome barn or yard, until it has absorbed a whole family of pestilential odors, and then to carry it to the factory, to corrupt and poison everything with which it comes in contact.

Some may suppose it a mere theory to speak of a condition of things in which abuses of this character cannot be found, but during an experience of four years as cheese

instructor, in the Province of Ontario, during which I superintended the making of cheese in about 400 different factories, and during the last year inspected the milk from about 65,000 cows, the property of about 7,000 dairymen, I occasionally made up vats in which there was no discoverable taint and which I was pretty certain came from the farms of well drilled, well posted dairymen, and from a circumstance of this character, I am led to the conclusion that what has once been done can be done again, and I make such facts a text upon which I found my plea for more thorough co-operation and diligent painstaking in the work of producing milk for factory purposes.

* * * * * * * *

We know of no business in which the necessity of combination is so great as that of cheese-making, and what, let me ask, could be more desirable and praiseworthy than an association of cheese-makers, for the purpose of sending the swill milk of the country to the hogs, where it belongs, instead of making it up, as at present, for human consumption.

We have an idea that such an association might be successfully formed, and that, when once in effectual operation, it might ask the legislative body of its country to enact a law, entitled "an act for the suppression of swill milk, and for the general good of mankind," in which it should be provided, among other things, that in every case where a dairyman has left a factory, on account of having had his milk rejected for cause traceable to his negligence, that in all such cases the factory or factory company knowingly receiving the milk of such rejected party, shall be liable to some appropriate penalty.

The extreme sensitiveness of milk in the absorption of taint from the atmosphere, or any substance with which it comes in contact, ought to be thoroughly understood by all persons engaged in handling it, but, we believe, that but few comparatively are alive to the true facts of the case. I herewith present several paragraphs clipped from journals of recent date:

"There are seventy-five cases of typhoid fever in the town of Port Jarvis. Dr. McDonald attributes the spread of the

disease to the use of milk from the farm of Mrs. Thomas Cuddebach, in whose family there have been several typhoid cases, holding that the milk conveyed the disease germs. Nearly all of the parties now sick had used milk from the farm."

"A dairyman from Dundee, has been apprehended and fined for allowing his wife and daughter to milk cows and assist in the sale of milk, after they had been engaged in nursing a child suffering from scarlet fever. No less than nineteen cases of fever, four of which resulted fatally, were traced to this act of carelessness."

There may be times when peculiar atmospheric conditions will exert unfavorable influences, and seasons when drought and wet weather will produce changes, over which human effort will have no control, and for these sufficient allowance must be made. We quarrel with the stupidity, shiftlessness and ignorance of men, and not with the providence of God.

In this day and age of the world, there is no excuse for ignorance upon the points to which we have alluded. Wisdom uttereth her voice in the streets, and he who will not hear her ought to be drummed out of the camp of dairymen. As a rule a common carpenter puts more thought into his business in a month than many dairymen do in a year. Indeed, it would be difficult to point out a single branch of human industry, of one-half the magnitude which the manufacture and sale of cheese has reached, carried on in a manner so slip-shod and slovenly as dairying.

The banker, the columns of whose ledger fail by one cent of balancing, spares neither time nor money in searching out and correcting the error; the merchant brings to bear upon his business a care and insight so unceasing and laborious that his locks are soon sprinkled with premature silver; the machinist works to plans from which the variation of a thousandth part of an inch cannot be allowed to pass uncorrected; but the dairyman too often stumbles along through his work without thought, or employs the little intellect he has in putting in and harvesting his crops, leaving the dairy n the meantime to take care of itself. There are too many men engaged in dairying who can see nothing in the business

beyond the factory dividend; men to whom filling the milk pail and the can are the Alpha and Omega of life. To such men such a thing as an ambition that their county, town or neighborhood shall attain and hold a reputation for being the banner cheese district of the state or nation, is as thoroughly unknown as the configuration of the bottom of the Dead Sea.

In saying what we have about the patrons of cheese factories, and the closer and more thorough co-operation among them, we have been actuated by no feelings of unkindness or ill-will, nor have we arraigned them upon trivial or imaginary charges. The indictments we have found against them are all true bills, against which too many of them will be unable to sustain the plea of not guilty. We have been constrained to our present course by an over-mastering sense of the importance of greater care, deeper thought and closer union in pushing forward one of the greatest industries of the day. I am confident that before another step can be taken in advance it must be preluded by a correction of the errors which we have feebly attempted to portray, all of which lie outside of and prior to the factory. As a body, cheesemakers can do little better than they are now doing, until there is some improvement in the material upon which they are called upon to exercise their skill, and the practice of crimination and recrimination, the factorymen tossing the blame upon the dairymen and the dairymen upon the factorymen, which is made use of to conceal the real source of our mistakes, will continue to shield him from the eyes of a discriminating public until the care and diligence of dairymen strip him of this shelter and drive him forward on the march to improvement.

James B. Harris returned to his home in this village last Friday evening, after an absence of several months in Canada, where he was under an engagement with the Western Ontario Dairymen's Association, to visit the cheese factories of Western Ontario and instruct the cheese makers in the art of making prime cheese. Mr. Harris contributed each week to the *Ingersoll Chronicle* a series of notes regarding

factories inspected by him, and the following, in relation to one of the best factories in the Dominion, will undoubtedly prove of interest to our many readers who are engaged in dairying — *Gazette.*

"Black Creek factory, seven miles west of Stratford, Thomas Ballantyne, M. P. P., proprietor; Adam Bell, maker. Got to-day 25,000 pounds of milk, which I inspected, and found it of excellent quality, not one sending poor milk, which shows that the patrons have been educated in the dairy business and made to understand that it is impossible for the maker to turn out a first class cheese if the dairymen steal the cream or the milkers save the strippings. I examined the cheese on hand, and they were No. 1. I doubt if there is on the continent of America a finer article of cheese made than at this factory. They used five vats, and have Brintnell's machinery, which is indispensable for a factory of this size. Mr. Bell believes in drawing the whey sweet and allowing the maturity of the curd in the sink; everything goes on like clock-work. The making room is an old one, being built seventeen years ago, and lacks the modern touches that are given to buildings since we know much better what is required for the business. But they have everything needed; four large sinks with slats and cloth, so there is no trouble in getting rid of the whey, immediately after dipping, which is very important, in fact, one of the most important points in the manufacture of good cheese. Mr. Bell thoroughly understands his business, and is well paid, getting 75 cts. per 100 pounds, furnishing all but the boxes; quite a contrast from some stock companies, who will let the job of making to the one who will work the cheapest, and the man who has taken it cannot afford to have help that is required, so some part is neglected, the consequences being poor cheese. At the Black Creek factory they never allow whey to be taken back in cans, and the cheese has always a good flavor, and has a reputation in the English market second to none. Mr. Ballantyne has labored incessantly for seventeen years for the improvement of cheese and has done more, directly and indirectly, for the dairying interest than any other man in Canada."

DISCUSSION.

Mr. Hoard — I wan't to ask Mr. Harris what is the standard among the Canada dairymen as compared with New York, where he lives, and with the west.

Mr. Harris — There is very little difference in the mode of making cheese. In Canada there are a great many stock companies and they draw the milk by routes. Each man has a route to draw and he has perhaps thirty scans in hi

wagon. Each one brings the milk to the factory in that way, and draw the whey back.

Mr. Hoard — Is there a more general condition of thoroughness on the part of the milk producers?

Mr. Harris — Well, I don't know that there is.

Mr. Hoard — We have some nervous apprehensions over the increasing excellence of Canada cheese, and we want to understand what is at the bottom of it. Have they got a better climate, or water and grass, or what is it?

Mr. Harris — Their grass is no better and their water is not as good, as a general thing.

Mr. Hoard — Have they got better men there?

Mr. Harris — That must be it. I have another paper to read, that will answer some of these questions.

Mr. Hoard — I would like to ask whether this co-operative action has been practically carried on to punish those, whose greed works an injury to the honest and intelligent dairymen?

Mr. Harris — They have been punished very severely, brought up before justices, and fined.

Mr. Hoard — If such a man is refused at one factory, will another take him in?

Mr. Harris — Well, human nature is the same there as anywhere. Of course they think if they don't take them in there that the next factory will, so they take them in.

Mr. Northrup — Would you seek to remedy this trouble, by excluding this man, not taking in the milk anywhere?

Mr. Harris — No, he should be punished by statute law, and fining the man that takes him in.

Mr. Hoard — Would you give the man a chance to reform?

Mr. Harris — Oh, yes.

Mr. Ingalls — I think Mr. Harris has put too light an estimate on the selfishness of human nature. It will take a pretty smart law to cure it. As far as my experience goes, I never knew a better place to learn the selfishness of man, than a cheese factory. They go into the smallest, meanest things. I never saw a place where iniquity would grow as suddenly, as rankly, as it will in the whey bed. I don't see how co-operation is going to cure that selfishness.

Mr. Hoard — Mr. Ingalls, suppose you play one selfishness against another.

Mr. Ingalls — That is what we do.

Mr. Hoard — A wise selfishness on the part of the cheese factory men, and the milk producers would tend to make good cheese; if Brother Harris can give us any points about that, it will have been a good thing for us to come up here. Mr. Harris, if you noticed any tainted milk coming into the factory, what did you do? How would you manage if things were unsatisfactory, in that regard?

Mr. Harris — Well, of course, a good deal of the milk was tainted when it came into the factory, and we had to do the best we could with it. But any milk that I found was tainted, before it got into the vats, I invariably rejected it. Sent it right back and told them to take better care of it.

Prof. Henry — Had you authority to do that?

Mr. Harris — I took the authority, self constituted authority, but I would not receive it.

Mr. Fish — That seems to be a great question — how to punish patrons. I will tell you how we stopped it in Herkimer county, New York. There was a farmer they found adulterating his milk, and the committee fined him $50 and turned him out of the factory. Two years later, he wanted the factories to take his milk, and they wouldn't take it. Finally, he pledged himself that he would bring good milk. It went along until one morning the committee found a fish in the can, and they set to watching him. They saw him pour in the first night about two pails of water. He asked his wife if she thought it would bear any more, and she said she thought not. When he came to the factory they told him they wanted to settle with him. He made a lot of excuses, and finally he wanted to know how they proposed to settle. They told him they would settle with him for $1,200. He wouldn't pay it, went and employed a noted criminal lawyer, Mr. Morgan, and he helped him along as well as he could, but finally advised him to settle, and he did settle, the $1,200, and gave Mr. Morgan a mortgage on his farm for $500 for his services, and there has not been another case of adulteration of milk there in ten years. I don't think, as a general

thing, that there are more generous-hearted, honest people, to get along with in the world, than farmers, but there are some sharpers among them, and they want to be cleaned up.

Mr. Blackman — I have been running a cheese factory for years, and I believe that the best system is to pay for milk according to what it is worth. I pay now some men 20 per cent. more than I do others, and paid one man twenty cents a hundred pounds more than I did others, on account of his feeding his cows. A man ought to be paid according to what he produces, it seems to me. I believe that will bring about honesty in the producers quicker than anything else you can do. Suppose a man's cow is hurt, or for some reason the milk is defective, of course, in the common way of handling milk, you could not detect it.

Mr. Northrup — You say there is a difference in the grades of milk; what per cent. difference is there in the milk of a cow fed on a sloughy pasture and one fed on good timber pasture — and corn-meal fed besides?

Mr. Blackman — I am not competent to answer that question, because I am awfully down on these marshes. I wouldn't ship milk into Milwaukee, where the cows exclusively run on marshes. I look a man's herd over — I look his farm over, and see how he keeps his cows, feeds, waters and handles his herd, and, if I think I want his milk, I buy it. If I don't, I go to his next neighbor. Milk from a sloughy pasture, don't pay to handle. To handle milk, and make it profitable, you have got to handle good milk, and a man can raise good milk just as well as poor milk.

Mr. Northrup — This co-operative plan, then, I should think, will work injury to the honest man who feeds his cow?

Mr. Blackman — I am not going to take any position on this co-operative plan at all, because I know little about it.

Mr. Babbitt — Suppose you had a fine Jersey cow, that was fed on the marsh pasture; wouldn't you take her milk?

Mr. Blackman — I wouldn't have it — you cannot produce good quantity and quality.

Question — I would like to know how you can get at the real value of milk?

Mr. Fish — One simple way is: Farmers that come to one factory generally have similar soils; the milk will be similar. If you think there is a difference, skim your cream, put that cream into a dish and heat it; the butter will rise to the top; skim that butter and weigh it, then take your casine and co-agulate it with the rennett, separate them, and weigh that. In that way, you will get the exact worth of the butter and cheese that each patron's milk is worth.

Prof. Henry — What amount of milk would you take for this test?

Mr. Fish — I would take enough, so you can tell by the weight of the butter — perhaps a gallon. So you can get enough butter to tell by the weight of it.

Question — Would all the butter rise on top?

Mr. Fish — I think it would, all of it.

Mr. Hibbard — How high do you raise the temperature in heating?

Mr. Fish — I couldn't say. Bnt I would raise it high enough, until I see the butter rise, and then let it cool, and you can skim the butter off, after it is cool.

Mr. Hoard — Mr. Harris, you spoke of the Black Creek factory refusing to allow the patrons to carry home whey in their cans; what did they do with the whey?

Mr. Harris — They feed it there on the premises.

Mr. Hoard — Then the whey is made of no account to the dairyman — the factory man feeds it.

Mr. Harris — Yes.

Mr. Hiram Smith — What becomes of the almost universal odor that must arise from feeding the whey from 25,000 pounds of milk, in the vicinity of the factory?

Mr. Harris — They don't have very much inconvenience from that. There is a creek running near there, and there is a large lot, some ten or twelve acres — they scatter through there, and go down to the creek, and there is no great odor about it. Of course, when the wind is blowing that way, towards the factory, you can smell it.

Professor Henry — Would you under no circumstances, have the whey carried back in the cans?

Mr. Harris — I have no objection, providing you can make

every patron empty the whey immediately after it gets home, and then properly wash and air the cans. There will be always some few that will let the whey stand in the can over night, and then they will empty it out, and they have got no hot water to scald the cans, and they give it a lick and a promise and let it go.

Mr. Northrup — How do you detect the water in the milk?

Mr. Harris — I have a little instrument that I use, called the German pyroscope that will merely tell the richness of the milk, but that don't tell anything about the water. I have one here I will show you. It is called Herron's milk tester. It is a very simple thing. I tested one man's milk last summer; I just put my fingers in as it came in, and it tried poor. I asked the cheese maker whose milk it was, and he says, "It is the milk drawer's." I got the name on the book so and so, and put down poor at the end of his name. When he came in I said, "What is the matter with your milk?" Says he, "Indeed, there is nothing, it is just as it comes from the cow." Says I, "There is no cow that ever gave such poor milk as that. Do you send all the milk that your cows give?" "Indeed," says he, "we don't; my wife and girl milks the cows, and we send that to the factory. Then they milk them again, and we keep that." Says I, "That accounts for the quality of the milk; you keep the strippings."

Question — How much do those pyroscopes cost?

Mr. Hoard — Cornish & Curtis, of Fort Atkinson, have them for seventy-five cents apiece.

Mr. Faville — I want to ask Mr. Harris whether there is as much of this adulteration of milk in Canada as we have here?

Mr. Harris — There is not, sir. I can say this for Canada people. I think they are honester than the people of this country. They have a pride in making the very best butter and cheese they can. They make cheese that will sell in the London market as the best cheese there.

Prof. Henry — What difference will there be between good Wisconsin cheese and good Canada cheese, in the eastern or London market?

Mr. Harris — I would want to see the Wisconsin cheese first. The best I saw at Milwaukee was a good many points below the best Canada cheese, and I attribute it a good deal to the greed of patrons, and makers vieing with each other to get a large yield out of the milk. You cannot make cheese out of whey.

Mr. Hoard — I want you to look this audience right in the face, these milk producers, and tell them whether you think, from all you know concerning the profit of the business, whether it is the most profitable and will continue the most profitable for them to furnish the cheese factory with the very best kind of milk, and the cheese factory to make the very best kind of cheese, or whether it will be most profitable to play snide, as we have been playing.

Mr. Harris — In the long run you will make the most money, have the best reputation, have a clear conscience and die happier, to be honest.

Mr. Northrup — If you found by your test that milk was watered, how did you punish?

Mr. Harris — Hasn't Wisconsin got a law?

Mr. Northrup — We have a good many statute laws.

Mr. Harris — I will read you the Canada law, which is merely a copy of the New York law.

1. Whosoever shall knowingly and fraudulently sell, supply, bring or send to be manufactured to any cheese or butter manufactory in this province, any milk diluted with water, or in any way adulterated, or milk from which any cream has been taken, or milk commonly known as "skimmed milk;" or whoever shall keep back any part of the milk known as "strippings;" or whoever shall knowingly and fraudulently sell, send, bring or supply milk to any cheese or butter manufactory that is tainted, or partly sour from want of proper care in keeping pails, strainers, or any vessel in which said milk is kept, clean and sweet, after being notified of such taint or carelessness, either verbally or in writing; or any butter or cheese manufacturer who shall knowingly and fraudulently use, or direct any of his or her employees to use for his, her, or their individual benefit, any cream from the milk brought to any cheese or butter manufactory without the consent of all the owners thereof, shall, for each and every offense, forfeit and pay a sum of not less than one dollar, nor more than fifty dollars, in the discretion of the presiding justices before whom the case shall be heard.

2. Any two or more justices of the peace, having jurisdiction within the locality where the offense has been committed, may hear and determine such complaint upon the oath of one or more credible witnesses, and shall

have power, in case the penalty awarded by them be not forthwith paid upon conviction, to levy the same by distress and sale of the goods and chattels of the offender by warrant under their hands and seals, or the hands and seals of any two of them; and the penalty, when recovered, shall be paid over by such justices, one-half to the person complaining and one-half to the treasurer of the municipality, district, or place where the offense shall have been committed; and, in default of payment or sufficient distress, the offender may, by warrant signed and sealed as aforesaid, be imprisoned in the common gaol for a period not less than one day, nor more than twenty days, at the discretion of such justices, or any two of them, unless such penalty, costs, and the charges of commitment, be sooner paid.

3. Any party aggrieved by such fraudulent conduct as aforesaid, may, at his or her election, sue the offender in any civil court of competent jurisdiction, and recover from him the amount of damages sustained, and levy the same, with the costs, according to the ordinary practice of the court in which the suit shall be brought.

4. Provided always, that no justice or justices having any pecuniary interest in any such butter or cheese manufactory, as aforesaid, shall hear or determine any such complaint.

5. In case of summary proceedings under this act, any person, complainant or defendant, shall have the right of appeal as provided in chapter one hundred and fourteen of the consolidated statutes of upper Canada.

Mr. Faville — In your opinion, in the long run, is it going to be to the interest of farmers to make skim cheese to any extent?

Mr. Harris — I cannot answer that; I never had much knowledge of the subject. I never made a skim cheese, and I don't want to.

Question — Don't they make almost wholly full cream cheddars there, by letting the dry acid from out of the whey?

Mr. Harris — Yes, they do.

Question — What kind of curd mills do they use?

Mr. Harris — They have three or four kinds. They have the peg mill and the knife mill, but the best of all is the Harris curd mill. There are more of them used than any other, and they like them better.

Mr. Babbitt — You made the statement that they were honester over in Canada than they are here in this country. Now, as you look over the audience, after having excepted my friend Hoard and myself, and the governor of Wiscon-

sin, does not this crowd look about as honest as any Canada crowd you ever saw?

Mr. Harris — I acknowledge the corn, gentlemen. It was the manufacture of cheese I spoke of. They are probably just as honest here as in other directions. Let me say, as a general thing, people in the west don't want to make cheddar cheese, because it takes too long. Many times, last summer, especially when I had a gassy curd, it would take till six or seven or eight o'clock. You want to get through by two or three o'clock. It was so in Canada in 1879, but they have got into it, and now you couldn't get them to make cheese any other way.

Question — Have you ever tried the difference in the heft of your cheese, when you draw the whey off sweet and sour?

Mr. Harris — I have tried it.

Question — What was your success?

Mr. Harris — The result was, I found I could make the best cheese always, to draw the whey sweet, and then let the acid develop on the curd in the absence of the whey. There would not, perhaps, be quite so much. You get more whey in the curd, but you wouldn't get any more nourishment.

Mr. Hoard — As you acidify the curd, every step you take in that direction, don't you lose butter?

Mr. Harris — Yes, you lose butter. The sour whey shows more butter than the sweet whey. You also save sugar in drawing it off sweet.

Mr. Hoard — We have a certain difficulty in this state that I think is not adequately understood by our farmers, and that is in the amount of bad water that our cows get. I know of a farm in this county, where a slough hole sitting all summer long, so muddy and filthy that you cannot see the color of the water, is the only water the cows get.

Mr. Harris — If that man had only dug a hole deep down in the middle of the slough it would have all gone down.

Mr. Hoard — He don't want it to go down; he wants to water his cows there; it seems to me there should be a committee appointed by factory associations, who shall see to

this matter of water, and that the factory men refuse to receive the milk.

Mr. Harris — The more thorough you are going to be in this dairy business, the more money you are going to get out of it.

Governor J. M. Rusk being present, was loudly called for and addressed the convention as follows:

Mr. President: I was invited by the secretary of this association to come over here, but it was distinctly understood that I was not to do any talking. I was just to put in an appearance. You have speakers here who have arranged to talk to you, so I will say but a few words in regard to my views on what the state should do in assisting you. I have listened to the discussion here with interest, and have been a little shaken by some remarks that have been made. I had supposed when I came here, that the farmers of Wisconsin were the most honest farmers in the land, but it has been stated here that there were some more honest over in Canada. Well, it may be that there are some that went away from here in times past. We had quite a number who thought it was a pleasanter climate. That may have been the cause.

This idea is new to me, that Wisconsin is not on the top of the ladder in the making of butter and cheese. The reports of sales in New York I see put Wisconsin cheese selling here at home higher than the quotations there, and I had a right to believe that our cheese was worth more than any other. I think that our dairymen in this state are not far behind any other in the land. If they are, they are working their way up, and will gain the top very soon. We have the climate, the water, and everything that will go to make our butter and cheese the very best.

Now, I have listened here, and concluded that the cow is nothing more than a chemical apparatus to manufacture grass, water and bran, and such feed as you give the machine into milk, and then our scientific men have arranged apparatus to change it into butter and cheese. When I was in Washington, I was invited to attend an exhibi-

tion; a gentleman was going to perform a churning operation. He had a churn, and all he required was water to bring forth butter. I said I would go, but I didn't believe he could do it. If he had put in a half a ton of hay and some corn-meal and other stuff, it is possible he had a machine that would take the place of the cow, but I never knew a cow that could produce milk on water alone.

Now, friends, I have wandered; I wanted to say that I am here to-day to meet and encourage you in this great business of our state. It is a great business — it must take the front of others that are passing away. The wheat growing belt has passed beyond us west and north, and we must turn our attention to other products. I say I am here to-day to encourage you in that enterprise, for I think it is the foremost in our state, and this society has done wonders in developing it. I am not a scientific butter maker or cheese manufacturer, I know nothing about it only what I have read in your reports. All I know I have learned from the reports sent out by this association. I say that you ought to make your reports interesting to every farmer in the state, and they should be circulated broadcast and in that the state ought to assist you. Not only yourselves, but the entire state is interested in this matter, and instead of appropriating for your benefit $500 to aid you in printing and circulating your reports, you should come up and ask for $5,000, or any sum that you need and can expend in this way profitably. It is to the advantage of all the people of the state to have all these experiments tried, tested and done at the expense of the state. The financial condition of the state is good, and now I will state, all you have to do is to ask your members of the legislature to appropriate it. I will approve the measure if I happen to be there, and will send you the money. If you will ask me to recommend $5,000 I will do it. I am not sure but what I will do it whether you ask it or not. I want to see you prosper, until you can beat Canada, and beat all the world.

ARE THE DAIRYMEN OF WISCONSIN DOING AS WELL AS THEY KNOW HOW, AND IF NOT, WHY NOT?

BY C. R. BEACH, Whitewater, Wis.

I am sorry this subject has been assigned to me, for I seem shut up to one of two courses, either to confess wherein I, as a dairyman, failed to do as well as I know how, which I should be ashamed to do, or to tell you wherein I think *you* fail to do as well as *you* know how, which is a task equally unpleasant, for I know very well that we never listen with pleasure to those who tell us of our faults, and, what is more to the point, we are rarely made better by being found fault with. But I trust you will find me generous, for I am one of those who believe that the dairymen of Wisconsin, as a class, whether measured by the standard of general intelligence, or by thorough knowledge of their business, or by that of success in prosecuting it, are in no ways inferior to an equal number of men engaged in any occupation in this or any other country.

The rapid growth of the dairy business, the almost universal prosperity of those engaged in it, the high reputation of our products in both home and foreign markets, the many prizes won in contests with dairymen outside of our own state, are proof that such belief is well founded. And when we remember the obstacles that have been overcome in reaching our present position, we can but feel that they who have achieved so much are honestly entitled to a large measure of praise.

Yet, when asked, "Are the dairymen of your state doing as well as they know how?" I unhesitatingly answer, "*No.*" But such answer is in no sense a disparagement but rather implied praise, for if, after all that has been accomplished, we have not reached the measure of our knowledge, we are certainly capable of reaching a very high degree of excellence.

No man has ever yet lived up to his ideal standard. Labor with what zeal we may, we shall always be conscious of

having left undone things we might have done, and see beyond us something to be attained. If it were not so, there would be no such thing as progress. The very idea of progress implies a deficiency in present effort and present attainment, and I suppose it will always be so in every branch of human industry, dairying among the rest.

But there are few branches of business in which the returns for capital invested and labor performed are so variable or extend through so wide a range as dairying.

A score of cows might be named that have produced over five hundred pounds of butter in a single year; yet a large number, if not a majority of the cows devoted to butter making will fall below one-fourth of that amount. There are cows that have given from fourteen to eighteen thousand pounds of milk in a single year, and yet I believe that a majority of the cows of this state will not much exceed three thousand pounds.

S. N. Wright, of Elgin, Illinois, reports that from his herd of twenty-seven grade Holstein cows, he received $97.74 per head; and yet the average proceeds from the dairies of our state will not much exceed one-third of that amount.

A cow has been kept through an entire year upon the products of a single acre of land, and yet among the farmers who make dairying a leading business, from five to eight acres are required.

This wide difference may be in part attributed to the fact that dairying, in the modern acceptation of the term, is comparatively a new business in this state, and very many, and perhaps a majority of those engaged in it, have not as yet been able to place themselves in condition, and with surroundings to produce the best results; and a part of it may be attributable to a want of theoretic knowledge; but if we are to find a full and satisfactory explanation for this wide range of results, we must look for it in other causes, and, judging by my own experience, I should say that the fault is chiefly in ourselves and not in our stars that we are underlings. *We don't try.* Disguise it as we may, the real truth is that the majority of men always have been, are now, constitutionally *lazy*, intellectually, if not physically; and

dairymen are no exception to the general rule. We see the right way, our judgments approve of it, but we pursue the wrong way, because it requires less mental effort.

Extraordinary results, or even good results, do not come by chance, they do not simply happen. Eurotus did not make $778 of butter in a year because she happened to be a Jersey. The cow that gave eighteen thousand pounds of milk did not do it because she got to giving milk and couldn't stop. It was not a special dispensation of Providence that Mr. S. N. Wright received $98 per head for the milk of his cows, while his neighbor received but thirty.

Results are the legitimate fruit of corresponding efforts, put forth in a particular direction, for a specific and definite end. And behind the results I have named was a purpose, having for its object the very thing accomplished.

Here, I believe, is the key that unlocks the secret of one man's success and another man's failure. Here is an explanation why one dairyman receives twice as much from his cows as his neighbor with equally favorable surroundings. Here is one chief reason why the dairymen of Wisconsin are not doing as well as they know how to do. We fail to gather up our knowledge and apply it, to purpose to do better this year than last, and then to supplement such purpose by well digested and well matured plans, which, taking into account our surroundings, and the means at our disposal, aims at definite ends and definite results; not results beyond our reach; not those that lie *only* within the bounds of possibility, but only such as we may reasonably hope to attain. But instead of doing so we drift, if not entirely aimless, yet without definite aim; we are content to do about as well as our neighbors.

I know a good average representative dairyman who, upon a farm of 120 acres of good land, last year kept twenty cows and his team, raising all that he fed, and received something like forty dollars per head from his cows. He was able to support his family and put money at interest. He thought he was doing well, and I think so. But do you believe that he was doing as well as he knew how to do? Do you not suppose that from that very same farm he

could make twenty cows produce sixty dollars per head with scarcely any additional cost if he would fully resolve that he would do it, and then plan to accomplish it. He might possibly have to sell five of his cows and replace them with others at an additional cost of ten dollars per head. He, most likely, would need to purchase a few tons of bran or shorts to feed while pastures were short in July and August. He might think it better to break up five acres of his pasture for fodder corn for feeding in September, October and November, as he will need to keep his cows longer in milk and it will require more grain for winter feeding. He had, perhaps, better take ten acres of his meadow for corn and oats, thus raising five acres more of each than he otherwise would have done. But as he is feeding more grain his cows will need less hay, and the extra corn fodder and oat straw will more than make up for any deficiency that might arise from having less meadow land. He probably will have to be more careful to milk at regular hours, salt his cows oftener and look more carefully after the water supply. These and other details that I might name will call for extra care and additional thought rather than additional cost, and we all know that it is in the manner that we look after the details of any plan that determines its efficiency.

No man can tell another just how to do a thing. But if he will make and follow some such plan as I have outlined, *if he will only do as well as he knows,* I am sure that if he does not reach sixty dollars per head the first year he will come so near to it that he will never fall back or be satisfied with forty dollars per head.

We all need to break out of the ruts of habit and school ourselves in the logic of common arithmetic.

I know another man who a few years ago was looked upon as rather a poor farmer and seemed to have hard work to make ends meet. A factory was started near him; having a few cows and abundance of grass they gave him good returns — more per head than his neighbors — he began to take pride in them and add to their number. Last year his entire dairy of fourteen or fifteen cows gave him on an average

over 7,000 pounds of milk and in the meantime he has become a first class farmer.

And this leads me to speak of a motive power of which if we had a large measure, would enable us to do more and better work without a corresponding increase of knowledge. I mean pride in our business.

I do not mean that spurious pride which shows itself by egotistical self-assertion, that has its root in inordinate self love an and undue appreciation of our own personal importance.

That prays the prayer of the Pharisee, "God I thank thee that I am not as other men." But rather that true pride that exalts in whatever is good, and useful, and noble, that inspires its profession to strive after excellence, to do things worthy of praise. We sometimes call it ambition, but, call it what you will, if the dairymen of Wisconsin had more of it, their aims would be higher, they would plan better and do work that would be more to their credit.

It makes all the difference in the world, in the results of our labor whether we put our heart into our work, or whether we do it because we think we must.

A want of purpose to do, want of definite and well digested plans and a want of pride in our work to stimulate as to perform, are *three* reasons why the dairymen of Wisconsin are not doing as well as they know how.

I asked my next neighbor, whose cows gave on an average 5,500 pounds of milk wherein he had failed of doing as well as he knew? he said by not keeping his cows up to a full flow of milk by extra feed the latter part of the summer when products were low. The wisdom of his answer we would all of us do well to take home with us and ponder it.

Of the many dairymen I have questioned but one has claimed that he had done as well as he knew.

I asked him what he has done. He said that for the year ending April 1, 1883, he had from a dairy of thirteen cows sold butter to the amount of $86.61 per cow besides what was used in a family of five persons. I asked him if he had not milked more than thirteen cows during the year, he said no. I asked him if he milked only the same cows; he said

that he had sold four or five in the time and supplied their places as was his custom to do.

I told him I still doubted if he had done as well as he knew how, but until the dairymen of Wisconsin reach a higher standard he might pass.

Mr. President: Of the science of dairying we have much to learn, and I for one hail with pleasure every addition to our stock of knowledge — we need it.

But we need *Gumption* a hundred times more.

DISCUSSION.

Mr. Fish — We have heard what the law is in Canada with regard to adulterating milk. I would like to know what the law in this state is.

Mr. T. D. Curtis — Your law is copied from the New York law, and the Canada law is just about the same; there is a little difference in the punishment.

Mr. Ingalls — All the difference between our laws and Canada, is that they enforce the law and we don't.

Mr. Hiram Smith — It is presumed that all those that are present are favorably disposed towards the Wisconsin Dairymen's Association. You would not have been here unless you felt some interest in its growth and prosperity. The Association has furnished you with papers of great value. They attempt to teach us how to make good articles; how to make the most money from our farms. But we are not all Grad-grinds, we have a social side. No instrument which has been used to promote the dairy interest in Wisconsin is to be placed ahead of the regular banquets which have been inaugurated wherever the Association was held. We may date our progress and popularity from the date when the banquets commenced. It is the place where the sharpest ideas will be brought out. I understand that the ladies of Lake Mills have done everything possible to make this one attractive, interesting and profitable. I shall expect to see you all this evening. You can all find the place by following the crowd.

Convention adjourned to 2 o'clock P. M.

AFTERNOON SESSION.

JANUARY 17.

Convention met pursuant to adjournment at 2 P. M. C. R. Beach in the chair.

THE ROAD TO THE FACTORY.

By ROBERT FARGO, Lake Mills, Wis.

In November last your honored secretary requested me to prepare a paper for this convention. I had chosen for my theme, "The Theoretical versus the Practical Dairyman," and one beautiful November afternoon, for which Wisconsin is so famous, I was riding home from my place of business, and while riding was working my inner consciousness upon my chosen subject, and found myself perplexed where to place some men conspicuous in journalistic circles for learned disquisitions upon the management of the dairy and kindred topics, who, if given a good garden and all necessary implements, could not grow a hill of beans, or given a choice Jersey cow, could not keep her in milk thirty days. Notwithstanding this difficulty, I had just found their niche, and was about to cry "Eureka," when my carriage made a sudden lurch, which nearly broke my neck. In my anxiety and pain I forgot my theme and witticism. A new problem presented itself for solution. Why had I driven into that hole in the frozen ground, one foot deep and three feet long? Had it not been there since last June? Had I not driven around it not less than 260 times? And had not the milk wagons done the same thing as many times? Then I thought of the many holes and stones on the roads I travel and I seemed to know by a sort of instinct just where each one was. Just then a milk wagon passed loaded with six cans—bruised if not bleeding—lashed to the wagon as securely as the master of a vessel lashes every spar before a storm. A half mile further on lay a wagon beside the road with a broken axletree. I had seen it there before, but now it awakened a new interest. The round faced stone in the wagon track, upon which it was wrecked, was familiar to

me. I had dodged it more than a *thousand times*, and thus my present theme materialized. A wheelbarrow full of dirt would have filled the hole and saved my neck — five minutes with a crow-bar would have saved the broken axletree. But whose business was it? Had not each good citizen *worked* his highway tax in June?

But why should the work be done in June and at no other time? Most of us have occasion to take medicine from time to time during the year but who would think of taking all his medicine for the year just after planting his corn and in the month of June? Every good housewife finds it necessary to make needy repairs of torn and threadbare garments but none are insane enough to undertake to do it all in the last half of June and leave it untouched the balance of the year.

During the present century the genius of man has made steam and lightning do his bidding. Even his breath on the air is heard a thousand miles. The reaper, mower and harvester, the rectangular churn, and the gang press are his servants; even the stoves we cook on and the carriages we ride in but symbolize modern progress. But the roads, the roads, the execrable roads.

Roads were repaired by levying ad valorem taxes paid in labor under Henry VIII of England, as early as 1346 — under the feudal system the highways were improved upon the labor plan — and the same system was transplanted to the colonies of America without modification or improvement, and found its justification only in the scarcity of money and the inability of the colonists to pay only as they paid other bills by exchanging products or labor itself. That the system has continued till the present time is an anomaly in the history of our civilization.

Under the present system the general policy is to see how little can be accomplished in a given time. Occasionally an effort is made to do some honest work, but with no knowledge upon the subject ofttimes those who attempt the most accomplish the least. They work two or three days, tear the road-bed to pieces from one end of the district to the other, and leave it as billowy as the ocean in a storm.

Others again work diligently to make a road-way of clay — too dull even to learn a lesson from the mud wasp or mud swallow, who uses that material for building purposes only under shelter. Ten thousand years is too short a time to teach some men that clay mud will not make a good road, that nothing but sand and gravel ever accomplished that result. Of such material are the old Roman highways, "whose firmness has not entirely yielded to the efforts of fifteen centuries."

The roads in Jefferson county will average but little better than thirty-seven years ago, and yet there has been expended in highway taxes in that time probably not less than $1,890,000. To illustrate: In the town of Lake Mills there are forty-four miles of highway. The past year the highway and poll-tax levy was $2,723.70, which would give $60.19 for each mile of road and $.18¾ for each rod of road in town, yet I venture the assertion that had $20 per mile been judiciously and honestly laid out, the roads would be fifty per cent. better than they now are. Estimating the tax levy for the last year an average for the last thirty-seven years, the town of Lake Mills has expended, or pretended to expend, $100,776.90. With gravel or stone in easy haul $1,000 a mile will make a perfect road-bed, needing but slight repairs thereafter. Estimating upon this basis, the town of Lake Mills could have macadamized every mile of road in it *twice* and had $12,776.90 as a starter for the next course.

Now, what is the remedy for this shiftless, thriftless, antiquated barbarous way of not doing a thing? I answer, the same *good sense* we bring to every vocation in life. First, *the payment of the taxes in money.* Second, the adoption of the *township* system, wherein the money is intrusted to a competent man or men, who will see that it is judiciously laid out; not in the month of June, just after planting, but throughout the year, who, when any road has a bad hole or projecting stone, will have it repaired at once, and the balance of the money be expended in making some road *permanently good* with stone or gravel, or both. This system has been adopted in some New England towns with most astonishing results.

Let the Wisconsin dairymen, who have now an enviable reputation in their high calling, inaugurate this much-needed reform, and in ten years you will find our main thorougfares well macadamized, smooth as a house floor, when the dairyman and the dairyman's daughter can ride to and from the factory or the town as unconcernedly as in a Pullman palace car, and ambitious scribblers will not get "tumbled" to their theme as unceremoniously as was your humble servant.

DISCUSSION.

Mr. Northrup — I would like to know how much it costs per cubic yard to get that gravel?

Mr. Fargo — Where it is within a mile and a half of the road to be repaired, the figures I gave will apply. We have done some such work in the vicinity of this village, and it can be done for that.

Question — How deep could you make it?

Mr. Fargo — One foot deep.

Question —And how wide?

Mr. Fargo —Twelve feet.

DOES IT PAY TO FEED MILCH COWS GROUND FEED DURING THE PASTURE SEASON?

By HON. HIRAM SMITH, Sheboygan Falls, Wisconsin.

This question will be more seriously asked than positively answered. Soon after this topic was assigned to me, a prominent and very intelligent dairyman said to me, in relation to this subject: "You claim that it does pay them, another man denies it; now how are you going to prove it?" My reply on the spur of the moment was, "prove it the same as you prove anything else." After more mature consideration, I still answer, "prove it the same as you prove anything and everything else."

The question "How are you going to prove it," where one affirms and another denies, presupposes that the proof consists in the preponderance of personal testimony, whereas

questions of philosophy and science are in no way dependent on personal testimony. The earth revolved as majestically before Galileo's time as it does to-day. A telephone wire, had it been stretched from Lake Mills to Milwaukee, would have conveyed a message as distinctly for the first settler as for the last, had the proper conditions existed. All truths of science have always existed. It is only the discovery of them that interest and affect mankind. "Personal testimony" (in the absence of any other) has to be depended upon to support religious dogmas. Witchcraft and pronunciation in the dead languages. You cannot even prove the crime of murder by personal testimony alone. The body of the victim, or traces of it, must be discovered. The facts of dairy science must be settled by a higher tribunal than the opinions of men, by a court, the judges of which are above all bribes and blunders. Although they may not be clothed in judicial ermine, yet their decisions carry greater weight than "Thus saith the law or the Lord." The names of these judges are unpretentious, and it is with the greatest confidence and respect that I announce the worthy trio, the ruthless *churn*, the remorseless *vat*, and the obstinate *scale*. These are the grim umpires that are soon to decide most of the dairy problems that have claimed our attention in the past. A record of the decisions of these judges will eventually settle all questions of breed, and all systems of feeding, two of the knottiest problems that have affected the profit or loss of dairy farming.

We may reasonably expect that that herd of cows that will take a mow of hay and a crib of corn, and produce the greatest number of dollars worth of dairy products, is the most valuable herd without much regard whether there are ten or twelve cows in that herd; and that system of feeding that will take one thousand dollars worth of feed and labor, and produce the greatest amount of net proceeds, is the best system of feeding. Now, while I firmly believe that it richly pays to feed ground feed every day, that a cow gives good milk, yet, I may be unable to convince you that such is the fact, and you may be waiting to see what reasons I can adduce that created such belief. I hope you will not think

me egotistical, if, at this conference meeting, I relate some experiences that led to my present practice of feeding ground feed to all cows giving milk at all seasons of the year. About eight years ago I was keeping fifty cows in the summer on over one hundred acres of pasture (a part of it woods), feeding no ground feed or fodder corn, except to the few cows that came in before May—these were fed a slop made of bran and corn meal, until grass started, after which the cows picked their living in the pasture, until after haying, when they had the run of the meadows, which of course prevented cutting the meadows more than once. This necessitated the sale of ten of the poorest cows in November, as it was with great difficulty that forty cows could be provided for through the winter. Such cows were sold in November, at an average of about twenty dollars each, and had to be replaced in the spring at a cost of about forty dollars each, entailing an annual expense of two hundred dollars to keep up the dairy, and this system of dairying is still pursued by more than three-fourths of the dairymen in this state. I think it is the history of experiments that they do not always result as expected; many are flat failures, and some result far beyond our most sanguine anticipations.

Six years ago I started out with the desire to save a part of the two hundred dollars annually expended in exchanging ten cull cows for ten fresh ones. As a means to this end six pounds of mixed corn meal and bran was fed to each cow from the first of August until the close of the milking season, mainly with a view to increase the value of the cull cows for beef. While it accomplished this result most grandly, it at the same time made it quite difficult to find a cull cow. The addition of six pounds of rich feed to mix with the coarser pasture grass satisfied the appetite and lessened the demand upon the pasture, so that it became necessary to pasture only one-half of the meadows and the other half was cut for hay, which enabled the wintering of forty-five cows instead of forty as heretofore. One decided advantage gained creates a desire for more, and the thought suggested itself if it pays to feed ground feed from the first of August, why will it not pay to feed all the time the cow gives milk,

and, as I could not refute the logic, I adopted the practice and the following year ground feed was continued to each cow giving milk the entire season. This so lessened the demand on the pasture that with the help of three acres fenced off from the pasture, and planted to fodder corn, furnished all the feed the entire herd required, leaving all the meadows to be cut the second time, furnishing sufficient hay so that fifty-five cows were wintered (by the purchase of about twenty-five tons of bran to mix with the corn-meal raised on the farm). At the time of which I am speaking (five years ago), winter dairying presented itself for consideration with such manifest advantages that the change was made as soon as possible, and continued to the present time. Not the entire dairy, but not less than three quarters of the cows came in to milk in the fall, becoming fully convinced that a dairy farm would feed more cows where winter dairying was practiced than the same farm would with summer dairying when the common method was practiced of keeping cows exclusively on pasture grass in summer and mainly on hay in the winter.

This truth became fully established in my own mind, from the fact that on the same farm of 200 acres, that formerly, with difficulty, would only keep fifty cows in summer and forty in winter, does now keep an average of fifty-seven cows the whole year by the additional purchase of about $300 to $500 worth of oil meal and bran to mix with the produce of the farm. In the presence of so many professors of agriculture, it would not become me to attempt a scientific explanation why pasture grass and hay are not a sufficient food for milch cows or fattening animals. And yet I will venture to express the thought that the proper mixture of food for milch cows bears about the same relation to best results, as the proper mixture of certain substances does to making a good grout wall. Let the gravel represent the coarser feed, such as pasture grass, hay, straw or corn stalks, containing mainly what our professors call carb-hydrates, and let the lime represent the richer feed, such as bran, oil meal, and ground grain, rich in albuminoids.

Now, every man knows that too much gravel in proportion

to the lime, greatly weakens the wall, and too much lime in proportion to the gravel equally damages the wall and the only way to get the full value of the lime and the gravel, is to use the right proportions. May it not be equally true, that the only way to get the full value of the grass, the hay, and the corn stalks, is to properly mix with them a certain amount of ground grain, oil meal or bran. The definite proportions of such mixture is now one of the grave questions before many of the agricultural experimental stations in the several states. It is a question requiring large expense, great labor, careful attention and research. I am glad to know that at the Wisconsin Agricultural Experiment Station at Madison, experiments are now going on to solve this important question, under the superintendence of Professors Henry and and Armsby, two competent and enthusiastic experimenters, full of zeal and determination, that have shown more enthusiasm than any five farmers in the state. These professors have been sustained by the Board of University Regents, and by what is of much greater satisfaction, liberally and earnestly encouraged by our worthy Governor. I believe it is a rule among scientific men to keep silent until they can speak positively. While this is a very good rule, yet it takes time, and during their silence individual dairymen may, with advantage, roughly experiment by assuming that a certain number of pounds of rich food should always accompany the coarser feed. I may have lost a good deal of money because I did not mix ten pounds of ground feed instead of six for the last few years.

But I have been entirely satisfied with my experiments in feeding ground feed the entire season, and by the adoption of winter dairying, for it has greatly increased the revenue and augmented the net proceeds in a still greater ratio. Eight years ago with a summer dairy of fifty cows in summer, and forty in winter, kept on pasture and hay mainly, yielded a gross revenue of about $1,800 to $1,900, while the same farm now, with an average of fifty-seven cows a year, fed ground feed and put to winter dairying, yields a larger amount of net proceeds than the gross receipts eight years ago. Yet I do not attribute the entire gain to

feeding ground feed, or to winter dairying alone, but the two combined double the profit without increasing the acres.

It would only be a humiliation to state the low average per cow of butter obtained. While there are scores of paragraphs in all dairy papers, telling of single cows giving 98 pounds and one ounce of butter in thirty days, or of others making 780 pounds of butter in a year from one cow, there never has been a "Mercedes," or an "Aggie" among my cows, nor a "Jay Eye See" or "Maud S." among my horses. I have never devoted much energy to see how much butter could be obtained from one cow, but my whole energies have been directed to see how much butter could be obtained on an average, per acre, on the whole farm, and the result has been the past year 55½ pounds of butter and 100 pounds of cheese per acre, on the 200 acres, that sold for $4,272. This is not large, but uniform.

I do not claim the foregoing statements are proof positive of the proposition, that it does "pay to feed ground feed during the pasture season," but only to point out the way by which you can prove to yourselves the truth or error of the proposition. Evidence that comes to us through our own personal exertions is more valued and longer retained than by any other means. Agricultural experiment stations are not so much designed to settle absolutely all questions that farmers are interested to know, as it is to point out the method by which each one can convince himself. It is the privilege and interest of any farmer to criticise any statement that is absurd or appears absurd, emanating from any of these stations. They do not intend to teach error, yet they are only men, and may hug a tradition as closely as a weather prophet does the signs in the changes of the moon, where there are three misses to one hit, but never weakens his confidence in the least. We, as individual farmers, must insist on the why and the wherefore.

One year ago I. P. Roberts, professor of agriculture of Cornell University, N. Y., gave at our annual dairy convention, in Elkhorn, a very interesting and instructive address,

for which I shall always feel grateful. But he made a recommendation, if correctly reported, at the New York State Dairymen's Association, held in Ogdensburg, N. Y., December 26th, last. His recommendation to dairymen was "to raise your own cows and sell them when seven or eight years old." I think this advice will shock most practical dairymen, and they will be inclined to ask the Professor, "Why should we be to the trouble and expense of raising our cows and then sell them just as they have reached their greatest value?" In the light of my past experience I could not afford to follow the advice for less than $1,000 a year, and yet I may be wrong and the Professor right, but I shall wait another year for the "reason why." I am no stranger to the criticisms usually bestowed upon a paper of this character in a Wisconsin Dairymen's Association, and I do not expect or desire to escape on this occasion. My main object has been to awaken thought and encourage experiments, so as to make labor more remunerative, capital more productive, and thereby the state enriched.

DISCUSSION.

Mr. Babbitt — We cannot so well calculate it by the acre, Mr. Smith, but we can tell something by the cow.

Mr. Smith — Fifty-five and one half pounds to the acre and fifty-seven cows isn't a very big sum but it would average 195 pounds of butter per cow besides the cheese.

Mr. Faville — Was this butter of yours made at home or at the factory?

Mr. Smith — It was made at home. There was about twice the amount of cheese.

Mr. Beach — Were you ashamed of those results?

Mr. Smith — Not very much; it was the best I could do.

Mr. Beach — Were you proud of it?

Mr. Smith — Not very much; I expect to double that within the next two years. I am not doing as well as I know how, because I almost know that I ought not to feed much pasture. I have made it a religious duty to plow up four

acres a year until it is all gone. You will run no risk in plowing up pasture, and planting fodder corn.

Question — Under what process do you raise your cream?

Mr. Smith — I submerge it under ice water. Every day in the year we churn.

Mr. Babbitt — What amount of ice would you require for 100 pounds of milk in the summer.

Mr. Smith — Well, I can't tell; it ain't worth telling. Ice is almost as cheap as air. I have got bigger fish to catch than to weigh ice. It doesn't take very much. For a dairy of 50 cows it would take about a bushel basket full, pounded, twice a day. It makes a positive certainty, there is no luck about it. No thunder storm or anything can affect it in the least. It is the same in dog days as it was when the thermometer was 27 below zero. It makes no difference about the weather, and the product is always the same every day in the year. If you only cool your milk rapidly enough, it throws the cream all up on top of the milk and you can draw out the milk and you have the cream left, all there is in the milk, all that is capable of being separated. Anything more is apt to have too much caseine in it, and it is a matter, perhaps, of a little more butter, but not better butter. One thing we know, that good feed makes more milk. The cow largely determines the quality of the milk, but if you get more good milk by good feed that helps pay the expenses. Another thing farmers have not taken into account. By feeding this rich food, bran, oil meal and the like would get more manurial value than the bran costs, provided we had to buy commercial fertilizers, containing the same material. Prof. Arnold says that for every ton of bran fed out upon the farm properly, the farm received $14 worth of fertilizers, if he had to go and buy the commercial fertilizers. Therefore, we get twice paid for all this rich feed. Once in the milk, and once in manurial value, as good as money in the bank.

Mr. Babbitt — Does your advice to plow up the pastures apply to all farms in the state of Wisconsin? Suppose a man has a remarkably fine pasture, bottom land, equal to the fine grass land of Kentucky?

Mr. Hiram Smith — Bottom land isn't a very high order of pasture.

Mr. Babbitt — I represent a section of country, down in Rock county, where I guarantee that two acres will pasture three cows.

Mr. H. Smith — Well, you ought to be a richer man than you are.

Mr. T. D. Curtis — I think that something should be said in regard to the remark of Mr. Smith in reference to Prof. I. F. Roberts' method of dairying. He did not tell you that Prof. Roberts carries out his system with one particular breed of cattle, and he probably would not recommend it with any other breed. He has what you in the west call Holsteins, and he is practicing essentially the system practiced in Holland. There their heifers come in at two years old; they milk them until the eighth year, when they fat them for beef; they claim they are worth as much for beef as for milking; he said he had practiced various systems until he went to Holland, and observed the system practiced there, and he is satisfied he never knew how to get the most money out of his cows.

At the end of the eighth year, he fats the cow and drives her to the butcher and he has a fresh heifer two years old coming in every year to take her place.

Mr. Babbitt — While we are on the subject of Holstein cattle, I would like to read an article I found in an agricultural paper, which bears on this question, and the proper way to feed cattle. I will read the article:

Prof. Henry — There is no need of the gentleman going further until an error is corrected. A person is chagrined sometimes in seeing what he has writteu for the paper badly mutilated.

I found that in this article the editor has left out my decimal points all the way through. I am instructed by the committee who have charge of this station to carry on such experiments as they think would be of value to our farmers. All over this state I have found farmers allowing the calves to run with the cows in order to raise the calves, and I have found a great many farmers who say they cannot

afford to raise calves any other way. We conducted the experiments to find out what it would cost to raise calves in different ways. These are merely experiments which the state can afford to make, to enlighten the farmers, as to the wisest plan for them to pursue.

MILK AND THE MANAGEMENT OF FACTORIES.

By J. B. HARRIS, Antwerp, New York.

In preparing an article to be read on this occasion, I have not succeeded in selecting words quite satisfactory in which to express my high appreciation of the honor you have conferred upon me by inviting me to appear in your presence, and be listened to by the united dairymen of one of the foremost agricultural states of the American Union. A variety of conflicting emotions as aroused within me on receipt of your note, among which a fear of my inability to discharge the duty it called upon me to perform was not the least. Second to this was the anticipated pleasure of meeting an assemblage of co-laborers in one of the grandest industries of the age, assembled from all parts of this great agricultural state. I was conscious also of a lurking apprehension that, perhaps, under the pretense of having me come here to tell "what I know about farming," you were decoying me into your midst for the purpose of inflicting condign punishment for what I wrote concerning your dairymen's exhibition, held at Milwaukee, in December, 1882, which was published quite generally in the dairy reports of Canada some time after.

In geographical extent the industry which we represent embraces the state of Vermont, New York, a portion of Pennsylvania, the northern part of Ohio, the southern portion of the Dominion of Canada, Michigan, a part of Indiana, a large portion of Illinois, Wisconsin, Iowa and Minnesota. It will be thus seen that but a small belt of country, comparatively, of North America is devoted to the production of butter and cheese, and it would seem that cli-

matic influences and other circumstances in the physical geography of the country will ever remain as barriers against a more widespread distribution of the industry. But while our area is not likely to be enlarged to any very considerable extent, our capacity for growth is nevertheless unlimited. By attention to the one fact of herd improvement, dimensions at least ten times as great as those we have at present reached may be attained and the fact that there is a strong inclination on the part of dairymen throughout the whole belt to thus increase our national wealth is one which every true friend of the industry will observe with pleasure. As another very important factor in the elements of our growth, inter-communication by railroad is not to be overestimated. For example, it was not until recently that the dairymen of central New York were made to feel the full weight of western competition. A dozen years since and there was no butter like Orange county pails, and no cheese like that from the hills of Herkimer.

To-day Wisconsin butter saunters about the Elgin market at high forty, while Orange county can hardly obtain a passing glance in New York at thirty-five. In London Herkimer occupies a back seat, or a place in the gallery, while Canada is invited to a place on the stage beside the very best English Cheddar. The possibility of attaining such a result has stimulated the men of the west and the north to herculean efforts in pushing forward to a high state of cultivation the dairy business of their respective localities. The fact that the dairymen of Lake Mills can place their products upon the wharfs of New York at the same or less by the car-load than can the men of Jefferson county, New York, has served to bring these two widely separated localities into direct rivalry. Such facts are of vast importance as underlying influences to-day, inspiring all sections of the great dairy belt we have mapped out.

Inter communication has overcome all the disparaging circumstances of locality, and we are all standing on a common plane of prospects and possibilities.

The first point to be considered in the line of thought which it is my intention during the time alloted me briefly to consider, is

THE COW.

It is not our purpose on this occasion to enter into a lengthy discussion on the character and quality of any particular breed of cows.

Everybody knows that the Jersey cow beats the world in the quality of her milk. The fact is equally generally known that the Holstein takes precedence in point of quantity, but who knows the capabilities of our native cow, and who will ever know until she is brought forward and asked in a legitimate way to give a reason for the faith that is in her. At present while the breeders are filling the country with illustrated catalogues, in which the beauties of their foreign cattle are set forth in an attractive manner, she has been suffered to languish behind the straw stack, unhonored, unfed and unknown. The island of Jersey, a mere speck upon the map of the earth's surface, is peculiarly favored by nature for the purpose of grazing. It has a mild, salubrious climate, it is continually fanned by warm ocean breezes, whose wings are freighted with the spray from the sea, and as a consequence its grasses are always fresh and succulent; its isolated situation has necessitated for centuries a system of inbreeding, and to these two circumstances Jersey cattle are indebted for the rank they hold in the bovine race.

There is no doubt in my mind that when our native cows have been for the same length of time subject to the same care and fed in the same manner they will be the peers of any race of cattle on earth for dairy purposes. At present the native cow is the fountain head of the great milk supply of this country and this being the case it would seem that she is justly entitled to our best efforts in the items of food and care. The attempts that are now being made at improvement by the importation of foreign cattle are well enough and will doubtless effect something in the long run, but for present purposes there is a much cheaper and more direct method of progress. A careful selection of native cows, followed by a liberal and judicious method of feeding and care, if adopted simultaneously and at once in all parts of the dairy community, would doubtless produce a result which

would astonish the most sanguine and expectant among us. Were one to examine closely five hundred or a thousand dairies in any section of the country, he would be filled with amazement at the immense waste of energy and loss of value to the country occasioned by the negligence of dairymen in point of selection.

As no river can be pure the springs of which are poisoned and corrupted, so our milk supply will never be what it should be, until the springs by which it is fed are in a healthful and thriving condition, and this will never be the case until the cows of this country are furnished with a bountiful supply of rich, wholesome food, and living, pure water.

The statement has been made and repeated so often, that it would seem like waste of time to reiterate it here, that it pays to feed and take care of a dairy, and yet a majority of the dairymen of the country do not seem to understand it. How many dairymen will you find in an area of fifty square miles in any section of the country, who commence with the day on which the herd are turned out to grass, and see to it that they are furnished with an uninterrupted and abundant supply of green, succulent, milk, producing food, until they are returned to winter quarters. Who, when they are safely housed in clean, well ventilated, warm stables, make it a point that until the return of spring, there shall be no day when a liberal allowance of first-class, green cut, well cured hay, are not forthcoming.

When I consented that a part of my subject on this occasion should be milk, I did so at the request of a prominent member of your association, and not because I considered myself competent to discuss it scientifically or thought myself possessed of any facts calculated to throw any additional light upon its chemical peculiarities; and so right here without introduction or prelude, I reach the first point I desire to make in treating upon the subject of milk, viz.: that improper and insufficient food and water is one of our most prolific sources of bad milk.

During the last four years my business has taken me into various, and somewhat widely separated districts of the

province of Ontario, and in these, my duty as cheese instructor took me to about four hundred factories.

With the most of this territory I was a stranger, but in the discharge of my duty as milk inspector, I was able in almost every instance to state some facts concerning the physical features of the district. For instance, I could detect the proximity of swamps and low marshy lands with unerring certainty. Their presence was discoverable in the milk brought to the factories in a large number of instances. This I regard as a very significant fact. The presence of drought and barren and unproductive pastures had driven the herds to the swales and marshes, and the consequence was tainted, gassy milk and floating curds.

With the agricultural features of your state I am wholly unacquainted, but I dare say that tainted milk and gassy curds are things not wholly unknown to your cheese-makers. And I venture the assertion without fear of successful contradiction, that in every district where these prevail swaley pastures and bad water will be found to be the cause. I do not desire to be understood as stating that this is the sole cause of tainted, gassy milk, but I *do* say that where dairies are fed upon marsh grass, and are allowed to drink dead and stagnant water, that floating curds is inevitable. Write this fact in your diaries, if you have not already written it there, and upon your hearts too, if you cannot be made to remember it otherwise, and hereafter see to it that you provide yourselves with a sufficiency of green, nutritious food (say, for instance, peas and oats, half-and-half, or sowed corn, with which to bridge over your periods of drought), and when the supply of good water in your pastures fails, betake yourselves immediately to the pump, or to your next best resource, but do not under *any* circumstances compel your famishing animals to quench their thirst at the frog ponds.

I come now to the second great cause of bad milk and to the most aggravating and exasperating part of my subject. It is with difficulty that I am enabled to speak with calmness of the inexcusable vice of uncleanliness, so prevalent among our dairymen, especially when I consider the extent

of the mischief it inflicts upon the unhappy cheese-maker of this devoted land.

From one extremity of the dairy belt to the other there is not an insignificant neighborhood or hamlet that has not its sloven; aye, two, three or four of them, if you please, and it is a lamentable fact that in spite of the best efforts of our most skillful cheese-makers these few in too many instances put disgrace upon the whole dairying community in which they reside. An unwashed pail or can often breeds a pestilence in a vat of milk which hours of patient industry on the part of the maker will be ineffectual to kill out, and thus the floors of the commission house are piled high with unsalable and inferior products. It is difficult to determine just how we are to reach these pests. To admonish them through the columns of the agricultural journals long since proved a failure. Newspapers of any sort are not to be found on their premises and I have more than once thought that perhaps it might be a good plan to attempt to reach them through the medium of some of our patent medicine almanacs. Ignorance, however, cannot always be pleaded as an excuse. There are some for whom there is no remedy but expulsion from the ranks of dairymen.

There are men who have devoted much time and ingenuity to the investigation and study of milk. With its component parts and the proportions in which they are mingled, almost everybody is familiar. It has been analyzed and experimented upon by the best scholars of the age, and yet, we believe, no one has been able to point out any single item in its composition that gives it the peculiar power it has of absorbing taint from the atmosphere, or any other deleterious substance with which it comes in contact.

And were the source of this power as well known as its other chemical features, we doubt whether such knowledge would be of any service in bringing about a reformation among dairymen in the manner of handling their milk.

There is one thing, however, we do know, and that is when milk is drawn from the udders of healthy, well conditioned cows into receptacles *absolutely clean*, and thoroughly exposed to the pure, heaven born breezes, until its animal heat

is eliminated, there can be no reasonable excuse for the man who with such material fails to make as good cheese as can be made in America.

Cheese-makers, however, are rarely blessed with such an article. At most factories in this country, when the last installments have been received prior to the commencement of the process of manufacture, the vats contain a material which does not come up to the standard we have given. I have been more than once extremely vexed when after the receipt of almost the entire batch of milk at a factory, all of which I had found in excellent condition, and feelings of joy were beginning to kindle within me in anticipation of beholding one of the rarest of spectacles, namely, my vats full of perfect milk, when, alas, perhaps the last patron would arrive with his mess sufficiently tainted to contaminate an entire vat; and again, as on many previous occasions, I would be compelled to sit up with a sick patient until a late hour.

We should but very imperfectly discharge our duty to the subject we have in hand were we to leave the impression that causes which have thus far prevented us from accomplishing all that we have desired in the way of cheese making are wholly with the milk producers. Indeed, we have known instances where we thought they were charged with more than their percentage of the blame. It is too often the case that negligent and unskillful makers seek to conceal the results of their ignorance and laziness with manufactured charges against the patron.

We have known makers as slovenly as any creature who ever lived to polute the name of dairymen. A thousand circumstances in the process of cheese-making may occur quite as fatal to flavor as tainted milk. A cheese may be never so well made, perfect in point of texture, color and flavor, its curing ingredients in accurate balance which if put to cure in a hot, damp, ill-ventilated or cold curing-room will in a short time be quite spoiled. A curing room located immediately above the make room and so constructed as to receive the fumes and bad odors generated below is quite as

fatal to the reputation of the factory as swamps and frog ponds.

Bad rennet, in my estimation, is a factor of no insignificant proportions in the sum total of the causes which have served to bring disgrace upon the cheese of America. From one end of the cheese belt to the other there may be found any number of ignoramuses who will persist in brewing the detestable compound called whey rennet—a subject sown thick with the seeds of decomposition and decay, and which, if persistently used, will bring discredit upon the best neighborhood of dairymen to be found in the world.

It is impossible to enumerate all the means by which cheese-makers may do themselves, their patrons and the world injury. From the very first step in the routine of his duties until his products are taken from the shelves by the purchaser, his pathway is surrounded with pitfalls, where a single misstep will prove fatal to the possibility of his turning out a first-class article.

Too much or too little heat, too much or too little rennet, a want of care in cutting, in scalding, in drawing the whey, in stirring, and if we are cheddaring, in matting and grinding, and so on in airing, salting, pressing and curing, any deviation from a line perfectly distinguishable by an experienced judgment which marks the boundaries between good and bad, will tell at the end when the work of the season is footed up and the result divided.

Nature has been called a kind mother, but when she makes laws, they are to be obeyed, and there is no dispensing or pardoning power to nullify or set aside their operation. One of her statutes provides that a given quantity of pure milk will make a given quantity of good cheese, and to this rule there are no exceptions. That portion of milk which nature has designed for whey will be whey whether you allow it to remain in your cheese or feed it to your hogs. Tastes differ, but the majority of mankind will doubtless prefer the latter method. An unwise ambition on the part of some cheese makers to inflate the dividends tempts them sometimes to try and overleap the barriers which nature has set up in the matter of yield. The penalty of disobedience,

however, follows as surely as night follows the day, and will be seen on the floors of some commission house in a lot of unsightly concave disks of premature decay.

When good milk is properly made up there will still be left in the product about 33⅓ per cent. of moisture, and *Nature* says, "if you vary this by so much as 5 per cent. you shall be punished in one of two ways, I will destroy the result of your labors by making your cheese hard, dry and unpalatable, or by visiting it speedily with decomposition and rottenness, but if you observe my statutes and thoroughly separate the elements which I have combined, giving the whey to the swine and reserving all the caseine, butter and mineral matter as food for my favorite children, the sons of men, then thou shalt be happy and wax wealthy, but if you continue to love more whey in your cheese than is lawful, I will cause the remorseless and vindictive purchaser to sue thee at the law and mulct thee in heavy damages." Out of the mass of regulations which nature has made to govern cheese-making, many systems have been codified, of which there are two about which we propose to offer a few suggestions, and these are what is known as the American and English cheddar systems. The distinction between these two methods as used in this country consists chiefly in matting and grinding the curd, a process which we claim secures in the cheddar system a more uniform and better texture than can be obtained by the American methed.

I am well aware of the fact that up to this date the cheddar system has failed to attain any degree of popularity in the west, but being a cheddarist from conviction, and as the result of considerable experience in both systems, I cannot refrain from stating a few reasons why, in my opinion, the cheddar method ought to be received with more favor by the dairymen of this section.

First, because by that system we are able to use the inferior character of milk so prevalent among us, to better advantage, experience having proved that in cheddaring, we are enabled to eliminate the deleterious gasses and objectionable odors almost entirely, and it is on this account that it seemed to me quite appropriate to say something of these

two systems in a paper devoted to milk and management of factories.

Second, contrary to what some have supposed, it is a *fact* that less skill is required.

The ordinary maker in cheddar system is able to produce a more uniform texture than the most skillful operator can possibly effect by the American.

Third, a glance at the quotations from New York, London or Liverpool markets, will, at any time, disclose to your view an argument more potent to convince than any words of mine can possibly be.

The people of the west have a passion for soft, moist cheese and, I think, have an idea that the cheddar system cannot produce these qualities. This I know by experience to be a mistake. As soft cheese can be made by the cheddar as by any other system. And I would here remark that so long as the west require such cheese and will take all or nearly all you make at market rates, securing to you a profit as great as you would receive from foreign purchasers, why of course make that kind. The west, however, is remarkable for its expanding qualities and the time is not far off, indeed we believe it already at hand, when the cheese-makers of this state will have to consult foreign tastes as well as their own and when *keeping* qualities will have to be placed among the attributes of *good* cheese in which particulars as well as flavor your cheese is at present defective. Moreover, I cannot be persuaded that the tastes of your people demand such cheese as those which constituted the great bulk of the exhibition I attended at Milwaukee in December, 1882. *Yield*, at the expense of every other consideration, was the motto quite too conspicuous on that occasion. Would it not be well for the makers of this state to ask themselves this question: Can we not double or treble the demand by improving the texture and flavor of our cheese?

The result of my experience as cheese instructor and milk inspector in the Province of Ontario, running over a period of about four years, beginning with the year 1880, impels me to say something in favor of the system adopted by the Canadians. I knew something of Canadian cheese prior

to that date and at present I am quite familiar with it. I believe my statement will be justified by the fact when I state that since the adoption of the instruction system their cheese as a whole has intrinsically improved twenty-five per cent. — indeed I know many factories in that country which have improved fifty per cent. We Americans think we know about all there is to be known, and more particularly is this true of those who attend our legislatures to make laws for us. The members of the Ontario legislature, however, have in one particular at least furnished us with an example of wisdom which Americans would do well to follow. For the last eight or ten years they have appropriated $3,000 to the dairy associations of that province, to be used by them in such manner as they see fit, for the benefit of their dairying interests. Money was never more wisely appropriated. Let the dairymen of the United States look to it lest in the course of a few years they find themselves straggling in the rear of their northern neighbors on the march to improvement in cheese-making.

If the legislatures of our dairy states would follow the example of the Canadians in this matter and adopt a system of cheese instruction and milk inspection there can be no doubt that the result would be of vast importance in the increase of their internal wealth. In the particular of milk inspection alone if it was understood by the dairymen of this or any other state that there was a milk inspector on the road by whom they were at any time liable to be confronted, the *slovens* would be quite likely to put their house in order against the day and hour of his appearance and the *skimmers* and *strippers* would take heed least he weigh them in the balance and find them wanting. Indeed we know that such is the case in Canada and the effect is quite salutary and healthful to the business.

But my paper has already reached dimensions much larger than I had at first intended, and there still remain volumes to be written upon the subject that we have imperfectly considered, and still there is nothing new under the sun.

I have labored much mentally and physically at cheese making, and as yet have been able to reach but the one con-

clusion, which it would seem might be reached by a mere apprentice, and that is, when we have restocked our dairies with first-class cows, and supply them with an abundance of food and pure water, house them in clean, warm, well ventilated stables, and learn to be *clean* at the farm as well as at the factory, we shall be able to excel in cheese making, as well as in many other occupations in which we, as Americans engage.

The world is full of books and essays upon this subject, which, when carefully examined, will be found to contain but the above truths as the substance of all their wisdom.

Imperfection is stamped upon everything emanating from human hands, and when we have done the best we can in every department of the business, we shall still be able doubtless to discover many things in which we have come short of what under other circumstances we might be able to effect. The reports which are brought to us by those who have visited the best cheese-producing districts of the world, would lead us to the conclusion that the difference which seems most to characterize their system from ours consists in the one point of *cleanliness*. The balance in their favor must be credited to climate and pasturage. Let us hope that the time is not far distant when American enterprise, pluck and intelligence will have left only the latter circumstance to distinguish English from American cheese, and when the product of our factories will be as good as any in the world.

DISCUSSION.

Mr. T. D. Curtis—I would like to make a few remarks on the paper of Prof. Harris. In his able paper on cheese making he has given you a vast fund of information. Within the last few years, there are one or two points which have undergone scientific investigation. You have all heard a great deal about sweet curd and sour curd cheese. Prof. Arnold and some other scientific men have made some fifty or sixty experiments with cheese by using pepsine, and they say that the acid in the cheese was the hindrance to diges-

tion. First class cheese, properly made, nearly all digest it in the pepsine. But of the factory cheese they found not much over 12 or 15 per cent. that was digestible. Prof. Arnold went to work to discover some method of avoiding this acid. He had not at that time ascertained the real effect of the acid on the cheese, but he discovered that lactic acid dissolves the phosphates in the milk. These are phosphates of lime, of iron, of magnesia and of soda. The principal is the phosphate of lime. This acid cuts those phosphates, and as a result, if the acid is developed before the whey is expelled, these phosphates go out with the whey, and that renders the cheese indigestible. He further ascertained that the digestibility of cheese depended very much upon the presence of these mineral phosphates. Now, the idea with the cheese makers should be to get the rennet action ahead of the acid. Many believe that cheese could be made without the acid, which is an absurdity. You cannot get rid of the lactic acid at some stage, and the idea should be to develop the rennet action and get out the whey, before the lactic acid is developed. If you do that, I think it don't make any difference whether the further curing of the curd is in the whey or out of it.

DAIRY EXPERIMENTS.

By PROF. W. A. HENRY, State University.

Our experimental station, as such, began its existence October 1st. Money was given to the University last winter out of which we were to establish an experimental station. We have started the station, and we have secured in this work Prof. H. B. Armsby, who was to have been here, but was prevented by sickness. I am sure he would have pleased you. He has studied in the first schools in America, also in Germany. We have secured him for our work here, and he is carrying on experiments at the farm. We are taking the products of the farm, and allowing them to be fed to the animals, and finding out what it costs in that way; of course it takes time. The chemical experiments alone take some

six months. These experiments have never before been tried in this country.

We have begun a system of tile draining that has attracted considerable attention from visitors. Upon almost every farm in the state there are smaller or larger pieces of land which the farmers would like to drain. In this vicinity tile factories are near, and the question of drainage is attracting a good deal of interest. At the experimental farm, in putting in our drainage, we do it so as to show people the drains after they are put down. Every little distance we have a cover, or what we call a well, where you can look down and see the water flowing. And it shows we are carrying off a great amount of water. We have a set of tile draining tools, which are very interesting, some of them imported. We try usually to lay the tiles four feet deep. Of course, the deeper we put them, the further we will draw the water from both sides. A tile four feet deep will drain about 30 feet on each side of it perfectly. The tile is two inches in diameter, that is, with a bore of two inches. That will carry all the water from two or three acres of land, that would naturally fall upon it.

We have found out some things that are interesting in the way of food. One of the foods is cotton seed meal. There are samples being passed about the audience and I ask each of you to taste it, and notice the flavor of it. You know that after cotton is taken from the seed, there is a black looking seed comes with a hard shell. By means of machinery that hard shell is taken from the cotton seed, and the germ, that which would have grown into the cotton plant is, by means of machinery, ground, and the oil is expressed from it. Cotton seed meal resembles oil meal in its flavor. In the oil meal there are little black specks; those remain of the covering. That cotton seed meal cost in Chicago $28 a ton. It contains in one hundred pounds about forty pounds of cheese-making food. The corn-meal contains about eight pounds. It is the cheapest feed that a man can give to his stock. Flax seed meal is $20, or $18 if you return the sacks.

Another food that we found was malt sprouts. I do not mean brewer's grain, but an entirely different product. In

malting the barley, there is a little germ about half an inch long; the grain is run over a riddle, and this little germ drops off. Where they manufacture large quantities of malt, this germ drops off in great quantities, and Orange county farmers send clear to Milwaukee, and pay the freights, to get those malt sprouts. We have been using them at the experimental farm, with excellent results. Chemically, they are twice as rich as bran. If you wish to feed milk-producing food, the cotton seed meal is the richest you can feed. And the malt sprouts come next; in Germany, the farmer carries with him his little book of tables, as you carry your diary or note book. When he is buying feed, he consults his table — his standard is hay. He says oil meal is so many hay-worths. In this country, we would naturally fall to corn-meal.

I want you all to come and see what we are doing; we want to make experiments that will be of use to the people, to find out if we can, a new way or a better way to do things, and to try it as far as possible. We are trying to find out the value of skim milk; we find that for feeding pigs it is worth not less than 25 cents a hundred, when corn is worth 50 cents a bushel.

DISCUSSION.

Professor Henry — I understand Mr. Smith is engaged in making skim milk cheese, I would like to ask Mr. Smith what is the value of skim milk for cheese manufacture?

Mr. Hiram Smith — It is worth about an average of thirty-five cents per hundred pounds, to make into skim cheese, exclusive of the labor; the labor goes into the general farm work, and making of the butter and cheese. We don't figure on these branches, but on the labor on the farm. It is worth about thirty-five cents a hundred to make into skim cheese to sell to those that want it. There is just as good a market, just as legitimate a market for skim cheese as full milk cheese. And it is folly for farmers to take their milk to the factories and make cheese, and get about ninety-two to ninety-three cents per hundred, while if they manu-

facture it into butter, they get more than that for the butter and enough to make up a dollar and forty cents per hundred for the milk.

SOME OF THE NEGLECTED OPPORTUNITIES OF DAIRYMEN.

By J. A. SMITH, Cedarburg, Wis.

So long as it is true that the average yield per cow, in milk that is taken to the factories is less rather than more than three thousand pounds per season, and so long as it is true that there are dairymen whose cows yield from four thousand to five thousand pounds each per season, it will be easy to make it appear that there are neglected opportunities on the part of most dairymen, which, if availed, would greatly augment the annual yield, and consequently make larger the profits.

One of the fundamental truths in stock-raising, and in profitable milk production, is, that it takes a given amount of food to support the animal's existence in such a way that it will simply maintain its status; and that growth in flesh or yield in milk, above an evenly balanced existence, must come from the food given to cause an increase of weight in flesh, fat, or milk products. Hence, all the profit must come from that excess, and is large or small just in proportion as the animal is capacitated to utilize and digest it, within the bounds of healthy, judicious feeding. So that farmer was sound who, when he fed up to the very verge of that limit, and was told by a skeptic that he did not believe high feeding paid, replied he was only sorry that his cows could not healthfully digest more. The capital invested in the cows, in the soil, in the barns and stables, in the care and time devoted to milking and waiting on them, is very nearly the same, whether they produce 3,000 pounds each per season, or 5,000 pounds. At first it may be granted that if a farm is stocked to its capacity in feeding a herd of 3,000-pound cows, that some outside food must be imported from other soil to enable the same herd to yield 5,000 pounds each. But the

enriching of the manure through high feeding, and the consequent enriching of the land, will soon obviate the necessity of the importation of outside food. If this is not true, I admit that my opinion is based on false premises; and that the opponents of high feeding have the best of the argument, as well as a majority of the disciples, and a majority of the thinly-covered bones of the so-called dairy stock of the state. In support of the idea that there is an added value to the manure through high feeding, it may be stated that there are many places in the eastern states in which in estimating the earnings of the cow each year, that the milk, or butter and cheese, the calf and the pork are not only counted, but $10 per well-fed cow is added for the increased value she has put upon the soil, deposited in a bank that never breaks. What is true of the old east is fast becoming true of the soil of the older settled portions of Wisconsin. To augment the productive capacity of a given number of acres that will now support in semi-starvation a given number of cows, to a point of fertility that will add 2,000 pounds of milk per annum to each cow, milk worth, say $20, is to have the funds in hand to pay the sum of $400 as interest on the added value to an ordinary farm of eighty acres that is made to well keep twenty cows, instead of keeping them in the usual way. Four hundred dollars will pay 5 per cent. interest, per annum, on an added value of $100 per acre to the farm. This can be done without adding a cow to the herd. All done by a simple expansion, through better use of the capital already in the hands of many who work on the semi-starvation plan.

The very first neglected opportunity of the mass of farmers is, that they do not see, and do not make much effort to see, that there is a better way than to plow, and plow, and plow, seldom seed down, keep a few head of spindling cows, mostly to give birth to spindling calves, that by a stretch of the imagination may be called cows when five or six years old; sell such cows, instead of selling butter and cheese to buy their clothes and groceries, sell hay to buy their whisky, and their farms by the bushel to pay for them if in debt, or to add some im-

provements in buildings if they are not. It would be useless to further describe them — they are not here, as they never go to dairy conventions, or even to county agricultural meetings or annual fairs; and so any rebuke of their methods would not reach their ears. Let them pass; the chief regret for their fate being that their name is legion, and that they seem to be beyond the reach of mercy.

The next class, and the one for which this association has much missionary work to do, is the one that has shown some signs of progress; that is still in unbelief of the radical truth, but yet seems to be uttering the invocation of doubting Thomas, of old. The most marked neglect of opportunity by this class is not in accepting the truth alluded to previously, that it pays to transform 2,500 and 3,000-pound cows into 4,000 and 5,000-pound ones, through the process of more generous, and better paying feeding. Many of this class know that a paying flow of milk comes only from food judiciously given; but who have not yet learned the programme by which such food can be ever on hand, or do not possess the intelligent enterprise to put forth the means to obtain it. As this is, largely, the hopeful class, we may well pray for their growth in dairy grace, in the knowledge of the truth, as it is exemplified in the reliable experience of the few saints in the business, who know how to make good common cows earn $50 and $60, and more, each, per annum.

Observation and my factory books for a series of years, teach that persons of this class start out well in the spring; and have cows that maintain the flowing stream for a while, so that the four-and-five-thousand pound yield would be obtained if they did not suffer it to come to grief, by not providing means to hedge against the immediate and consequent influences of the first serious check in the supply of palatable and easily digested food in the pastures. This is the great fatality of the whole business — a tolerated calamity, as we may call it, for it induces a lapse that cannot afterward be made good, the same season. It is to the paying yield of the cow what an untimely frost is to an unmatured corn crop. It is my firm belief that this is the great sin of the medium good dairyman of this and other dairy

states — the cause of the low average earnings of the cows; the reason why so many dairymen work so cheaply; the promoter of infidelity in the mind of the dairyman as to whether he has not made a mistake in entering upon the dairy business at all; in short, it is the chief "neglected opportunity" to get upon the highway to success. That opportunity, when interpreted, means that when the chief available supply of food fails or lessens, or becomes unpalatable or indigestible, that a substitute previously provided should be immediately supplied. Let the substitute be early rye, clover, oats, millet, corn, or other fodder, grown for the purpose, according to the time in the season in which the pressing need comes; and if neither are in available time, then let the substitute take the form of ground grain in larger measures than should be given to every cow in milk, every day, even when feeding on the flushest and choicest of grasses. That is the way the five thousand-pound to the cow dairymen do; and they win in doing it. But the blighted class look upon it as they would on an accidental fire, an untimely death, an early frost, an unavertable calamity; a kind of Providential dispensation, the superstitious regard it. The latter class betake themselves to prayer for rain, instead of taking the scoop-shovel to the provender, and distributing it to their famishing herds. Troops of them don't know that they are suffering any but present loss in weight, and delude themselves into thinking a blessed rain will restore their cows to the position they fell from. They don't seem to comprehend that they thus lose their grip on the fifty dollars and sixty dollars per annum prize, and their certainty of getting it. The result is, they have their big flow of milk at the season of the year in which dairy products are ever the cheapest, and their cows are crippled for good performance at the pail, when ever-returning good prices in the fall and early winter show them what golden opportunities they have lost.

Now I can look over my list of patrons and see in my mind's eye the men who practice both the systems I allude to. One is the discomfited, doubting dairyman with but too little to show for his hard work; and the other has a good

bank account, or a plethoric purse, and his sharpest look is given in search of more good cows, whose owners don't know any more than to sell them. There is not a whine about them, nor do they go into a decline because another half cent could be squeezed out of the cheese market. Their talk is content with "well done," and their cure for hard times is, "more milk."

The most manifest loss, as it appears to one taking note of merely dollars and cents, in the prosecution of any special pursuit comes to light in the dairy business, from this the chief neglected opportunity of the dairymen to gain more wealth.

There are other neglected opportunities—minor matters in themselves—that if improved would make the goal of the enterprising dairymen easier of attainment, and are, therefore, desirable adjuncts in accomplishing his purposes, and they seem to be concomitants of measurably high success. One is in not properly testing the real profit-earning capacity of each cow, and weeding out those that are not only not profitable, but are actually, year after year, eating into the profits derived from other, and it may be not so good appearing cows. Profitable performance not only at the pail, but at the churn and the cheese-vat, should alone give a cow respite from coming, in her youth, to the butcher's block.

Another is that there is a woeful benightedness in providing stables suitable to milk in and easy and healthful for cows to live in, as they should be allowed to do for more than half of the hours of the year. The advanced dairymen who have plank floors daily littered, cleaned and cleansed, drops in the floor, and clean walks in the rear of the cows, well ventilated, but warm, non-freezing stables, would be amazed and disgusted to enter what I greatly fear are a majority of the stables of the state, in which the cows are thrust to endure a painful and filthy existence. When purity of product has a great influence in gauging the price, and the health of the consumers is at stake, this neglect in providing better and more cleanly stabling is one of the crying ills of our dairy system. I am glad to know that the

supervision of the health officials of Milwaukee extends to the stables of the cows that produce the milk that is allowed to be sold in that city. It would be well if it was made the imperative duty of the health officials of every town to forcibly establish the blessings of a decent civilization in the cow stables of more than half of the farmers of Wisconsin. I am moved to thus speak because of what I have seen —and smelled. I will not quarrel with a man who claims the unalienable right to rot, as a hermit, but I deny his right to freely make and sell to others, unwholesome food, into which he has mingled filth and the germs of disease and death. It is shameful to neglect to provide good and healthful stables for food-producing dairy stock — one that calls for vengeance on a criminality.

Another neglected opportunity of the dairymen to increase the number of head their farms might subsist, and thus increase their profits, especially those who occupy our highest price lands, is in their declining to adopt the system of soiling. I do not know of a highly successful dairyman in the state who has not adopted it, in part, at least — enough to save cows when famine is in sight. Neither do I believe there is one who would not be more successful if he should practice it more. The arrived-at goal of the select few who keep as many cows as they have acres of land, has been reached by and through the soiling process; and approximate successes like theirs must be achieved by traveling the same route. There are those who are ensmalling their pastures, and at the same time, increasing their herds, because the lands taken from the pasture and devoted to soiling crops produce more than the old herds can consume. The wandering cow feeds herself, in fact, from what might be the choicest product of her own milk, tramps the life out of much more, and tosses her head in disdain at much that if cut and properly fed in the stalls, she would eat with a relish; so that it may be safely said that two, and some practical men say three, cows might be well-fed through soiling, on the same land that one is by the system of exclusive pasturing.

Another, it may well be called the lost opportunity—that

grows out of the neglected ones, alluded to, is that the cows are not kept in good milking condition more of the time of the year. The men who seize and utilize the few opportunities I have mentioned, very soon learn that they have an almost perpetual fount of wealth; and that they can not afford to dry it up, and wait for spring. Putting in more time for the cow to produce, inevitably convinces them of the fact that the larger part of the cow's earnings are made when dairy products are high in price; and they are dull, indeed, if they do not see in that a revelation that more winter dairying would pay. I am aware that the flippant answer made by those disinclined to adopt soiling and winter dairying, is, that they involve employment of more manual labor on a given number of acres, and that reliable farm labor is hard to get and troublesome to keep. This is the first superficial pretext of nine-tenths of those advanced enough to ever give these subjects a serious thought. Nevertheless, the practice of these innovations are essential in the higher grade of farming; and that practice, instead of being an ill, is a blessing to the farm, to the farmer, to his older children, and to the hired laborer; for it gives to all of them steady and profitable employment, while the present system requires the far greater proportion of labor in the spring and summer months, and furnishes less to do in winter for the hired man and the grown-up boys and girls. They thus lounge, often, in debasing idleness, or are early weaned from the farm, and go away, never to return to partake of its real, invigorating life, its independence, and its joys.

The dairy with the accompaniment of soiling and more production of dairy products in the winter, would make the farm more like a factory, with every wheel in motion almost the entire year. The home and family of the dairy farmer should be as large as the capacity of the man and the woman at the helm; and as steady employment as that which must be given to the store or the shop would go a long way in developing and increasing the capacity of the whole force to manage more. Giving regular employment to good men on the farm makes it far easier to get and to keep them; and it retains a more brainy set of men who are

otherwise enticed to the factories and railways that give steady work, and so have the pick of the intelligent and most reliable ones. It is an accomplishment in a farmer and his wife to know how to get, and how to keep good, faithful hired men. I know of those who are slaves because they don't know how. Many of them ascribe it to the men, when they themselves are principally at fault. There is a mortal dread of "tramps," especially among the more ignorant farmers. But I aver that the common system of almost exclusive grain farming that crowds most of the labor of the year into a few spring and summer months, is a direct cause of much of the tramp evil of which so many farmers complain. It manufactures the tramps who rove from necessity, and even drives out their own children to swell the ranks of those in search of a job.

On the other hand a large increase of milk-stock kept on the farm necessitates the retention of most of the manual force of the summer months. Not how to dispense with hired labor or the labor of his children, but how to profitably employ and elevate it, and make it inviting, rather than abhorent and slavish, is the problem the progressive farmer should study to solve. The manufacturer counts upon additional gains through the addition of well-employed laborers. The farmer could do the same if he used more educated brains and a little less over-taxed muscle in his business. The bulk of every fortune steadily acquired, consists of the success of its possessor in getting, honestly or dishonestly, a profit from the labors of others. This must be so, so long as it is an axiom in political economy that labor is the basis of all wealth. The owner of the soil can succeed in winning more than a pro rata proportion, just in the ratio of his ability to make his brains help the work of his hands.

I know of whole sections, and even contiguous miles square, on which the system of farming prevails that I have condemned — the hired man is unknown, save only for short periods of the year — the children gone to the cities, to the factories, the railroads, or to the west — the land denuded of stock, almost, as well as of the rightful ones to care for it; and half-impoverished farms, half farmed by the old folks,

or continuously cropped on shares by more indigent neighbors. Possessions that by nature are as fair as ever the sun shone upon, that do not, and cannot now pay five per cent interest on $25 per acre; when well managed dairy farms in the same county pay more than that per cent. on a basis of $100 per acre. In view of these patent facts that stare us in the face, is it any wonder that some of us feel we have a loud call to dispense the pure dairy gospel to these perishing sinners who thus neglect their grand opportunities.

In some one of the first sentences of this paper I alluded to the influence of good and profitable farming in improving the condition and standing of the farmer, as a man among men. This, after all, is the crowning objective point, or should be, of all those who make the most of the opportunities the great mass neglect. If with all his getting a man does not get some real wisdom, some development in stalwart morality, and a higher cultivation of the mind, it needs no Solomon or Bible to tell the on-lookers that he is a comparative failure; and it ought to be apparent to himself. The legitimate profits of a higher grade of farming ought to be expended to elevate the farmer, his wife, his children, and all the attendants whom he directs. Part of them should appear in the form of better and more comfortable houses and barns, finer stock, better horses, better roads and school-houses, a larger list of newspapers and periodicals, better libraries and better house-keeping, and more cheery homes in which intelligence and music are not strangers. It is as important that a man should spend his earnings aright, as that he should use his energies and talents to earn. It is not a manly element in a man whose chief forte is that he can hold all he can get. A clam can do that, and not suffer much either, in a comparison of brains with the groveling getter of mere wealth. The high behest to earn much, by and through grand opportunies to labor and direct labor, blossoms into blessing in its best sense only when the earnings are spent to increase the intelligence, add to the comforts, and aid men to discharge their private and public duties more nobly than it is possible for a man to do with an income that simply gives him bread.

Because the earnings of the farm are not more frequently spent in thus installing a section of paradise on the farm, is the real cause of the stampede therefrom of so many of the smart ones who deem the struggle for elevation there a hopeless one, and, catching an inspiration from the shriek of civilization that announces each swiftly flying train, they turn their backs on what have been to them farm dungeons, and mingle with the surging throng in quest of a better condition. That they are often mistaken and baffled in taking such a route, does not deter a new crowd from going. They fly from what they dread, as much as they are inspired by what they hope to win. These things ought not so to be, and a wise improvement of the many neglected opportunities on the farm would go far to rectify the ills they fly from, but from which few escape.

Say what we will about all its defects, its uninviting toil and low wages, agriculture disenthralled of its ignorance is the basic rock of our hope, and he is a slanderer of the noblest occupation who raises the veil to expose its defects and sterility for any other purpose than to make greener its verdure and brighter its bloom.

President Morrison — The ladies of the M. E. Church have prepared a banquet for the association and every one is invited to attend. There will be toasts, responses and singing.

The convention now stands adjourned until to-morrow morning at 10 o'clock.

EVENING SESSION — BANQUET.

TOASTS.

Supper — 5 P. M.

Toast master — Robert Fargo.

1. Music — Friendship, Love and Song — Lizzie H. Royce, Nellie Hoskins, C. D. Fargo, R. L. Royce; Miss Jennie Plumb, accompanist.
2. Our Guests — Response by H. C. Drake.
3. Our Hosts — "The People of Lake Mills" — Response by Col. R. P. McGlincy, Elgin, Illinois.

4. Music, Solo—"Grandfather's Cane"—C. D. Fargo, with Quartette Chorus.
5. The Cheese—"It is Mitey and Must Prevail"—Response by J. B. Harris, New York.
6. The Jersey Cows—"Multum in Parvo"—Response by C. R. Beach, Whitewater.
7. Dramatic Reading—Isaac Fargo, Lake Mills.
8. Ole O. Margerine—"An Alien in the Dairy Domain who Must not be Naturalized"—Response by T. D. Curtis, New York.
9. The Dairyman's Daughter—"She Never Fails to Respond to the Call 'to Arms'"—Response by W. D. Hoard, Fort Atkinson.
10. Music, Solo—"Milkmaid's Marriage Song"—Lizzie Royce.
11. The Farmer Boys of Wisconsin—"Let Them Supplement Hand Work with Brain Work"—Response by Prof. W. A. Henry.
12. The Inventors and the Railroads—"The Indispensable Auxiliaries of the Dairymen"—Response by J. G. Lumbard, Chicago.
13. Solo—Abe Forrester.
14. The Badger State—"First in the Production of Cheese, Butter and Rusk—Response by Gov. J. M. Rusk.
15. The "old boys" in the Dairy Business"—Response by Hon. Hiram Smith, Sheboygan.
16. Solo—J. G. Lumbard, Chicago.
17. "The Cow that Jumped Over the Moon"—Response by L. B. Hibbard, of the *Farmer's Review*.
18. "How is it up North?"—Response by J. M. Smith, Green Bay.
19. "The Three B's, Brains, Bread and Butter"—Response by Prof. H. P. Armsby.
20. Music—"Good Night Gentle Folks"—Lizzie H. Royce, Nellie Hoskins, C. D. Fargo, R. L. Royce.

Four hundred and fifty sat down to a feast that was grand beyond question.

The ladies of Lake Mills did their utmost to make the banquet a success and they succeeded most admirably. The Association has never attended a better banquet.

The supper, the toasts and responses, the singing and all, were enjoyed in the highest degree.

MORNING SESSION.

January 18th, 1884.

Convention met pursuant to adjournment, at 10 A. M. President Morrison in the chair.

REPORT OF SECRETARY.

Mr. President — The expenses of the secretary's office the past year, for stationery, stamps, express on reports, telegrams, etc., have been $25.13. An itemized bill has been furnished the Executive committee.

By an act of the last legislature, our reports were cut down from 2,000 copies to 500. They do but very little good in a great state like Wisconsin.

If we had 10,000 copies to distribute, instead of 500, the good they would do could hardly be computed.

Respectfully submitted,

D. W. CURTIS.

TREASURER'S REPORT.

Mr. President and Members of the Association — The following itemized report is made, showing the receipts and disbursements of the money placed in my hands. No bills are paid only on an order from the secretary, which orders I hold as vouchers.

RECEIPTS.

1883.			
Jan. 1,	Cash on hand	$208 62	
Feb. 3,	Membership for 1883	69 25	
Feb. 3.	Entries at dairy fair	9 00	
May 5,	Received from state treasurer	500 00	
Total receipts			$786 87

DISBURSEMENTS.

1883.		
Feb. 3,	C. R. Beach, executive committee for 1882	$13 00
Feb. 3,	C. Hazen, executive committee for 1882	13 00
Feb. 3,	Mrs. J. Howard Kelley, reporter	33 00
Feb. 3,	Mrs. J. Howard Kelley, hotel bill	4 50
Feb. 3,	Walworth County Independent, printing	5 00
Feb. 3,	Prof. I. P. Roberts	75 00
Feb. 8,	H. K. Loomis, meeting with executive committee.	13 00
Feb. 8,	W. D. Hoard, meeting with executive committee.	13 00
Feb. 8,	D. W. Curtis, meeting with executive committee.	13 00
Feb. 8,	W. D. Hoard, printing bill	26 50
Feb. 13,	Marking Hart cup	1 00
Feb. 14,	Marr & Dyer, premium	8 00
Feb. 14,	J. L. Taylor, premium	10 00
Feb. 14,	G. N. Wiswell, premium	2 00
Feb. 14,	C. L. Calkins, premium	10 00
Feb. 14,	McKanna & Harris, premium	5 00
Apr. 10,	D. W. Curtis	15 10

DISBURSEMENTS — CONTINUED.

Apr. 18,	W. C. Thomas, printing..	$3 00	
Dec. 10,	D. W. Curtis, services as secretary.....	75 00	
Dec. 10,	Hiram Smith, meeting executive committee....	13 00	
Jan. 16,	W. D. Hoard, meeting executive committee 1883.	6 50	
Jan. 16,	Hiram Smith, meeting executive committee 1883.	6 50	
Jan. 16,	D. W. Curtis, meeting executive committee 1883.	6 50	
Jan. 16,	W. H. Morrison, meeting executive com. 1883.	6 50	
Jan. 16,	C. R. Beach, meeting executive committee 1883.	6 50	
Jan. 16,	D. W. Curtis, expense secretary's office.....	10 13	
	Balance in hands of treasurer.....	393 14	
			$786 87

Respectfully submitted.

H. K. LOOMIS,
Treasurer.

THE FARMER'S GARDEN.

By J. M. SMITH, President State Horticultural Society, Green Bay.

Mr. President, Ladies and Gentlemen—A number of years since it was necessary for me to call upon a gentleman upon some business. After my business was completed, and I was about to leave, I started toward his garden. He called to me saying, "do not go there, you cannot get through the garden if you do." I arrived at the borders of it and stopped. He had evidently complied with one of the necessities of a good garden, viz.: put on plenty of manure, for it was simply impossible for weeds to grow at the rate, or to attain the size they had there, except upon very rich land. Rabbits would have been perfectly safe from foxes, and foxes from dogs, in that immense tangled growth of weeds. The owner of that garden was one of the best and most enterprising farmers in the northwestern states. He had at one time been president of his state agricultural society. Many years ago I visited some friends upon a 160 acre farm. It was one of the most beautiful quarter section farms that I have ever seen, either in this or any other state. While there, I was speaking of a splendid crop of melons that were then just ripening. He said in rather a fretful tone, "I do not see why my melons do not grow. I know the land is rich, and there are no weeds in the hills. I hoed them all up only a few days ago." I walked out to his garden

with him, and there were his poor, puny vines struggling for life. As he said there were no weeds in the hills, a little circle of perhaps two or three feet in diameter had been hoed out, and the balance of the land was covered with a dense growth of rank weeds from two to six feet in height. He had a most excellent and refined lady for a wife, and young children growing around him, and as before stated, a most excellent as well as a beautiful farm. Yet not an early pea, or an early sweet corn, not an early potato, or a tomato, in fact nothing that by any stretch of imagination could be called a garden. And yet that *man* has been to *college.*

Another gentleman said in my presence: "In the spring I purchase my cabbage and other seeds, and sow them. When it is time to set cabbage plants, I purchase the plants and set them. When it is time to have cabbage, I purchase that, and have it." That man is none of your common farmers. He is among the very best in the state. He teaches others how to farm, and does it well. The man who attacks him in a convention needs a strong cause and a ready tongue, or he will be apt to consider his own cause a very poor one before he gets through with it. This man has been president of a State Dairymens' Association. One case more:

Another gentleman, who is far above the average farmer, and who has also been president of a State Dairymen's Association, as well as a public teacher, as he was going out to attend a farmer's meeting or convention, where he was expected to be a teacher, happened to look out over the place where his garden should have been, and saw an immense growth of weeds about going to seed. He said to his sons and hired men: "Boys, bring out a team, and hitch to the mower, and mow off the garden. I cannot conscientiously go and teach others how to farm with that crop of weeds, just going to seed, in my own garden." The work was done. "There," said he, "now I can go and teach without a troubled conscience. There are no weeds going to seed in my garden."

I have strong hopes of this gentleman. He has a conscience. He attends church, and, although I consider him

intellectually as far superior to most of the clergy, yet, if the right one should become his pastor, I fully believe that there is salvation for him even in this life. As to the other three, the case seems at least to be a very doubtful one. One cannot but be reminded of the anecdote of the three little boys who had commenced studying the catechism. Some one asked them if they had learned any of it. "Oh, yes," says one of them, "I am past justification." A second one says, "I am past sanctification." The third one jumps up and says, "I have beat 'em all; I am clear past redemption." It is much to be feared that the three first described gentlemen are all of them "clear past redemption."

Let us turn for a moment to a farmer's garden of another order. He has a beautiful as well as an excellent farm. Around his house are quite a number of beautiful trees, that stood there when the Indians were the proprietors of the soil. The present owner has added such others as he thought would add both to its beauty and comfort. The house is a number of rods from the highway, and in the summer is one of the most beautiful rural homes that I ever saw. Back of, and near by the house is his garden. It is so arranged that most of its crops can be cultivated with a horse and cultivator. A nice asparagus bed furnishes, not only himself and family, but some of his poorer neighbors, an abundant supply of this, the first, as well as one of the best of the products of the out door garden. His strawberry beds, containing only a few of the standard varieties, and a very few plants of some of the most promising of the new ones, were models of both beauty and economy in their arrangement for cultivating both well and cheap. The same was true of his peas, beans, sweet corn, cabbage, potatoes, etc. His raspberries, both red and black caps, furnished an abundant supply for the family during their season. The same is true of his blackberries and grapes.

A short distance from these well-cared for necessaries and luxuries of his farm, is a moderate-sized and well-cared for orchard. I have no doubt but that he can, if he wishes, have some of the products of his orchard, or garden, or both, upon his table every day of the year.

The gentleman who owns and conducts this farm has never been president of any State Agricultural Society, neither has he been to college; nor president of any State Dairymen's Association; nor has he ever been sent to congress. But, gentlemen, he is one of the most thoroughly, wide-awake and enterprising, as well as one of the very best farmers that Wisconsin can boast of, and we all know that we have some good ones. The question very naturally arises, why is it, that so many not only of our common, but of our best farmers fail to have anything that can be called even a poor garden? It is not because they do not like its products. Time and again have men who were good farmers when looking over my grounds, said: "Well it is too bad that I have not had a decent garden, but I am determined to have one after this, and will neglect it no longer." I have no recollection of any farmer's family among my acquaintances who would not enjoy its products. Perhaps the best reason, and often the only one that can be given for so many almost entire failures in this respect, is the want of time. It is a well known fact that almost all of our farmers are short of help during the busy season. They do not make arrangements in the spring for what help they really need to keep their farms in good condition. Something is sure to be neglected, and in three cases out of four, if not nine out of ten, the poor garden is the first thing that is left to care for itself, which it generally does by growing a tremendous crop of weeds.

It is perfectly useless to attempt to have a respectable yard unless arrangements are made in the spring for its planting and cultivation, with the same care that the arrangements are made for the care of the wheat, oat, corn or potato crop, or for the care of the dairy.

When this arrangement is made and faithfully carried into execution during the season, then shall we see good gardens upon our farms, and not only that, but as a rule they will be the best paying pieces of land upon the farm, not only in the comfort they give to the family, but in the pocket as well.

I do not propose, at this time, to give you a treatise upon

gardening. A few hints that may be of value to those who wish to make some improvements, is all that will be attempted. In the first place, select, if you can have a choice, a piece of light, loamy soil, a little descent to the east or south is better, if you can get it. A heavy clay soil will raise as large crops as the one above mentioned, but it is not as early, and is much more expensive and difficult to work.

In laying out a garden on a farm, take plenty of room, and arrange the grounds in such a manner that the greatest possible amouut of the work can be performed with the horse. The selection of seeds is, to me, the most annoying and perplexing job of the season. The circulars come pouring in, and are filled with the names of new varieties of this, that and the other, each better than any others of its kind, and so very desirable that you are apt to think that you must have a few of the seeds just to try them.

Of course, there is occasionally some improvement made in vegetables and plants, but it is safe to say that in nineteen cases out of twenty, the farmer or the amateur who invests in some new variety of seeds or plants upon the recommendation of his circular, loses both money and time by the operation. If I should record my own experience in this line, during the past twenty-five years, the result would show that I have drawn occasionally a prize, and a marvelous number of blanks, and some of them very annoying as well as expensive ones.

I will give you a list of such seeds as have proved themselves to be about the best that I can find after years of experience:

Asparagus — Conover's Colossal.
Beets — Early Egyptian for first early, and Early Blood Turnip for fall and winter use.
Carrots — Early Short-horn.
Parsnips — Common Dutch Hollow-Crowned.
Rutabagas — American Purple Top, improved.
Turnips — Flat Purple Top.
Bush Beans — German Dwarf, Black Wax.
Pole Beans — Limas.
Cucumbers — White Spine.

Cabbage — For first early, Jersey Wakefield; for fall and winter, Premium Flat Dutch.

Celery — Golden Dwarf.

Cauliflower — Early Dwarf Eurfurt.

Muskmelons — Early White Japan, and Hackensack.

Watermelons — Mountain Sweet.

Peas — Extra Early Dan O'Rourke for first early; American Wonder and Champion of England for late, in order named.

Summer Squash — Round Scallop; fall, American Turban; winter use, The Hubbard.

Lettuce — Curled Simpson and Boston Market.

Pepper — Large Bell or Bullnosed.

Tomato — Trophy and Acme.

Sweet Corn — Early Minnesota, Crosby's Early, and Stowell's Evergreen.

These, if planted at the same time, will furnish a season's supply, coming on in the order named.

Radishes — French Breakfast, and the Covent Garden.

When we come to the small fruits I would recommend as follows: Strawberries — Wilson's Albany Seedling for main crop. If a few very large ones were wanted, try the No. 30 and the Sharpless. With me they are both worthless except for the purpose of producing a few very large berries. To lengthen out the season the Kentucky is the best of any that I know of. Downer's Prolific is also a fair bearer, and of excellent quality. I am constantly trying those of the new varieties that seem to me most likely to do well, but almost invariably lose both time and money. I have some twelve or fifteen varieties of them now on trial, but presume the result with nearly or quite all of them will be the same as with the hundreds of others that I have had during the last twenty-five years, viz., after two or three years of trouble and expense, plow them under for manure.

For raspberries, the Doolittle and the Mammoth Cluster have done nicely among the Blackcaps. The Gregg is also highly recommended by those who have tried it. I have not had it a sufficient time to tell what it will do with me. The Philadelphia is a standard among the reds, and justly so. After two or three years' trial I think very highly of the Cuthbert, although with me it is not as hardy as the Philadelphia. In fact they all do better for being covered in winter.

Blackberries. For this portion of the state I know of nothing that I believe would give better satisfaction than Stone's Hardy.

Among currants the old Red and White Dutch are still the standard.

The Concord grape is yet among grapes about what the Wilson is among strawberries, the standard for the million. The Worden, a seedling of the Concord, is very promising and may yet prove to be a strong competitor in the race. The Delaware does splendidly in the Fox River Valley, but is not as reliable in all portions of the state as the above named varieties.

I have tried to name nothing but what will do well with good, fair cultivation upon any good soil. Yet you will often be annoyed in selecting seed, from the fact that the same seed is sent out by different seedsmen under different names. For instance, I have had early peas sent to me under different names, and by different seedsmen, and all planted the same day, side by side, all cared for precisely alike, all growing and ripening, and yielding precisely alike, all looking and tasting precisely alike, all alike claiming to be remarkably early and prolific, as well as excellent in quality, and yet every one of them precisely like the old Extra Early Dan O'Rourke that I used to grow, I do not know how many years ago. The American Wonder is the only one of the new varieties that I have tried in many years, that really seems to be an acquisition to our list. It is a dwarf, about second early, and with me a good bearer, and of excellent quality. I mention this to show the farmer that as a rule it is better for him to rely upon the old standard list until some grower, with whom he is acquainted, has fairly tested the new varieties and ascertained whether or not they are worthy of cultivation. I do not propose to go into any detailed directions as to the best methods of garden cultivation. Good land, plenty of manure, good cultivation, and some good sound common sense, is all that is needed to insure a good farmers' garden. In nearly twenty-five years I have failed but once to have at least a paying crop of strawber-

ries, and most of the time they have been both large and profitable.

During that time I have failed once to have a crop of corn, and have a number of times failed to have a paying crop of potatoes.

In fact, I have failed or partially failed oftener with my potatoes, than with any other of the long list of crops that I attempt to grow. Yet, if I should say to the farmers of this audience, that they did not know how to grow a crop of potatoes, they would consider themselves insulted; although I presume that not one of them has had a complete success with them for a long series of years.

Peas and onions should be put in as early as the land is in good condition to work in the spring. If the ground freezes hard even after they have sprouted, it will not injure them. Parnsnips, beets, carrots, radishes, turnips, cabbage, cauliflower, lettuce and salsify will bear a little frost after they come up, but not much. Corn, beans, peppers, tomatoes, vines of all kinds, require a warm soil, and will do their best in no other.

A place for the wife and children's flowers should never be forgotten nor neglected. Give them a place; furnish help to prepare and care for it; and do not complain about the little time and expense it takes, either. Probably you will neither eat nor sell the flowers, but they will pay you better than a few extra bushels of wheat would.

We are apt to hear complaints at our conventions that the young men will persist in leaving the farm home and seeking a new one in some of the towns or cities. Well, when I am traveling in our own and in other states, and see so many desolate, dreary places that are called farm homes, no trees, no shrubbery, no fruit, no flowers, no garden, in fact nothing but a shell of a house and some land, and it is fair to suppose that it is about as cheerless inside the house as it is dreary outside of it, I often wonder how or why any bright, active, wide-awake young man can stay there one day after he is at liberty to leave. Gentleman, I know that there are many beautiful exceptions to the above described homes, and that they are yearly becoming more numerous.

If the exceptions could become the universal rule what a glorious northwest we should have. Presidents of the state agricultural societies would not have to warn their friends against attempting to get through the tangled mass of weeds called the garden. The man who has been to college would no longer fret because his vines would not grow. The president of the State Dairymen's Association would no longer buy either cabbage plants or cabbage. Neither would he be compelled to order out his team and mow his garden before his conscience would allow him to teach others how to farm. Instead of these, should be homes beautiful, homes bright, homes happy, so happy that the young would ever be loth to leave, and glad to return. As our northwest is the grandest portion of our republic, so should our homes be the most beautiful, and the inmates thereof the most intelligent as well as the happiest and most contented citizens of our wide domain.

DISCUSSION.

A Member — Mr. Smith recommends the cultivation of the garden by horse. Will you state in what shape you would make it to work it with horses?

Answer — You that raise strawberries and peas plant them in long rows, cultivate with a cultivator between the rows, and plant the same as you would potatoes. If it is Daniel O'Rourke peas, I would plant in double rows, and take three and a half feet for the double rows. I take my shovel-plow and make a furrow three or four inches deep, and plant my seed in that double row. Early peas you cannot cover quite deep enough in any other way, to protect them. You plant them in that way and harrow them right over. Strawberries I would plant three or four feet apart, in rows, and put the rows, say, three or four feet apart. I don't cultivate my strawberries with the horse, because my land is very valuable, and labor is reasonably cheap, and I can put the plants closer together, and work by hand, and get larger crops per acre; but on a farm where you have plenty of land, a few rods more or less is no particular object. I would do that

way, and the same way with beets and carrots and turnips. If every farm has one day's sowing or cultivating, it will pay that farmer to have a drill and a hand cultivator.

Mr. Faville — Mr. Smith, do you regard the cultivation of the soil for any particular crop as of very great importance?

Answer —Yes, sir.

Question — Now, tell the audience how much manure you use on your land?

Answer — On my principal crops I claim to put on about forty loads per acre, composted with well rotted manure.

Question — Do you use that exclusively as a fertilizer?

Answer — I use a good deal of ashes. I have tried some of the commercial fertilizers, but I can get stable, barnyard manure, so much cheaper, that I use but little commercial manure. I use perhaps, 2,000 bushels of ashes per year, both leached and unleached. When I have unleached, I put on seventy-five to a hundred bushels to the acre. If they are leached, about twice that amount; I have used salt some, and had good success. I regard salt as very good with cabbage, put into the manure that we are going to put on the cabbage. I get a good many fish; sometimes they are spoiled fish, what they call sour fish — the dealers come to me and say: "I have got some thirty or forty or fifty barrels of sour fish." There is a great deal of salt, of course, in those.

Question — How do you prepare your onion ground?

Answer — I put on about twenty loads of fine manure to the acre and plow it. My soil is a light loam; after it is plowed I put on about as much more and harrow it. I plow my ground in beds, thirty to thirty-five feet in width. I then go over it, and prepare surface drains that will carry off all water from the beds. Then, after it is harrowed, it is all raked by hand, that answering two purposes: it mixes the fine manure with the surface soil and makes a very nice seed bed. Then it is sown with a drill. The rows are about thirteen or fourteen inches apart. If I was upon a farm I would sow them fifteen to sixteen.

Question — How is the best way to apply ashes? to mix it along with the manure?

Answer — I never mix ashes with any other manure; it releases the ammonia. I always put the ashes on top of the ground, after plowing, and harrow them in.

Question — Why doesn't it have that same effect on the ground?

Answer — Because after it releases the ammonia it is absorbed by the earth. The earth itself is an absorbent and holds the ammonia.

Question — How do you manage the cabbage worm?

Answer — The only protection I have ever been able to get against them, except what the birds do, and they do a great deal, I have my ground in the very best order that I can make it; I have a large growth of plants — strong growers, and then set them and then force the growth just as rapidly as possible. If I can get a head started as big as a goose egg they are safe, as a rule, after that. The heads grow upon the inside, while the worms work upon the outside. They occasionally get on the inside, but very rarely.

Question — Do you grow your plants in the open air?

Answer — Some of them I do for my late cabbage. What we want for early cabbage, we grow in hot-beds.

Question — How do you protect your vines — your squashes, from bugs?

Answer — Paris green.

Question — How do you apply you Paris green?

Answer — Sometimes we use it with water; put in a good sized teaspoonful of Paris green into a common tin quart pail full of water. For the squash vines that is enough. Apply it with a sprinkler. Sometimes we use plaster of Paris.

Question — Give us some of your ideas how potatoes should be raised?

Answer — I fix my ground for potatoes about as I do for other things, except not to put on so much manure. They are one of the few crops we can destroy by over-manuring. We plant our potatoes by a machine after the ground is thoroughly prepared. We have a machine that makes the furrow, cuts the potato, drops and covers it. It is drawn by a horse.

Question—How can you cut a potato by machine, and do it as scientific men say it ought to be done?

Answer—You can not. That is the disadvantage of the machine in cutting potatoes, you will sometimes cut a piece without an eye, and it takes a little more seed. But the rapidity with which you can do the work after your ground is prepared, more than makes up. A man and a boy can plant some four or five acres a day.

Question—Doesn't that work an injury the other way and gives you too much seed in some of the hills, and none at all in some others?

Answer—Yes, occasionally; but the effect is far less than you would imagine. Two years ago I planted a little patch of early potatoes in that way, and from an acre and a half, I sold 500 odd bushels of potatoes. I had just about an even six hundred bushels on the acre and a half planted in that way; they were early rose. They were manured with ashes. No other manure except ashes. But we put on an extra amount. I told my man to put on about forty loads to the acre, and through a mistake, they put on nearly two hundred bushels per acre, and I had an enormous crop.

Question—What is the cost of the machine you plant with?

Answer—$30, I think.

Question—What do ashes cost you a bushel down in your country?

Answer—Where we get leached ashes we pay 25 cents a load for two horse loads; unleached ashes, we pay double that price.

Question—How do you apply your ashes?

Answer—Throw it broadcast on the ground after plowing, and harrow it in.

Question—Do you consider coal ashes valuable?

Answer—It is not considered valuable—I have never tried it to any extent, but chemists tell us that it is not valuable.

Question—I would like to ask one question in regard to cutting potatoes. Which is about the best number of eyes

left on each piece for the best returns? And, also, would you plant the seed end or not?

Answer — In cutting potatoes where we have cut by hand, I should try to have about two eyes left on the piece, after cutting the whole potato. I know there have been a great many experiments with regard to the seed end and the blossom end, but I never made any experiments in that line. Of course, by cutting with the machine, we cut the entire potato, and it is cut sometimes one way, and sometimes another. I have no doubt that cutting by hand would have the best results, but whether it will pay for the large amount of extra labor, I have my doubts.

Question — Would you advise to plant small potatoes without cutting at all?

Answer — No, sir; it might do for one year, but I have known of farmers trying it for long series of years, and the result was they didn't have anything but small potatoes, after a while.

Question — In cultivating the strawberry, how do you dispose of the runners?

Answer — If I was upon a farm, I would run my cultivator through and let that cut them off — when I got my row as I wanted it I would keep the ground cultivated between, and where the runners come on let the cultivator cut them off. I let my whole ground become a mass of vines, simply because I want to get the most I can off the ground. I might better pay for the extra expense of labor than to have the wide alleys between the rows, and nothing growing upon them.

Question — How many years do you let a bed gorw without plowing it up?

Answer — I am cultivating the Wilson principally; when I get as large a crop as I want to get, I plow it up after the first crop. It will bear itself to death. The Wilson on very rich land, under high cultivation, will often bear itself to death after the first season. The crop will be so poor, it will hardly pay for the growing of it.

Question — What season of the year do you set your plants?

Answer — In the spring.

Question — What is the objection to August?

Answer — If the fall is just right there is no objection to it, once or twice. I have now a bed of beautiful plants that were set for my wife's benefit, in August. But I have several times failed almost entirely setting in August, while I never failed in a spring setting.

Question — I suppose the chief difficulty with the August setting is the drought.

Answer — The drought, and then sometimes the fall rains come, and then it is so short a time after the rains before the cold weather, that they don't get fairly started.

Question — What do you do during the dry season to keep your beds watered?

Answer — I have means of artificial watering.

Question — Do you regard the Wilson as superior to the Crescent?

Answer — Yes; it is with me a better quality and will bear shipping, which the Crescent will not; I would not recommend the Crescent for this reason; it is a pistolate; it is a difficult matter to keep a Crescent from overruning everything else. You mix a few Wilsons along with it and the Crescent will choke the Wilson to death the first season; perhaps the first season you will have some fruit, and the next season, if there are no other plants around it, it will choke the Wilson out. It is better for the farmer to raise what we call perfect flowering plants.

Question — Do you know of a blackberry that is suitable for this climate?

Answer — I should sooner try Stone's Hardy, in this climate than anything I know of; I don't cultivate the blackberry from the fact that we have wild ones, and it is not worth while.

Mr. Babbitt — I was talking with Mr. Spaulding, and he told me day before yesterday that his Crescents were a perfect success; that he had had good success with them for five years.

Answer — I will state that the strawberry blossoms are divided into three kinds. There is what we call the male

and the female plant. The male plant never bears. The female are the pistolate plant, which bears, but never until fertilized with the male. What we call a perfect flower is the hermorphrodite; we call that perfect because it has both the stamens and the pistolates. The Wilson is the most perfect bearing flower. It will fertilize not only itself, but other plants near it. Probably the cause of Mr. Spaulding's success is, that he has moderate sized beds, and his Crescents either have other plants near them from which they have been fertilized, or they have been fertilized by being near others. The Crescent will bear some without any fertilizing, but they are not doing their best, or anything like their best, without being fertilized.

Question — Will the Wilson strawberries, kept in matted rows, run out in one year?

Answer — It depends on how largely they bear; if very heavily they will be apt to run out. If not, they will bear three years, and perhaps the second crop will be as good as the first.

Question — What protection do you use in the winter time?

Answer — I cover mine with straw. I like marsh hay best of anything, but if we can't get that, straw is good. It is good provided it has no foul seeds in it, but they are apt to be in it. They should be covered just about deep enough to hide all the leaves; if you cover too deep you may smother them. My rule is to cover just deep enough to hide the leaves.

Mr. D. W. Curtis — Mr. Stephen Faville said he could make more money in feeding cattle, than he could in making butter and cheese; we would be glad to have him tell us how he does it.

Mr. Faville — The thought came to my mind day before yesterday, while Mr. Hoard was making his plea for raising the heifer calves, that we should raise all the male calves as well as the heifers, and the reason I thought so, was because there was more money in raising steers than heifers. Our good friend, Hiram Smith, told me ten years ago, that the man that attempted to make beef for a living, would come

to the poor house. But subsequent experience has taught me somewhat the policy of that statement, and that a man may still live and make occasionally, a steer grow up to beef. I believe what I say to-day, that I can take the right kind of stock and make more money in raising beef than we can make in making butter and cheese. I cannot give you the figures now exact, I left my memorandum book at home, but I can approximate it sufficiently to show you what I mean. I bought twelve Durham calves three years ago last fall; six of them were heifers, and six steers, six months old. I paid $10 a head, thought to be a very large price at that time, but they were good ones; of course those twelve calves run together until they were two years old, had the same sort of feed, the same pasture, and the same care in winter. At two years old the six heifers came into milk, milking through the summer. The steers run right in the same pasture until fall, and in the fall were put up and fed until spring, and sold. Now, those six steers brought me $85 apiece the first of May, and if any of you gentlemen can figure out how, in that time, that amount of money could have been gotten out of those heifers in all the milk, and all they were worth at that time, I would like to have you tell me.

Question — What did you get out of the heifers?

Answer — I don't know.

Question — What were the heifers worth at the time you sold the steers?

Answer — Well, probably $35; they were good, three year old heifers. Each had a calf when they were three years old.

Question — What would the calves have brought?

Answer — It depends on when you sold them — at a week old, about a dollar and a half or two dollars apiece.

Question — Have you got the heifers yet?

Answer — Yes, sir.

Question — How much milk will the heifers give?

Answer — Any of you dairymen can figure that thing out.

Mr. Blackman — I have known many two-year-old heifers net $40 in my factory. I would like to ask Mr. Faville if beef

has not been higher accordingly during the last year, than usually?

Answer — Not any higher in proportion than dairy products; it was a good price last spring.

Question — Don't it cost more to winter those steers, to fat them for market than it did the heifers?

Answer — Certainly.

Question — Giving the heifers credit for that, and their calves, and what they ought to have been worth at the factory, where would the profit have been — on the beeves or on the heifers?

Answer — In my opinion, it is on the beeves.

Question — It couldn't have left very much at the factory?

Answer — You generally take the average heifer right through the first year, exclusive of labor, and they will seldom net you more than $20. If they do that, you will do pretty well. I want to tell you another thing; two years ago, we had a poor corn crop, with us, and on looking it over, I said to my man, "we are not going to have a merchantable corn crop; we will have to feed it out, and we haven't anything to feed." I went out and bought twenty-three steers; the twenty-three cost $1,300, most of them two years old, and past; a few three past. I put them in the first of November, and fed them until the first of May and sold those steers, for $2,300 in round numbers. And out of that same yard, I sold $420 worth of pork. There is $1,400 profit, out of that $1,300 outlay. If any of you can lay that money out in cows, and make that profit out of it, I would like to hear it.

Question — Didn't your hogs cost anything?

Answer — Not anything — they run right after the steers.

Question — Where did you get them, to run after the steers?

Answer — I had part of them, and I bought part of them, but after selling that $420 worth, I had as much value of hogs left, as I had when I begun. There is no snide about this; I am giving the exact facts. For fear some of you misunderstand, let me tell you that just as surely as you expect to make money, making beef out of scrub steers,

unless you are out on the western prairies, you will get left. But when you sell three year old steers, that will weigh seventeen and eighteen hundred pounds, then you can make some money. You take the scrub steer, and he will weigh about ten hundred. Don't make a mistake. If you are going to make money out of beef, you must have the right kind.

Mr. Raymond — Mr. Faville has taken a beef strain, and compared it with butter-making cows; I say it is a one-sided thing — the way it has been presented. The gentleman gives us his success with fine-blooded, fine bred beef cattle, and he wishes us to take the average of the dairies; we wish to get the dairies up to the standard of his fine bred cattle, and if we can't beat them, I will give it up. Here is a farmer that has $1,300 to invest in cattle, and he is a skillful judge of cattle, and he will pick out of that, somewhere between twenty-five and thirty cows. Now, for such cows as he will get he should receive fifty dollars a head at the factory. And he still has his cows. The gentleman talks about his steers bringing him eighty-five dollars after he has raised them three years. The cow has turned in fifty dollars a year, making one hundred and fifty dollars, and he has the cow left.

Mr. Faville — You are counting three years; it was six months; that is as long as it took me.

Mr. Fish — Well, even then, the cow will produce in that time, fifty dollars at the factory, and the cow is left for other years.

Mr. Hitt — There is one question which will doubtless bring up a valuable discussion, which has been touched upon, that is the question of ensilage. It is a question I am very much interested in, from the fact that some of my neighbors are talking of building silos. They want me to pick up any ideas I can while here, and I want to know what to tell them when I get back.

Mr. Faville — Tell him from me what the young man's friend said when he told him he was thinking of getting married — "Don't."

Mr. Hitt —A friend has brought a box of silo product here, which is here for examination; it is whole clover.

Mr. McGlincy — *Mr. Chairman*, I haven't got a silo or any ensilage, but I have got a neighbor who has, and he is satisfied with the results of his ensilage, during the past three years. He cuts his corn in the fall, and puts it into the silo; and feeds that through the winter. He plants, right after that, puts that into the silo, and has summer feed; he has 204 acres of land, which is probably as poor as any in our country; but on that 204 acres, he keeps 84 head of cattle, and the necessary horses to do the farm work; in addition to this ensilage, Mr. Ropeman feeds bran and corn-meal. And let me say here, that every dairy farmer in Kane county, Illinois, feeds grain the year around. Feeds it as much on the fourth of July as on the fourth of January. That is the reason my friend Smith was able to quote figures from S. N. Wright's farm. He feeds a hamper basket full of this grain to every cow. It holds about two bushels of this ensilage and has a handle on each side of it; he cuts his feed with a cutter into about five-eighths inch lengths. He puts the ensilage into the silo, tramps it in with the horse, keeps filling it up, and when it is settled down he makes his final cutting, covers it with straw, and puts on his boards and weighs it down, and his food is very good. He fed the cows while I was there this fall, and he placed the ensilage and a little bran before them, and they went for the ensilage first. The butter product from ensilage has been pronounced as good as any. Dr. Pratt, a breeder and dealer in Holstein cattle, has a small silo on his place, I don't remember exactly the size, but he simply scooped out a hole in the ground. He constructed a surface drain and under drain and boarded it up; the silo cost him about $7 to $10, and he puts his corn fodder, in there, feeds it out to his cattle, and gets very good results. Down in New York state, however, Mr. Borden rejected the milk that had been made with ensilage and brought to the condensed milk factory and furnished the farmers with other feed. In our state I believe the results have been considered very good. If we had more silos this season, we would not have had so much trouble as we have had with poor corn. Ensilage should not be kept long out of the silo before it is fed, because a fermentation sets in — it hurts the milk. It is

a cheap feed, it is a valuable feed, and if the farmers in the west want to succeed in the dairy business, they have got to come to it.

Mr. Babbitt — I am sorry to take exceptions to these remarks, but the farmers of the state of Wisconsin are certainly bound to be led astray if they followed the advice of these gentlemen. Now, the Germans can learn to eat sour kraut; a first class fine New England or western boy can learn to smoke, and an Irishman can learn to drink whisky, and a cow can learn to eat ensilage; but when my friend here says that ensilage is a cheap food and a valuable food, and that the farmers have got to come to it, he goes against the positive and thorough experience of eastern men who have tested this matter. I saw but a few days ago a test which was brought out in Massachusetts, where they come down to the bottom of things, and they found out that the old-fashioned way of feeding stock was two per cent. in favor as against ensilage, and I believe that expresses the sentiment of every man who has tested this matter for a long time. I advise you, and I know I am right about it, to go slow on ensilage.

Mr. T. D. Curtis — We don't wish to condemn our neighbor's ensilage, because so much depends on the conditions and how it is used. I will read you here a range of analysis quoted by an eminent scientist, Major E. Alvord:

ENSILAGE.

Range of Analyses quoted from Eminent Scientists, by PROF. HENRY E. ALVORD.

	Range in 100 lbs.	Average.
Total dry matter	15.10 to 25.90	18.60
Water	84.90 to 74.10	81.40
Protein	0.90 to 1.90	1.30
Fat	0.30 to 0.90	0.60
Nitrogen, free extract	7.00 to 13.40	9.60
Crude Fiber	4.70 to 7.90	5.90
Ash	0.90 to 1.40	1.20

DAILY MILK RATIONS.

The following tables of daily milk rations are copied from Prof. E. W. Stewart's recent book on "Feeding Animals."

No. 1.

Materials.	*Cost in Cents.*
10 lbs. clover hay	4.0
10 " straw	2.0
4 " linseed oil cake	6.0
4 " wheat bran	3.0
2 " cotton seed cake	2.5
4 " corn meal	3.0
	20.5

No. 2.

16 lbs. meadow hay	6.4
8 " wheat bran	6.0
2 " linseed meal	3.0
6 ½ " corn meal	5.0
	20.4

No. 3.

18 lbs. corn fodder	4.5
8 " wheat bran	6.0
4 " cotton seed meal	5.0
4 " corn meal	3.0
	18.5

No. 4.

15 lbs. straw	3.0
5 " hay	2.0
4 " cotton seed meal	5.0
4 " bran	3.0
4 " corn meal	3.0
4 " malt sprouts	2.0
	18.0

No. 5.

Materials.	*Cost in Cents.*
10 lbs. corn fodder	2.0
10 " oat straw	2.0
2 " linseed meal	3.0
4 " malt sprouts	2.0
10 " oat and corn meal	10.0
	19.0

No. 6.

60 lbs. corn ensilage	7.5
5 " hay	2.5
2 " linseed meal	2.5
4 " bran	3.0
	15.5

No. 7.

60 lbs. corn ensilage	9.0
4 " corn meal	4.0
	13.0

No. 8.

40 lbs. corn ensilage	5.0
40 " clover ensilage	6.0
4 " bran	3.0
	14.0

No. 9.

40 lbs. corn ensilage	5.0
40 " clover ensilage	6.0
40 " millet ensilage	6.0
	17.0

PROPORTIONS OF FOOD FOR ADDITIONAL RATIONS.

By PROF. E. W. STEWART.

No. 1.

8 lbs. oat straw.
5 " bean straw.
5 " cotton seed cake.

No. 2.

20 lbs. barley straw.
5 " pea straw.
2 " wheat bran.
5 " linseed meal.

No. 3.

20 lbs. poor hay.
5 " corn meal.
5 " cotton seed meal.

No. 4.

20 lbs. wheat straw.
5 " wheat bran.
3 " corn meal.
4 " linseed meal.

No. 5.

20 lbs. fresh marsh hay.
5 " corn meal.
5 " cotton seed meal.

No. 6.

10 lbs. good meadow hay.
10 " rye straw.
3 " wheat bran.
5 " linseed meal.

No. 7.

20 lbs. best meadow hay.
10 " corn meal.

No. 8.

17 lbs. clover hay.
3 " wheat bran.
10 " corn meal.

No. 9.

25 lbs. oat straw.
5 " wheat bran.
4 " linseed cake.

No. 10.

20 lbs. corn fodder.
5 " clover hay.
2 " wheat bran.
3 " cotton seed cake.

I think, in my state, they are not as enthusiastic over ensilage as they used to be. They find it is very good as a condiment; it takes the place of roots, for instance, but it needs always to be supplemented with something else more nitrogenous; cornstalks in any form are not perfect food, they are too fatty. In experimental stations, last summer, it was found, that by using ensilage, it did not increase the yield of butter or fat in the milk. But it did effect the churning quality of the milk — it made it churn easier; they could get more of the butter out of it. There was less butter remaining after they commenced feeding the ensilage; dry feed always makes hard churning. If, in the winter season, you had plenty of roots or good ensilage for feed for animals, you would have very little trouble about churning. On the whole, I think that on large farms, where you have a large amount of stock to feed, it will pay a man to put it in a silo. It only pays on a large scale.

Mr. Hitt — Couldn't you keep a large amount of stock on a small farm if you had a good silo, and change the feed? Feed grain and hay at least once a day.

Mr. Curtis — If you soil enough and buy enough grain outside, of course you can keep a large number of animals. One thing you want to understand, that putting the cornstalks in a silo, don't add any nutriment to them; on the contrary, as a rule, there is less nutriment.

Adjourned to meet at 2 o'clock, P. M.

AFTERNOON SESSION.

JANUARY 18, 1884.

Met pursuant to adjournment at 2 P. M.

C. R. Beach in the chair.

Chairman — I understand that several of the committees are ready to report. Will the committee on Nominations make their report.

REPORT OF THE COMMITTEE ON NOMINATION OF OFFICERS.

Your committee appointed to bring forward the names for officers of this association for the ensuing year, beg leave to suggest the following names:

For President — W. H. Morrison, Elkhorn.

For Secretary — D. W. Curtis, Fort Atkinson.

For Treasurer — H. K. Loomis, Sheboygan Falls.

Vice Presidents — Article 3. of the Articles of the Association, provides that the Vice Presidents of the Association shall consist of all past Presidents, which together with the elected officers shall constitute the Executive committee.

All of which is respectfully submitted.

HIRAM SMITH,
F. B. FARGO,
E. MONTGOMERY,
Committee.

Report of committee was adopted.

REPORT OF THE COMMITTEE ON RESOLUTIONS.

Resolved, That the thanks of this Association are due and are hereby most heartily extended to the citizens of Lake Mills for their cordial hospitality and attention to every detail necessary to make our visit to their beautiful city delightful, and the convention entertaining and instructive.

Resolved, That this Association recognizes its indebtedness to those gentlemen who have presented papers on subjects pertinent to the occasion, and our thanks are hereby extended to them.

Resolved, That we thank the officials of the Chicago & Northwestern Ry., Chicago, Milwaukee & St. Paul Ry., Milwaukee & Northern and Wisconsin & Michigan Ry., Wisconsin Central Ry., and Milwaukee, Lake Shore & Western Ry. for a reduction of their passenger rates to persons attending this convention, and for their kindness and aid given by them in the past — the furtherance of the purposes of this organization.

Resolved, That it is the conviction of this Association that the law passed by the last legislature, whereby the Reports of this Association are combined in one volume with those of the Horticultural and Agricultural Societies has worked serious injury to the dairy industry of the state by delaying the printing of the same and greatly decreasing the number necessary for circulation, and we call for a repeal of the law.

Resolved, That the President and Secretary are hereby requested to see that our Annual Report is placed before the people before the commencement of the dairy season.

Resolved, That the members of this Association take special pleasure in commending and approving the very judicious management of its affairs the past year by its officers, and heartily extend our thanks for the fidelity and ability they have so conspicuously displayed.

W. D. HOARD,
J. G. LUMBARD,
R. P. McGLINCY,
Committee.

Mr. Babbitt—I would move this change in the fourth resolution, that we ask that the number of the reports of the Dairymen's Association be increased to 25,000 copies.

Mr. Hiram Smith—I move an amendment to the motion that it be amended to read 10,000 copies for the Dairymen's Association.

Motion on amendment carried.

Motion of Mr. Babbitt as amended, carried.

REPORT OF COMMITTEE ON BUTTER AND CHEESE.

Mr. President—Your committee who were appointed to examine the butter and cheese, beg leave to submit the following report:

CLASS I.

TUB OR PAIL OF BUTTER.

First premium..... $10 00
Awarded to Wm. Eaverson, Lake Mills.

Second premium..... 5 00
Awarded to H. W. Kellogg, Ripon.

CLASS II.

PRINT BUTTER.

First premium..... $5 00
Awarded to H. W. Kellogg, Ripon.

Second premium awarded to C. P. Goodrich, Fort Atkinson.

CLASS III.

GRANULATED BUTTER.

First premium..... $3 00
Awarded to Marr & Dyer, Whitewater.

Second premium..... 2 00
Awarded to Harris Bros., Spring Prairie.

CLASS IV.

PREMIUMS ON CHEESE.

First premium..... $10 00

Awarded to E. P. Ingalls, Milford.

Second premium awarded to H. Z. Fish, Lone Rock.

CLASS V.

HIGGINS CHALLENGE CUP PREMIUM.

Awarded to Harris Bros., Spring Prairie.

The cup was won last year by the same parties, which entitles them to keep the same permanently.

CLASS VI.

GEO. S. HART & CO., SILVER CUP.

Must be won three years in succession to hold the same permanently.

Awarded to E. P. Ingalls, Milford.

It has been won by A. H. Wheaton, Auroraville; Olin & Clinton, Waukesha; H. A. Congor & Son, Whitewater; August Klessig, Centerville, and Marr & Dyer, Whitewater.

Respectfully submitted,

C. F. DEXTER, Chicago.

R. P. McGLINCY, Elgin.

R. F. McCUTCHAN, Whitewater.

Committee.

REPORT OF THE COMMITTEE ON ESSAYS.

Your committee appointed to pass upon the essays received on the best manner of manufacturing butter and cheese report as follows:

For the best essay on butter making, of not more than 250 words, $15.00.

Awarded to D. W. Curtis, Fort Atkinson, Wisconsin.

For the best essay on cheese making, of not more than 250 words, $15.00.

Awarded to T. D. Curtis, Syracuse, N. Y.

Your committee recommend a special premium of $5.00 to H. Wrightson, butter and cheese dealer, Chicago, and that his essay be read at the convention.

Your committee wish in addition to strongly emphasize the following passage in the essay by C. M. Kellogg, of Ripon: "The lactic sugar contained in the cream changes into lactic *acid* and then hastens on to lactic *vinegar*. When the acid change takes place the culminating point is reached and churning *is the next* necessity.

HIRAM SMITH, Sheboygan Falls, Wis.,

J. B. HARRIS, Antwerp, N. Y.,

W. D. HOARD, Fort Atkinson, Wis.

Committee.

BUTTER MAKING.

By D. W. CURTIS, Fort Atkinson, Wisconsin.

Awarded the first premium, $15.00.

COWS.

Select cows rich in butter-making qualities.

FEED.

Pastures should be dry, free from slough-holes, well seeded with different kinds of tame grasses, so that good feed is assured. If timothy or clover, cut early and cure properly. Feed corn, stalks, pumpkins, ensilage and plenty of vegetables in winter.

GRAIN.

Corn and oats, corn and bran, oil meal in small quantities.

WATER.

Let cows drink only such water as you would yourself.

CARE OF COWS.

Gentleness and cleanliness.

MILKING.

Brush the udder to free it from impurities. Milk in a clean barn, well ventilated, quickly, cheerfully, with clean hands and pail. Seldom change milkers.

CARE OF MILK.

Strain while warm; submerge in water 48 degrees. Open setting 60 degrees.

SKIMMING.

Skim at twelve hours; at twenty-four hours.

CARE OF CREAM.

Care must be exercised to ripen cream by frequent stirrings; keeping at 60 degrees until slightly sour.

UTENSILS.

Better have one cow less than be without a thermometer. Churns without inside fixtures. Lever butter-worker. Keep sweet and clean.

CHURNING.

Stir the cream thoroughly; temper to 60 degrees. Warm or cool the water. Churn immediately when properly soured, slowly at first, with regular motion, in 40 to 60 minutes. When butter is formed in granules the size of wheat kernels, draw off the butter-milk, washing with cold water and brine until no trace of butter-milk is left.

WORKING AND SALTING.

Let the water drain out; weigh the butter; salt, one ounce to the pound; sift salt on the butter, and work with lever worker. Set away two to four hours; lightly re-work and pack.

HOW TO MAKE GOOD BUTTER.

By C. M. KELLOGG, Ripon, Wis.

Perfect butter is a beautiful structure. Its foundation is milk, produced in a painstaking way, from well kept cows. Its corner stone is cleanliness. It is made by the most approved plan. Ice and water are employed to cool the milk rapidly, and extract the cream quickly. As soon as the cream is separated from the milk it is removed and placed where it will gradually reach a temperature of about sixty degrees. Here the ripening process begins and culminates. The lacteal sugar contained in the cream changes into lacteal acid and then hastens on to lacteal vinegar. When the acid change takes place the culminating point is reached and churning is the next necessity. Butter color is to be added when necessary to keep the color uniform. A little experience will teach the right amount to be used. By starting with the cream at a temperature of about fifty-eight degrees in summer and sixty in winter, and using the improved method of churning without inside dash, we may always produce a granulated butter that needs but little washing to make it entirely free from milk, and by adding about one ounce of salt for every pound of butter, and working it evenly together in one mass, we have a production that will delight the eye and please the taste.

BUTTER MAKING.

By Mrs. L. T. TENNY, Hartland, Wis.

To obtain the best results, we must have good cows, good food and absolutely pure water. The cows should be kept comfortable and milked quietly at regular intervals. Cleanliness is absolutely essential throughout the whole process of butter making. There are various methods of raising the cream. It may be skimmed when sweet or when a little acidity has taken place, but should not be churned till somewhat sour. As little milk should be skimmed off with the cream as possible. The churning should be done at least twice a week, and in summer it may be done oftener. The temperature of the cream should be about 62°. If too warm or too cool, it may be brought to that point by outside appliances before commencing, but in no case put cold or hot water into the cream. Churn rather slow, but regularly and continuously till finished, which should be in from twenty to thirty minutes. Remove the buttermilk with or without water, and work the salt in thoroughly—an ounce to the pound. Let it set over night, or for several hours, and re-work, being careful to remove all moisture and not break the grain. The milk room should be free from odors of any kind.

BUTTER MAKING.

By MRS. N. W. MORLEY, Baraboo, Wis.

As butter is made from milk and the milk is obtained from the cow, our first care must be for her, would we be successful butter makers. She must have plenty of good milk-producing food and pure water. Her stables must be warm, clean and well ventilated, as the milk with the blood, passes through the lungs for purification. She should be handled gently, milked quickly and neatly. The sooner the cream is separated from the milk soured, not very sour, but a little more than slightly, aired and churned at a temperature of 58 degress in summer and 62 degrees in winter, in a churn that revolves without inside machinery to agitate the cream, the better. Should be churned with an even motion, not too fast. When the butter has come in grains as large as shot draw off the buttermilk and wash two or three times in cold water in which a little salt has been dissolved. After draining, salt with good, clean dairy salt, one ounce of salt to one pound of butter. After standing an hour or two work it carefully so as not to break the grain, until it becomes firm, tenacious and waxey. Pack carefully and cover to exclude the air. Of course everything about it must be kept in the height of cleanliness. Place it upon the market as often as once a week. Butter produced in this way will not only be gilt-edged, but golden throughout.

BUTTER MAKING.

By T. D. CURTIS, Syracuse, New York.

Have the milk of a healthy and properly-fed butter-cow drawn in the most cleanly manner. Carefully strain it, and however set, run the temperature below sixty degrees but not below forty. Skim just as the milk is the least acid, expose the cream to a pure atmosphere and moderately churn as soon as the cream turns slightly sour, so as to produce even concussion in all parts of the cream. Wash down the cream when the cream assumes a granular appearance, and stop churning when the butter has collected in granules the size of wheat kernels. Draw off the buttermilk and rinse in pure water below sixty degrees. Then float the butter in weak brine, to coagulate the caseine and albumen into a soluble form in about half an hour. Then thoroughly rinse in pure water. Stir in enough purified salt to suit your market, and work just enough to thoroughly incorporate the salt and consolidate the butter. Pack directly (or give a second working after standing a few hours), in style to suit your patrons, or in fifty-pound tubs, thoroughly saturated with brine. Rub purified salt on the inside of the tub, leaving a sprinkling on the bottom. Cover with a muslin cloth and a layer of salt, and make the package as nearly air-tight as possible. Store in a sweet, cool place. The good quality of the butter is guaranteed.

BUTTER MAKING.

By Miss GERTRUDE MARTINDALE, Oberlin, Ohio.

It is necessary to be well read in dairy matters, that the selection of butter cows, their food and care, the process for raising cream, churning and working butter, may be wisely determined with reference to individual surroundings. Be particular in the *details* of butter making. Experience will determine the exact temperature to have the cream to begin churning: the rule is 58° to 62° Far. It must be thoroughly ripened and in its first acid. Do not use a churn warranted to "bring the butter in five minutes;" one hour is soon enough for churning fifty pounds of butter. When the butter is sufficiently separated from the buttermilk, draw out the latter; gently wash the butter while in the granular form, first with pure water and afterward with brine. Add salt at the rate of one ounce to the pound of butter; work in evenly and let stand four to six hours.

When working over butter as soon as the moisture that works out looks watery and free from buttermilk, stop, if the color of the butter is even. This is the only part of the work connected with butter making that can be slighted, but in this there is more danger of working too much than too little.

For retail trade mould the butter into rolls or prints; if for shipping, put in packages best suited to your market.

BUTTER MAKING.

By the Short-Hand Reporter, MRS. R. HOWARD KELLEY.

Although totally lacking in experience, a large absorption of dairy conventions has led us to believe that we *know how* to make butter that should be not merely gilt-edge, but pure gold clear through.

Given the following conditions: One of Mr. Phillips' beautiful Jersey cows, selected by the judgment of Chester Hazen; if in summer put upon Mr. Faville's rich 40 acre pasture, or if with Mr. Hiram Smith, winter dairying is preferred, a judicious feeding of Prof. Henry's fragrant ensilage (made from Mr. Hoard's ten ton to the acre fodder corn), with occasionally some of Mr. J. M. Smith's carrots, not forgetting Mr. Beach's favorite dish of cotton seed meal; the cream raised in a Cooley Creamer, churned in a rectangular churn, worked with a Lever butter worker, the necessary savor added in F. F. dairy salt, then color with Fargo's Improved Butter Color.

These elements all combined under the skillful, intellectualized management of Miss Fannie Morley; and if the product shipped east by the Star Line does not bring at least $1.00 per pound, it will be either because it was not first sold on the Elgin board of trade, or because the millionaires down east are so far away from the great dairy center of the world that they do not know good butter from oleomargarine.

ESSAYS ON CHEESE MAKING.

CHEESE MAKING.

By T. D. CURTIS, Syracuse, New York.

Awarded the first premium, $15.00.

Pure whole milk from healthy cows, in luxuriant pastures or fed duly balanced rations in stall, is requisite. The more directly it goes to the vat, the better. If kept over night, reduce the milk to sixty-five degrees Fahrenheit. An agitator, to keep the cream from rising, is desirable. Mix night's and morning's milk when ready to work. If cream is mixed in, warm it and pass it through a wire strainer. Heat the milk slowly to eighty-four or eighty-six degrees. Add your coloring matter and rennet enough to begin coagulation in ten to twenty minutes, as desired. Cut the curd as soon as it can be done without waste, as fine as beechnuts. Slowly raise the temperature, gently stirring all the while, to ninety-eight degrees. Hold it there to the end. Draw the whey as soon as there is the least sign of acid, or a little before. Get sufficient rennet action to expel the whey before the acid develops. This prevents the phosphates from washing out and insures a digestible cheese, when properly cured. If you cheddar and grind or not, thoroughly stir and air the curd, to get rid of bad odors and develop flavor. Put to press not above eighty degrees, and place in an even tempered curing room at sixty-five to seventy degrees. Avoid direct draughts of air, and carefully turn and rub the cheese, which will be prime.

CHEESE MAKING.

By H. WRIGHTSON, 164 Washington street, room 13, Chicago.

Awarded special premium $5.

The process of manufacturing cheese being the happy result of accidental causes, requires neither care, cleanliness, system nor skill. Variety being the greatest desideratum, each factory should manufacture something in quality, size and style peculiar to itself, so that a carload collected from neighboring factories would include every possible variety of cheese, which would be very interesting, if not profitable.

There should be one factory at every four corners, surrounded by a slough, where several kinds of stink are struggling for supremacy. This will insure a small supply of tainted milk, making it too expensive to procure curd milk, modern machinery or skillful labor, thereby guarding against modern ideas.

Patrons should skim just a little and also keep home the strippings, and should never attempt to cool the milk after milking, for the removal of the animal heat would be very ungrateful to the cow. Milk cans should always be used for hauling the whey; it gives to the cheese that very desirable whey-tank flavor that will keep prices down. Rennet, the active agent, should stink, or at least be tainted; the strength and quantity should vary to get a variety of results, and have a few cheese just for the home trade.

Coloring matter should be inferior in quality and not thoroughly mixed with the milk; this will secure that beautiful mottled color so much admired.

Curd should be cut in two sizes and permitted to mat during cooking. This will make it cook unevenly, and procure two kinds of quality in one cheese, and if sour enough it will shed many a silent tear while in the curing room or on the road to be consumed. Never grind the curd for it makes too close a cheese without much souring, which deprives factories of their usual supply of bullets and also those fancy, spongy, porous cheese, that so amusingly raise the cover after boxing, peek-a-boo fashion.

Coarse salt is best, and should be weighed on rusty scales; this will help the cheesemaker to be good at guessing.

Curd after put in the hoops should be uncovered until it gets cold, then the rind will crack, making a home for the silly skipper. Do not put the pressure on gently from time to time, that would be cruel. Squeeze it everlastingly just once and remove it to the curing room whenever convenient, and trust to Providence to regulate the proper temperature for curing, and success will be your reward.

HOW TO MAKE CHEESE.

By J. A. SMITH, Cedarburg, Wis.

Cheese-making really commences on the farm. Good cheese can only be made from good milk. This requisite attained, set at 82° with sufficient rennet to make the curd break square in fifty minutes. Cut to size of kernels of corn. Let stand fifteen minutes if certain the milk was sound. Then heat evenly to 98° in one hour, stirring all the time, but very gently till a temperature of 90° is attained. Draw part of the whey at 90°, and most of the balance on the first evidence of approaching acidity, the chief sign of which is the hardening of the curd, and a readiness to part with its whey upon pressure in the hand, and firm enough to compact.

When only enough whey is left to float the curd, cool contents to 90°. Drain, stir and air till acid develops to spin one-half inch from hot iron.

Good cheese must have the right amount of acid. It is safer to develop it out of, rather than in, the whey. Salt at 80°, two and one-half pounds to hundred of cheese; then stir, cool and air, till curd is at 75°, and feels silky. Press hard enough to close curd smooth; grease once thoroughly. Turn every day. Cure in an even temperature of 70°, in pure air, and in such light as a few windows will admit.

CHEESE MAKING.

By G. B. HARRIS, Spring Prairie, Wis.

There are two necessary ingredients used in the manufacture of cheese — rennets and salt. Only the best should be used. First, heat the milk to a temperature of from 82° to 86°; shut off steam, add color, then put in sufficient rennet to coagulate in from fifteen to twenty-five minutes, according to time of year. When the curd has become firm enough to break, clean when tested with the finger, cut with perpendicular knife, allow to settle until whey covers top of curd; cut crossways with small knife, then cut with horizontal knife; apply heat again. Agitate carefully until heated to 98°; stir about ten minutes longer, then push the curd to the upper half of the vat; allow it to settle. When the curd has changed so that it will string one quarter inch on the hot iron, draw off the whey, make a channel through center of the curd and cut in strips about a foot wide, lopping one piece on another, changing often. When the curd will string on the hot iron from three quarters to three inches, according to time of year and nature of curd; grind and air by stirring, if tainted. Then salt from two to three pounds per thousand pounds milk, in regard to time of year. Then put to press for twenty-four hours — steady pressure. Take then out of the press, put in curing-room on clean shelves. Grease, turn, and rub every day, until marketed.

CHEESE MAKING.

By MRS. J. A. SMITH, Cedarburg Wis.

Set at eighty degrees. Use rennet enough to coagulate the milk in thirty minutes. When firm and will break over the finger squarely, cut twice and let stand ten minutes, Cut fine as peas, and let stand ten minutes. Apply heat gradually, stirring gently till the heat stands at ninety degrees. Draw half the whey and heat to ninety-eight degrees, and keep at that point till the curd becomes firm and will squeak in your teeth. Draw rest of whey, leaving enough to float curd. Cool to ninety degrees and stir while cooling. Draw all whey and let stand and drain till acid begins to develop. Salt two and one-half pounds to one hundred pounds of curd, when curd will spin one inch by hot iron test. Put to press when lowered to seventy-five degrees. Put on power gradually, that the whey may escape readily. When pressed two hours, dress up. Press twenty-four hours. Then put upon the shelves. Grease thoroughly, and turn and polish with hand every day until cured. Curing room should be clean, light and well ventilated, and kept at a temperature of seventy degrees.

CHEESE MAKING..

By W. C. BRAGG, Lake Mills, Wis.

Heat the milk to eighty-two degrees after coloring. Apply rennet enough that the milk will coagulate in fifty minutes. Cut twice with perpendicular knife and once with horizontal, stir the curd five minutes and cut again with each knife. Cook the curd the first four degrees in twenty minutes, and to 96 in thirty minutes more. The amount of acid required should ever vary with the quality of the curd, weather and season. During summer, curd should string fine from hot iron one-half to one and one-half inches before starting the whey, be well drained before salting, and well aired before pressing. In the cool weather of spring and fall little, and sometimes no acid is needed to make a fine, firm cheese. Salt two and three-quarters pounds to 100 pounds of cheese.

Tainted milk — Set at eighty-six degrees; cook to 100 degrees. When curd will string one inch draw whey, salt, and in one or two hours grind and put to press, or after salting, put curd in press thirty minutes, then take out, break up fine, and put to press.

Partly sour milk — Set at seventy-eight degrees to coagulate in thirty minutes. Cook slow to eighty-six to ninety-two degrees, depending on sourness of the milk. Draw the whey if possible before the curd strings. Pack in vat and grind, or if after heating acid appears before curd has hardened, have it string one inch. Draw whey, wash curd thoroughly with water, salt and put to press.

CHEESE MAKING.

By Judge GEO. W. WEEDEN, Sheboygan, Wis.

Heat the milk to eighty-six degrees. Hold it there during coagulation. Put in sufficient *sweet* rennet to coagulate so that the curd will cut slick in thirty minutes. Cut so that the pieces will not be larger than a beechnut. Heat to one hundred degrees in cold and ninety-eight in warm weather, stirring the curd carefully, so as not to bruise it during the heating and cooking. Cook at that temperature until the curd feels firm in handling. Draw off three-fourths of the whey. Keep the temperature the same until by squeezing some curd in the hand, it will expand or *crawl* a little on opening the hand. Run off the water, and if the weather is pretty warm, pump some cold water in with the warm water, to cool the curd a little, to prevent it from packing. Run off the whey, and keep the curd worked fine by careful handling until sufficient acid is developed, which may always be known by a velvety feeling of the curd. Salt with two and one half pounds of salt to each thousand pounds of milk and then put to press. This process of developing the acid in the curd after it is separated from the whey takes more time and labor than to develop the acid in the whey; but the curd will be better aired, sweeter, the yield will be better, and if well pressed, the cheese will be close, full meeted and fine flavored.

REPORT OF COMMITTEE ON DAIRY UTENSILS.

Your committee on dairy utensils would report as follows:

That we have examined the several articles on exhibit as well as circumstances would allow, but could under the circumstances make no actual tests with the several articles and devices. What is said then is the opinion only of your committee.

DIVISION I.

CREAM RAISING UTENSILS.

Deep Setting Method.

The Cooley Creamer, John Boyd, 199 Lake Street, Chicago. A deep setting can that is submerged. This we would place first of the deep setting devices.

The Chicago Creamery. A deep setting method with narrow cans which will curd the milk rapidly. Sperbeck & Stout, 21 West Randolph Street, Chicago.

A second system is shown in the Narrow Cream Extractor, which in our opinion if placed in ice water is equal to any deep setting system. N. B. Blackburn, 617 Grand Avenue, Milwaukee, Wis.

The third system is the Racine Dry Air Creamer. For want of actual test we do not know its value, but as the cream is raised by ice we see no reason why the method is not a good one. Racine Refrigerator Co., Racine, Wis.

The fourth and latest is the Kellogg Cream Raising Apparatus. In this the warm milk is poured directly upon ice placed in the bottom of a can of medium depth. For want of actual tests your committee is unable to decide upon its merits. The principle seems to be a good one.

DIVISION II.

CHURNS.

In our opinion we would place them in the following order as to excellence:

The Rectangular, in which the milk is given several concussions by each revolution of the churn. Cornish, Curtis & Greene, Fort Atkinson.

The Boss Churn, H. H. Palmer & Co., Rockford, Illinois, and Barrel Churn. Both Barrel Churns, Blakeman & Dobson, Rockford, Illinois. Both excellent churns, as is almost any churn that dispenses with dashers and paddles.

The Excelsior Test Churn, by Schuck & Bolander, Orangeville, Illinois, is admirably adopted to testing patrons' cream in the factory creamery system.

BUTTER MAKERS.

The Eureka and Lever Butter Makers, by Cornish, Curtis & Greene, Fort Atkinson, Wisconsin, are too well known in our state to need a word from your committee.

BUTTER COLORS.

Fargo's Improved Butter Color. We find this equal in coloring strength to any sample on exhibit, and freest from unpleasant taste. F. B. Fargo & Co., Lake Mills.

Bean & Perry's Natural June Butter Color is of high coloring power. Bean & Perry, Rockford, Illinois.

FEED CUTTERS.

Only one on exhibit. A machine of new construction as to feed geer, with revolving cutter blades, seems to be well made and adapted to its purpose. B. H. & J. Sanford, Sheboygan Falls.

The farmers present should examine Van Sickle's Champion Hay Unloader and decide upon its merits.

W. A. HENRY,
C. HAZEN,
S. FAVILL,
Committee.

THE MANUFACTURE OF CHEESE FOR THE ENGLISH MARKET.

BY J. B. HARRIS, Antwerp, N. Y.

In considering the subject of cheese making we are sometimes led to question that wisdom which has placed the limit which we call perfection so far beyond our reach. It seems a pity that all human efforts should be doomed to begin and end in imperfection. That cheese making begins in imperfection is a fact to which every cheese maker will subscribe a ready assent.

Cheese making commences with a natural product called milk, a perfect article of which, in such quantities as are accumulated at factories, is rarely seen.

It seems therefore to be the design of those engaged in the manufacture of cheese to commence their efforts under conditions which make perfection impossible.

It can hardly be expected that under such circumstances, he will ever be able to arrive at the goal of his hopes. If a perfect article of this substance is ever to be produced, the

process must begin at a point remote from the cheese factory—with the stock raisers and at the farm.

Cheese making consists in utilizing the laws which nature has enacted to govern the process. These laws, if strictly observed will inevitably lead to the desired end, and any departure from their provision will be certain to end in defeat.

In treating this subject we shall take matters as we find them, and deal with it, encumbered as it nearly is, with a host of imperfections.

We can not hope, in the present condition of the industry, to describe a perfect cheese factory, but we can map out a plan which comes the nearest to perfection we think of any in operation.

In choosing a location, a sight should be selected upon high and dry ground, so that *all* refuse matter may be conducted speedily and to a safe distance from the factory.

We will construct our building of the capacity of a thousand cows. We will build substantially, knowing that the industry in which we are to engage is a permanent one. Brick walls are none too good, but if wood is used let them be so constructed that they will be a protection against all unfavorable conditions of the weather. The cold, damp atmosphere of spring and fall, and the excessive heat of summer both operate to the disadvantage of the cheese maker. The manufacturing and curing rooms ought to be in separate buildings, and the curing room always on the ground floor. In this a very prevalent fault in the construction of cheese factories would be avoided.

Cheese cured over the making room and immediately under the roof is always exposed to at least two unfavorable conditions, namely, the heat of the sun on the roof, and the heat, steam, and odor from the making room below.

If the making, boiler and press room (and we include all three in one apartment), being 96 feet by 36, it will be large enough for our purpose. The boiler and engine shall occupy a position in one corner, so that in the cold portions of the season the heat of the former may be diffused about the apartment, but which in hot weather may be inclosed with a movable partition.

The capacity of the boiler should not be less than ten horse power, and the power of the engine not less than five.

Five 5,000 pound vats sitting parallel with each other, one end facing the weigh can, will perform the business of the factory.

Upon the platform four feet from the floor are the scales and weigh can. To a maker a little rusty in his arithmetic, five or seven beam scales are of much service, as the record of several messes can be readily kept without any particular mental effort, and without emptying the can.

Three sinks, each 12 feet by 3 and 9 inches deep, upon frames of convenient height, and supplied with castors and with *slats* in the bottom will be necessary in which to drain, mature and salt the curd.

Forty screws or four gang presses will be required in this factory, their position being selected with a view to convenience in the removal of the cheese to the curing room.

With a view to cleanliness the floor of this apartment has been laid with good, sound, well planed lumber with a slight incline from two ways toward a gutter at right angles with the lower end of the vats.

At the lower end of each vat there is a pipe communicating with the whey vat, one end of which protrudes about one inch above the floor.

A large movable tin funnel, the end of which may be inserted into either of these pipes, and which may be shifted from vat to vat as occasion requires, together with a two-inch syphon, or what is better, a faucet in the end of each vat, are all the appliances necessary for drawing off the whey. At some convenient point in this room a cask of perhaps forty gallons, within which there is a pipe communicating with the boiler, is all the arrangement necessary for the purpose of heating water.

Near this we will have a box eight or ten feet long by sixteen inches wide and eight inches deep, as a sort of sink in which the tools and utensils can be washed.

Between the two rows of presses, and connecting the make with the curing room, there is a railroad, upon which perambulates a car, thus affording an easy means of conveying the cheese from one apartment to the other.

CURING ROOMS.

This building should be about 80 feet by 30 feet, thus giving ample room in case of emergency, and divided into three apartments.

That the atmosphere of these rooms may be kept at all times in as perfect a condition as possible, their walls should be of three thicknesses with a space between in order that dampness, heat and cold may be effectually excluded. If, as is frequently the case, the building is erected upon posts at some distance from the ground, the floor should be double and well laid, and the room should be supplied with a most thorough and effectual system of ventilation.

The railroad we have already mentioned, extends along an entire side of this apartment. At right angles with the railroad, and parallel with the end walls of the building, and with each other not less than two feet apart are tiers of shelving, each tier containing four shelves.

This room should be supplied with a heating apparatus of sufficient power at all times to control its temperature. This apparatus should be so constructed as to diffuse its heat equally to all parts of the room. For this purpose we would recommend a coal stove located in a position as nearly central as possible.

This stove we would surround with a sheet iron jacket, about five feet high, and large enough to inclose a space of at least two feet about the stove. This jacket should be supplied with a means of hoisting and lowering, and should be so adjusted as to stand about six inches from the floor. The purpose of this arrangement is to cause the heat to pass upward, the space beneath being ample for a draft.

We have now given a brief description of a factory, which, generally speaking, is as perfect as any in operation. We have omitted a host of minor details, leaving them to be supplied by the taste and ingenuity of the cheese maker.

We have said nothing with reference to many improvements now in use, by which the power of machinery has been made to assist in the process of manufacturing cheese; but we wish to state that as our industry is a progressive

one, and our efforts are to be constantly in the direction of improvement, we shall not hesitate whenever a real good idea in this direction is offered, to take advantage of it, whether that idea relates to the chemical or the mechanical portion of the work.

We have now built and equipped our factory, but unless we can find patrons it will be of no use.

Ordinarily it will take one hundred of these to supply us with the amount of material for which we have built our factory.

There are as many different minds and as many methods of running a dairy as there are dairymen. Out of this fact we shall find in the course of our employment arise a large portion of the difficulties destined to beset us. If each individual of our one hundred patrons perfectly understood the natural laws which govern the production of milk, and obeyed them, the cheese maker would be relieved from many sore vexations; but the fact is a large portion of them do not, and so the cheese vat overflows with the unhappy fruit of ignorance.

In the number we have named there will always be found a few who do not and cannot be made to understand the importance of cleanliness, and the trouble which a want of it occasions at the factory.

There will be others who could not be induced for love or money to provide their cows with sweet wholesome food. It requires but a small outlay of money and labor to produce a field of peas and oats with which to bridge over the dry portions of the season, and *this* they will not make.

In every crowd of a hundred men there will always be found a few down-right lazy ones. There are some among our patrons, who, having a pump, will not use it, and so their cows are compelled to quench their thirst at the poisonous and pestiferous frog ponds and stagnant pools which here and there dot the surface of their pastures. If a majority of the men engaged in the cheese industry were of this character, the whole business would speedily end in a disastrous overthrow, as the baleful consequences of bad water for the dairy are too far-reaching for description.

The dishonest men are not all dead yet, and it would not be strange if one or two should be found on our list, and even among those who object to be placed in this class, there are some who have a weakness for cream in their tea, coffee, etc., or who, at least, have wives with such a weakness. And it sometimes occurs that their milk is found wanting in this important element. And if this weakness prevails to any considerable extent among our one hundred patrons, a few figures will show how a number of *petit* larcenies may become one great grand larceny. If fifty patrons each extract a quart of cream, the result is a loss equal to fifty pounds of cheese, and should this be repeated one hundred times during the season, we reach a total of five thousand pounds; the value of this is five hundred dollars, to steal which, by the laws of our civilized country, is grand larceny. The damage to the cheese is not covered by these figures.

We have heard of a man, somewhere at a great distance from here, in a place, the name of which we have forgotten, of whom *it was said that he watered his milk*, but we never could bring ourselves to believe the story.

In the company of our patrons, there is another class, of whom we must not forget to speak, namely: the clear-headed, painstaking, industrious and honest fellows, who *always* bring large yields of pure, wholesome milk, the result of whose labor and foresight is too often neutralized in the vat by the product of vice, shiftlessness and ignorance, with which it is mingled. Upon the shoulders of these, the motley company we have above described, ride into market and gain the attention of the purchaser.

But the things we do not like to say about the patron would fill a large volume, and as our space is limited we will bid adieu to this branch of our subject, trusting to time and the future to correct the abuses to which we have thus briefly alluded.

The experienced cheese maker, who has grown gray in learning the facts we have above enumerated with reference to the patron, and to whom the knowledge thus acquired has given the requisite amount of "cheek," will not fail

on the arrival of the first load of milk, and every subsequent load, to mount the wagon and give the cover of each can a surge up and down, thus forcing the air through the vent up to the nostrils. In this way he will be able to detect any objectionable odors.

If the maker has a proper sense of his responsibility, and that commendable independence of character which the loss of a few paltry dollars cannot daunt, he will promptly reject all material, which, if used, will operate to the disadvantage of those of his patrons who have furnished a good article, and throughout the whole season he will not fail to make use of all such tests as science and experience have provided for the discovery of *crime*, and the detection of abuses. In this way he will protect the honesty and industry of some against the vice and indolence of others.

If the maker be a sharp man (and we have known such even among cheese makers), he will give himself good weight, as in this way he will avoid difficulties, achieve for himself a good reputation, and if he treat all alike, the transaction will be found to be merely a harmless ruse.

The milk is now in the vat, and if the maker understands his business, he will by this time have thoroughly familiarized himself with the character of the compound with which he has to deal; he well knows how far it has advanced on the road to maturity, and will regulate his conduct accordingly.

If the milk be far advanced he will heat to not more than 82°, if otherwise, he may go as high as 90°, and here, as elsewhere, throughout the whole system of cheese making, let me say that there is no absolute rule, and that the figures we have given are only the approximate extremes.

Rennet seems to be the only true agent by which the cheesy matter of milk can be separated from the whey. Nature seems to have provided it for the cheese makers' especial use. Its office is not simply that of producing coagulation, but it goes farther, and exercises an important part not only in the curing of the cheese, but also in bringing about that condition in its substance which we call digestibility. No other substance of which we have any knowledge is capa-

ble of bringing about the same result. In view of these facts more than one idea should govern in the use of this important element.

If it is intended that the cheese shall go into market in from ten to twenty days, which is always the case in the early part of the season, enough should be used so that the process of coagulation will begin in from eight to twelve minutes. Rennet sufficient to accomplish this result, will in the time limited for sale, have performed all that is desired in preparing the product for the table.

It will be seen by this, if we have been clear in explaining the idea, that the time of curing, rather than the quality of milk, should govern the quantity used.

In the preparation of rennet too much pains cannot be taken. In the extract we have an article of uniform strength and always sweet. For this reason it is the safest for cheese makers to use, especially those who persist in using the whey-soaked article. Some claim they cannot keep rennet sweet when extracted with water. We never fail.

In the years 1880–81, I acted as cheese instructor, under the auspices of the Dairymen's Association of Eastern Ontario. During the first season I visited and made cheese in eighty-four factories, and in 1881, one hundred and seven. During the first season I found not more than three out of ten in which the rennet jar was in proper condition; seven out of the number using whey for the purpose of extracting. In 1881 the preparation was reversed, and not more than three in ten used whey.

The whey method seems to consist in decomposing the sack as well as extracting the gastric juice in sour whey. A compound, it is needless to say, fit for no purpose, but to be thrown away.

Every buyer who has had experience in shipping cheese to England, knows that it will be quite as well for him should his cargo sink to the bottom of the Atlantic as to land upon her docks with a flavor objectionable to English tastes. The rotten compound we have described above will develop such a flavor every time it is used.

The true method of extracting rennet is as follows: Al-

ways use a stone jar. Take a number of rennets sufficient for a week's consumption (if Bavarian are used), cut off the black ends, open and shake them out, and put them into the jar. Use about two quarts of pure water to each rennet, and one half pound of salt to each gallon of water; rub the skins four or five times each day for two days, then ring them out and strain the liquor thus obtained into another jar, and add all the salt, and a little more than will dissolve again. Put the skins to soak in another weak brine, and rub as before for two days. The skins should again be wrung out, and as they are of no further use, throw them away. Strain this second liquor into the first, and add more salt. If there is a cool place about the factory put the jar into it.

Prof. Arnold recommends making rennet in the winter sufficient for the whole season.

If in closing this branch of the subject we can say a word which will impress the cheese makers of the country with the importance of untiring painstaking in the preparation and use of rennet, we shall have accomplished a great work.

Let them write these words in letters of gold upon the pages of memory. A mealy, good cheese, can never be made with bad rennet.

I know of no means for the application of heat to milk, but what in the use of which it will be found that some portions will be warmer than others.

For this reason I recommend that after heating for a period of about five minutes, the vat be occasionally stirred, so that the heat be equally distributed throughout the whole mass, after which it will be proper to add the rennet.

Upon the application of the rennet, a period of at least three minutes should be devoted to thorough agitation, after which it may be allowed to stand for perhaps three or four minutes. Now with the bottom of a dipper occasionally stir carefully the entire surface of the vat, to the depth of about two or three inches, until coagulation begins. The purpose of this is that no portion of the cream in rising to the surface may escape the influence of the rennet.

Coagulation perfect, and the work of cutting begins. Now

let this be done as carefully as possible. I cut first with the perpendicular knife lengthwise, then across, and finally horizontally, not waiting, as many do, for the curd to settle and whey to become matted.

This is all the cutting that is necessary, except such pieces of curd as may have escaped the knives; these I cut with the perpendicular knife as they appear when raised to the top.

Unlike some cheese makers, I am now in no haste to apply the heat, knowing that the chemical process is still going on, and so for perhaps fifteen minutes I address myself to the work of careful hand stirring.

This rule is of more importance than will at first thought appear. By its observation one advantage is gained, the separation of the whey from the curd being more thoroughly effected than by the application of heat immediately after cutting, as the heat has a tendency to harden the exterior of the cubes before the whey has all escaped.

Experience has shown that in the process of making cheese a maximum of from 96 to 98 degrees must somewhere be attained. If 82 degrees be used, in setting, a balance of 16 degrees must be used upon the curd. If 90, then 8 degrees. Thus it will be seen that more time is necessary in heating the curd when the milk is set at 82 than at 90 degrees; and it will be borne in mind that the operation of stirring is to be kept up until the required heat is reached, and from five to ten minutes after. The purpose of stirring is to prevent matting. Care should be taken that no particle of curd be allowed to lie on the bottom exposed to excessive heat until

As careful stirring is necessary in order that the white whey be not started, do not heat too fast, as rapid heating requires rapid agitation.

After the steam is shut off, stir for five or ten minutes to secure a uniform heat throughout the whole mass. A good test by which to discover when the curd is cooked is to compress a quantity in the hand. If sufficiently cooked it will be found to have attained a certain degree of elasticity, and whenever the pressure is removed, the particles will resume their former shape and size. When this condition is

reached it will be time to draw the whey, and for this reason alone attention ought to be given to the work at this time; the test being frequently applied in order that the whey be not allowed to remain in the curd longer than is necessary, as it often contains some disturbing element. This is an important point in cheese making, as when the whey is allowed to remain too long with the curd, acid is developed, and a dry, mealy cheese is the result. If the whey is drawn too soon a soft, mushy article will be produced.

At the proper time draw the whey as quickly as possible. The time has now arrived when the sinks we have described in a former part of this article are brought into use. Over one of these a strainer cloth is thrown, and the curd immediately transferred to it. Here it is strained until the whey is all drained off. Sinks such as we have described, with a strainer cloth, and slats in the bottom, will be found to be much more convenient for the purpose of draining than the vat or sinks with the perforated tin bottom, as the process is not obstructed by the matting of the curd.

A good arrangement for effecting this purpose in cold weather are two sections of slats, each of the size of about one-half the length of the bottom of the vat, and so constructed that when placed in position they will stand about six inches high. These covered with a cloth, will perform the same office in the vat as that performed by the sink; the advantage of this arrangement being that the curd may be kept warmer in the vat than in the sink. If the curd is allowed to become cold it contracts, and thus the whey is prevented from running off, a condition of things fatal in its consequences.

Too much care cannot be exercised in draining and stirring the curd. When it is borne in mind that one-third of the substance of a perfect cheese is water, and that an addition of not more than five per cent. will spoil the product, the necessity of diligence and care in this branch of cheese making will be readily seen, and if we have succeeded in making ourselves clearly understood, it will be seen that all our efforts so far not only in cutting, heating, and at times

withholding the heat, but also in stirring, our aim has been that the separation of the whey might be the most perfect possible.

We will take it for granted that draining is complete; other events must now take place before we are ready for the salt. Let us stand back and let nature do something.

In describing his method of making cider vinegar, Hon. Harris Lewis says that the Lord makes the vinegar and he does the chores. So with us, nature makes the cheese, and we do the chores. Friend Lewis has excellent vinegar and if we only attend to our business, nature will attend to hers, and we shall have first-class cheese.

Mysterious forces are at work, and the curd is gradually becoming softer, and a velvety feeling is being developed, its coarse, harsh texture is rapidly giving place to one of a more cheesy character.

Experience now will tell us when the curd mill should be put in operation. To avoid white whey, this should be at a point and time midway between that in which draining was completed and that when salt should be added. It is a part of the character of curd while going through the process of maturing to adhere and form a solid mass; the purpose of the mill is to again separate it into small cubes, the better to secure a thorough permeation of the salt. Some cheese makers contend that matting is of no importance in the process, but experience has shown that such ideas are erroneous.

We know of no way whereby that firmness of texture, and at the same time soft flexibility can be obtained but by matting.

Without matting as above described, unless acetic acid be developed, cheese will be soft and porous; acid developed, and they are mealy, hard and indigestible, and lack that nutty, buttery quality, which characterizes the sweet whey matted process.

Besides, it involves too much labor to keep it fine enough while the work of maturing is progressing, and if this process be not already well advanced when the whey is drawn, and it lies in the sink for three or four hours as it sometimes

does, it will be impossible to prevent solidification, and the stirring to prevent it, will be apt to cool the curd too much.

It is desirable that the curd be cut into small pieces of equal size without bruising, and without starting the white whey, and to effect this we know of no machine by which it can be accomplished with so little labor as with the Dominion Curd Cutter. Curd cut with this mill does not patch together, as in the case of the peg or knife mill, and perfect uniformity having been reached in the form and size of the pieces, the permeation of the salt can not be otherwise than uniform.

So far as we have done right we have kept our curd warm, and in order that it still be kept so our sink should be supplied with a canvas cover. This cover should consist of a piece of canvas or duck, about twelve inches long and wider than the top of the sink or vat. Along this cloth transversely at intervals of about eight inches are wooden bars of the size of lath, fastened with tacks, or by means of strings tied at convenient distances.

These bars serve the double purpose of holding the cloth in position when spread over the vat or sink, and to facilitate rolling it together when we have done with it.

I cannot find words strong enough to impress upon the minds of cheese makers the importance of keeping their curd warm while maturing. I have seen so many cheese spoiled by drafts of cold air through open doors and windows that I have exclaimed with Mark Twain —

> "Where ignorance is bliss,
> T'were the height of folly to be otherwise."

Close attention to the curd at this stage of the process of maturing is important.

So long as there is an odor as of burned milk to the curd, when applied to a hot iron, there is no danger; but the moment this odor changes to nice toasted cheese, then apply the salt. On no account allow it to remain a moment longer, or you will have a tallowy cheese. You will have allowed the work of maturing to proceed too far.

The work of grinding done, and our material is wholly at

our command, we have only to wait until the condition we have described is reached, when we may apply the salt.

If the curd be a grassy one, the time to doctor it is after grinding and before salting, and the remedy to be used is one which nature has provided, namely, pure air. Exposure to the atmosphere by long and patient stirring will accomplish *wonders* in removing the seeds of decomposition which *bad water*, disease in the cows, or uncleanliness in dairymen has implanted in the milk.

SALTING.

There is no rule by which we may be governed in the use of salt, other than perhaps a very general one. If we design our product to cure in twenty days, and have used rennet sufficient to secure that end, more than 1¾ lbs. should not be allowed to remain in the cheese, as more than that amount will defeat our purpose.

But here we should consider the condition of the curd when it is applied, making allowance according to the amount of moisture still remaining in which some portion will be carried off in draining and pressing.

From this it will be seen that in the use of salt we must take into consideration not only the condition of the curd as to moisture, but also the time to be consumed in curing, thus avoiding the error of using a quantity of salt which will counteract or limit the action of the rennet, as it is known that salt and rennet work in opposite directions.

EXAMPLE.

Time of curing, twenty days; rennet sufficient to secure that, and moisture perfect; use 1¾ lbs. salt.

GIVEN.

Time of curing, forty days; rennet sufficient for this purpose, moisture perfect; use 2½ lbs. salt.

GIVEN.

Time of curing, twenty days; rennet sufficient for that purpose, allow for moisture 1⅛; use 2 6-16 lbs. salt.

GIVEN.

Time of curing forty days; rennet sufficient for that purpose, allow for moisture 20 per cent.; use 3 lbs salt.

In the manufacture of cheese salt performs a hardly less important function than rennet, a fact which we think must have been lost sight of by a number of cheese makers the past season in various parts of the country from the fact that in buying we found thousands of cheese badly injured from no other cause than the want of salt.

To secure a perfectly equal and thorough distribution and permeation of the salt after a vigorous stirring, allow the whole to stand for ten minutes. It can then go to press.

PRESSING.

Not much need be said upon this branch of the subject more than to say hoop rapidly. Never allow a full hoop to stand a long time exposed to the atmosphere, as by this means the curd becomes seered over, and a defective rind is the result. Put on the cloth and follower, and allow the mass to settle while engaged in filling the balance of the curd in the sink. By observing this rule cavities are avoided, sometimes occasioned by putting on the power before the particles of curd have been allowed to settle together. Press gradually until the whey is well nigh expelled and then put on all the power you have.

To secure a good rind if the curd is cool when put to press; when bandaging rinse the whey out of the cap cloths, dip them in scalding water, and place them again upon the cheese, as warm as possible.

To avoid cracks I think it is a good plan to press a cloth upon the top and bottom. In this way the necessity of greasing when first put in the curing room and rubbing every day is avoided.

Again, do not overlook the importance of turning your cheese the next morning after they are put to press. Examine them in order that you may correct any defect in form produced by the imperfect working of the press. Never put a cheese in the curing room objectionable to the eye in point of form. Let this be observed as an *iron* rule.

CURING.

Curing is a process of nature. We have only to observe certain rules in the care of our product, and in due season

nature will have accomplished the work. In another portion of this article we have given a description of the room set apart for this purpose. It only remains for us to give the rules and conditions governing the process. A steady heat of from 65 to 70 deg. ought to be maintained without cessation from the time the cheese are put on the shelves until the work is done.

When artificial heat is applied it will be found that those occupying the higher shelves cure more rapidly than those below, on account of the tendency of heat to ascend. For this reason they ought frequently to be changed, and their positions reversed. Too much heat has a tendency to beget a tallowy condition, while too little retards the process and a saggy, clammy cheese is the result. In extreme hot weather, to prevent excessive drying, I would recommend occasional sprinkling of the floor.

It is doubtless a fact that many cheese are spoiled after reaching the curing room through neglect.

Many cheese makers seem to suppose that as soon as the cheese are upon the shelves they are out of harm's way, and need no further care or attention from them, and the work of turning, rubbing, and the general business of this department is given over to the boys.

WEIGHING.

As it is now the custom for each factory to do its own weighing and boxing it will perhaps not be out of place to say a few words upon this subject. In weighing care should be taken to give good weights, thus avoiding the mortification of being docked perhaps a pound upon each box upon delivering at the station.

BOXING.

In shipping, especially to England, it often occurs that ten, fifteen, or perhaps twenty cheese are piled one upon another. In this way a single cheese is made to sustain a great weight. To provide against this they should be so boxed in substantial boxes that the surface of the cheese and the upper edge of the box rim be upon the same level. In this way the

burden will be divided, and the cheese and the box each be made to sustain its share.

BRANDING.

As branding is a part of the cheese maker's duty we wish to remind him that in this, as in all other parts of his work, pains should be taken and he should see to it that in writing weights and stenciling shipping marks the work be done in a neat, workmanlike manner.

In order to protect the figures and letters from obliteration, from rolling the boxes about, it is a good plan to place them at the lap in a column, so that when properly piled they all may be seen.

Throughout the whole course of this article we have supposed ourselves engaged in the manufacture of cheese for the English market, and have kept constantly in view a texture flavor and general appearance required by that market.

In the business of making cheese no one is more deeply interested than the patron, and with him much depends upon his own efforts. He should be thoroughly alive to the necessity of producing his material at the factory in as perfect a condition as possible, never for a moment allowing cupidity and greed to warp his understanding, or his ignorance and slothfulness to stand in the way of progress and general good.

It is now time to draw our remarks to a close.

If the cheese maker is actuated by those motives essential to success in any branch of the world's industry, he will form a resolution at the commencement of the season, and renew that resolution on the morning of every day, to neglect no single point in the whole routine of his duties.

It should be his aim to write the name of the factory over which he presides, *First Among Cheese Factories.*

In order to do this he should study cheese making as a science.

He should know the nature of the material upon which he is to operate, the laws governing the process over which he presides, and the characteristics of the result he desires to

effect, and knowing this he will be prepared to perform the operations we have described, intelligently, and with success.

A mere superficial knowledge which extends no farther than what the eye sees and the hand executes, will never succeed on the march to success.

DISCUSSION.

W. D. Hoard — I assume that a large number of the readers of the *Union* in this section of the county have read this week's issue, have read a little statement in there, looking to the publication of market reports or the publication of the account sales of individual shippers. I wish to make this explanation — that what I want is, to have every shipper, as he receives his account sales from the merchants to whom he has sent his goods, shall send it to the office of the *Union* for the purpose of having it published in connection with others. Now, the effect of this will be this: First, it will give the only true butter market in the county — the only statement which will show just what is received. You know we cannot always believe the reports of the sales of butter, but if the county sales of the commission merchant is published, you can rest assured that there will be no jockeying with it in the *Union* office. The second effect it will have will be to present an enlightened condition of criticism. If Mr. A. does not receive as much for his butter as Mr. B. for that week, he falls to looking it over. He is interested in the whole matter. He hasn't got half so much foolish and silly pride about how much butter he sells, as he has about the money he wants. And lastly, not the least effect, is that which it will have upon the commission merchant. His account sales will be offered, and if he does not furnish you just as square and truthful reports, and give you as good results as he ought to in comparison with other commission men, you see he is subjected immediately to criticism. I believe if the individual farmers will give us their account sales to get into shape, and you have the *Union* for the medium in which you can publish this thing, you will find that it is a good thing. I would like to have you all, whenever you receive your account sales, to send to the *Union* office, and it will be included in the next publication.

Prof. W. A Henry—A letter came to me this morning from Chicago, which will answer some inquiries which I have had with reference to oil meal, and cotton seed meal. It is from Aldrich & Norton, 78 La Salle street, Chicago. The prices are, new process oil meal $24 per ton. Old process $27. Cotton seed meal $25. That is the price aboard the cars. As I said before the value of the cotton seed is far in excess of the oil meal—it is the richest feed in the market. I have a letter also, from the St. Paul Linseed Company in which they tell me they have linseed oil meal for $20 a ton, new process, and if the sacks are returned they will allow ten cents a sack, or $2 a ton, so that the meal on board the cars at St. Paul costs $18 a ton, if you return the sacks. There is one thing you must remember. You must not feed too much of the cotton seed meal. Two pounds of cotton seed meal for cow, for an average cow in full flow of milk, would be enough, along with other food. Don't give them too much—it hurts the quality of the butter. I think for cheese possibly, you could feed a little heavier. In our experience, cotton seed meal is a great butter producer, and if a person wished to test a cow, to see what she could do, cotton seed meal is probably the best feed. I also advise farmers to look up malt sprouts.

Question—How is that fed.

Answer—It is very dry when received, and should have water poured upon it, and allowed to swell; it should swell to four times its bulk. Of course, in this cold weather we could hardly use it.

Question—How do you mix the cotton seed meal?

Answer—That would be fed dry just as you would corn meal.

Question—If with other feed you would mix it?

Answer—Yes; here is a good chance for combination among farmers; suppose you would want to try this cotton seed meal—why don't a number of farmers combine together and get a few hundred pounds? You want to do what the Sheboygan county farmers are doing; Mr. Hiram Smith told me he and his neighbors had combined to get a carload from St. Paul, and that is $18, if you return the sacks.

Convention adjourned *sine die*.