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Eleventh annual report of the Wisconsin Dairymen's Association : held at Elk-horn, Wis., January 31, and February 1 and 2, 1883. Report of the proceedings, annual address of the president, and interes...

Wisconsin Dairymen's Association

Madison, Wis.: Democrat Printing Co., State Printers, 1883

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Yours. Respectfully
Chester Hazen

FIRST PRESIDENT OF THE WISCONSIN DAIRYMEN'S ASSOCIATION
1872 TO 1874.

Western Bank Note Co. Chicago.

ELEVENTH ANNUAL REPORT
OF THE
WISCONSIN
DAIRYMEN'S ASSOCIATION,

HELD AT

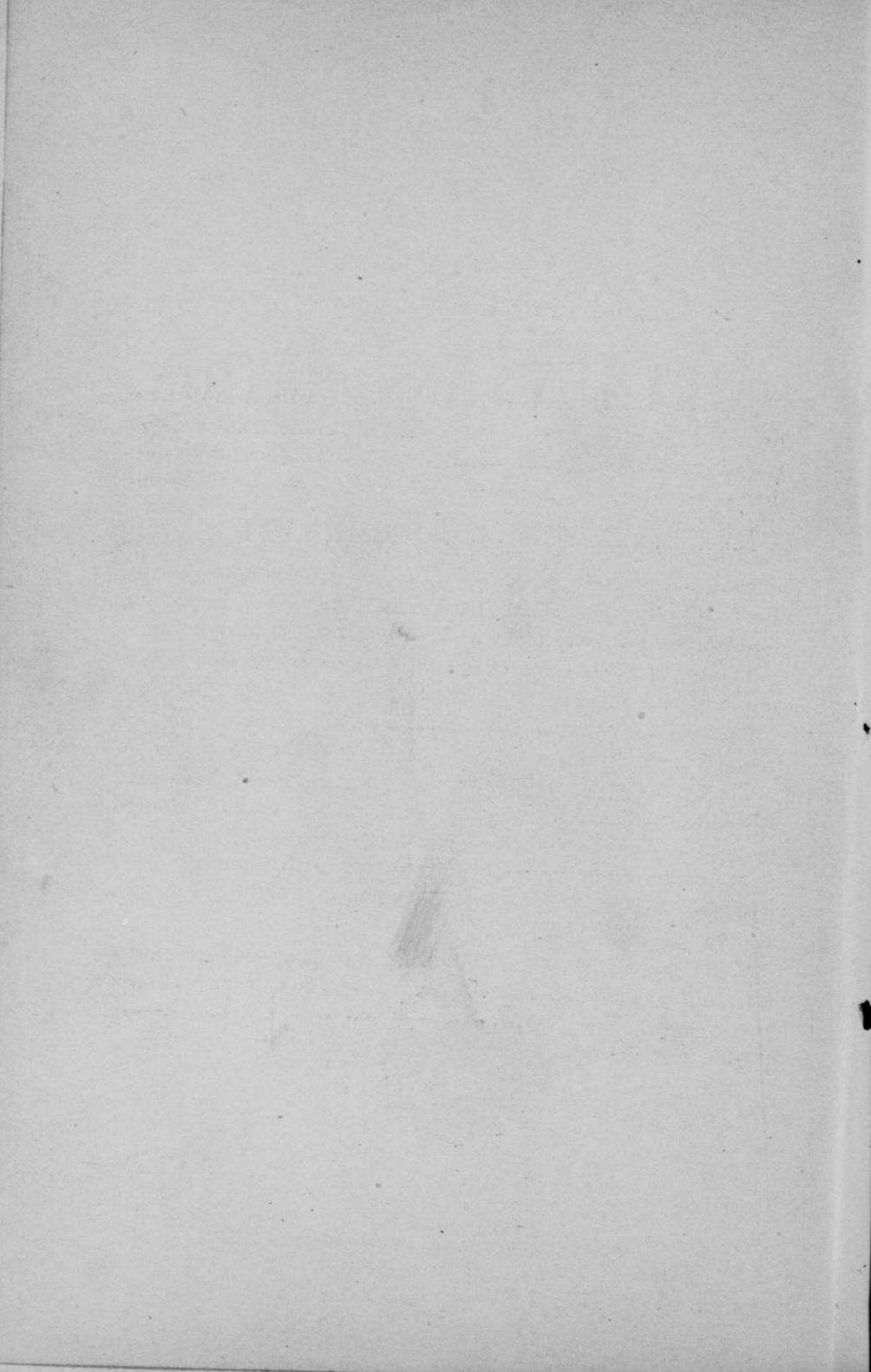
ELK-HORN, WIS., JANUARY 31, AND FEBRUARY 1 AND 2, 1883.

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.
1883.



PREFACE.

In presenting this report the secretary desires to state that owing to the severe snow storm and extreme cold weather the convention was not as well attended as some of its predecessors, although a much more elaborate and valuable line of topics for discussion had been prepared.

It might be well to remind dairymen that when the association secures such thorough masters of these questions as Prof. Roberts, of Cornell University, and Prof. Henry, of Madison University, they can hardly afford to stay away.

The report will be found to contain very much that is valuable to the thinking and reading farmer and dairyman. Those who do not read and think we can hardly expect to reach except by example.

The report of the Union Dairy Fair is compiled from data furnished by Mr. R. P. Jennings, the courteous and efficient secretary of the Milwaukee Exposition Association.

The Exposition Association paid in full all premiums awarded, although the Fair was a financial failure owing to the extreme cold weather.

The time and place of holding annual meeting has not yet been decided upon. Localities desirous of having the next meeting held with them are requested to correspond with the secretary.

D. W. CURTIS.

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OFFICERS, 1883.

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 VI. 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.

MEMBERS FOR 1883.

A.

Aldrich, A. M., Burlington, Wis.
 Allen, Geo. R., Bloomfield, Wis.
 Allen, D. S., Lima, Wis.
 Allen, L. E., Elkhorn, Wis.
 Allen, Lucius, Elkhorn, Wis.
 Aldrich, Alma, Spring Prairie, Wis.
 Austin, H. H., East Troy, Wis.

B.

Beamish, John, Elkhorn, Wis.
 Barnes, H. D., Spring Prairie, Wis.
 Burk, Z. B., Lyon, Wis.
 Buell, Sidney, Bloomfield, Wis.
 Beach, C. R., Whitewater, Wis.
 Bean & Perry, Rockford, Ill.
 Briggs, H. A., Elkhorn, Wis.
 Bangs, B. S., Delavan, Wis.
 Billet, Geo., Whitewater, Wis.

C.

Curtis, D. W., Fort Atkinson, Wis.
 Carswell, N., Elkhorn, Wis.
 Conger, W. H., Elkhorn, Wis.
 Cowles, John, Elkhorn, Wis.
 Church, Cyrus, Elkhorn, Wis.
 Clark, R., Elkhorn, Wis.
 Church, L. C., Walworth, Wis.
 Curtis, F. C., Rocky Run, Wis.
 Curtis, T. D., Syracuse, N. Y.
 Cronk, J., Waupun, Wis.
 Calkins, G. S., Palmyra, Wis.
 Cheever, D. G., Clinton, Wis.
 Chadsey, Albert, Sharon, Wis.
 Cooper, J. W., Whitewater, Wis.
 Casey, D., Delavan, Wis.

D.

Deirhick, La Fayette, Wis.
 Davis, J. P., Elkhorn, Wis.
 Dunlap, Chas., Geneva, Wis.

E.

Edgerton, S. R., La Fayette, Wis.

F.

Flack, Hiram, Elkhorn, Wis.
 Flack, John, Elkhorn, Wis.

Flack, D. L., Elkhorn, Wis.
 Foote, M. H., Spring Prairie, Wis.
 Fisk, H. E., Walworth, Wis.
 Fish, J. M., Springfield, Wis.
 Foster, Asa, Elkhorn, Wis.
 Fish, H. Z., Lone Rock, Wis.
 Fargo, F. B. & Co., Lake Mills, Wis.

G.

Greening, Wm., La Grange, Wis.
 Green, Harvey, La Fayette, Wis.

H.

Hubbard, E. A., Troy, Wis.
 Hawks, H. I., Lyon.
 Hubbard, J., Spring Prairie, Wis.
 Hubbard, W. M., Spr'g Prairie, Wis.
 Hammersley, W. H., Geneva, Wis.
 Harris, J. H., Spring Prairie, Wis.
 Howe, S. B., Elkhorn, Wis.
 Hoard, W. D., Ft. Atkinson, Wis.
 Henry, Prof. W. A., Madison, Wis.
 Hazen, Chester, Brandon, Wis.
 Hatch, E., Jefferson, Wis.
 Hollister, J. H., E. Delavan, Wis.
 Hyde, E. S., Sharon, Wis.

J.

Jacobson, Ole, Sugar Creek, Wis.
 Jones, T. L., Helena, Wis.

K.

Ketchpaw, Jacob, Elkhorn, Wis.
 Kinney, T. B., Sugar Creek, Wis.
 Kling, Jacob, Troy, Wis.
 Kinney, M. W., Lyon, Wis.
 Kelley, Mrs. R. H., (short-hand reporter, Room 31 Major block, Chicago).

L.

Loomis, H. K., Sheboygan Falls.
 Lauderdale, J. E., LaFayette, Wis.
 Lee, N., Elkhorn, Wis.
 Lytle, Geo. A., Elkhorn, Wis.
 Lytle, Sam'l, Elkhorn, Wis.
 Lawrence, Geo., Jr., Waukesha, Wis.
 Lang, Willis, Waupun, Wis.
 Lawrence, George, Kenosha, Wis.

M.

Morrison, W. H., Elkhorn, Wis.
 Meadows, Geo., Lyon, Wis.
 Meadows, Wm., Lyon, Wis.
 Merrick, Leroy, Spring Prairie, Wis.
 Meacham, W. P., Troy, Wis.
 Mayhew, M. M., Spring Prairie, Wis.
 McCanna, C. B., Springfield, Wis.
 Moorhouse, Isaac, Elkhorn, Wis.
 McGlincy, Col. R. P., Elgin, Ill.
 Miller & Son, Chas., Utica, N. Y.
 McCutchan, R. F., Whitewater, Wis.
 Marr & Dyer, Whitewater, Wis.

N.

Norton, A. C., Spring Prairie, Wis.
 Norris, H. C., Elkhorn, Wis.
 Northrop, S. S., Clinton, Wis.

P.

Purdy, P. L., Springfield, Wis.
 Pratt, Orris, Spring Prairie, Wis.
 Phelps, C. K., Geneva, Wis.
 Paden, H. C., Elkhorn, Wis.
 Potter, Alonzo, Elkhorn, Wis.
 Preston, D. S., Elkhorn, Wis.
 Piersons, Robt., Sharon, Wis.
 Prescott, Otis, Elkhorn, Wis.

R.

Rockwood, S. S., Janesville, Wis.
 Reek, Joseph, Lima, Wis.
 Ross, Wm., Geneva, Wis.
 Roberts, Prof. I. P., Ithica, N. Y.
 Ramsey, M. P., Elkhorn, Wis.

S.

Smith, Hiram, Sheboygan Falls.
 Spencer, Henry, Elkhorn, Wis.
 Smith, J. B., Lyon, Wis.
 Smith, C. W., East Troy, Wis.
 Skiff, B. F., Lyon, Wis.
 Snyder, John, Elkhorn, Wis.
 Smith, J. A., Cedarburg, Wis.
 Smith, J. M., Green Bay, Wis.

T.

Taylor, J. L., Elkhorn, Wis.
 Taylor, C. P., Springfield, Wis.
 Torrey, Maj. R. D., Milwaukee, Wis.

V.

Voss, August, LaFayette, Wis.
 Vahey, John, Elkhorn, Wis.
 Vosburgh, John, Richmond, Ill.

W.

Waring, E. S., Elkhorn, Wis.
 Weaver, J. E., Millard, Wis.
 Wisewell, P. S., Elkhorn, Wis.
 Wineg, C. E., Elkhorn, Wis.
 West, S. G., Elkhorn, Wis.
 Wisewell, Geo. N., Elkhorn, Wis.
 Wilkinson, H. J., Whitewater, Wis.
 Willard, Chas. P., 20 La Salle St.,
 Chicago.
 Williams, John, Delavan, Wis.

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TRANSACTIONS,
WITH
ACCOMPANYING PAPERS AND DISCUSSIONS,
OF THE
WISCONSIN DAIRYMEN'S ASSOCIATION,
AT THEIR
ELEVENTH ANNUAL CONVENTION,

Held at Elkhorn, January 31 and February 1 and 2, 1883.

The eleventh annual convention of the Wisconsin Dairymen's Association convened at the court house, in Elkhorn, Wednesday, January 31, at 2:30 P. M., Vice President Hazen in the chair, who stated that the severe snow storm had blockaded the roads so that it was impossible for Mr. Beach, the president, to reach here on time. As Prof. W. A. Henry was here, from the University at Madison, he would call upon him for a "talk" upon matters at the University.

PROF. W. A. HENRY.—*Mr. Chairman, Ladies and Gentlemen:* It seems to me it is time this meeting should be called, and even if we have not all whom we hope to see here; if there are persons here who have come to obtain information it is time we were talking with each other, time we were giving out and receiving facts. The dairy interest is such in the northwest that when as many people have gathered together in a room as are here that are interested in the dairy question, the time should not be wasted. These meetings are expensive, they demand our time, they demand inconvenience in travel, so we should get to work and get acquainted with each other. About the time this meeting closes you will hear persons saying, "I wish we had an hour

longer to discuss that question." Let us put that hour in right now, at this end of the meeting. Let us get warmed right up and make this a good lively meeting. This is my first coming among the people of Walworth county, I am sorry to say—sorry because I know I need your help; whether you need mine or not I doubt.

I wish I could tell you something about our experimental farm. It is rather a small farm. People very often go away with a very small opinion of the farm and the man that has charge of it, but I have done as well as I could. One of our lines of work has been producing sugar from sorghum cane. I will have some here this evening to show you, and each of you can take home a sample. We have produced on the University farm this year about two and one-half tons of sugar. We got nearly a ton and one-half from three and one-half acres.

I have at the farm four very excellent milch cows that are now just in condition to use for any experiment that I might wish to carry on. They are all just fresh, they are large cows, and they are pretty well accustomed to the farm. Our chemist and myself have discussed what experiment we had best try. Whether we should try the value of oil meal for producing butter, or whether we had better try any more ensilage experiments; but we concluded we had enough of those experiments just now. Then we have discussed different hays, then bran and corn meal, and now I wish you would talk it over among yourselves at this meeting, and think of some experiment that you think ought to be carried on, and I will guarantee that we will do all in our power. I have one man that I have trained who will, if necessary, stand by those cows from half-past four in the morning, until six in the evening, except to go to his meals. I have a young man who will attend to the butter with equal care, and under all circumstances I can assure you, we will conduct the experiment, whatever it may be, with the greatest care. We have taken two lots of milk of sixty pounds, and when we come to weigh the butter unsalted, there would not be any more than the turn of the scale's difference. That is the accuracy with which our butter maker works. I have one man who,

if a cow throws a stalk in feeding, he picks it up and it is weighed. We are trying to be accurate.

There is something that is of considerable interest to me and possibly you might be interested in it. It is the importance of a chemist to help our farmers in their wants. Let me tell you about a man that I have secured to assist me. When I went to Madison two years ago I found a young man, an instructor in chemistry, helping Prof. Daniels. He was working for \$400 or \$500 a year. He had graduated at the University, was teaching several times a day, but spending his odd moments in improving himself. When I found him he was studying the glucose question, and his experiments were certainly very interesting.

He got a box of Duryea's corn starch, and the next day he had some beautiful glucose made out of it. He turned the corn starch into syrup, having the sweetness, though not the flavor, of honey. He had a purpose in view in working with that corn starch, and it was not long until a glucose factory in Iowa heard of him and they offered him a salary of \$4,000 a year to come and work for them, but they told him they were expecting to make articles which must be sold under names of a different character from what they were really. They wished him to be a chemist to help them adulterate different articles of food. And it was a question whether he should take \$4,000 to do such work and thus give up his integrity or stay with me. He is now at work with me at \$1,200 and I want to secure that young man as a friend and a helper to the farmers. You may say "What use can he be?" There are many uses. This fall when I was at Chicago at the fat stock show, I found upon the table that a glucose company had a certain kind of new feed called glutenile which they sell for \$15.00 a ton. I said to myself, "here's a new thing, I wonder what it is worth." I went down to the factory and I said to the president, "Sir, I would like if you showed me a chemist's analysis of your meal." He showed me one for which he probably paid \$200, in New York. I said, "Is this correct?" "Yes." "Where do you send this meal?" He said, "Mostly to Orange county, N. Y." I said, "You ought not to send that there, you ought to send it to Wisconsin, and only ship but-

ter to Orange county." The result was that he sent me a ton of the meal; the chemist has analyzed it and has found it is superior to oil meal in richness. If that is true our farmers ought to know it; at \$15.00 a ton it is cheaper than oil meal.

Now, with a chemist at our university at Madison, we could find out many things which we can only get from a man who turns his attention to these things. We could get honest things sold to us; we could do at least something to correct this flood of adulteration of food that is going over the country. Over in Germany the farmers have three hundred such chemists, and there are sixty experimental stations, and about one thousand men working constantly at them. They analyze the feed of the cattle, the fertilizers that the farmers use, they stand by the farmers, and over there in Germany it has got so that a German farmer carries in his pocket the German farmer's hand book. I can go to the governor, go to some of the legislators, and they will be interested in this matter, but unless the farmers help me I cannot get that young man put in the place I want him. He is a Norwegian, who started in the shops up in Janesville, and he has proved himself a grand man, and it seems to me we ought to be interested to keep this man for ourselves. I hope you will talk this matter over and get a little more union and harmony. I go to Madison and I see this man going round talking, pushing, lobbying—he represents the railroads. Then this other man, he is watching the interests of a logging company up north. So every corporation has a member who is helping them, but the great farming interests, which lie at the bottom of all, have not a single man to lobby it. Put up a measure that helps the farmer, and there is not a man to help it. Put up a measure against a railroad, and there are hosts brought there as fast as telegraph and railroads can carry them. We want more organization, and until we have that we must require at the hands of our legislators that which we fail to possess through our inertia.

President Beach having arrived, introduced Hon. Otis Preston, who cordially welcomed the association to Elkhorn.

Mr. President, Ladies and Gentlemen of the Wisconsin Dairymen's Association—A harmless rural custom has crystallized into an invariable usage, that whenever a representative assemblage convenes to inquire as to the better processes of advancing public interest, by instituting further inquiry as to the better modes of promoting research into the unexplored fields of thought, and by public discussion and comparing of results or experiments, and spreading these results before an inquiring public, inviting a spirit of inquiry in regard to the better ways of promoting the welfare of any industrial pursuits, or by confining their inquiries to some special or specific industrial vocation, some one is selected to accord to, or voice to them a cordial welcome. This post of compliment has fallen to my lot, not from any adaption to the position, but probably in view of a long residence in our unpretentious rural village, and a slight recognition of regard for gray locks. First, then, gentlemen, permit me to greet you and accord to you a most cordial welcome as harbingers of advanced and advancing thinkers. A body of men who are doing the public as well as yourselves a positive good by promoting a greatly increased interest in a skilled industry. Yes, gentlemen, I am warranted in saying that whoever fosters or promotes in any of the varied fields of industrial pursuits skilled labor, promotes the public as well as their own private interests, and adds liberal deposits to the exchequer of the community. For I regard it as a fact demonstrated, that pioneer thinkers constitute the most potent factors of public progress, and should be recognized as constituting a most useful class of citizens. For I regard it as true as a problem demonstrated, that pioneer thought precedes skilled labor; for however wise and useful the problems of a practical brain power, the thoughts, the problems of these advanced thinkers, need further the utilizing, patient experiments of skilled labor, to demonstrate their utility. And when they accord in effort, useful results are sure to follow.

Gentlemen, there can be no question that the problems evolved from patient inquiry by the Dairymen's Association of Wisconsin has resulted in adding many thousands to the wealth of our Commonwealth, and these thousands will in

the near future be augmented to millions. You have not only greatly raised the standard of dairy products and stimulated a spirit of emulation, but you have also created a largely increased demand for the gilt-edged, on the part of the public, and this increased demand for the best on the part of the public, has effected the jingle of many increased dollars in your own plethoric pockets. And, further, gentlemen, we greet and welcome you for having given to the dairy products of Wisconsin a fame which every citizen, not a misanthrope, is proud of. The clarion of fame which attaches to the dairy products of Wisconsin has been heard not only through the length and breadth of our own land, but its notes of praise have reached foreign nations, and recognition of the merits of Wisconsin dairy products adorn the side boards of many Walworth county dairymen, and it is a pleasure to advert to the fact that the fame achieved by one of the fair daughters of the state, has placed upon her name a coronet, which the friends of Miss Marley hold as more lasting, more to be coveted, because more useful, than the ephemeral applause which attaches to the beauty of Mrs. Langtry, the Jersey Lily.

And gentlemen, there are other chaplets to garland the names of distinguished Wisconsin Dairymen. And here we will take a license, the prerogative which poets sometimes avail themselves of, and this germ to a supposition will assume the form of inquiry. If the alleged beautiful Indian maiden Pocahontas, daughter of Powhatton, did not look into the kaleidescope of time and forecast in the roll of coming years in the far off Northwest, a land subsequently called Wisconsin, a capital dairy belt, peopled, honored, and utilized by Smiths, and in consideration of what she forecast, instead of an amorous maidenly impulse, was it not that which prompted her to heroic efforts to spare the life of the Ancestral Smith?

And there are many others I would name would time permit, but being a citizen and proud of honors which attach to Walworth county, I will here note the fact that the side boards of the Flacks and Lytles, are decorated with tankards and goblets (dairy prizes), which would raise the inquiry

with a stranger as to the probability that their names could with propriety be enrolled as advocates of prohibition.

Again, gentlemen, it is only the stupid that fail to note that the car of progress moves on with accelerated speed in our favored state. And it is equally potent that the Wisconsin Dairymen's Association are worthy of bearing aloft the banner inscribed with those inspiring words *forward* and *excelsior*, and it is only here and there that can be found a person so wedded to inherent despondency as to still insist that you "crazy fellows" are bound to glut the market and cause the dairy interest to go down in one everlasting "kerflummax," whatever that may mean. So then, gentlemen, as you are enterprising and brave, so be forbearing and kindly towards these weaker vessels of humanity; take them by a little strategy; induce them to survey the real situation; show them that the dairy belt, which is really fitted to advantageous dairying, constitutes but a fraction of our own widespread country, and that in our own country the demand for first-class products is not retrograding, but that diversified interests are constantly opening new marts of trade, and that the old world has, by the inevitable law of supply and demand and cost of production, given the outlook for further advance of price; provided, if skilled laborers and advanced thinkers work in harmony and work out the problem of greater excellence, which is most likely attainable not only in dairy products, but whatever the *live man* resolves is attainable; for none, I think, will insist that the acme of the attainable is yet reached. Gentlemen, in my musing moments I sometimes regret that the results of yours and kindred associations, such as agricultural societies, with all their prompting influence to excel, can not be placed in a demonstrated form so as to be studied in its financial effects. How soon it would silence the cavil of those who carp and sneer at what they are pleased to call "impractical theories." A word for the cow, the prime factor of all your exultation. Quietly, steadily she adds to the value of Wisconsin's broad acres; she erects and adorns the rural homes which are found upon the hillsides and grassy slopes of the state. And the practical eye of sagacity would hardly mistake these homes in traveling over the state.

Generally embowered amidst the foliage of the evergreen and maple; the roadways and the walks fragrant with the aroma of flowers which greet the eye and please the senses.

Generally these mansions of architectural taste as well as comfort are the abodes of refinement, where the children speak the words father and mother reverently. Books, magazines and papers are found upon the center table; sisters receive polite and kindly attention of brothers, which betoken the general fact that refinement is usually found amidst pleasant surroundings. And it is from such homes that we look for the future men and women, who will give character and lead in giving refining influences to society. As light differs from darkness, and day from night, so will the graduates of such homes differ from those young men who spend their evenings in the saloons and billiard rooms; from such homes hoodlums seldom graduate.

To close, all honor to the Cow, and all who appreciate her capabilities, when utilized by the members of the Wisconsin Dairymen's Association.

RESPONSE TO ADDRESS OF WELCOME.

By HON. R. D. TORREY, Milwaukee.

Mr. President, Ladies and Gentlemen, Members of this Convention and its Friends: I regret exceedingly that our friend Mr. Smith is not present to respond to this warm address of welcome. I regret it the more for fear that I cannot represent even one branch of the numerous Smith family. I regret it because I know that from Hiram Smith's lips never fell a word but that it was profitable to listen to; but, however, your irrepressible secretary has pressed me into this position.

Welcomes are always pleasant. It is true they are sometimes without heart, they are sometimes without merit, and we feel that we had rather not be welcomed; but when, as now, a welcome comes from a citizen of the best county in the State of Wisconsin, from a citizen who for more than two score years has been one of your energetic, active, prosperous, honored and worthy men; when, as now, a welcome

comes from such a man, and from a man who represents the best agricultural site in the Northwest, to a body of men who are doing so much in their Dairymen's Association, one feels as though he ought to be able to respond, and we already feel that we are at home. We already feel sure of the success of this convention. It cannot be otherwise. Before us are representative men of Walworth county mingling with those who represent the State Dairymen's Association of Wisconsin, all united in this one grand purpose — that this shall not simply be a holiday that we spend here in Elkhorn, but that it shall be to the profit and the best interests of all the people who shall come within these walls during the session. Now, what shall make this convention all that is desired? What shall be the best or better method of making this convention the grandest success possible? It will not be a success if Mr. J. M. Smith or Mr. Chester Hazen, or Mr. Hiram Smith, or the President or any other man or set of men shall do all the talking. It will not be that profitable meeting unless every person shall feel, that comes within these walls, that he is part and parcel of the convention, that it is his convention. That if he has a question to ask or an argument to advance he has the right to do it. This is what makes conventions most successful, in my opinion. It is not the lengthy paper that may be read. It is not the finished, polished address or anything of that kind; it is the question that may arise, the argument and debate that may be had upon the ideas advanced in these papers.

So allow me to say in conclusion, in accepting your welcome Mr. President, be assured we all feel we are glad to be here and to express the hope that not only you, but every person who comes here will feel like taking hold and putting forth his best effort to make the convention a grand success.

OPENING ADDRESS.

By C. R. BEACH, Whitewater, President of the Association.

Members of the Wisconsin Dairymen's Association, Ladies and Gentlemen:—It is expected that the President of this association will give an address at the opening of our annual

meeting, but if this custom was omitted at the present time, this gathering would lose none of its interest.

Yet I am glad to have this opportunity of thus publicly extending a cordial greeting to so large a number of the older members of this association, and equally glad to welcome so many who are strangers to me. And I most heartily congratulate you all upon the present prosperous condition of the business this society represents, and for the success of which it has these many years so zealously labored.

Every added year of prosperity places our business upon a broader and firmer basis — gives increased confidence to those engaged in it, encourages them to extend it, to give to it more exclusive and undivided attention, furnishes them the means to make permanent improvements, by building better barns, improving their dairy stock, adopting better methods of manufacturing, gives them that increased knowledge and skill which comes from practice, inspires them with ambition to excel, and so leads to healthy, legitimate and permanent growth.

Nothing succeeds like success, and the best assurance that we can possibly have of continued advancement and improvement is the fact that so much has been accomplished.

While the dairymen of Wisconsin may not have done all that they might, yet when we remember the difficulties and prejudices that have been overcome, we feel that the pioneers in this business are entitled to all praise for the perseverance, the energy and intelligent foresight which they have shown. We can almost count the years upon our fingers since dairying in this state has been recognized as a separate branch of farm business, yet to-day it occupies one of the very highest places among the sources of wealth to the state, and the reputation of our products has been steadily improving till, in point of quality, they are excelled by none.

Since our last annual meeting there has been held in the commercial metropolis of this state a grand union dairy fair under the auspices of the Butter and Egg Association of the United States, the Northwestern Dairymen's Association, the Milwaukee Exposition Company and the Wis-

consin Dairymen's Association, to which dairymen throughout the world were invited to compete for the liberal prizes there offered.

And it gives me pleasure to say that, in the opinion of those best qualified to judge, the exhibits at that fair of butter and of cheese, both in quantity and excellence of quality, far exceeded any previous exhibition made in this or any other country, showing that the dairymen of the northwest not only deserve, but are bound to maintain the high reputation of their products. But while the exhibition was a source of gratification to all, I am sure that every dairyman in Wisconsin felt a peculiar pride in the large number of premiums given to exhibitors of both butter and cheese from this state; and what is still more gratifying, is the fact that almost to a man the prize-winners were members of this association. And I can not believe that this was a mere accidental coincidence, for this is not the first time that honors have been won for the dairymen of Wisconsin by members of this association in contests where all the world competed. And it would be gratifying to me if we, as an organization, should, in some suitable manner, acknowledge our obligation to them for the honor they have conferred upon us and upon the state.

But while we would confer honor upon those to whom honor is due, and congratulate each other upon the progress hitherto made, our only object in doing so should be to stimulate to greater effort in the future.

We are not as yet all of us prize winners. There is very much to be done before the majority of the dairymen of this state have brought their business up in point of amount produced, or quality of product, or profit in production to compare with the best we could name, to say nothing of an *ideal* standard.

And while we are willing to acknowledge that very many keepers of cows are not surrounded, and cannot at once surround themselves, with all the conditions to make the best returns, we do claim that there are but very few who are doing the best they can under the circumstances they are surrounded.

There are within the limits of this state not far from

500,000 cows, each cow representing in her own value, in land for her maintenance and in buildings and fixtures, a sum not less than \$265, or a total of \$137,500,000, the annual interest on which at 7 per cent. will amount to over nine and one-half millions of dollars. If the labor of one man at \$300 dollars per year, without board, be equivalent to the care of twenty cows, then we must charge these 500,000 cows, in addition to the nine and one-half millions interest, seven and one-half millions more for care, making seventeen millions of dollars or \$34 per cow. Though our dairy statistics are not very full or very reliable, I am satisfied, after considerable study, that the average products of the cow in this state will fall below \$30.

But we know that there are dairymen who realize forty, fifty, sixty, and even seventy dollars per cow, making the average income of the majority of our cows much less than the sum that I have named. And, therefore, their owners are not receiving a full equivalent for capital invested and labor performed. This ought not so to be, and there is no good reason why it should be so. And until every dairy in the state is placed upon a paying basis this association has work to do.

Your committee have given us a programme embracing a wide range of subjects, questions in science, in theory, and in practice, and those who take part in these discussions will without doubt, give us their best thoughts, and we shall receive valuable addition to our stock of knowledge; but unless we incorporate what we learn into our future practice, it will do us no good. It will be like plowing and sowing a field and then lay no plans to harvest.

The real truth is that we all know better than we do, we are all conscious of not doing our best, and he that will do the best he knows, will soon know best how to do.

Said he who spake as never man spake: "He that will do his will shall know of the doctrine." Here is unfolded the universal law of progress. If ye will do, ye shall know.

Earnest striving after right doing is the surest road to right knowing.

It is also the most effectual way to diffuse knowledge. One successful dairyman, though he say but little, will by

his example do more to elevate the business in his neighborhood than half a dozen who do nothing but talk, however learned and eloquent they may be.

I who receive but forty dollars a cow this year will next year be much more likely to realize fifty dollars if my neighbor is receiving sixty dollars.

So, then, successful practice not only benefits the doer, but it also indirectly aids and inspires others.

The truth by the living voice is but for once; but he who puts that truth in practice repeats it over and over again; the lesson he teaches is ever before us.

But however learned we may be in the principles of our business, and however completely we may have mastered all its details, and however enthusiastic we may be, we can not always keep ourselves up to our best without occasionally seeking inspiration outside of the daily routine of our own particular sphere.

This want is most happily supplied by *this* and kindred associations.

Said a friend to me not long since: "What benefit do you derive from attending dairy conventions? Have you ever changed your method, and are you a better dairyman for all that you have learned by attending them?"

My answer was: "I do not know what kind of a dairyman I should have been had I never attended any of them. Of one thing I am quite certain, that those who do attend are better dairymen than those who do not; whether they are better because they attend, or attend because they are better, I shall not attempt to determine.

We all remember the old fashion religious protracted meetings, the object of which was not so much to teach theology, as to inspire men with a desire after a higher standard of living. So we, while we may hope to impart valuable knowledge, must mainly strive to inspire the dairymen with an ambition to teach a higher standard, to make the most of their surroundings, to practice more thoroughly what they already know.

When we have done this we have inaugurated a reformation, the value of which it is not easy to estimate.

If we can increase the annual product of our cows from

thirty dollars to fifty dollars, at an additional cost of ten dollars, we have added a yearly increase of four millions of dollars to the wealth of the state.

But fifty dollars is by no means the limit to which we may aspire. Neither are we keeping all the cows that our lands will maintain. There is as yet but one cow to every seventy acres of land in the entire state. We can, by improving our methods, double and quadruple the number of our cows without diminishing the amount of our other farm products.

So then the field for our efforts is almost limitless in every conceivable direction.

No equal number of dairymen in the world have so many natural advantages, so many facilities for the successful prosecution of their business as we in Wisconsin have to-day.

There is no place where butter and cheese can be produced at less cost. And if we clearly perceive and wisely use all the means at our disposal, we can not fail to make our business more a success in the future than we have in the past.

All that has been accomplished will be but so many prophecies of what we shall in the future achieve.

The end attainable is worthy of our highest ambition and our most persistent effort, but it can only be reached by the united endeavors of every dairymen in the state.

DISCUSSION.

Chester Hazen in the chair.

Mr. Hazen—I would like to have the opinion of dairymen in regard to the question of changing pastures. I have in my mind a dairyman who told me last year that he had but one pasture, and upon that pasture he turned his cows out as soon as the snow left the ground, sometimes before, and he pastured them there until the snow came again. He had no fodder, he had no sowed corn. He carried his milk to a cheese factory, and the cows netted him for eleven months \$72.00 per cow. Well, I thought that most remarkable. In the east, where I came from, it has been insisted upon by

the best dairymen that cows did better for butter if they were pastured the whole season upon the same field without change, if there was plenty of food.

Mr. Stephen Faville—Did this friend of yours tell you how much corn he fed besides this pasture?

Chester Hazen—Not in summer any. In the fall, when the food became dry, they were fed a little wheat shorts, but no sowed corn. There were thirty acres in the inclosure, and that field kept at least ten head of cattle. It was upland, with the exception of about five acres of marsh.

Mr. Stephen Faville—Twenty-seven acres of land ought to keep 10 cows in first-rate shape. Twenty-seven acres of land that would only pasture 9 cows and a horse ought to pay \$70 apiece for the cows to pay for the use of the land. As to the question raised by our worthy president, my opinion is that if a pasture contains sufficient food, it is better that the cows remain there and not be changed. If I had 40 acres of land, enough to keep them, I would have it all in one field if I could, and they should be there all the time, and my reason is this: Suppose we had it in two fields and put 40 cows in one, in a week it would get short; you then turn them onto the next field; it would be fresh and they would gorge themselves, and then the next day they wouldn't want so much; milk would be irregular; their cream would be irregular, their diet would be irregular. We can not have it this way, unless in both fields there was a great deal more than the cows could eat. The gentleman referred to had an unreasonable amount of land to keep that number of cows. I pastured last season 30 cows on 40 acres, and quite a good deal of it was new seeding; they were not turned out at all. It was very late when we did a little feeding. Those cows fed all they wanted, and I went into that pasture and got three or four good, large loads of hay, and drew it up so as to make a little after feed in the field.

Mr. Chester Hazen—I prefer to pasture in one pasture through the season, provided I have feed enough for my cows. In changing pastures, where you change the cows into fresh feed when they have been a a little short they will overload their stomachs and shrink in their milk. My opinion is cows want steady feed. I change my pastures once

in two or three years, seed them over. I think I get more feed from new seeding than old. I practice a rotation of crops. I have pastured fifty head of cows in a pasture of sixty-five acres, and had good feed all summer and got some hay in the pasture besides. If an acre and a half of land won't pasture a cow first-rate I don't call it worth much to me.

Mr. J. M. Smith — Some time since I was visiting a friend who has a farm of sixty or seventy acres. He was complaining that he had not land enough, he could not do anything to keep cows.

It is an extra good farm and I said to him, "My friend if you will put your land to its best uses you can keep forty head of cattle." He looked at me in utter amazement. Says I, "I mean it." I want to ask these dairymen here if I was extravagant or out of the way, and I will give him the answer.

Mr. Faville — I would say, No, sir; but these fellows laughed at me about pasturing thirty cows on forty acres. I believe seventy acres ought to pasture forty cows and give them all they want.

Chester Hazen — I would say so too, but I would have to pray the Lord to increase my faith until I bring my practice up to it. We know that we as dairymen do not do anything of the kind and our object is to attain to it if you will tell us how. My impression is that through all the average of the dairy sections it will take at least five acres to one cow. A man with one hundred acres of land, if he raises all his feed upon it, is not very likely to keep more than twenty cows and keep them well.

Prof. W. A. Henry — I can tell you of a farm in this state that is keeping forty-seven cows on seventy-eight acres.

Chester Hazen — I wish to know if he produced all his feed upon that seventy-eight acres of land. It is easy enough to keep a hundred cows on a small enclosure if you feed them.

Prof. Henry — This farmer has resorted to ensilage as a means of raising all the coarse feed that his stock use. He raised something over two thousand bushels of corn. I know he is making money on his farm. I am positive I could

raise the coarse feed for a cow the year around on an acre of land. That would be good land.

President Beach—I am very certain that many of us keep as many cows as we ought to upon our land, even if we have only one cow to five acres. This question of how we are going to make our land support a cow to the acre. It can not be done at once. There may be a time when we can keep a cow to the acre, but I think the millenium will come before that, and we shall not have to keep cows.

Mr. D. W. Curtis—I would like to ask the President if the quality of the milk is changed by the feed or only the quantity; whether with richer food she will produce richer milk or whether it increases the quantity.

The President—My impression is that a cow that has a good large flow of milk, as a general rule it is not as rich as a cow that has less milk. Grass that grows upon land that is producing three or four tons to the acre is not worth as much as land upon which a ton or a ton and a half is produced.

Mr. J. M. Smith—I am keeping three or four cows, and I am constantly experimenting with them. Two years ago I had a large lot of parsnips. I concluded to feed them out, and in feeding them out our cows did remarkably well. They gave the richest milk of any crops we have ever fed; the quantity of milk was increased some, but the quality very much.

The President—How many pounds of that class of milk would it take to make a pound of butter?

Mr. J. M. Smith—I think I gave my cows a bushel a day each of parsnips. Good butter at that time was worth about twenty-five cents a pound, and after changing the cows with the other feed and allowing the skim milk and for taking care of them I had twenty-five cents left for every bushel of parsnips that I fed. A bushel of parsnips was worth a pound of butter.

The President—I wish Prof. Henry would tell us how many pounds of milk it takes for a pound of butter up there at the University farm.

Prof. Henry—Mr. President, I can say that my sources of information are two, that is, what I may have learned in

meetings of this character, and, second, what I have learned by direct examinations, which, of course, with a person of my age and experience must be very small, and all I can tell you about the question proposed is that so far as investigations in Germany and a few conducted in America have gone, they have gone to show that the milk is but slightly influenced by the quality of the food. The flow of the milk may be largely increased or decreased. In experimenting between ensilage and fodder corn we found we improved the quality of milk by feeding ensilage over the fodder corn, but you can see the reason why milk should not go up and down with the feed. Milk is made in the process of nature to feed the young, and nature is very practical in her goodness to the young. You know that a mother with the Typhoid fever in her whole system can yet nurse her child and the child be free from the fever, because nature is careful for the life of the child, even more so than the life of the mother. So in this matter before us, she has arranged it so that the milk shall be of pretty much the same quality.

The President—Can you tell us whether the milk of new milch cows is better adapted to making butter than that of a cow that has been long milked? Mr. Hiram Smith has claimed that new milch cows are a necessity in order to produce premium butter. That is contrary to my preconceived opinion. You will tell whether it is contrary to science. I have never shown but one sample of butter and taken one premium, and that was in the winter when my cows were not new milch cows. That received fifty points on a scale of fifty, but I think the judges might have been deranged.

Mr. Lytle—I would like to hear this question fully discussed as to the quality of milk obtained from rich feed. Our commission men and the eastern men tell us that our butter excels eastern butter simply because we feed rich food, and from what little experience we have had we find that when a cow is fed well with heavy feed we get butter that has got a grain to it. With reference to the new milch cow giving good butter, I can not answer; but this fall I was talking with Mr. Thatcher in Milwaukee, and I asked him that question, and he gave his reasons in this way: That the milk from a new milch cow contained larger globules than that

of the cow that had been milked a great while, and the milk from that cow would produce finer butter than from an old cow, and the reason was this, that when the cream was rising the large globules rose faster than the smaller ones, and in mixing the two together you would not get as good butter; but in rising milk from a new milch cow they were all large globules, and in that way you got better butter.

The President—I would like to ask Prof. Henry a question in regard to the quality of bran, where it is extremely light in comparison with heavy bran. Which do you prefer, light bran or heavy bran?

Prof. Henry—That would take just about one hundred dollars' worth of chemistry to determine. The nutritious part of wheat bran is deposited very near the surface, and the reason why our doctors tell us we must eat more coarse wheat is because the millers have thrown that out and left nothing but the starch in. But in the new process they grind so close to the husk that there is more gluten and nitrogen in the flour, and that will consequently be deteriorated.

Adjourned to 7:30 P. M.

EVENING SESSION.

Convention met pursuant to adjournment at 7:30 o'clock P. M.

President Beach in the chair.

THE IMPORTANCE OF RELIABLE CROP REPORTS.

By W. H. MORRISON, Secretary Walworth County Agricultural Society.

From the farm come the issues of American civilization and prosperity. The entire stricture of our national life rests upon and springs from the soil. In a word, the farm is our hope and our pride.

With our 40,000,000 acres of wheat, 80,000,000 acres of corn and oats, 16,000,000 of cotton and then the immense interest concentrated in the dairy products, then to swell the grand total we have millions of acres of barley, rye, potatoes, tobacco, flax, etc., and yet this vast interest, this vocation that

upholds and vivifies all other occupations, occupies a subordinate position. It is certainly a demoralizing spectacle for farmers, who should be the peers of the land, to take the products of their broad acres and go out single-handed, humbly tendering their wares to the well-organized commercial speculators, and the question almost invariably is: "How much will you give for wheat to-day?" The answer should come from the farmer: "The wheat is No. 1, weighs 60 pounds to the bushel and is worth \$1 per bushel." But to the contrary he humbly receives what is offered. The cultivators of the soil know too well that they have not been suitably rewarded, consequently a sense of self-depreciation, a dumb hopelessness, akin to despair, takes possession of them; they feel that they have been imposed upon, that their work, their endeavors, their vocation is misappreciated; in a word, they fail to infuse the dignity, manhood and conscious superiority over all other vocations that rightly and properly belongs to the farmer.

It is only through co-operation that farmers can cope effectually with the combination of capital that would undermine and disorganize our free-hold system. Farmers are too careless of their legislative rights. Take, for instance, our western states, whose people live by, and whose chief business is, agriculture, and how perfectly oblivious we are who shall represent us in the assembly or senate! Consequently, very little has been done to advance the particular interest of the farmer. In the make-up of committees, the best talent, financiers, men whose keen scrutiny reaches far into the future, are placed upon "ways and means." The professional man, the student, the scholar, on "jurisprudence;" the speculator, the man who will make a living, crop or no crop, success or failure—he is just the man for the committee on railroads and corporations.

The last committee generally to be made up is that on agriculture, and you have the fag-ends, the defunct politician, the men who never make success, possibly some new member who lacks legislative knowledge, and consequently the encouragement of the interests of the producing classes is nearly, if not wholly, ignored.

In the matter of co-operation, other vocations work

together. Merchants have the exchanges, the men who handle the products of the farm have their "boards of trade;" all except the farmer have their organized associations, where ways and means are discussed to promote and benefit their respective pursuits, and almost wholly is their success, their prosperity dependent upon the prospective crops of the farmer.

Right here is a grand work for our State Board of Agriculture. If they wish to secure the hearty approval and co-operation of the farmers of this state give to them a monthly crop report, founded upon facts and derived from correspondents located in every township throughout the state; this will enable them to place a proper estimate on the value of their crops, under the general laws of supply and demand. Many of the states have already adopted a system of crop reports. The Michigan crop report is prepared and published by their secretary of state. Seven hundred and eighty-nine correspondents, representing 629 townships, give the farmers some idea of Michigan's productive capacity. Secretary Chamberlain, of Ohio, who with S. D. Fisher, secretary of the Illinois Board of Agriculture, are the pioneers of this great work. Ohio has a monthly report from 1,700 correspondents, and I believe Illinois has a still greater number.

The crop reports of even the great grain growing states of the northwest are imperfect. In order to be accessible, and to impart the information necessary to farmers, they should be prompt, but in the most of instances of crop statistics gathered by township assessors, they are not published till the crop has been marketed and a second one nearly grown. No one can deny the immense advantage to the producer of prompt and accurate reports of the acreage and of the prospective condition of the crops all through the growing season.

In conclusion, I think that the time has already come when the best interest of the farmer demands that not only grain, but fruit and meat reports, shall be issued by the general government. We do not wish an elaborate report, a weekly bulletin furnished to all our agricultural papers. The same could be posted each Saturday morning during

the growing season in all our post offices. Producer and consumer would thereby be equally benefited.

DISCUSSION.

Prof. Henry—I don't think I can sit still when there is a subject of this character under discussion. I have been working at it for some months. I have worked with the Governor of this state upon this subject, and you who read his message will perhaps know that he had a few lines in his message upon the subject, and Monday there was an article in the Milwaukee Sentinel. The state of Ohio has gone so far in this matter that she has settled the value of crop reports to the farmer. Over in Michigan they have got a live secretary. He has about seventeen hundred correspondents. They are furnished with postal cards, which are filled out and returned a certain day of the month—no earlier and no later. These agents work without pay, being intelligent men who are willing to do so. Those postal cards come pouring in, they are all mailed on the same day, and when the secretary gets to work with three or four men around him, they sometimes work all night. They tabulate by counties and the printers set it up as fast as they can, and there is the crop report. Each correspondent receives one of those; they are sent to all the newspapers in the state, and the Ohio farmer, sitting on his porch in the summer time, knows the condition of wheat all over the state, the condition of the apple crop, he knows the number of hogs in the state, all about the corn crop, and you can see the power he gains by it. Let us not presume that our farmers are so ignorant that they would not read them if they had them. In our farmer affairs we ought to be as wise as serpents and as harmless as doves; we ought to take lessons from these railroad corporations that do business regularly. They keep strict account of everything, and they never put down a figure but brings in a dollar in the end. Why is it the wheat-buyer sets the price of wheat? A man goes into the market, and he says: "I will give you so much a bushel." He has educated himself up to the point of daring to take

the risks. If the wheat-buyer can risk, why can not the wheat-seller say: "I will take so much for my wheat." If he knew the condition of wheat all over the United States, he could set the price of wheat. If we were educated on this point, had our bulletins posted in our post-office, we could pretty nearly say what we could get for our crops.

Now, the expense of this thing is merely trivial. The governor has spoken of it favorably. We have forty-six farmers in the lower house and a goodly number in the upper, but they do not hear from the farmers. Bills are going in every day. Now and then there's one that relates to the farmers, but they nearly all have reference to railroads and the lumber region, or Milwaukee. There are four states now that have reports, shall we come in and make the fifth, or shall we wait until the legislature adjourns. I think you have a member from this district who will work for you in this matter if you show real interest. I hope this meeting will not pass without doing something in this matter; the time is ripe to push it. It can be done either by the state or by the state agricultural society; we want it done by somebody. The governor and legislators will do in this matter as the farmers want.

Mr. Torrey — I would like to make a suggestion. How would this do to pass a law creating a commission to be composed of one member of each of the five Agricultural, Dairy and Horticultural societies of the state, and those five men to appoint a man to do this work.

Mr. Plumb — I had some conversation with the governor on the subject of the crop reports, and he said that there was a large body of the farmers that did not express any voice in this matter, and before taking any action he wanted the general opinion of the farming community. I think rightly, he was not in favor of giving it into the hands of any society in the state, but wanted to get the voice of the whole state on the matter.

Mr. Torrey — I will make a motion that a committee of three be appointed, of which Prof. Henry be chairman, to take this matter in hand, of carrying out this idea, either by resolution or presenting a bill to the state legislature for passage.

Motion seconded by Mr. Hazen. Motion put by the president and carried unanimously.

President Beach appointed as such committee, Prof. W. A. Henry, Madison; W. H. Morrison, Elkhorn; Chester Hazen, Brandon.

AGRICULTURAL SOCIETIES.

By Hon. R. D. TORREY, Milwaukee.

Among the many agencies employed for the development of all branches of productive industry as well as for securing the highest perfection in every field or department of agriculture, none can be said to be more important or effective than are the Agricultural Societies and Associations of the country.

In truth it may be said that so far as exerting a positive and practical influence for permanent improvement they have excelled, and in this statement we can hardly except Agricultural Colleges and National and State Boards of Agriculture.

It is true that colleges and the various boards of agriculture are accomplishing very much in the same direction, and should receive every encouragement from all sources, and if liberal appropriations and subsidies are granted anything, these schools of learning should be the first to receive them, for they can hardly be over-estimated in the good they will accomplish when the results of the present are seen in future years, in the practical application of the instruction that is being given broadcast, "in good ground," the active brain of the youth of the land.

The time may come when these schools will supersede the Agricultural Society, but that is far in the future, and hence the necessity of thoroughly sustaining every association that has for its object the improvement of all methods employed in any and every field of agriculture. This term is used in its broadest sense, and includes every branch of farm husbandry.

But it must be said that the good accomplished in the past will hardly serve for the present. Greater and richer fields

are unexplored. We are hardly past the threshold of usefulness compared with the work beyond. Agricultural societies should be composed of earnest, studious men and women, who are willing to spend time and money, if necessary, in experiment, in research, in fact, in everything which tends to improvement; and all of this valuable thought should be given to the world through these societies. Then will their great value and importance be more fully recognized by all classes and result in widening influences that shall be lasting.

Put in another form; the great object of all agricultural associations, whether in the interest of the dairy, the field, or the orchard, should be the receiving and giving the best thought possible, gained from experience, from experiment and observation.

The idea seems to be prevalent that the only and sole purpose of these societies is the holding of annual fairs, and if the fair is a success, then the society is a success. And while this is measurably true, yet when we consider the true work of the society, viz.: the advancement of agriculture, then the fair is very insignificant in the matter of real good derived by any one, or imparted to any.

Given a membership of intelligent working farmers whose greatest ambition and desire is improvement, and a fair follows as a result, and the result will always be successful.

Again, take any society whose only purpose is to hold a fair, and while for a few years it may succeed, yet, not having a good foundation, it will become less and less prosperous until in time it will cease to exist, or if it continues, must be, to use a common term, "bolstered up" by some other methods than those that ought to be employed, such as amusements, attractions, etc., while, if the other course is pursued, then we build on sound foundation, fixed in principle.

This fact has been more and more apparent since the inauguration of annual conventions, which to the thoughtful, studious mind are almost equal to a course of study in the agricultural schools of the country. The success of conventions wherever tried has always proved, and will continue to prove, that the important part of the work to be done is

accomplished through their agency. I said the attendance on these conventions was almost equal to a course of study in our agricultural schools. I do not know, but I might say is equal, if not superior, for after all theories have been followed to this end, after all experiment has been exhausted, we must come here for actual practical thought gathered from the fields of experience by men of intelligence in all departments of productive and industry. Then let conventions be well sustained.

THOROUGH ORGANIZATION.

It seems to me that there is less organized effort than there should be, or their could be more effective organization than there is, in fact a harmony in organization that does not now exist.

In this connection it is proper to say that there should be a complete and continuous chain of agricultural associations with its center or head a national organization, its branches or auxillaries in every state and territory in the country, and this in turn supplemented by every county association in the state. That is to say, a system of membership should be adopted, a feeling of interest created that should extend from the remotest county the entire length and breadth of the land up to and through each state agricultural society to one common and strong centre, a national. This close alliance would, I may safely say, be productive of far better and greater results.

Under our present system each society seems to be entirely independent, and I had almost said without any common interest, or at least not manifested to any great degree.

AGRICULTURAL FAIRS.

The assertion is frequently made that our agricultural fairs are failures in so far as they contribute to the benefit of productive industry, or assist in developing our resources. It cannot be denied that interest in them is falling off more and more year after year. This is especially true in the west, and is proven quite conclusively in the extra efforts that have to be put forth by managers to secure "attractions" that will "draw," in order that the receipts shall be sufficient to pay expenses, and as a consequence many

"features" are admitted that are objectionable, and in truth are degrading. To have a fair now without the inevitable balloon ascension, is thought, in many places, to be impossible, and invites only failure, for there are so many who enjoy the sight of seeing some one endanger his life, that probably the feature will be retained; and then a fair ground is such a thirsty place, where people get awfully dry, "you know," and places must be convenient where all can quench their thirst, not with water, oh, no, water would not draw, you see, so the saloon is substituted, and the proof is not wanting that *it* draws money from the pocket and wit from the head, as well as crowds inside the gate, and money into the treasury. The wheel of fortune is another attraction which draws what little money visitors have out of their pocket, but all go home feeling they have had a good time for they have "been to the fair." The chariot race, foot races, walking matches, hurdle races, sack races abound until the whole thing has more of the appearance of a variety show than an agricultural fair.

High authority says there is a place and time for everything, but is it not questionable whether the fair ground is a proper place or the fair the time for any of these features. It is a fact that all over the country there is a class of "professionals" who look upon the fall fairs as their "season," and expect to make a bonanza out of them, and unfortunately many of them do, and until the whole thing is abolished, fairs will grow more and more into disrepute.

Agricultural fairs are very nearly the same the world over and to make any radical changes would be almost impossible, and yet it would seem desirable in many ways. Beginning with the premium list or catalogue, there is but little difference in any of them. All are nearly alike, except perhaps it may be said in amount of money offered, so that as a matter of business the person who desires to enter the list of exhibitors, looks over the ground carefully and naturally goes to the place where he can get the most money and usually selects the class to exhibit in where there is the least competition. This is natural for all, and no rule to prevent it, and hence we are educating a class of "professional fair goers." This of course does not apply to many who are the patrons and sup-

porters of our fairs, but it does furnish an opportunity for dishonorable men to take advantage of the situation to their own financial profit without having contributed anything of real value to the fair, except, perhaps, to add somewhat to the magnitude of the "show." The system of offering first, second and third premiums on natural or artificial products may have or doubtless has been of no small value and accomplished considerable good. It has probably had great influence in bringing into the country improved stock of all breeds not only in quality but in kind as well.

The system has had its influence in no small degree in field and orchard, in manufactures and inventions, in fact in all departments of industry, but has not the time come for a change in the method of awards.

A few years since, our State Agricultural Society adopted the system of *pro rata* premiums in the dairy department, with the best of results, largely increasing the exhibit and giving far better satisfaction to all exhibitors. It is the opinion of many that this is the only correct plan on which to base an intelligent award, for by it all get their exact dues. The system has solid foundation. If it works so well, then, in the dairy, may it not supersede the old method in other departments? What prevents its application to blooded stock, when a scale of points of excellence has been so long established?

An objection may arise that competent judges are hard to get, but this is not wholly true. In all of the more important classes have but one man as the committee of award, throw the whole responsibility upon him, and, in order to secure the best judgment possible, pay him for his services. In this way he is entirely unbiased, and has not, nor can he have, any object in wrong decision or favoritism to any one. In field and orchard the same plan is easily applicable, and should be adopted.

In stock, of course, pedigree should be unquestionable, and in farm products there should be a written statement as to all of the conditions, including soil, manures, kind of cultivation, and every other particular that effects in any wise the fullest development of the exhibit.

SPEED OF HORSES.

There are serious objections made by many persons interested in fairs to having this feature at all, or, at least, if there must be racing, that it should be controlled and all of the objectionable adjuncts thrown off; but it is as natural for all, man or woman, to love a horse and to see him go as it is to eat, and it comes equally natural to some to "bet" on the result of the race. The best method, probably, for removing objectionable features of racing is in vogue in St. Louis. Some years ago they abandoned the usual form of racing, and adopted the plan of testing the speed of horses singly—that is to say but one horse trotted at a time—and the plan has worked so well and given such perfect satisfaction that it would be difficult to induce the managers of the St. Louis association to return to the old plan.

In conclusion it may be said that while fairs have been of no inconsiderable value to the industrial world, and much may be said in their favor, yet they do not furnish thought for improvement in any field of industry, the visitor only witnesses the result of thought or accident and knows little, if anything, of the methods which produced or perfected. Fairs give but a very small proportion of the benefits to be derived from agricultural associations; they are of minor importance when placed in comparison with the convention in the great good to be derived from the associated efforts of our producers.

In conclusion allow me to say, abolish everything objectionable from fair grounds, sustain thoroughly the convention, bring to each session some thought you have gathered during the year, and give it to the world.

DISCUSSION.

Mr. J. M. Smith—It has been my good fortune to attend perhaps more of the conventions that have been held in this state than that of any other man, I think. When I look back at those conventions that were held previous to the time when Prof. Morrow undertook to get up the first one, I remember how he was laughed at and told that he could not

succeed, and if he got the farmers together they could not talk and they could not write, or they wouldn't read their papers if they **did** write them; but he went on and got up his convention, and it was a success, although it was hard work at first.

The farmers were not accustomed to **talking** or writing, and the work had to be done by a few of us. Now, I can say I have heard a good many prominent men **speak**, a good many very fine speakers, and I have listened to some fine debates in our legislature, but it is very rare that I have heard men express themselves better, more promptly and with more precision than I have heard farmers express themselves within the last four or five years in our conventions. To me it is one of the proudest signs of progress that there is in our state. I like to go to these conventions and note how the farmers are getting along, see how much more readily they speak, how much more intelligently they express themselves, particularly those who attend the conventions, and I am sorry for those who do not come. It would be worth millions of dollars to this state this coming year if we could get every farmer in this state to attend one convention if no more.

There is one little item in regard to the crop reports that has not been touched upon and that is reports with regard to the cost of transportation. I raise more crops in my line than can be sold near where I live. Consequently I have to find an outside market. That makes it necessary for me to study up the question of railroad transportation, and it is sometimes a good deal of work. It is necessary for me to find not only a market, I must study up the crop reports to find whether the crop I have to sell, whether there is a surplus of it in the United States. I must find where there is a deficiency, if anywhere, where I could find the best market. The next thing would be the cost of transportation. A year ago last fall I found there was a deficiency in some crops that I had, in western Missouri and Kansas, almost an entire failure. I got the cost of transportation to Kansas City and the result was that I sold eleven car loads to one firm in Kansas City. I have made a study of this matter, it is part of my business just as much as growing my crops.

I believe it would be for the benefit of farmers in general if it was added to the crop reports.

We should have any way the rates of freight from points in Wisconsin to Chicago, and from Chicago the rates of freight to the different large seaboard cities.

For instance, I found by the crop reports that I had some crops that were bringing a good price in Galveston, Texas. I undertook to get the rates of freight on such articles to Galveston. It took me a week, but I finally succeeded in doing it. Now if the crop reports had given the rates of freight, I could have sat down at once and written, "Here I have such and such articles to sell, and the rates of freight are so much." I think something in that line would add very much to the value of those reports.

Adjourned to next morning 9:30 o'clock.

MORNING SESSION.

THURSDAY, February 1.

The association met at 9:30 pursuant to adjournment.

President Beach in the chair.

COMMITTEES.

The president appointed the following committees.

On Resolutions—

W. D. Hoard, Fort Atkinson.

J. M. Smith, Green Bay.

D. G. Cheever, Clinton.

On Nomination of Officers—

Hiram Smith, Sheboygan Falls.

R. D. Torrey, Milwaukee.

Stephen Favill, Delavan.

On Dairy Utensils and Manufactures—

Chester Hazen, Brandon.

G. A. Lytle, Elkhorn.

C. B. McCanna, Springfield.

On Finance—

W. H. Morrison, Elkhorn.

W. D. Lyon, Elkhorn.

N. Carswell, Elkhorn.

Judges on Butter and Cheese—

W. W. Ingram, Chicago.

T. D. Curtis, Syracuse.

D. G. Cheever, Clinton.

REPORT OF SECRETARY.

Mr. President: The expenses of the Secretary's office for the past year, for stationery, stamps, freight on reports, telegrams, etc., has been sixty dollars.

An itemized bill has been furnished the Executive Committee.

Respectfully submitted,

D. W. CURTIS,

Secretary.

The report was adopted.

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:

1882.		RECEIPTS.	
January 13,	Received for membership.....	\$104	00
January 13,	Received for entry fees.....	41	00
January 23,	Received from state treasurer.....	500	00
January 27,	Received from O. P. Clinton, ex-treasurer...	67	34
January 27,	Received from Samuel Davis for sp'l prem'm	15	00
	Total receipts.....		<u>\$727 34</u>
1882.		DISBURSEMENTS.	
January 13,	Paid hotel bill Mr. Sherman.....	\$1	90
January 13,	Paid W. D. Hoard, printing.....	24	25
January 13,	Paid Mrs. Kelly, reporter.....	35	70
January 13,	Paid C. Beach, expense on executive committee	6	00
January 13,	Paid A. D. DeLand, expense on executive committee	7	55
January 13,	Paid C. Hazen, expense on executive committee	7	50
January 13,	Paid D. W. Curtis, expense on executive committee	5	00
January 13,	Paid W. D. Hoard, expense on executive committee	5	00
January 13,	Paid Hiram Smith, expense on executive committee	7	55
January 21,	Paid W. C. Thomas, printing.....	5	50
January 24,	Paid Wm. Crosby for taking charge of entries at Dairy Fair	10	57
January 24,	Paid express on book.....	25	
January 27,	Paid O. P. Clinton for express.....	2	30
January 31,	Paid postage.....	12	
January 20,	Paid D. W. Curtis balance of expense of secretary's office for 1881.....	16	25

DISBURSEMENTS—continued.

February 6,	Paid Hiram Conover premiums.....	\$11 90	
February 6,	Paid Hiram Smith premiums.....	10 43	
February 6,	Paid Wisconsin Dairymen's Protective Association	100 00	
February 8,	Paid H. Waterman premium.....	5 00	
February 8,	Paid H. J. Bamford premium.....	14 52	
February 8,	Paid Chester Hazen premium.....	14 42	
February 8,	Paid Harney & Campbell premium.....	5 00	
February 8,	Paid W. D. Kirkland premium.....	3 00	
February 8,	Paid N. W. Morley premium.....	8 61	
February 8,	Paid J. Shumaker premium.....	5 00	
February 8,	Paid H. Bliss premium.....	13 24	
February 8,	Paid C. H. Pape premium.....	11 24	
February 8,	Paid E. Eastman premium.....	7 21	
February 8,	Paid P. Johann premium.....	8 24	
February 8,	Paid F. B. Fargo & Co. premium.....	3 00	
February 8,	Paid J. Reich premium.....	8 24	
February 8,	Paid D. W. Curtis salary.....	65 00	
February 8,	Paid for stationery and sundries.....	20 00	
February 8,	Paid Cornish & Curtis premiums.....	10 00	
February 8,	Paid Mrs. A. J. Smith premiums.....	3 00	
February 8,	Paid treasurer's book.....	25	
February 16,	Paid Holden Bros. premium.....	6 95	
February 17,	Paid J. Vick premium.....	8 24	
August 10,	Paid D. W. Curtis expense of secretary's office, sending reports, etc.....	20 00	
August 15,	Paid freight on reports.....	54	
October 13,	Paid stationery, stamps, etc.....	20 00	
November 3,	Paid express on stationery.....	25	
	Total paid out.....	—	\$518 72
	Total receipts.....	\$727 34	
	Total expenditures.....	518 72	
	Cash on hand to balance account.....	—	\$208 62

Respectfully submitted,

H. K. LOOMIS,

Dated January 29, 1883.

Treasurer.

UNDETERMINED POINTS IN BUTTER-MAKING.

By T. D. CURTIS, Syracuse, N. Y.

Butter-making has been practiced from time immemorial, and almost everybody is familiar with it. Many will say they know all about it, or if they do not say so, they think so. Yet it is a fact that, beyond a certain round of routine, very little is known about butter-making, and the man who has pursued the subject most earnestly and intelligently is the one who is ready to acknowledge that he understands very little of the underlying principles of butter-making. It

is a field as yet but little explored by scientists, for the reason, I suppose, that it is such a commonplace one that it has been assumed that there is no need of investigation. But such a conclusion is a mistake, and I am happy to find that the scientists are beginning to turn their attention to this very common but very important branch of human industry.

We need light on almost every step of the process of butter-making, from the breeding of the cow to the point of consuming the butter, for every one within this wide range has some bearing on the character and value of the product as an article of human food.

I would not wish to be understood that we have not butter-makers, and very many of them, who can make what is called good butter, and sells for a high price. Each makes it his or her way, and is satisfied. But what do they know about it save the routine process mechanically gone through with; and how many are there who can intelligently and certainly vary the character of the product to suit their own or the consumer's taste?

It is all very well to talk about "practical" butter making; but what we want is a positive application of science to the art, so that we shall know precisely what we are doing, and all its effects at every stage of butter-making.

Many people have unfavorable and vague ideas about science. But science is positive human experience or knowledge reduced to practice, resting on a sure foundation. It guesses at nothing. So long as there is any uncertainty about it, it is not science—it is only practice or experiment based on hypotheses, and has yet to be demonstrated before it can be classed as science.

I recently read an anecdote about the great English chemist, Dr. Voelcker. He had been lecturing to an audience of English butter-makers. When he got through, a sceptical woman came to him and said: "It is all very well, what you say, but can you make butter?" This was as much as to ask: "Can you practice what you preach?" A legitimate question enough. "Yes," was the doctor's reply, "I think I can, if I can have the chance." She invited him to her house to try. So he got up at five o'clock in the morning

and was on hand to see the cows milked. He superintended everything, until he had a batch of cream to churn. When it came to this, he asked if the cream was at the right temperature. The woman said it was. He used a thermometer and found it 10 deg. out of the way. This surprised her; and her husband shook his head and told her he thought she had lost him much money by her guessing. You see he had begun to be converted to the doctor's side. Well, to cut the matter short, the doctor finished his batch of butter, put it in the package, and it was set away with the rest for market. When sold, it brought considerable more per pound than any other package. This resulted, it is said, in every dairyman in that neighborhood presenting his wife a thermometer. Probably the product was varied in other particulars. But this failure to guess at the right temperature impressed itself upon all.

It is not safe to trust to guess-work as to temperature, salting, souring or anything else. We must work by exact methods, if we would secure the best and uniform results.

One more illustration of the vague ideas, if not absolute distrust, which people entertain about science. Recently, at the agricultural convention held in the library of the commissioner of agriculture at Washington, Prof. Knapp, of the Iowa State Agricultural College, said many farmers had asked him if he could not at once teach their sons scientific agriculture, without their going through the study of chemistry, botany, vegetable and animal physiology, and the like. All this seemed to the fathers to be a waste of time. Prof. Knapp said his reply was substantially: "What is scientific agriculture? Is it not science applied to the cultivation of the soil, the growing of crops and the rearing of stock? How can I teach your sons how to apply science to agriculture before they have a knowledge of science? I must first teach them science, and then I can teach them how to apply it, but not before. They cannot be scientific farmers without scientific knowledge."

This, it strikes me, is a very sensible reply, indeed. Farmers make a very great mistake when they suppose that science is going to lay down a set of rules, or devise a routine course, by which all kinds of farming can be done, and all

kinds of farms can be run. If it could, it would eliminate the necessity for brains on the part of the practical farmer; whereas, no successful farming can be long done without judgment and variation. Nowhere are brains more needed than on the farm, and by no one more than by the scientific farmer, who must make a study of his farm and of every variety of soil and change of condition on it. Science will tell him just what to do in most cases; but he must first become acquainted with science. She indulges in no familiarity with strangers.

But what does science know about butter making? Very little. What do any of us know about butter making? A good deal less — much less than we do about cheese making, which is still in an experimental condition. But science is beginning to look into the matter, and I have confidence that she will in time revolutionize many of our practices.

Let us glance at a few of the points in butter making, and see how many there are on which we have positive knowledge — how many there are that may be called settled and determined. We will omit breed, feed, drink and age of the cow, time from calving, etc., as affecting the product, and begin with the milk.

How shall we set the milk? At what temperature? Shall we set deep or shallow? Shall we run the temperature down low, or stop it at 60 or 50 degrees? Shall we cool rapidly or slowly? Shall we submerge the milk in water? Shall we set it in ice? Shall we run water under or around it? Shall we set it in open pools? Shall we exclude it from the air? Or, are there various conditions of milk which require different treatment?

I should not be surprised if I could get every possible answer to these questions in this audience. Each of you has his preference and each has his practices; but hardly two of you agree in the details of your work. Why is this? Is it because you all have positive and conclusive knowledge on the subject? By no means. If you had, there would be agreement. Nature is consistent. Facts do not contradict each other. It is your lack of positive knowledge that makes you disagree. You cannot all be right, though you may all be wrong. Hence the need for careful observation

and scientific experimentation, that we may learn just how to make a uniform product, the most of it and the best for human consumption.

When shall we skim? Shall we skim deep, taking a good deal of milk, or shall we skim shallow, taking only the cream? Shall we skim sweet, or shall we let the milk get sour, or even the cream get sour? If sweet, how long before souring? If sour, how sour shall we let the milk or the cream get.

How shall we keep the cream before churning? At what temperature? Shall it be exposed to the air, or shall the air be excluded? Shall it be exposed to the light, or kept in the dark? Or shall it be kept not at all, save until we can get it into the churn? If kept, shall we stir it occasionally, or frequently, or not at all? When shall we churn, when the cream is sweet or when it is sour? If sour, what degree of acidity? At what temperature shall we churn? Or shall we churn cream in different conditions at different temperatures? Is there a different temperature for sweet and sour cream, and for different degrees of acidity? Shall we secure a certain degree of oxydation before churning? How shall we churn? Shall we depend on concussion, on friction, or on simple agitation to bring the butter? Or shall we adopt the method said to be practiced in some oriental countries—put the cream in a tight sack, bury it in sweet earth, and let the butter come without churning? When shall we stop churning? Shall we stop it before the butter gathers, or shall we proceed after the old method of gathering it into a solid mass? There are earnest, positive advocates of both methods.

How shall we work butter? Or shall we work it not at all? If we work it, at what temperature? How much shall we work? Shall we do it by hand, or by power? Shall we give butter a second working? If so, at what temperature? How shall we salt butter? Shall we sprinkle it on when the butter is in the granular form, and gently stir it in? Or shall we first mass the butter, work out the butter milk and then work in the salt? How much salt? Or shall the quantity be determined by conditions? Shall we use no salt at all when we pack our butter to keep? Does salt help retain

or dispel the fine aroma, by chemical action? Is the use of brine advisable in washing butter? Does covering butter with brine help preserve it? If brine is used, what is the best temperature for washing butter? What is the best temperature of brine for keeping butter.

Shall we color butter? If so, why? Does coloring improve the flavor? Does it injure the flavor? Does it injure the keeping qualities of butter? Why did the Boston buyers, at the late National Butter, Cheese and Egg Convention, caution against high coloring?

How can we keep butter? Shall it be kept without salt or with salt? What is the best temperature for keeping? Does a low temperature hasten decay when butter is again raised to a higher temperature? Is there a temperature at which butter will keep and not thereby have its keeping qualities at a higher temperature injured?

These are a few of the questions that naturally suggest themselves to one who is trying to get at facts and principles. Very few, if any of them, have received final and satisfactory answers. Who, then, can say that he knows all about butter making? Who can conscientiously and understandingly say that he knows much, if anything, about it? Yet, we all make butter, and those who do not make money by it, lose money. Would it not be a better and surer business if it were put on a scientific basis? So it seems to me; and for the purpose of specifically directing thought to the several points indicated, I have raised these queries. I hope they may stimulate butter makers to careful and scientific experiments, in which all the varying conditions shall be noted and taken into the account. Science and practice must unite to solve these questions.

I might go on and give specific answers to most or all of my questions. My answers would be based on facts, observations and testimony. But of what value are my opinions, or those of any one else, in the absence of well settled principles having a scientific application? We never can call butter making a science, nor even one of the arts, until we are able to fix upon some sort of a basis on which we can all agree. Until then, if I am permitted to live, I shall remain simply an inquirer. But what marvel is it that

so much poor butter goes into market, or that imitation butter can be substituted for the neutral kind?

DISCUSSION.

Mr. W. D. Hoard—What shall we do to reduce butter-making to a determinate position?

Mr. T. D. Curtis—I will tell you what we are thinking of doing in our state. We have got an experimental station and we calculate on having these experiments gone through to determine these questions—determined as much as we can. Until we have some kind of scientific basis for what we do—scientific directions by which to make our butter—I don't see how we are going to come to any conclusion.

Mr. Hoard—Under these circumstances would you not take this body of butter-makers, represented by this convention, and use it as a sledge-hammer to pound into the consciences of the people that something should be done with the intelligence and money of these people of Wisconsin.

Ole Bull relates a story about going through a fair at Donnybrook and seeing an Irishman sitting on a barrel, fiddling for dear life. He was working desperately hard. He says: "Do you play by ear?" "Divil an ear." "Do you play by note?" "Divil a note." "Well, how do you play?" "By main strength, be jabbers."

Now, that seems to be the general state of butter making in Wisconsin. There is wide and diversified judgment, and no butter man has cornered all the facts, but he has cornered all the conceit. He believes his theory is the best, and the other one believes his is best, and the result is you can not say he has had no experience. The farmers of Wisconsin pay seven-tenths of all the taxes in the state, representing the great bulk of property in the state, and on these matters they ask and expect so little from their money and the organized forces of the state.

I believe before we are through with this convention that we ought to pass a resolution asking the legislature of Wisconsin, at its present session, to devote some intelligence to the discovery of the system or systems whereby the agricul-

tural interests of this state shall be better served; whereby the dairy interests of the state shall receive some of the money of this state, that something practical shall be done for the farmers of Wisconsin. Why is it that in our legislature the railroads and lumber interests are always listened to? Why, because they are organized; because they know something of what they want. I believe we ought to do something towards establishing in Wisconsin an experimental station, and I hope that this convention will do something to forward it.

Mr. Hiram Smith—Although the questions put to us by Mr. Curtis are very pertinent, yet are we very far behind other industries? Do machinists know precisely how to apply power? We see the cog gear recommended, we see friction recommended, and there is the same uncertainty, if you look at it closely, through all human activities, and though we make many failures, yet we make as many successes. What shall we do? Shall we sit down and wait for science before we do anything? We all know that you may pursue two different plans and get good results from both. You may set the milk in shallow pans, in a temperature of sixty degrees, and get butter almost perfection. You may set it away from the air, at a temperature of forty-five degrees, and get butter almost perfection. Now, I am as much in favor of an experimental station in this state as any man, and I hope Mr. Hoard's suggestion will be carried out.

Prof. Henry—I want to tell you of something we did on the experimental farm towards answering some of these questions. There is a man in this state selling what he calls a vacuum cream extractor, for which he will charge you \$40. He claims he can take cream off in about forty minutes, and that he can deodorize the milk, and so on. The company brought their pump down to our experimental farm, and there, before witnesses, they went through with their tests, and the tests came out against them. We got more cream in the Cooley deep-setting pans. They fell behind the Cooley twenty per cent. in the amount of butter. They had a second trial, and they still got less. They are advertising all over the state of Wisconsin, and when our report came out they claimed we hurt their business, and

they threatened to bring the legislature to bear against us. I told the gentlemen to go ahead if they thought they could hurt us. I say to the farmers that that system, so far as the raising of any more cream is concerned, is worthless. That we learned by this experiment.

The President—Science is crystallized practice, nothing more, and I suppose if we live long enough and do the best we know, we shall probably crystallize into some sort of science up here in Wisconsin; but this I would say to every dairyman, if you have a method which is paying you well and you are satisfied, you had best stick to it until you find a better one. Make close observation and know what you are doing; compare your results with other methods, and in that way we shall reach some kind of common sense wisdom if it is not scientific wisdom. We have got to work out our own salvation. I cannot tell just the best method. My friend, Hiram Smith, says deep settings, and I use shallow settings. I compare my results with his, and they are not so wide apart.

Therefore, I say it is better for him to continue his deep settings and I my shallow.

HOW TO MAKE GOOD DAIRY FARMS WORTH ONE HUNDRED DOLLARS PER ACRE.

By HON. HIRAM SMITH, Sheboygan Falls, Wisconsin.

The early efforts of the Dairymen of Wisconsin were mainly directed to make a salable article. We had strong prejudices existing all over the country against western butter and western cheese. This prejudice was very discouraging to new beginners. But there was still another, and more formidable obstacle to contend with, and that was the *fact* that western dairy products were extremely poor, and to change this fact was the all important thing to do. It took long years of patient labor, much investigation and at times great losses before the fact was changed so as to be known and recognized. This great and desirable change in the character and commercial value of dairy products in Wisconsin has been greatly accelerated and promoted by the

Wisconsin State Dairy Association, in bringing the widely scattered dairymen together, to tell each other of their failures and successes. "The one idea" prevailing was how to improve the product, all other questions were subordinate to this. The advantages of better dairy stock, a better system of feeding, the profit of winter over summer dairying, all had to wait until dairymen could first learn how to make good butter and cheese.

The first ambition was to make as good cheese as that made in Ohio — that supplied most of the western markets — this point gained, the next ambition was to make as good butter and cheese as was made in Herkmer county, New York. Our New York friends undoubtedly thought us presumptive, but sharp competition at the Centennial Exhibition, in Philadelphia, and at the International Dairy Fair in New York, has put the question at rest, and Wisconsin dairy products to-day, stand as high as from any other locality in the markets of the world. Now that this important point has been gained of making as good butter and cheese as any we have to compete with, we may safely consider how we can increase the product without increasing the number of acres we cultivate. This is the great problem of to-day among dairymen, east and west, and upon its proper solution depends the profit or loss of dairy farming. Five years ago about 18 to 20 cows were kept on 100 acres, that annually yielded about 3,500 pounds of milk per cow.

This you will perceive would be at the rate of ten cows for eighty acres, in other words, one cow to eight acres of land. This is about the situation of a large majority of dairymen to-day, east and west, one cow to eight acres. It is easy to estimate the value of land from the productions obtained.

If on 160 acres 20 cows are kept, that produce 3,500 lbs of milk each, or a total of 70,000 lbs, at \$1 per 100 lbs.....	\$700 00
20 calves at \$2 each.....	40 00
10 pigs to sell at \$12 each.....	120 00
Grain, fruit and vegetables.....	300 00
Total receipts.....	<u>\$1,160 00</u>

To interest on 160 acres at \$50 per acre at 5 per cent.....	\$400 00
Interest on cows.....	45 00
Implements and team.....	45 00
Two hired men, one 12 and one 8 months.....	320 00
One girl.....	100 00
Taxes and repairs.....	150 00
Provisions not raised.....	100 00
	<hr/>
Total expense.....	\$1,160 00
	<hr/> <hr/>

It will be readily perceived that a dairy farm, conducted as stated above, and as nine-tenths of the dairy farms in this country are conducted, the land cannot be made to pay more than five per cent. interest on a valuation of \$50 per acre. But little or no concentrated food, such as bran, oil meal and corn meal is used, except a few days in the spring. The farm will produce much more coarse food than 20 cows can possibly digest, therefore there is a waste. Little or no system prevails. Cows are neglected to secure grain crops; there being plenty of pasture no fodder corn is raised. Cows are only milked in summer, and but little corn is raised. Manure that should go upon the corn land from day to day, as it accumulates, is usually thrown out of the stable window under the eaves of the barn to leach and waste until the following autumn, usually to be plowed under beyond the reach of plant life. This kind of dairy farming is largely practiced at the present day, and was almost universal fifteen or twenty years ago, and wherever practiced keeps dairy farms at a value of \$50 per acre, or below. But happily there is another kind of dairy farming, "modern dairy farming," which is conducted on an entirely different plan — on the principle of high feeding and warm stables, and avoids all waste of coarse food, by the purchase of bran, midlings and oil meal, to mix in and make all valuable.

Modern Dairy Farming starts out with keeping one cow on four acres, and this should be the "pass word" to every *Dairy Lodge*, "one cow to four acres," and this should be rapidly reduced, until the undoubted possibility was reached, of keeping one cow to every acre. One of the principles of Modern Dairy Farming is to have their cows give the most milk, when the dairy products are in highest price, which is invariably in winter. It has been repeatedly demonstrated

that a good herd of cows coming into milk in September, October and November, will, on the average, give from 4,500 to 5,000 pounds per cow annually. This milk is worth to sell at the factory or to manufacture into butter and cheese, \$1.30 per 100 pounds, or \$58.50 average for each cow.

On a total from 40 cows	\$2,340 00
From the sale of calves.....	80 00
From the sale of hogs.....	240 00
	<hr/>
Total receipts	\$2,660 00

EXPENSES ANNUALLY

To interest on 160 acres at \$100 per acre, at 5 per cent.....	\$900 00
Interest on stock and implements, \$3,000.....	150 00
For hired help, four men and one girl.....	700 00
For provisions not raised on the farm.....	160 00
For 20 tons of bran	240 00
For eight tons of oil meal.....	180 00
For taxes	125 00
For repairs and blacksmith work.....	120 00
For salt and plaster and grass seed.....	85 00
	<hr/>
Total.....	\$2,660 00

It will be seen that "Modern Dairy Farming," enables us to increase the expense for hired help, \$440; for concentrated feed, \$420; and to pay an additional interest of \$640.

In other words, dairy farming with one cow to eight acres on 150 acres produces \$1,160. Modern dairy farming with one cow to four acres produces \$2,660, an increase of \$1,500 by the outlay of \$860 for feed and help, a net profit of \$640, a sum amply sufficient to raise the price of land from \$50 per acre to \$100 per acre. A fundamental condition of successful dairy farming is large crops of corn, not less than two acres of fodder and four acres of field corn to every ten cows, or a total of twenty-four acres for forty cows. All the manure of the farm should be evenly placed on this twenty-four acres during the winter, and the land plowed just previous to the tenth of May and thoroughly harrowed, the corn planted immediately thereafter with a horse drill, the rows three and one-half feet apart and the kernels from seven to nine inches apart and cultivated twice before the corn comes up with a fine tooth harrow and frequently thereafter with cultivator until the tenth of July, at which time, if the work has been honestly done, it will be free from

weeds with never a hoe in the field, and is almost certain to produce fifty bushels of shelled corn to the acre for the field corn and twenty tons of fodder corn per acre. It takes less labor to raise twenty-four acres of corn as described above than to raise half that amount planted in hills, and the cultivation deferred until you can see the rows. The foregoing statement is not a fine spun theory or made up from loose estimates, but is a correct record of actual transactions in my own experience in following the two systems of dairy farming.

DISCUSSION.

Prof. Roberts — It seems to me this idea of making farms worth \$100, is one that is worth much consideration. I have had considerable to do in the last eight or nine years in bringing lands up in comparative value, and by a very simple method it seems to me, which is only a common sense method. You may call it a scientific method if you choose, but scientific methods and common sense methods usually run parallel. We have put on a farm of one hundred and twenty-five acres of land naturally very inferior to the land around Elkhorn, fifty-two head of cattle. To be a little more explicit, there is three calves, three or four months old, there is four or five, nearly a year old, and from that on. We keep eighteen head of horses and a colt on the same farm. We have fifteen sheep, and we sold \$224 worth of pork this fall. Quite a number of acres of it is not valuable, only side hill plowing. The method that Mr. Smith has given you is the same in general, not quite in detail. I have brought it from producing thirty bushels of oats to the acre, to this year we got eighty bushels of oats to the acre. Our wheat ran this year 47.99 bushels per acre.

Such land is worth something. I have some notes with me, and I see that our books show we sold a little over \$2,500 worth of milk from our dairy. We have quite a village there, in fact they have taken half the farm for buildings, and we supply the students and our own people. When the students and professors go away, our milk drops down, of course, as we do not peddle milk outside. I find our best

cow a year or two ago produced 8,600 pounds of milk. I find that milk was worth 6.02 cents a pound to us in the pail after it was milked. There is \$172. Now, how can I do it. Let me say to you that this year I brought a car load of cotton seed meal from Memphis. It cost me \$28.22 delivered. Corn meal in our market was worth \$30 per ton. After I had fed that cotton seed meal to my animals it was worth \$15.75 in manure per ton. My corn meal, after I had fed it, was worth \$6 per ton. The manure is not thrown under the eaves of the barn and left there as it is in so many places in our state. There is more fertility, Mr. President, wasted today in New York state on the farms unnecessarily than would pay for all the education of all the people. I know it.

Our manure is thrown out and exposed to the atmosphere.

Mr. Smith is on the right track, he will see the day when he will be ashamed to talk about dairy farms being worth \$100 an acre.

They will be worth \$200, and at that price they will bring a better percentage than government bonds.

Prof. Henry—I don't know that the audience is quite aware of who is talking to them. Prof. Roberts, of Cornell University, was called to his chair of agriculture, not because he was a gentleman farmer with a few fancy ideas, but because as in charge of an 800 acre farm in Iowa at their agricultural college he had made a reputation for himself. At Cornell, on a poor, miserable side-hill farm, they had had failure after failure. They went to Iowa to get him.

He was my teacher, and I wanted to get him into this state, so you could hear him. He is one of those men who has made a success of his business. I hope that our Wisconsin friends will listen to him, for I think you will see all his remarks are practical. If you could have visited a few years ago that region of land that would not yield more than 25 bushels of corn under the best conditions, look it over, and then turn to his books and see how the receipts went up from \$1,000 for the whole farm to something like \$6,000, you would see what brains have done.

Mr. Lytle—I would like to ask Mr. Smith how long he continues to plant corn on 24 acres; how many times?

Mr. Hiram Smith—I think it would be entirely immaterial whether I continued it one year or fifty years. I think the land would look out for itself with the manure placed upon it. It has been the experience of many who have been planting corn, especially since silos have come into use, that the land grows better and better. But my plan is to rotate; plant corn, then sod down; the fodder corn next; then seed down for hay. That is my usual way. If I had permanent meadow that could be sustained (and I know of no way that they can be), I would not care whether I changed my corn ground or not, but for the sake of the meadow which I must have, I go round and round one, or two, or three years, according to my needs.

Mr. Lytle—You say you could raise corn for fifty years on the same piece. How would you keep the weeds out fifty years?

Mr. H. Smith—Kill them. It is a very easy thing to kill weeds if you go at it right. If the land is ploughed, we will say between the first and the tenth of May, and harrowed well, and the weather becomes a little warm, the weeds will sprout, those nearest the surface. There will be two little spindling leaves starting from the seed weed. Some can be seen with the naked eye, and a great many you can not see. You take a couple of thorn bushes or a light harrow on a dry, warm day, and go over that field with a pair of horses, regardless of the rows, both ways. You destroy all the weeds then germinated, and they will never sprout again. You wait a week longer, and such weeds as were buried a little deeper will sprout a little, and you go over it again. The corn is not yet out of the ground, and if it is it will do it no harm, unless it is up three or four inches. If you destroy the weeds before you can see the rows, you have conquered the whole thing. You go through with the cultivator every week or ten days, stir the soil frequently, and you will have no weeds to bother you; that is my experience for the last three or four years. I never use a hoe in the field.

EDUCATION OF DAIRYMEN.

By COL. R. P. McGLINCY, dairy editor Elgin, Illinois, *Advocate*.

Mr. President, Ladies and Gentlemen: When your secretary solicited me to prepare a paper for your annual meeting I scarcely knew what field to work in, for I knew full well that among the veteran workers to be found in your state there would be no difficulty in securing topics of a practical nature. So the question of "The Education of Dairymen" presented itself to my mind, and thinking that this undeveloped field might prove a fruitful one, I concluded to explore it and obtain such results as I might be able to gather in, in the few moments which may be allowed me on this occasion.

At the outset let me say that I do not assume that the dairymen, as a rule, are not educated, for on the contrary I know that the progressive dairy farmer, butter and cheese maker are well educated and fully understand their business, at least so fully that they are not only able to make a living out of their calling, but also add improvements to their farms their stock and their residences. But in every profession there are to be found the shiftless ones who go plodding through life, satisfied with their efforts if they get but enough to eat and clothes to protect them from the weather. The dairymen and dairywomen who are in attendance at this convention do not come under this head.

This question is one of great importance, at least I consider it so, for it involves an improvement of things on the farm and at the factory, and while to the major portion of the dairymen of the state, my words will not prove beneficial, there doubtless will be found some who, if they would heed the lesson, would very materially benefit themselves, the community in which they live and the state at large, and to such permit me to address myself.

Knowledge is power, whether used for good or bad; and when properly directed it proves itself beneficial to humanity; when not so directed it is a curse, and perhaps the greatest that afflicts the earth — the most difficult to get rid of, and one that brings a blight which casts a dark and lasting shadow wherever it falls.

The education of the dairyman, as I look at the question, is not that which relates to a book education, but to a practical knowledge of every day affairs. A man may be as full of book knowledge as an old cheese is full of skippers, and yet be as ignorant of the proper way of conducting his farm or his factory as a Hottentot. In what I may have to say I shall consider the education of the dairyman to be that which relates to a thorough and practical knowledge of the various duties he is called upon to perform, and I may add to the dairyman, the butter and cheese maker, also, for I have no doubt but that in many instances their poor judgment and worse management has been laid at the door of the dairy farmer, who has had as little to do with the matter as the prattling babe at its mother's breast.

But to the question. What should constitute the education of the dairyman—the man who is engaged in producing the milk? Should we expect him to be a man well read in law, theology, political economy, the science of government, and be a thorough geologist, or should we expect to find a simple rustic, who can figure interest on a note for a given time, and who knows when his hay, wheat or corn crop will do to harvest, and let his knowledge end there? The accomplishments enumerated might all be dispensed with, and still the dairyman would be an educated man to a certain extent. Now, I take the question to mean a man educated in his profession, so that he can follow it not only for a livelihood, but also that he in turn may have so mastered it that he may be able to instruct others who may be less fortunate than himself, and that he may not be compelled to call upon Tom, Dick and Harry, every few days, to ascertain whether he is right or wrong about the most trivial affairs. These he should learn from observation and practice, carefully noting the successes or failures, and profiting by them in the future.

There is one thing in regard to the dairy business that I wish to say a word upon, and it may as well, perhaps, be uttered here as elsewhere, and that is, that far too many men are in the business who are not "educated to it," and who are destined to bring disgrace to the profession. All

through the northwest are to be found men who are farming, who since the creamery business has been established within their reach, have added more cows to their farm. These men have heard of the wonderful success dairy farmers in Illinois and Wisconsin have met with, and supposing that dairying was easily attended to, have tried it; and while in some cases they have succeeded in spite of their ignorance or carelessness, in many others they have made a complete failure of it.

I recall now a matter which came under my personal observation in Iowa last summer while spending a couple of weeks on a farm, ten miles from a town. The farmer was selling his cream and having the use of his skim-milk at home, and I mention this fact because I believe from it he received the bulk of his profits. His cows were neither watered nor milked with anything like regularity; sometimes at 6 A. M. the milking was done, while at other times an hour later would find the boys in the barn-yard milking. It was during the haying season, when everybody was busy, and at night the cows fared worse than they did at morning, for they were milked anywhere from 5 to 9 P. M., and the care of the milk was managed about the same way. When remonstrated with the farmer said it made no difference, and when I tried to show him that such irregularity was ruining his cows, he simply looked his astonishment, but finally promised a reform. Ignorance, carelessness, stupidity and shiftlessness combined in that farm were working a great injury to the business. He should attend a few conventions like this and take his first lessons in dairying, and profit by the experience of those who have made a success of the business.

This is by no means an isolated case, nor one drawn from the realms of fancy, and I doubt not there are among those here to-day some who know of such cases. Then, let this and the kindred associations labor until they have converted these shiftless farmers from the error of their ways, and made educated dairymen of them. It may be that the efforts may seem like casting pearls before swine. Still, persevere in the work.

An educated dairyman should have no little knowledge of

cows — the various breeds, their habits, constitutional organism, the common diseases which afflict them, and cures for the same. But he should not resort to drugs and nostrums on the slightest provocation, for too frequently by dosing the animals they are ruined; whereas, if nature had been allowed to take her course for a few days, the animal would have come out all right. In studying the habits of his cows he would learn the quantity of food they require (though I apprehend that few dairymen ever over-feed); the particular kinds of food each would improve the best upon, both as regards the quantity and quality of milk, and the taking on of flesh. Lately, in looking over an agricultural paper, I came upon the query, "Will hogs do best upon ground corn and cob meal, or upon the whole grain?" and the reply of the paper was that "We have forwarded your question to one of the agricultural colleges, and the answer is that in about the year 2000 we can answer the question." Now, I would not cast a slur upon any of the agricultural colleges of the land, but it seems preposterous that such a reply should have been made to the question. While it is true that the year 2000 is not very far distant, the experiment should be made in less time than that, and the different results given. Now, the farmer who raised the question should have made experiments for himself, trying both ways, noting carefully in his diary the difference, and in far less time than it will take the agricultural college to give a definite answer, he would have solved the problem.

The dairy farmer must be so educated as to know the value of punctuality with his cows, for it is of great importance. There must be a punctuality in the feeding, watering, milking and stabling. Serious losses are the result yearly, either from a lack of knowledge, or what is far worse, gross carelessness in regard to the value of punctuality. To many of you this will doubtless seem a small and insignificant matter, but I think it of great importance and so do those of you who have adopted it, and you would just as soon think of being tardy in this matter as in matters of very great importance. Then the dairyman should learn punctuality as one of the first lessons in his calling.

In writing upon this subject a few years ago, I said: "The

educated dairyman will be found in various localities, and where found you will observe that he has everything in its place, where he can lay his hand upon it when wanted. His fences, stabling, granery, and everything connected with his farm and stock is in a neat and tidy condition, and he is always at home to visitors; that is he is always ready to show his cows or buildings, because being an educated man, he keeps all things as they should be. I once knew a thrifty farmer who made it a rule to examine his fences once a week, to see that no bars were down, gates swinging on broken hinges, or boards loose. He was an educated man in that by watching his premises and taking a 'stitch in time saved nine' as the saying is. But in contrast with this man, who was a model farmer, let us look at another; and this latter one is very numerous — in fact he is found all over the country. In yonder fence corner you will find his plow just where he left it when he finished the field; it may be that it has kept its lonely guard in that fence corner since last spring. There in the middle of the field stands the mower, and he will find it there next season when he wants it, perhaps a little the worse for having been exposed to the storms of winter; and so I might go on enumerating the articles left to take care of themselves in that manner. Would you call such a man educated? Do you think the picture overdrawn? Look around you and see if there is not such a one in your neighborhood, and think you if he should turn his attention to dairying he would forsake his old habits? He might, but it is very doubtful. And it is just this class of men who bring disgrace upon any profession they may follow."

This is by no means an overdrawn picture, and if farmers of all classes would attend the annual conventions which are held they would profit by the experience of their more thrifty neighbors, and in time would become educated.

Another class of uneducated dairymen may be like one of whom Harris Lewis, of New York, is reported to have said, "that a filthy man, with filthy hands, milking a filthy cow in a filthy stable, into a filthy pail, is the perfection of filth," and I think Mr. Lewis is right in his conclusions, and I do not think any of you would consider that dairyman an

educated man, although he might be rich in classic lore and able to read the rocks and the stars, yet he lacks being educated in his profession. An editor, commenting on Mr. Lewis' statement, carried the "filthy" comparison on further as follows: "It may be the *perfection* of it, as far as these operations go, but it is not the *completion* of filth. The milk must first go through the usual processes, and be strained by a filthy milkmaid or milkman, through a filthy strainer, into a filthy receptacle, sitting in a filthy dairy house, with filthy surroundings and reeking with a filthy atmosphere; then skim it with a filthy skimmer into a filthy churn, churn it with a filthy dog, in a filthy place, take the butter out with a filthy ladle into a filthy bowl, wash it with filthy water, salt it with filthy salt, pack it in a filthy tub, and store it in a filthy place. Then let it be sold by a filthy dairyman to a filthy dealer, who disposes of it to a filthy retailer, who keeps a filthy stall or grocery, dips it out with a filthy paddle, into a filthy sheet of filthy paper or a filthy dish, weighs it on filthy scales, and delivers it by a filthy boy to a filthy patron, and the filthy picture can be completed by a filthy imagination." It does not require education to evolve all that filth. But reverse the picture and then see what education does.

As a rule, such dairymen as Mr. Lewis found in New York are not to be found in the west, and especially in Wisconsin, where they have won more first-class premiums at dairy fairs than any other state, except, possibly, Illinois. But such a picture tends to bring out the educated dairyman in all of his better qualities, and while comparisons are generally odious, it is necessary to make them sometimes in order to find the gilt-edged that may be obscured. There is undoubted waste in the manner in which many of the dairymen feed, and as soon as they can be educated by conventions, colleges and the press, they will become saving through knowledge, and thus add to their finances. The general and dairy farmer has much to learn in these matters, and hard study and careful instruction, well applied, may bring them out in time, and their wastefulness stopped.

If we thus speak of those who produce the milk, what shall be said of the host of incompetent butter and cheese makers? They are positively more injurious to the business

than the producer, as through their ignorance greater losses are sustained. A few years ago it used to be customary to indenture boys to capable mechanics for the purpose of having them taught the trade they proposed to follow, and the term of the indenture was rarely for a less period than five years, and often for seven. A good workman well knew that unless a boy put in a good deal of time, he would be a botch, and do more injury than good, hence when a boy was indentured his employer controlled him for a series of years as though he owned him, and as a rule it was for the boy's good. This may have the appearance of barbarism, but it would be better than to have every other boy who undertook to learn a trade prove a regular botch workman. Does a law student or a medical student get through by studying a few weeks or months? Then why should a butter or cheese maker be considered a master workman who has only spent a few months in the factory? I have in mind now a cheese maker who never made a pound of butter in his life, but who was anxious to learn, and for that purpose spent two full weeks in a creamery to learn the *modus operandi*, and at the end of that time set himself up as a first class workman. Now was he sufficiently educated for the responsible position of butter maker? When we need a doctor or a lawyer, we are very apt to select men of experience, and so it should be with the manufacturers, especially if they desire to place upon the market a salable article. A cheese maker should serve a regular apprenticeship at the business, and when he has graduated be able to give satisfactory reasons for the modes he may employ about his work. But most of the cheese and butter makers are anxious, apparently, to get through their day's work, and do not care for the consequences. If they are lucky enough to make a lot of cheese which happens to suit the market, they are satisfied, and on the other hand, if they, as they term it, are unlucky, they blame the producers with the fault.

I had hoped to be able to give a few points in this paper that might be of value to young men who are about to embark in the dairy business, but I find that I am unable to do so, and therefore beg you to accept the intent for the deed.

In closing let me say to one and all, whatever you do, do

well. Have system about your business; watch details; care for the small things of life; they make the large ones; the details are as important as the great things; begin right and work to some purpose, and success in life is assured; without an aim your work will amount to little.

PLEASANT HOMES MADE HAPPY ONES.

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

Upon one of the rough, hilly farms of one of the Atlantic states, there stands, or did stand, a few years since, a house, the dwelling place of its owner. It was of fair size, and, with proper surroundings, might have been a comfortable and happy home. On the contrary, everything about it was chilling and forbidding. No lawn or shrubbery in front, no flowers or garden in sight. Not a respectable fence between the house and the highway, or even a lilac bush or a wild rose to bid a silent welcome to the wayfarer, or to relieve the dreary monotony to those who were compelled to make this place their home. Within, the house was as cheerless and destitute of everything but the barest necessities, as if the owner and his family had been on the verge of starvation. He said he would have no useless gewgaws about him. He dressed in the plainest of clothes, and even these were often dirty, patched or ragged. He lived and compelled those in his house to live upon the cheapest and plainest of food. In manners he was rude, profane and vulgar. Toward his wife and children he was arbitrary and overbearing, and among his hired men he was a tyrant and a savage. His wife, weary and worn out with her burden, lay down and died before the summer of her life was half over, and his children left such a dreary spot as soon as they were able. The owner lived simply to gather property. He died a few years since, leaving an estate valued at \$250,000, with no indebtedness. In amassing property in a wild mountain district he was certainly successful; but to him this was all of life. Was such a life worth living?

Let us turn to another picture. Among the schoolmates of my early years was a young lady a few years older than myself. At an early age she married an excellent young man and moved with him to what was then an unbroken wilderness in eastern Michigan. There, in a long, low log cabin they commenced the battle of life together. As the years passed the forest gradually disappeared, and field after field was added to the farm until it was a beautiful one to look upon, as well as a profitable one to its owner. The log cabin still remained, but around it had grown up many shrubs and ornamental trees, and flowers of many colors and varieties nestled about the quiet home from early spring until late in the fall. A beautiful climbing rose had succeeded in hiding nearly all of the logs on one side of the building from view, and was doing its best to hide the roof. How was it within? Let me give you the words of another. A gentleman who owned and lived in the finest mansion in the county called upon her one day, and after chatting a few minutes with her, threw himself upon a very plain lounge in the room and said: "Well, Sarah, you have the most real home here of any building that I was ever inside of in my life."

There was neither church nor school near them, yet a large family of children grew up who were neither ignoramuses nor heathen, but on the contrary are intelligent Christian men and women and valuable citizens. The good husband and father sleeps in the silent city. He left behind him no large accumulation of property, but a name revered and honored by all who knew him. My old schoolmate, now rapidly growing old, is spending her remaining days with one of the children she trained so well. To her children and friends, the memory of the bright and happy, as well as the useful lives of herself and husband, are worth much more than any amount of gold could have been. Surely I need not ask any one in this audience which of the two lives they would prefer. I trust no one here is so far gone in his love of money, simply as money, that he would accept the home and life of the wealthy man first described in preference to that of my old schoolmate.

And yet, when I am traveling in the west, I often see

homes, no, not homes, but places where homes ought to be, that make me fear that many of our people are too eager for money. In their anxiety to accumulate a fortune they either forget or neglect many things that would add very much to the comfort and happiness of a home. The first case I referred to is, I know, an extreme one, and there is very little danger that any one who attends these meetings will ever go to such extreme lengths for money. But my friends I would not have you travel any distance whatever in that direction, as no amount of money could redeem such a life from misery in the end. The wealth of a Vanderbilt might gild it over and perhaps hide some part of it from the world, but nothing could cure it. I referred to the other case because my old schoolmate and her husband came to what was then the west, just as many of you, and just as wife and I came, without money and with our homes to hue out and our fortunes to acquire, if we ever have them. What they did, you and I may do it if we try. Why, then, is it that we have so many places in our beautiful state that can be called homes only as a matter of politeness or as a compliment to our friends? My friends these things ought not so to be, and they need not so continue. Begin now, if you have not already done so, to adorn and make homes pleasant, and you will surely make all within it happier, better and more contented with their lot. Resolve to-day that another spring shall not pass without your having a nice and respectable garden, in which shall be an abundance of all the vegetables of the season. That for at least one month of the year strawberries shall be as plenty as bread is and as free to all. Raspberries should be in the same abundance during their season, with plenty to spare for canning, and before they are gone comes the blackberry, which if your family enjoy in abundance they will have little use for your family physician.

Then when you have feasted your family and friends to their heart's content on berries, comes the grape in its different varieties, of which if you take proper care you may eat until winter. But in our list of small fruits we must by no means omit the little red and white currant.

Would you ask what varieties of small fruit will grow upon

common farm land? Well, if you should ask my friend Mr. Kellogg what varieties of strawberries or raspberries will grow upon your land, he would give you a list of names of each, long enough to make your head swim even to think them over. But I am not asking or expecting you to become experts at first, but only to add to the comfort and beauty of your homes. I will give you a very short list of such varieties as my family, and friends who visit us enjoy. I need hardly say that of strawberries I place the Wilson first. To lengthen the season somewhat, I like the Kentucky the best of any late variety that I have tried. If you wish a very large and beautiful berry of good quality, try Seth Boyden's No. 30. It is with me a very poor bearer, and will only pay as indicated above. If you wish something very choice in quality, get some of Downer's Prolific, or Burr's New Pine, which are both moderate bearers and medium in size, but too soft for market. For raspberries, the Doolittle and the Mammoth Cluster are both valuable and good among the Blackcaps. The Philadelphia is a standard among the reds. I also think highly of the Cuthbert, but have not yet fully tested them. From what I have seen I think well of the Gregg among the Blackcaps and intend to try them the coming season.

I have had no experience in cultivating the blackberry, from the fact that wild ones of excellent quality grow in such abundance near me that there seems no occasion to look farther in that direction. From what I have heard and learned from others, I think Stone's Hardy and the Snyder may be safely recommended as good and reliable. Among grapes the Concord stands at the head for reliability upon all soils and under all circumstances. With me the Janesville has proved more hardy and a better bearer than the Concord, and also earlier, though in quality inferior to it. Still it is like the Wilson strawberry in one respect, it is not really ripe as soon as it becomes colored, but will improve in quality for some time by being left on the vines, or if picked, carefully packed and left in a cool, dry place to ripen. With me the Delaware is a favorite and does nicely. Rogers No. 3 and No. 9 are my early and choice in quality, I think about equal to the Delawares, and a few days earlier;

but with me they are not free bearers and would hardly be a popular market sort, the bunches not usually being well filled, though there may be some magnificent clusters. All these varieties of fruit, except the currant, need winter protection, but will pay well for it in the health and comfort to your family and friends during the entire fruit season, and give you plenty to care for a winter store.

As to soil I will only say: Any soil that will produce a good crop of either corn or potatoes will, with good cultivation produce a fair crop of any of the varieties I have named, and with as much certainty as you can grow either corn or potatoes. I do not expect or intend to go into the details of fruit, flower or vegetable growing of any kind. My plea today is only for you to make a beginning, and do it in such a way that it will not be thrown aside even when the hurry and drive of the working season seem to need all your time and strength.

When I was a boy it was the custom, not only at the old home but with the neighbors as well, to have the garden work done nights and mornings and rainy days. It seemed to me, boy though I was, very poor policy. Neither years nor gray hairs have changed my opinion in that respect. The growing of fruits, flowers, shrubbery, shade-trees and lawns, should be as much a part of the regular work as the growing of crops of wheat, hay, oats and corn, or the making of choice butter or cheese, and the necessary work should be arranged for with the same care. Perhaps you may not make quite as much *money* by this course, but young wives will be happier and more content to bear the necessary burdens of farm-life, and your sons and daughters will develop into stronger and better men and women than by an opposite course. You no doubt wish some of your sons to become first-class farmers, but can you reasonably expect it if your home is cheerless and destitute of those thousand and one things that go so far to make home pleasant and yet cost but very little money? Will he take any pleasure in inviting his young friends to a home where there is nothing to show them, or to interest either them or himself?

If, on the other hand, he knows, as his neighbors do, that his home is a bright and cheery spot, where all are made

welcome, and made to feel themselves so from the first, even though they may be strangers, he is glad to invite his young friends to visit him in such a home. He will take them to the garden and show them first a magnificent asparagus bed from which he has cut stalks from 3 to 4 inches in circumference, and tell them what nice dishes his mother made from them. He shows them where he picked the first early peas that grew in the neighborhood, what variety they were, and how they were tended and cared for. Then here are beds of lettuce and radishes as perfect as they can grow, with plenty more coming on for a later supply; also, beets, carrots, turnips, and many other things just coming on, and how nice and clean they are, and how they do grow. It is evident that it was no night and morning and rainy day work that made this garden, but that it has been as regularly planned and cared for as any portion of the farm. But here we are at the very center of attraction, the beautiful strawberry beds. The Wilson's are loaded down with berries in all stages, from the tiny set to the large, deep-red, ripe berry. Here, too, are the No. 30, with their magnificent berries, so perfect in form and color, but not thick upon the vines. The modest and beautiful Downer, and perhaps some other varieties celebrated for their good quality, are shown and the story of their setting and cultivation is given. And now, says the boy, we will have a strawberry treat.

So he goes to the house and says: "Mama, we want a dish of nice berries, right fresh from the vines, and the boys want to help pick them. Will you fix them up for us when we bring them in?" The good mother says: "Certainly, my boy; go and pick them, and I will set a table for you under the shade trees on the lawn, and you shall have a treat fit for the president and his cabinet." In a few minutes the boys return with their beautiful fruit. All is soon in readiness, and they sit down to a table of most delicious berries of various kinds, with plenty of cream and sugar, and a bountiful supply of nice biscuit and butter. When this is over, and the boys, delighted with their visit, are ready to leave, they are hailed by the mother, who says: "Boys, you must not go until you have seen the beds of flowers." She shows them the different varieties of early flowers, gives

each a nice bouquet of roses, which are now in their glory, and they leave this pleasant home, saying they will give their parents no rest until they can have such good and beautiful things around their own homes.

Think you the boys or girls will be in haste to leave such a home? Should they do so, you may be sure they will gladly return to it satisfied and contented. I have not referred to the cultivation of apples, because that will come up by itself. Neither have I referred to the details in the cultivation of any of the smaller fruits, as it would make this paper too long. My object has been simply to awaken an interest in our homes. I tell you, my friends, we can not afford to live any longer as too many of our farmers live. They are doing injustice to themselves, their wives and their children, and in fact to our entire profession. I am not pleading for extravagance and folly. On the contrary I believe in and practice both industry and economy. Allow me a moment to illustrate my idea. Many years ago, and not long after we began to have fine crops of strawberries, when they were more of a novelty than now, we had many visitors during the berry-season. We always wish our friends to have a good time when they visit us, but we were then less able than now to bear so much extra expense. My wife said to me one day: "How shall we manage to give all the friends who visit us a real good time and yet keep the expense from becoming a burden?" I replied: "We have plenty of berries and plenty of good cream, milk and butter of our own. We can afford to buy some extra sugar, and if you will keep a good supply of nice biscuit on hand, we will give our friends plenty of nice berries with sugar and cream and nice biscuit and butter and a cup of tea. Our friends all know that we are poor, and the *sensible* ones will be satisfied, and as for the rest, if they are not, they can go elsewhere next time." We adopted the rule and adhered to it strictly, and I doubt if we were ever more successful at any time since in entertaining our friends.

My friends, large sums of money are not necessary to make a pleasant and happy home. Let us make the most of what we have, and not make slaves of our bodies while we starve our minds and destroy all the better and finer im-

pulses of our natures. Books, papers and magazines have become so cheap that there seems no real necessity for any home to be without them. Then let us begin at once if we have not done so, and make them what we can. Plain and humble they may be, and perhaps rude in structure as was that of my old schoolmate, yet that was a happy and lovely spot, and the memory of the happy days spent there will cast their influence far into the years to come. Then let us go on, each improve in his own way, until our beautiful Wisconsin is dotted in all directions with beautiful and happy homes, until it may be truly said of us, the northwest in all its wide domain has no fairer lands, our country no truer sons and daughters, and the world no fairer or happier homes than may be found in Wisconsin.

Moved to adjourn until 1:30 P. M.

AFTERNOON SESSION.

THURSDAY, February 1.

Convention met pursuant to adjournment.

President Beach in the chair.

THE PAST, PRESENT AND FUTURE OF DAIRYING.

By I. P. ROBERTS, Professor of Agriculture, Cornell University, Ithaca, New York.

When a company of friendly neighbors who have been widely separated for a period, come together, they first discuss the past, talk of the various scenes, incidents and hardships which they have passed through. Next they tell of their present prosperity, their broad acres, their flocks and herds, and how they acquired them; tell of their mistakes as well as their successes, but they never stop here, but with the greatest eagerness and pleasure they discuss the future, lay plans in which their former mistakes are eliminated; project improvements and apply the knowledge gained by experience that their future efforts may be still more suc-

cessful. We will consider this convention a body of friendly neighbors, convened for the time being to discuss the Past, Present and Future of the dairy interest, in any or all of its minutia.

And let not little things be despised, for the whole industry is made up of them, the multiplication of the forces which lie in a little calf, a blade of grass and a motion of the human hand, produce ship loads of valuable nutritious food.

THE PAST.

Where did we start? A long way back, but let us begin with the century. We had at that time a few hundred thousand cows inferior to their progenitors, for their congenial environments had caused them to degenerate. Most of them found a precarious living in the swamps and clearings in the summer, and in the lee of straw stacks in the winter, while in spring they relieved their constipated bowels and purified their blood by eating buds and twigs in the clearing.

Down at the spring house was the milk in earthen crocks and there our good mothers and grandmothers rolled the salt and made the butter; near by the kettle filled with stones pressed the cheese and no thanks to any patent right man.

Tradition says the butter was good, and had fine aroma, though the cows from which it was made had frequently to be "tailed up in the spring," and not one drop of milk from the aristocratic-pedigreed, solid-colored, dark-tongued, back-pointed, beautiful deer-like Jersey entered into it. The cheese made in a bottomless peck measure, melted in the mouth, at least all they could get did.

Certain portions of the state, it was soon found were not well adapted to grain raising, but produced good grass. Here the dairy interests began to thrive and grow, and derived great benefit from the juxtaposition of the dairymen, which juxtaposition caused the rapid dissemination of technical knowledge. Some localities gained a wide spread reputation for superior products and some enthusiasts became so vainglorious as to honestly believe that good butter could not be made outside of the limits of these charmed districts.

They felt sure that the Lord had instituted a monopoly of good butter districts, and that He had granted to a few individuals the first and only letters patent. How the butter makers of Wisconsin and Iowa shake their sides as they read some of the dairy literature of half a century since.

In 1850, the United States produced, in round numbers, 313,000,000 pounds of butter and 105,500,000 pounds of cheese. The eight factories (not associated) produced \$67,000 worth, or, say, 670,000 pounds. In 1851, the first associated cheese factory was organized; in 1860, the census report recorded but two, which employed seven hands, with an invested capital of \$8,000, using upwards of \$9,000 worth of material and producing \$13,400 worth of products. In this decade the butter production had increased 1,500,000 pounds, while cheese production had fallen off nearly 2,000,000 of pounds. Ten years later, in 1870, there were 1,313 cheese factories, which produced nearly \$17,000,000 worth of cheese (or, say, 170,000,000 pounds), which, added to the 53,000,000 made on farms, makes a sum total of 223,000,000 pounds, or a gain of 119,000,000 pounds (over 100 per cent.) over 1860, while the production of butter had increased in the same time but 54,000,000 pounds. In 1850, we produced almost exactly three pounds of butter to one of cheese; in 1870, only a little over two pounds of butter to one of cheese.

PRESENT.

In 1880, the number of gallons of milk sold and sent to factories was 529,974,992, divided as follows: Sent to factories, 343,490,981 gallons; sold, 186,484,061 gallons. The cheese made in factories was 215,885,361 pounds, and that made on farms was 27,272,489 pounds; total, 243,157,850 pounds. The butter made in factories was 29,421,784 pounds, and on farms 777,250,287 pounds; total, 806,672,071 pounds. Calling the milk sold worth eight cents per gallon on the farm, the cheese ten cents and the butter twenty-five cents per pound, the account would stand as follows: Value of milk sold, \$14,918,724; of cheese manufactured, \$24,317,785; of butter, \$201,618,018; total value, \$240,854,527. Add to this the value of milk consumed on the farm, and also the value of veals and pigs raised, and it may be safely stated that the total

yearly value of all the dairy products of the United States equals, or perhaps exceeds, \$300,000,000.

The exports of dairy products in 1881 was, of butter, 19,713,569, pounds, valued at \$3,774,991, or 19 1-10 cents per pound; of cheese, 126,001,345 pounds, valued at \$13,801,189, or 10 1-10 cents per pound. The total value of exports for 1881 was \$17,576,180. For the ten months ending October 31, 1882, the exports of butter were but 6,321,433 pounds, valued at \$1,258,922, being 19 9-10 cents per pound. During the same time the exports of cheese amounted to 95,558,557 pounds, valued at \$10,591,103, being 10 cents per pound.

The following letter is appended, which will explain itself:

U. S. DEPARTMENT OF AGRICULTURE,
Division of Statistics,

WASHINGTON, D. C., January 4, 1883.

SIR:—Among the causes for falling off in exports of butter and cheese is the relative urgency of the home demand. The home market is our main reliance for our farm products, and our dairy products are no exception. Our butter is not wanted abroad, it is so poor; and for the better qualities there is increasing competition from home buyers. The population is rapidly increasing, and in 1881 especially the supply was not abundant.

Respectfully,

I. P. ROBERTS, Ithaca, N. Y.

J. R. DODGE, Statistician.

This gives approximately the condition of things as they exist to-day, as to milk and manufactured products, and we are justly proud of the results. Meantime what advancement has been made as to the number and producing capacity of the cows. In the last thirty years the numbers have almost exactly doubled, reaching in 1880 twelve and one-half millions.

In 1816 a cow is said to have produced 487 pounds of butter in 300 days, but in 1881 there were 33 Jersey cows alone having a well authenticated record of 13 pounds and upwards each per week. The subjoined table appears to be well verified:

TABLE I—YEARLY YIELDS.

	Lbs.	Oz.
Eurotas, 2454, A. B. Darling	778	1
Jersey Bell Scituate, 7828, C. O. Ellms.....	705	0
Stutliff's Pansy, 1019, Asa Bartholomew.....	574	8
Imp. Flora, 113, Thos. Motley.....	511	2

TABLE II — WEEKLY YIELDS.

	Lbs.	Oz.
Eurotas, 2454, A. B. Darling.....	22	7
Jersey Bell Scituate, 7828, C. O. Ellms.....	25	2
Imp. Flora, 113, Thos. Motley.....	14	0
Duchess of Bloomfield, 3653, Campbell Brown.....	18	1
Imp. Mary Jane of Bellevue, 6956, V. L. Kirkman.....	17	7
Imp. Ona, 7840 (three years), S. M. Burnham.....	17	4
Oakleaf, 4769, John D. Wing.....	17	0
Leonice Second, 8342, (two and one-half years) W. P. Hardin...	16	8
Imp. Favorite of Ellms, 1656, W. S. Taylor.....	16	4
Belle of Scituate, 7977, C. O. Ellms.....	16	0
Imp. Maid of Ellms, 6960, T. H. Malone.....	16	0
Imp. Brunette Lass, 1780, W. J. Webster.....	15	6
O. Onan, 1485, M. C. Campbell.....	14	8
Alphea, 171, R. M. Roe.....	14	8
Landseer's Fancy, 2876, W. J. Webster.....	14	6
Turquoise, 1129, John D. Wing.....	14	3
	=	=

There are many other large butter records, some of which are not directly vouched for.

MILK RECORDS.

The typical auctioneer's cow, which gives a barrel of milk and a wash-tub full of strippings, has been produced. We no longer count milk yields by the pound, but by the ton. It is considered no trick at all, in these days, to produce six, seven, eight, or even nine tons of milk from a cow in a single year. Many of the dairies have been much improved by the admixture of pure blooded animals, and without any doubt the average yield per cow has been increased.

In the last place, we are to view the farms. During the half century there has been taken off the farms vast quantities of beef, veal, dry cows and milk. All this tends to impoverish the land. The question arises: Has a sufficient amount of fertility been returned to keep it up to its most profitable productive capacity, or have these vast results been reached by drawing on the invested capital, that is, the native fertility of the land? Will all the acres devoted to dairying carry as many cattle as they did twenty years since? Are the grasses on the pastures coarser and less nutritious now than formerly? In the east, I believe that they are, and that the average capacity of an acre is less. Briefly summarized, then, the cows have increased from a few hundred thousand of badly kept, inferior ones to nearly 13,000,000, many of which are superior.

From the small quantity of butter and cheese manufactured in the days of milk-crocks and stone-weighted cheese press the amount has swelled to 806,672,071 pounds of the former and 243,157,850 pounds of the latter; almost $3\frac{1}{2}$ pounds of butter to one pound of cheese. Butter, it will be seen, is "king of the dairy."

From the spring-house we have moved into the superbly steam-fitted, engine-puffing, improved, ventilated factory furnished with all the conveniences and appliances that human ingenuity can patent. We consume and export nearly 300 millions of dollars' worth of dairy products annually. From small beginnings dairying has grown to be one of the great agricultural industries of the nation. This is the present. The first question that arises is: What have been the leading causes which have produced these marvelous results? They may be briefly stated under four heads: Cheap and abundant land; the associated factory system; rapid and cheap transportation; and, last and greatest, dissemination of technical knowledge by earnest, self-sacrificing men, by conventions, and by the press.

Let those who will, make fun of education, but the fact remains that knowledge is power. Twelve years since a poor boy from the South came to the Iowa Agricultural College and spent three years. He then spent one year at Cornell University, then two in Germany, and to-day, at thirty-one years of age, he is Governor of Colorado. This is an extreme case, you say; well, let us take the hired farm boy attending the district school in the winter, doing chores for his board, eating at the family table, with his ears as well as his mouth open, reading his employer's papers in the family sitting-room at night, and on every hand gaining knowledge rapidly from the very atmosphere with which he is surrounded. A few years later we find him in a comfortable home on his own broad acres and holding offices of honor and trust.

The two cases given illustrate the effect of some of the more powerful causes which have been at work. This American system, so different from the European, of throwing wide open the doors of knowledge and bidding, yea, urging every one to enter who will; this American way of

scattering it so profusely that the poorest child breathes it in with his very life is the prime cause of American success.

We have started on the right road but need a little more steam and many more tracks laid to out stations. It has been a very pleasant task to tell of the successes of the past, to count gains of the present by the millions. But how of the future? What lack we yet? One of our honored teachers has passed away; others are well advanced in years, their step is becoming less elastic; their heads are silvered o'er with the frost of many winters; how, and by whom is the work so well begun by such honored men as Arnold, Lewis and Willard to be continued and improved?

I will arrange it under the following heads in the form of questions:

- 1st. How can technical knowledge be best acquired and disseminated?
- 2d. How can quality be improved?
- 3d. How can the cost be decreased?
- 4th. How can the price be increased?
- 5th. What expensive implements can be cheapened or dispensed with?
- 6th. How can the cows be improved?
- 7th. How can the farm be most economically bettered and the grasses increased?
- 8th. What improvement can be made in cattle food and feeding.

Outside of the dairy districts over one-half of the butter made is not good; in fact it is downright poor; perhaps one-fourth of it, in commercial phrase, would be called grease. The persons who produce this butter would like to make it better, and get better prices, but they don't know how.

You will observe that I have asked more questions than I can answer, more I fear than the combined wisdom of this convention can at present.

The quantity they produce is not sufficient to pay them for leaving home and placing themselves under the instruction of an expert; how, then, are they to acquire the knowledge? Through the press? Yes, partly. But how are they to be interested enough to take a paper devoted to dairying? Through this convention? No. It meets but once a year; it should meet at least once each month during the winter. It should have at least one branch association in each county of the state, reporting to this convention through a delegate

at some one of its regular meetings. There should be as many societies for advancing agriculture as there are school districts in the land, and the state and nation should pay the bills. Your state agricultural or mechanical college or these two departments should have an annual income of not less than \$100,000. There is no lack of money, millions are being squandered and stolen; let us see to it that those who feed and clothe the people have the benefits of a just proportion of it. Sustain and support your home institutions, give them ample means to gain technical knowledge and then let it be scattered free to the people. Give time for the experimenters to learn to experiment; the field is all new and many experiments will be failures. But be not discouraged, for often more is learned by failure than by success.

There is no reason why two or three men should not devote all their time to giving instruction throughout the state. The only way and the true way is to place the instruction within the reach of those whom it is desired to benefit, and personal work must be supplemented by the press. I have pointed out one way of disseminating technical knowledge; there are many others, and I hope they will be thoroughly discussed. As to the best and most expeditious way of acquiring this knowledge. The great storehouse is books, ninety-nine one-hundredths of all knowledge in the world is now contained between their lids. Had I never seen a cow or a churn and wanted to embark in the dairy business, the first thing I should do would be to purchase Arnold and other works on dairying, and subscribe for two or three journals germane to the subject; after having digested these I would place myself under the instruction of a practical dairyman for one season, and if then I could not make better butter and cheese than that usually found in most of the country towns, I would have my friends send me to an idiot asylum.

Second—How can quality be improved? This is partly answered by what has already been said. One thing, more than all others combined, tends to keep up the supply of a poor article. The habit of most grocers is to pay as much or nearly as much for a poor as good butter. When asked if they purchase all goods on this principle, they say no, but

we don't want to offend and drive away our customers. What we lose on poor butter we have to make up on something else. The question is who pays the loss? Then one pound of poor butter blocks the market for two pounds of good. Again I ask who stands the loss? And is there no way to remedy the evil? If all butter could be purchased at first hands on its merits, there would be little trouble as to quality.

Third—How can cost be reduced? By improving the cow, her food and the farm. I do not propose to lock horns with anybody as to breeds. There is still plenty of room among the rank and file of all breeds for loftiest effort.

As to pastures, many of them could be made to profitably grow two blades of grass where only one grows now. Circumstances will point out far better than I can the most expeditious and economical methods of improving the land. I have just purchased a car-load of cotton-seed meal, paying \$28 per ton, delivered in Ithaca. Reckoning its value by the present price of commercial fertilizers, the manure from a ton of this meal will be worth \$15.75.

On hilly farms commercial manures may be the most economical; on others, yard manures or clover. I want to repeat what I have so often said before in one form and another: Feed the farm liberally if you desire to live on the fat of the land.

Fourth—How can the price be increased? I have no sympathy with "two-ten" thirty thousand dollar horses, forty thousand dollar cows or dollar butter, for the simple reason, in these prices, true values are ignored. If all butter was gilt edge and sold at one dollar per pound, and cheese in like proportion, consumption would so diminish that one-half of the cows would have to go to the shambles.

It would please me to see every pound of butter and cheese sold at a good round profit over and above cost. How is it to be done? By more careful study of the business; by fighting everything that is not a first-class article; by placing goods on the market in their most attractive form; by studying supply and demand and the daily market; by holding on to the export trade. This can only be done by selling prime goods and by seeking new markets.

Fifth—What expensive implements can be cheapened or dispensed with. I have looked over the estimates of experts as to the cost of the implements necessary for a creamery of four hundred cows, and find it to be fully one thousand dollars. Add to this buildings and grounds, interest, deterioration of the investment, labor, packages, and commission on sales, and we find that it is an expensive operation to convert milk into greenbacks. Can anything be done to save a part of this expense and place it in the dairyman's pocket as profits.

Sixth—How can the cows be improved? By sending about one-fourth of them to the shambles and giving better food and care to the remaining three-fourths.

Seventh—How can the farm be improved and its fertility increased? This question presents a wide scope for thought and effort, and I trust it will be thoroughly discussed here and now.

Eighth—What improvement can be made in cattle food and feeding? The ensilage question is not yet fully settled. Cotton-seed meal is attracting much attention on account of both its manurial and feeding value.

Some of the best dairymen feed but twice a day, others three, four and five times; who is right? Does it pay to cut hay, cornstalks, etc.? Should the food be fed dry or dampened? Should concentrated food be fed alone or with something less hearty? These, and many other questions connected with dairying, want more careful consideration than has yet been given to them. Are we to definitely settle any of them in the future? If so, how, and who is to do it? Is there no way for this convention to increase its usefulness, or is it to go on like other conventions in other states, doing much good, but failing to reach and benefit to any appreciable extent a majority of the milk producers. I believe the future is to see greater improvement than the past, and I leave it with you to discuss and recommend the means by which the sought for ends are to be attained.

EXPERIMENTS WITH ENSILAGE.

By PROF. W. A. HENRY, Madison, Wis.

The value of dried fodder corn is appreciated by our enterprising dairymen. The claim of ensilage enthusiasts of immense yields of fodder corn to the acre are not in the least favorable to ensilage, if this same green material possesses equal feeding value when prepared in some cheaper way. Most of our farmers in this state feed fodder corn in the bundle, or sheaf, without passing it through a cutter. The query arises, is there any material loss in this method of feeding, and if so will it pay to use the silo to save such loss? How much longer would a given area of fodder corn last if preserved in the silo than if cut, shocked and fed in the bundle? The design of the experiment was to meet this question. Once knowing the difference, a farmer can decide whether it is cheaper to make up the loss of growing more acres of fodder corn, chaffing it when dried, or preserving it in the silo. The experiment designed and carried out at the Experimental Farm, was to take fodder corn from equal areas, cut and shock that from one plat, and put that from the other into a silo, and feed to milch cows to ascertain what the difference in feeding value might be between the two lots.

THE FODDER CORN USED IN THE EXPERIMENT.

The fodder corn was planted in drills three feet apart, and so thick in the row that no ears could form. Eighteen rows forty-eight rods long were planted with home-grown yellow dent. The corn grew between seven and eight feet high over most of the plat, though where the rows crossed a low spot of ground the fodder was short and poor, owing to wet weather. Eight rows fifty rods long were planted with Dr. Bailey's ensilage corn, and presented a much heavier growth, with the rows about equally good all the way across the field.

CONSTRUCTION OF THE SILO FOR THE EXPERIMENT.

About the buildings of the Experimental Farm the land is comparatively level, but in one place not far from the barns

there is an embankment about seven feet in height. An excavation was made in the face of this embankment extending back fifteen feet and having a width of twelve feet. The bottom of the excavation was on a level with the ground at the foot of the embankment. About the sides of this excavation two by four scantlings, ten feet in length, were placed upright as studding, narrowways against the earth walls and also at the open front. Upon the inside of these studding boards were nailed. These boards were carried up to the top of the studding so that it gave a room twelve by fifteen feet and ten feet high. This box, as will be understood from the previous explanation, stood about seven feet in the ground on three sides, but had an exposed front. Where it extended above the ground and at the exposed front, boards were nailed upon the outside of the studding also. The four inch space thus formed was filled with earth in order to exclude the air. Studding were then placed on end lengthwise through the middle of this box and boards fastened to both sides of these, and earth placed in the four inch space as before. This gave two small silos each about fifteen feet long, nearly six feet wide and ten feet deep.

These were constructed wholly of old lumber which had accumulated at the farm and of which no other use could have been made. In putting on the boards no care was taken to make them fit closely and they were full of cracks and nail holes, but as most of the silo was below ground and that part which extended above had a four inch space filled with earth, there was little chance for the passage of air. Such a silo is far from having air tight walls in the true sense of the word. This silo had only the natural earth floor. The roof was made of old boards well lapped to keep out the rain. The labor required for excavation was one team ten hours, farm hands thirty-four hours; for building the silo, farm hands fifty hours. Allowing fifteen cents per hour for team and hands the cost of the silo for labor was \$14.10. The amount of old lumber used was something like two thousand feet. The fodder corn used in this experiment for ensilage was put into one of the divisions of this silo.

PREPARATION OF THE FOOD.

On September 4th and 5th the silo just described was filled

by using nine of the eighteen rows of dent fodder corn, and four of the eight rows of Dr. Bailey's ensilage corn. The nine rows forty-eight rods long gave 11,992 pounds, and the four rows of Dr. Bailey's ensilage corn fifty rods long gave 9,228 pounds of green corn previously described. The great weight of the Dr. Bailey fodder was due mainly to the great weight of the large stalks. The corn was cut into three-fourth inch lengths by passing through a Belle City feed cutter. No special pains was taken with the work. The silo was filled with cut fodder corn to the very top and inch boards laid crossways over it and weighted down with three two-horse loads of stones. The ensilage laid directly upon the earth floor, and no straw or other protection was placed over it under the board covering. It had settled nearly one-half by feeding time.

On September 6th the other nine rows of dent and four rows of Dr. Bailey's fodder corn were cut and shocked. The corn was in full blossom at the time of cutting. On October 25th, after an unusually fine fall for curing fodder, the shocks were taken down, bound into bundles and placed under cover. The weight of fodder from the thirteen rows, was at this time 6,643 pounds. From this it will be seen that we had the same amount of green fodder corn to start with, one-half prepared for feeding by ensilaging and the other by drying in the ordinary manner. Any difference then in the feed value of the two products must be due to the manner of curing, the method of feeding, or both.

THE COWS USED IN THE EXPERIMENT.

Four cows, whose qualities as milkers were well known, were selected. They had been in milk some time as will be seen, but were deemed the best of any we had for that purpose. The following gives all needful data regarding them.

Name.	Breed.	Age.	Calved.
Heroine.....	Short Horn.....	7 years.....	August 26th.
Roan.....	Grade Jersey.....	4 years.....	June 5th.
Yellow.....	Grade Jersey.....	9 years.....	July 21st.
Brindle.....	Native.....	5 years.....	July 17th.

None of them were with calf during the experiment. Heroine and Roan constituted Lot I; Yellow and Brindle Lot II.

THE FEED GIVEN.

During the whole experiment each cow had one pound of bran, one pound of corn meal and one and one-half pounds of oil meal at a feed twice a day. These food articles were carefully weighed out separately each time, and the three mixed and fed dry in a feed box, being given when the milking began. This ration furnished only about one-half the digestible protine necessary for a full flow of milk, leaving the other feed to make up what was lacking. In addition to the above food one lot of two cows was supplied with all the fodder in the bundle that they would strip of the softer parts, no attempt being made to force them to eat the coarse stalks as they showed no inclination to do so. Great care was taken to have the stalks fully stripped of all the leaves and to this end the bundles were opened, turned over and shaken out several times by the attendant during each meal.

While one lot was supplied with fodder, the other lot was fed all the ensilage that could be eaten up clean between feeds; the cows showed no choice between the fine and coarse parts of the ensilage, eating all alike. One day's ration of ensilage was brought from the silo in a large box wheel-barrow each afternoon. That not needed for the evening's meal was left in the wheel-barrow standing in the open air beside the barn, protected only by a gunny sack and cover made of inch boards. The ensilage came out warm each morning, though the mercury went below zero during two periods of cold weather, once sinking to fifteen below.

The ensilage was taken out of the silo in layers reaching from top to bottom, and the exposed face was protected by a few bundles of fodder corn stood up against it.

OTHER DETAILS.

The milking began at half-past four, morning and night, with perfect regularity, during the whole trial. The milk of each cow was weighed separately and recorded, and the milk of each lot set by itself in Cooley cans. The cream

from every seven settings, when slightly acid, was churned in a rectangular churn. The butter was salted one ounce to the pound, and the butter from each two churnings of each lot was sent in numbered bail boxes to Barber & Ingram, commission merchants, Chicago, to be tested. The feeding began at milking time; at eight o'clock each day the cows were weighed; they were then offered water in pails in their stalls, and again at night water was offered to them. They were kept in comfortable quarters and carded each day; during fine weather they were allowed exercise in a lot where no food could be had. In this lot rock salt was provided in boxes. Care was taken to see that they did not eat any of their bedding, and that no stalks were lost from their mangers. The time required to attend to them was not less than eight hours per day, while that spent upon the milk and butter were proportionately great.

Only those who have attempted experiments of this nature can appreciate the patience and attention required in the work. In this trial everything was well done.

Fearing that the dried fodder corn would not last through the whole trial if much was fed before the experiment began, other similar fodder was substituted up to within the fifth day before the trial began, when the fodder designed for the experiment was fed. The experiment began November 16.

FIRST TRIAL OF ENSILAGE AND FODDER CORN, NOVEMBER 16
TO DECEMBER 7, TWENTY-ONE DAYS.

LOT I—FODDER.

*Weight of yellow cow November 16	964 pounds
Weight of yellow cow December 7.....	970 pounds
Gain	6 pounds
Weight of Brindle November 16.....	845 pounds
Weight of Brindle December 7.....	848 pounds
Gain.....	3 pounds
Fodder corn placed in manger during trial of 21 days....	1,481 pounds
Stalks weighed back	431 pounds
Water drank.....	3,245 pounds
Milk given by the two cows.....	689 lbs. 1 oz.
Butter made from the two cows.....	31 lbs. 2 oz.

*The weights here given are in all cases the average of those of the day given and the previous day.

LOT II — ENSILAGE.

Weight of Heroine, November 16.....	1,308 pounds
Weight of Heroine December 7.....	1,307 pounds
Loss	1 pound
Weight of Roan November 16	1,054 pounds
Weight of Roan December 7.....	1,079 pounds
Gain	25 pounds
Ensilage eaten during trial of 21 days	4,428 pounds
Water drank during trial of 21 days.....	791 pounds
Milk given by the two cows.....	791 lbs. 13 oz.
Butter made from the two cows.....	28 pounds

At the close of the first trial lot I changed from fodder to ensilage, and lot II from ensilage to fodder, and a week of preliminary feeding carried on, after which a second trial began. Though some doubts were entertained as to the advisability of such a sudden change in the main part of the food, no ill effects were visible.

SECOND TRIAL OF ENSILAGE AND FODDER CORN DECEMBER 15,
TO JANUARY 5, TWENTY-ONE DAYS.

LOT II — FODDER.

Weight of Heroine December 15.....	1,253 pounds
Weight of Heroine January 5.....	1,229 pounds
Loss	24 pounds
Weight of Roan December 15.....	1,011 pounds
Weight of Roan January 5.....	1,017 pounds
Gain	6 pounds
Fodder corn placed in manger during trial of 31 days....	2,393 pounds
Stalks weighed back.....	1,137 pounds
Water drank.....	3,596 pounds
Milk given by the two cows.....	633 lbs. 14 oz
Butter made from the two cows.....	21 lbs. 14 oz

LOT I — ENSILAGE.

Weight of yellow cow December 15.....	1,025 pounds
Weight of yellow cow January 5.....	1,012 pounds
Loss	13 pounds
Weight of Brindle December 15.....	911 pounds
Weight of Brindle January 5.....	855 pounds
Loss	26 pounds
Ensilage placed in manger during trial of 21 days.....	3,881 pounds
Frozen ensilage weighed back.....	87 pounds
Water drank.....	270 pounds
Milk given by the two cows.....	664 lbs. 11 oz
Butter made from the two cows.....	13 lbs. 8½ oz

As the feeding progressed, it was discovered that some of the bundles of fodder were slightly mouldy. It was deemed advisable to leave these out. The weight of the mouldy fodder not fed was 446 pounds. The fodder from the thirteen

rows gave out at the close of the second week of the second trial. Fodder corn in all respects equal and similar was fed during this last week as a substitute. The very large amount of stalks weighed back during the second trial, is due to the fact that four of the thirteen rows of fodder used in each plat were Bailey's Ensilage Corn, a very tall growing variety, with large stalks, which still held considerable moisture at feeding time. It happened that most of the fodder from these rows was fed last. The fodder substituted was also Bailey's ensilage corn.

The fodder corn fed during the first two weeks of the second trial weighed 1,615 pounds. Of the 6,643 pounds put under cover October 25, only 4,615 pounds can be accounted for, as follows:

Fodder corn fed previous to first trial.....	249 pounds
Fodder corn fed during first trial.....	1,481 pounds
Fodder corn fed during interval of 7 days.....	724 pounds
Fodder corn fed during two weeks of second trial.....	1,615 pounds
Mouldy fodder corn thrown out.....	446 pounds
Total.....	<u>4,615 pounds</u>

The loss in weight of about thirty per cent. must have been due to drying out in the mow. The loss in weight of ordinary hay in the mow is from 15 to 20 per cent. This fodder corn actually lasted two cows during five days of preliminary feeding, twenty-one of first trial, seven of interval, and fourteen of second trial, or forty seven days in all. Had none moulded, it would have lasted about five days longer, or fifty-two days in all. It should be here noted that all the fodder corn fed was of high quality, the leaves being of that rich yellow green color characteristic of good fodder. With the ensilage there was also a part unfit to feed. All that from three to six inches under the covering on top was so rotten that it was unfit for food.

The weight of the ensilage as taken from the silo was:

Ensilage fed during preliminary feeding.....	3,248 pounds
Ensilage fed during first trial.....	4,428 pounds
Ensilage fed during interval between trials.....	1,346 pounds
Ensilage fed during second trial.....	3,881 pounds
Ensilage fed after second trial.....	877 pounds
Poor ensilage thrown away.....	<u>2,183 pounds</u>
Total.....	<u>15,963 pounds</u>

As 21,220 pounds of green fodder were put into the silo, the loss at feeding time was 5,257 pounds, or about 25 per cent. The actual number of days feed for two cows, furnished by the ensilage from the thirteen rows of fodder corn were: Preliminary to first trial, 17 days; during first trial, 21; interval, 7; second trial, 21; after trial, 4; total, 70 days. The ensilage that was spoiled at the top of the silo, had it been in good condition, would have lasted about 11 days longer.

MISHAPS.

It would be strange if so many weeks of experimenting could go on without some accidents. The udder of the cow Heroine, in Lot I fed on fodder, caked in one quarter on the 27th day of December, when her milk fell off between five and six pounds. By great care she was restored so that the next day she was back to within one pound of her usual flow, and the following day was fully up. The total loss of milk was not over seven pounds. Strangely enough on the other side of the experiment, the cow Brindle, fed ensilage, met with the same misfortune on the 30th of December and continued until the close of the experiment. In all, her flow of milk was decreased about twenty pounds from this cause. The malady, which was a mild one, appeared in the same stable with another cow that has not eaten ensilage this winter. No allowance is made for either of these losses in the report, but only the actual milk and butter yields reported. If any difference is to be made it is left to the reader to do so.

REPORT ON THE BUTTER.

Messrs. Barber & Ingram reported that none of the lots of butter sent showed very high flavor as the cows were not fresh enough to make the highest quality. In no instance could they tell which lot was from ensilage and which from fodder corn.

SUMMARY OF THE TWO TRIALS.

Let us with these explanations group the result of the two trials so as to see what they teach. First as to the food.

Thirteen rows of fodder corn converted into ensilage actually lasted two cows seventy days. Thirteen other rows

equal in all ways to those made into ensilage when cut, shocked, bound into bundles and housed, lasted two cows forty-seven days. In this regard the value of the ensilage exceeded that of the corn fodder by nearly fifty per cent.

Second, as to the product of these foods. The following table will show the milk and butter product of forty-two days ration of fodder and ensilage for two cows:

THE MILK AND BUTTER PRODUCT OF FORTY-TWO DAYS' RATION OF FODDER AND ENSILAGE FOR TWO COWS.

	1st Trial.— 21 Days.	2d Trial.— 21 Days.	Total.
Milk from fodder corn	689 lbs., 1 oz.	633 lbs., 14 oz.	1,322 lbs., 15 oz.
Butter from fodder c'rn	31 lbs., 7 oz.	21 lbs., 14 oz.	53 lbs., 5 oz.
Milk from ensilage. . . .	791 lbs., 13 oz.	664 lbs., 11 oz.	1,456 lbs., 8 oz.
Butter from ensilage. .	28 lbs., 0 oz.	31 lbs., 8 oz.	59 lbs., 8 oz.

From this we see that the cows fed on ensilage produced 133 pounds, nine ounces more milk and six pounds three ounces more butter than when fed on fodder corn. This is ten per cent. more milk and eleven per cent. more butter.

Grouping these in an other way we can see the effect of the food on the flow of milk:

Lot I, on fodder corn, gave 689 pounds one ounce of milk in three weeks. When changed to ensilage one month after the first trial, they gave 664 pounds eleven ounces, a shrinkage of twenty-four pounds six ounces in three weeks.

Lot II, fed on ensilage, in three weeks gave 791 pounds thirteen ounces; and a month later, when changed to fodder, gave in the same time 633 pounds fourteen ounces, a shrinkage of 157 pounds fifteen ounces in three week.

With the butter we find:

Lot I made thirty-one pounds seven ounces in three weeks on fodder; and a month later, on ensilage, thirty-one pounds eight ounces, or a gain of one grain.

Lot II, on ensilage made twenty-eight pounds, and when changed to fodder, made twenty-one pounds fourteen ounces, or a shrinkage of six pounds two ounces in three weeks.

Third. Lot I made one pound of butter from 21.9 pounds of milk when fed fodder, and when fed on ensilage in the second trial, it required only twenty-one pounds of milk for one of butter.

Lot II, when fed on ensilage during the first trial, required 28.2 pounds of milk for one of butter, and when changed to fodder required 28.9 pounds of milk for one of butter.

Fourth, as to the condition of the animals. The cows fed with fodder corn gained ten pounds in the first trial, and lost eighteen in the second.

The ensilage fed cows gained twenty-four pounds in the first trial and lost thirty-nine in the second.

Fifth, as to water drank:

The cows fed on fodder corn drank in the two trials 6,841 pounds of water, or over eighty-one pounds per cow per day; while the ensilage fed cows drank only 1,061 pounds, or less than thirteen pounds per cow per day.

The cows fed on ensilage went as many as five days at a time without drinking. Most of the water was drank during the milder weather of the first trial.

Of the 3,874 pounds of dry fodder fed, 1,568 pounds were never eaten, but left as refuse stalks. This is about forty per cent. of the whole amount fed and explains in a large measure why the ensilage lasted so much longer than the fodder. Had finer fodder corn been grown, much less would have been wasted. To grow very fine stalks, however, one must have a far smaller yield to the acre, and if the silo makes good feed of coarse corn stalks it should receive credit for so doing.

FEEDING HAY AND ENSILAGE TO CALVES.*

The following experiment was conducted to determine if calves could be fed ensilage successfully, and what such food was worth to them compared with hay.

Two calves were placed in one box stall and three in another. The food allowed each calf was two pounds of oil

* In this and the next experiment the ensilage fed was made from fodder corn grown at the rate of over 33,000 pounds per acre.

meal, two of bran and four of oats per day, divided into two feeds. In addition to this the two animals in the first lot received all the ensilage they could eat, while those in the second lot were fed blue grass hay of medium quality. One calf in each lot was a full blood Holstein, the others were full blood Shorthorns. All were born in May or June of the previous spring; they had been raised on skim milk and were in good condition.

The weights of the several animals on January 7th were as follows:

LOT I.

Holstein heifer.....	550 pounds
Shorthorn bull.....	522 pounds

LOT II.

Holstein heifer.....	476 pounds
Shorthorn bull.....	474 pounds
Shorthorn heifer.....	448 pounds

They were fed, carded, watered and weighed regularly each day during the experiment, and in fine weather allowed exercise in the open air. The experiment began January 7th, 1882, and continued to January 30th, when hay was substituted for ensilage, with Lot I and Lot II received ensilage in place of hay, the other part of the ration remaining the same. After this change the experiment continued 22 days longer. It will be seen then that two calves ate ensilage while three were eating hay in the first trial, and in the second three were eating ensilage and two hay. The equivalent would be five calves 22 days on ensilage, and five 22 days on hay. During the first trial of 22 days, Lot I ate 995½ pounds of ensilage and gained 74 pounds. In the same time Lot II ate 266 pounds of hay and gained 92 pounds. During the second trial of 22 days Lot I ate 333 pounds of hay and gained 112 pounds; Lot II ate 1,355½ pounds of ensilage and gained 148 pounds.

A summary of the two trials would give us the following:

I.—ENSILAGE.

Total amount eaten in the two trials.....	2,351 pounds
Total gain in the two trials.....	222 pounds
Pounds of ensilage to one of gain.....	10.5 pounds

II.—HAY.

Total amount eaten in the two trials.....	599 pounds
Total gain in the two trials.....	204 pounds
Pounds of hay eaten to one of gain.....	2.9 pounds

From this it appears that one pound of the hay was equal to 3.6 pounds of ensilage. It should be stated in this connection that the ensilage, being a new feed with us, was not handled as skillfully as it now is, and during some days of quite cold weather a part of it froze in the feed boxes. This, of course, was weighed back and not counted as eaten, but it will be understood by this that it was not made as palatable as it should have been.

The appearance of both lots of calves at the close of the experiment was most excellent, and the impression gained aside from the test of the scales was very favorable to ensilage all the way through in the experiment. That calves will eat it with avidity and thrive, when properly fed, is beyond all question.

EXPERIMENT IN FEEDING ENSILAGE ALONE.

Two two-year-old steers and two one-year-old heifers were fed in this trial. The animals in each lot received nothing but ensilage and water. Preliminary feeding with ensilage began May 10th, and the experiment dates from May 17th. The weather was unusually cool for the time of year. The animals were allowed exercise a part of each day in a small lot where no food could be obtained. The ensilage fed was the same as that used in the previous experiment with the calves. It was placed in feed boxes, and care was taken to supply a little more than would be eaten each time. The small amount remaining was weighed back each day.

The weights of the animals reported are the average of the weighings of two days. The following shows the results:

I.—STEERS.

	<i>Pounds.</i>
Weight of steer No. 1, May 17.....	851
Weight of steer No. 1, May 31.....	863
Gain in 14 days	12
Weight of steer No. 2, May 17.....	906
Weight of steer No. 2, May 31.....	942
Gain in 14 days	36
Total gain of two steers in 14 days.....	48
Average gain per day for the two	3.42
Total amount of ensilage eaten by the two steers in 14 days.....	1,949½
Or, 139.2 pounds per day by the two steers.	

II.—YEARLING HEIFERS.

	<i>Pounds.</i>
Weight of Holstein heifer, May 17.....	718
Weight of Holstein heifer, May 21.....	735
Gain in 14 days.....	17
Weight of Shorthorn heifer, May 17.....	621
Weight of Shorthorn heifer, May 31.....	631
Gain in 14 days.....	10
Total gain for the two heifers in 14 days.....	27
Average gain per day for the two.....	1.92
Total amount of ensilage eaten by the two heifers in 14 days.....	1,412½
Or, 100.9 pounds per day for the two.	

I am fully aware that a two weeks' trial is too short for very accurate results, yet, as the ensilage was all fed out by the 31st of May, we could not continue our experiment longer. The gain in weight is certainly very fair, and was a surprise, since, the animals, though they ate their food well enough, nevertheless seemed uneasy, and very anxious to get at the fresh, springing grass in the lots bounding the small one in which they were kept.

REPORT OF THE CHEMIST ON ENSILAGE, MAGNUS SWENSON, M. S.

My portion of the work in the experiment made with the ensilage of fodder at the University Farm during the past seasons, was to note the chemical changes which took place in the silo. The two different varieties of corn which were used in the experiments of 1881-2, were analyzed just as they were taken from the field, while the ensilage from each of these was analyzed after remaining six months in the silo. The following table shows the results of these analyses:

METHODS OF ANALYSIS.

The ether extract was obtained by percolating about 0.6 of a gram of the dry substance with ether. After weighing the dry extract, it was again dissolved in a small quantity of ether, and to this solution a little pure calcium carbonate was added. After standing for some time it was emptied on a filter and washed with water. The filtrate containing the calcium lactate was evaporated to dryness and ignited at a low red heat. From the amount of calcium carbonate thus obtained, the weight of lactic acid was calculated. This weight subtracted from that of the whole ether extract gave the weight of crude fat.

The alcohol extract was obtained by percolating the residue, after percolating with ether, with 90 per cent. alcohol. The filtrate was evaporated to dryness and weighed.

The dry extract was treated with water, the cane sugar, glucose and other soluble matter then being separated from the insoluble, the latter being dried and weighed. The cane sugar and glucose were determined by Fehling's solution.

The water extract was obtained from the residue, after percolating with both water and alcohol, by percolating with hot water.

The total nitrogen was determined by combustion with soda lime. To determine the insoluble nitrogen about 0.5 of a gram was boiled for one hour in water containing a small amount of lactic acid, and the nitrogen was determined in the insoluble residue. The difference between the weight of this and the total quantity being the soluble nitrogen.

The fibre was obtained by boiling 3 grains of the powdered substance for one-half hour, first with two per cent sulphuric acid, then with a two per cent. soda solution. The residue was carefully washed with water, alcohol and ether, dried and weighed, ignited and again weighed, the difference between the weights being the crude fibre.

The acid and alkali extract were determined by difference.

It will be seen from the table of analyses that if the ether extract had been put down, as is usually the case, as crude fat there would have been an increase of about 120 per cent. in the ensilage No. 1, and about 100 per cent. in No. 2. The

analysis of this ether extract, however, shows that there has been a gain of only about 45 per cent. and 35 per cent. respectively; a gain which is largely accounted for by the greater concentration of the ensilage due to fermentation and other changes. Corn No 1. was very good, the stalks being large, nearly all bearing well developed ears of corn. No. 2, on the contrary, was very poor, the stalks being small and unhealthy, bearing scarcely any ears. The differences between the analysis of the corn and the ensilage resulting from it is undoubtedly due to some extent to the difficulty of getting average samples. This is especially true of ensilage No. 1, as the pieces of the ears of corn were apt to accumulate in one place when emptied into the silo, on account of being heavier than the pieces of stalks and leaves. The decrease of albumenoids and increase of ash seem to indicate that the sample of ensilage No. 1 used for analysis contained a larger proportion of leaves and less of the corn than the sample of the fresh corn stalks. The ensilage put down in 1882 is much superior to that of the previous year; the sugars in the latter had all undergone fermentation and it was very sour to the taste, while that at present in the silo does not taste sour at all. An analysis will be made of this at an early date.

OBSERVATIONS UPON THE CONSTRUCTION OF SILOS AND THE USE OF ENSILAGE.

In locating the silo the main points to be considered are economy in getting the cut fodder into the pit and the ensilage out. A disregard of one or both these points may change what would otherwise be profit into loss. The full ration for a cow is about one hundred pounds, so that a large dairy would require some tons of ensilage to be handled daily. This realized, the importance of ease in hauling becomes apparent. The most convenient location for the silo would be in the feeding barn or attached to it, with the floor of the silo a few inches higher than the feeding floor in front of the stock. A car could then be made to carry ensilage, without inconvenience, from the silo to where fed. If it is impossible to have the silo attached to the barn or a part of it, then its location should still be such that the ensilage need

be handled but once when fed. It is best to have the silo under ground if possible, but that is not at all necessary. Elevators are now sent out with ensilage cutters that carry the cut fodder to any desired height, so that it is no longer necessary to have the cutter stationed above the silo. One had better build above ground and lift all the cut fodder at cutting time into the silo by horse-power, than to put the silo into the ground and lift the ensilage out when it is fed. When the silo is in a hill side, the door should be so placed that a wagon or cart can be driven up to it, or better still, backed into the pit, from which it can take the ensilage where it is needed. To be obliged to use a horse each day is quite an expense and trouble, unless a large amount of ensilage is to be fed.

A man has only to reflect how far it would be profitable to carry hay every day to his stock, and then remember that a ration of ensilage will weigh several times as much as one of hay, to realize the importance of the question of the location of the silo.

The silo should be built, then, wholly with reference to economy in getting the cut fodder in and the ensilage out.

CONSTRUCTION OF SILOS.

Experience has shown that silos may be made of any material that will answer for walls and exclude air. In many localities they can be best made of stone. When of stone, the inside of the walls should be made smooth with mortar or cement in order that the plank covering may settle without hindrance. While floors are advisable, they are not essential. If the silo is built below ground, care should be taken to prevent water from entering. We have had trouble from this source at the Experimental Farm. Silos of wood will serve a good purpose in many localities, and if properly built are satisfactory. Care should be taken to prevent the weight of ensilage from springing the walls. In many parts of the state lumber can be had at such a low price that a silo of wood can be built for a small sum. If made with double walls with the space filled with earth or sawdust there should be no necessity of using matched lumber. There should be but one door to a silo and this should be carefully

closed while the silo is being filled. Silos should not be less than ten feet deep, and the deeper the better. It is useless to give detailed account or estimates of the cost of silos; let the reader divest them of all mystery and they become very simple. All that is required is a convenient storage room with tight sides and bottom, where a large quantity of green cut food can be packed away without air getting to it in sufficient amount to cause heat and decay. While putting in the fodder it will begin to heat, but lay on the planks and weigh it down and the heat will pass off as surely as the fire in a stove will die out when all the air is shut off.

If possible, not one silo but several should be constructed. A large silo should be partitioned off into smaller ones. The reason for this is that small silos can be more rapidly filled and sealed and less ensilage is exposed when the cover is removed. With several small silos at hand one can put in any crop that is ready any time during the summer season. By this means much green feed that would otherwise go to waste can be saved. Again, a small silo can be fed out during a summer drought when pasture is short, thus preventing a shrinkage of the milk. Those who feed ensilage all come to look upon several silos as essential to the highest success.

THE COST OF RAISING A TON OF FODDER FOR THE SILO.

It is unfortunate that no exact statement of the cost of raising fodder corn on the Experimental Farm can be given; yet the process is so simple and so in line with common corn culture that intelligent farmers will meet with no difficulty on this point.

On good corn land the amount of green fodder that can be grown to the acre may be set down at from fifteen to twenty tons. To plow, harrow, plant with a horse planter, drag three or four times with a light harrow as the corn is coming up, and cultivate twice with a horse cultivator, will cost from six to ten dollars per acre, depending upon the size of the field and the facilities for work, but the expense should be nearer the first figure than the last. This being granted, it may be set down that a ton of ensilage fodder will cost from fifty to seventy-five cents when ready for the

silo; for harvesting and putting into the silo the expense may be rated at seventy-five cents more, thus making the actual outlay for ensilage to the farmer from one dollar and a quarter to one dollar and a half per ton. The loss in weight in the pit being about twenty-five per cent. of the first weight of the fodder put in, the cost of the ton of food ready to feed may be estimated as not far from two dollars.

I offer these figures not as absolute, but as giving a fair idea of the matter. The fodder corn crop can be raised wholly by horse power. By using a light harrow there is not the slightest use for the hoe, since by the time the corn stands a foot or eighteen inches high, it shades the ground so as to effectually check all growth of weeds. I have allowed no charges for manure in the above estimates. There are tens of thousands of acres in Wisconsin, each of which will grow from ten to fifteen tons of ensilage without a single load of manure.

THE EXPENSE OF CUTTING AND STORING ENSILAGE PER TON.

Last year, in my report upon this subject, I showed that the expense of cutting and storing ensilage had been over one dollar and sixty cents per ton at the Experimental Farm, and made the statement that with proper machinery and arrangement the cost of this work should not be over one-half that sum. I am glad to be able to say that we did the work this year at the price I estimated. The total number of hands employed this year, including the fireman who ran the engine and teamster, was seven, arranged as follows: one hand at the engine, one feeding the cutter, one passing the fodder from the wagon to feed table, one teamster loading, drawing and weighing, and three hands cutting and getting to the wagon in the field. Two wagons and one team were used. The loaded wagon standing at the cutter, while the other was in the field. It should be noted in this connection that the field was close by the farm buildings. In two days these seven men cut and placed in the silos 63,618 pounds of green fodder corn. With a somewhat larger force of men the expense could have been made still less. As before stated, the capacity of the cutter used was not less than seventy-five thousand pounds per day, and with three or four more hands,

that amount of fodder could probably be handled in a day instead of less than half the amount, as was the case.

The expense of putting in the cut fodder may be stated as follows:

Rent of engine, two days, at seventy-five cents per day.....	\$1 50
Wood for same.....	1 50
Seven men filling, two days, at \$1.40 per day.....	19 60
Four men, weighting with stone, one-half day, at \$1.40 per day....	2 80
Team, two days at \$1.50 per day.....	3 00
	<hr/>
Total.....	\$28 40
	<hr/> <hr/>

Calling the weight of the cut corn fodder put in 31.8 tons we have the cost per ton, eighty-nine cents. In getting the engine for seventy-five cents per day we secured a very cheap power, it is admitted, yet the charge of men at \$1.40 per day is more than most farmers have to pay, and the allowance of \$1.50 for two horses is rather more than they are worth in the country. I have allowed nothing for setting the machine or taking it up. A charge might be made for this work, still, since but one setting would have answered for hundreds of tons, it is hardly right to charge the whole of this cost to such a small amount of ensilage as was put up at this time.

WHO SHOULD AND WHO SHOULD NOT BUILD SILOS.

Shall our Wisconsin farmers build silos, is the substance of a question so often put to me that I take this opportunity of answering.

The reply depends wholly upon the purpose and plan of the farmer. Among those who have no need of silos are our farmers who make pork-raising the first object of the farm. Such do not keep many horned cattle and there is usually an abundance of coarse fodder and straw for these. Another class of farmers who raise grain for the market are not in need of any system of securing cheap coarse food. They have large straw stacks that will more than supply the wants of all the stock they can carry, where they sell grain. I will not here discuss the advisability of such farming.

On the other hand, the ones who may find use for the silo are those who not only feed all they can grow on their farms to cattle or sheep, but who wish to keep still more stock and

are willing to purchase liberally in the markets such concentrated foods as corn meal, oil meal, cotton seed meal and bran. These farmers believe that if oil meal and cotton seed meal can be shipped all the way to Europe to be fed for butter and cheese, they can afford to purchase and feed them at home and send dairy products abroad instead.

Ensilage goes with high farming, which is not the common method in the west. This system is well illustrated in the report of Dr. L. Weeks, of Oconomowoc.

With a large amount of ensilage grown on the farm and concentrated food such as oil meal and bran in abundance, the farmer can keep a large number of cattle. With this amount of stock and rich food a great quantity of manure will be made, which, properly applied, will give large crops in turn. It is very evident that more labor is required on a farm managed in this way than by other systems. All these points should be considered by those who are debating the question of silo building.

One point in favor of ensilage should be noted here. It seems to be a cheap substitute for roots which many farmers esteem highly as a food for stock in the spring. Ensilage can be grown and handled so much cheaper than roots that those who now raise a few acres of mangolds or sugar beets might well try the change.

In conclusion I would say that I believe there are many farmers in this state who could use the silo to advantage and profit. But to all I would say: Do not build expensive silos until you have tested ensilage in a small way. Do this by means of an inexpensive silo or simply fodder buried in the ground. The experience gained in this way will pay well when it comes to erecting larger silos.

DISCUSSION.

Mr. W. D. Hoard, Fort Atkinson—I heard Prof. Roberts read a very pungent indictment against the growers for their lack of discrimination in regard to butter, and he asked, "What shall we do about it?" and I wish to answer the question. In 1870 the dairymen of Jefferson county found themselves in the same boat that Prof. Roberts speaks of. There are two things that a farmer's wife will resent

with the bitterest indignation: any disparaging remarks about her baby or her butter; and when a merchant undertakes to discriminate and pay for good butter at its worth and the poor at its worth, he soon finds himself impaled on the point of her prejudice. We attempted to cure this, to subject the dairymen of Jefferson county to the sharp inspection of the market.

At that time there were two men in Jefferson county in 1870, who sold their butter in a butter market on butter merits. Those two men were Milo Jones of Fort Atkinson and Henry C. Drake at Lake Mills. We organized the Jefferson County Association, and I wrote to Dexter, Smith & Co. of Chicago and asked them to prepare an intelligent statement of how to prepare butter for market, and commenced the work of trying to secure on the part of our butter-makers shipments on their own account to the commission trade in Chicago or anywhere else where their butter would be intelligently discriminated upon. It had its effect. The country merchants very soon began to find themselves losing the butter of the county. There are two kinds of butter-makers. Those who make butter in the cellar of the merchant and those who make it in the country.

The farmer found himself immediately face to face with the judgment of the market which did not care to buy bad butter, and the result was that sharp criticism began to produce more intelligence in the minds of the butter-makers than all the preaching would have been able to.

That is the result in general. In 1881 I prepared a list of farmers, fifteen hundred of them, who consign direct to commission men, or sell to local buyers who do discriminate, and these local buyers ship to New York or Boston or Chicago. They buy it for shipment entirely. In this way we answer the question of how to get by this condition of affairs.

President Beach—It is now time to adjourn for the banquet which the ladies of Elkhorn have prepared for us at Warings Hall. It is now the established custom of this association to hold a banquet at its annual meeting, where we have singing, toasts and responses. Let every one attend.

The convention now stands adjourned until to-morrow morning at 9:30 o'clock.

MORNING SESSION.

Met pursuant to adjournment, at 9:30 A. M., Feb. 2, 1883.
President Beach in the chair.

DISCUSSION.

Mr. Lytle—How long shall we feed our cows while in calf?

Prof. Roberts—Seven months, or a little more if they have good fodder and are in a good warm place. You can not get something from nothing. Where a man has a warm stable; where he has good feed and good judgment, mixed with plenty of brains, he can milk that cow along up to within six weeks of the time of calving. He can not injure the calf, and he will not materially injure the cow, unless he has got a very heavy milker.

Mr. Hoard—What temperature would you have that stable you call a warm stable?

Prof. Roberts—Of course we could not keep it just at 65°, but we found that when it run higher than that the yield of milk diminished. You see it is easy to get at a conclusion. When twenty cows yesterday morning gave 320 pounds of milk, and the thermometer ran up, and this morning we didn't have as much by 20 pounds. When it fell down to 45, from that to 50, we got our best yield of milk. When it got down to freezing, we found then a greater consumption of food, but the yield of milk was less. So we keep it, as near as we can manage, somewhere from 46 to 55. We throw open our windows as soon as the temperature goes up to 60, for air and to cool the stables.

Mr. Smith—On sunshiny days, would you not let them out even if it is pretty cold?

Prof. Roberts—My rule is this, to try to put that animal where she is the most comfortable. We have quite a large barnyard where we manufacture manure, and our cows have been there in the sun and the rain this winter. We have a covered barnyard, stone wall on two sides, and the cows, when it comes a sunny day, will look out of the window just like a school boy on a bright day in May, and we let them out and put up a little stack of straw out there so they will stay out there in the sunshine.

Mr. Lytle—How much do you feed the cow during that six weeks that she is dry?

Prof. Roberts—It depends on the cow. Some cows, if you undertake to feed them corn, will fatten right up. As a rule, if we have pasture we never feed any corn. We turn them out and feed no corn until after she drops her calf.

Mr. Smith—That cow, if she takes on flesh and keeps that flesh after she drops her calf, is she a good dairy cow?

Prof. Roberts—No, sir; not as a general thing. It all depends on the cow. I would feed roots in small quantities and a little corn.

Mr. Smith—Can you tell me what a pound of butter costs you?

Prof. Roberts—I have been figuring it over, but I don't think that experiment is worth anything. My men get \$35 a month with no perquisites. Those are my cheapest hands. They work about thirteen hours, and they work hard and are well worth every dollar they get. Then other things are so different I cannot tell what it costs. Then it depends a good deal, too, on how much brains you mix with it as to how it costs. I want to say this, I visited Holland several years ago and I thought I got some very good ideas, although I have not put them into practice. Their method of dairying was what I wanted to get. There they have had to pump the water out of the land; there is one place there it took fourteen years to pump the water out, and it is now fourteen feet below the river. Land is worth from \$500 to \$1,000 to them for making butter and put it into the London market in competition with our butter. An average cow is worth there all the time twice as much as it is worth here. The calf is worth twice as much.

Mr. Lytle—They don't have to pay \$35.00 a month for help!

Prof. Roberts—No, they don't. Now I will give you an idea of their way of doing. On one of these farms we will imagine they have thirty cows. They will naturally get fifteen heifer calves and fifteen male calves. The first thing the male calves are killed. I have seen a calf from six weeks to two months old sell in their market for \$30.00. Out of the

fifteen heifer calves they pick ten of the best ones and the other five go with the male calves to the shambles as veal.

They have probably fifty of a herd in the farm. The two year old heifers come in with their first calf in a stable usually in February, ahead of the ordinary dairying. These are there bedded and cared for the best that the barn produces, and tested during this year, and when they are tested probably three or four or five of them in the fall will go to the butcher. They don't come up to the standard, they come in early, they dry them up early, and put them on succulent grasses. You see there is a second weeding out. We will now suppose there are six left of the two year old heifers. Now, then, six of the grown cows go or the farm is over-stocked. They have sold twenty veals at an average of \$20 to \$25; they have sold four two-year-olds at an average say of \$80, and they have sold four cows at an average of over \$100. They have had all the milk and butter that those cows have produced except what it took to raise the veal and the calves which were raised on skim milk. I could not find a cow in Holland that was nine years old, and I saw thousands of cows. When I saw a good cow being driven to the shambles, I said, "what are you selling her for?" and the reply was, "why bless you there are two coming right along just as good."

I purchased one cow. We got about 7,000 pounds of milk from her in two years, and that milk under our circumstances is worth two cents a pound in the pail in the stable, and I sold her for \$71.10. I sold a Holstein bull which had become a little ugly, for $7\frac{1}{2}$ cents a pound dressed, and he dressed 1,327 pounds; that figured about \$100. I think it is; and I turned right around and bought an eight-months' old calf for just \$100. I was in Holstein in the summer, so I did not see them feeding them. I understand they always give them a little oil meal. Their hay is very light. They have a very moist climate, the grasses are succulent; they never have the droughts we have, and the cows seem to get right along, and I think we can see in that why as a breed the Holsteins have a tendency to give a great deal of milk and the tendency is not to give as rich milk as the Jerseys.

The cows' stables are in their houses all in the same, one,

immense structure. The family live here and the cows live there, and the hay is above. The cows are put in the stables in the fall, two tied together, and they stop there until the spring, when they come out to stay. The stable is cleaned out, and no matter what the weather is, they cannot come back in till fall again.

The President—Prof. Roberts, I want to ask you, could you conduct your farm on the same plan you are now doing without reference to experiments, and show a balance sheet in your favor?

Prof. Roberts—I have a balance to show in my favor now, and I am very sorry to say it. It makes me mad sometimes. We have not educated our men up in New York yet. Our desire is to have them look upon that farm as the laboratory of the professors of agriculture, where we can go on with our work without any reference to dollars and cents. It is a place to try experiments, not to make money. Our experimental station is simply two or three professors, who have gathered themselves together with the idea of progress.

Prof. Henry—I want to say something in regard to the books men should read. The best book I know of for a dairyman or an ordinary farmer to take hold of is a little book called "Science in Farming." It costs \$1, published by the Farmer's Advance, Springfield, Ohio.

There is another book called "The Farmer's Annual Hand Book," which costs fifty cents, published by D. Appleton & Co., of New York. It contains, in the first place, a blank for each day in the year, so you can make a record. In addition to that, there are eighty pages of carefully printed matter, useful to any farmer. For instance, one is a table of the periods of gestation, so a farmer can tell by his records just when his cows will calve. There is a record so you can keep these facts. Then there are tables in regard to feeding, etc. Over in Germany every good farmer carries one of those hand books in his pocket.

Mr. Hiram Smith—There seems to be an inquiry among quite a number here to know if there is not some method by which the agricultural department of the state may be strengthened. The way to accomplish that is just the same

as to accomplish anything else. Put forth the proper effort. You cannot get a hill of beans without effort. And the way to strengthen the agricultural department of this state is just as plain as to raise beans, and just so soon as the farmers of this state wish \$40,000 expended on the experimental farm and experimental stations they can have it, and they ought to have it. They pay 70 per cent. of the taxes, and as soon as they want it they can have it. They don't want it, they don't care anything about it. That is the trouble. Now, by what means can we get them to see what is for their interest, to care about it. I have no doubt but what the farmers will act as soon as they see the necessity. The farmers complain that the offices are filled with lawyers, they say the governors ought to take out the lawyers and put in farmers. Now, then why have the lawyers been appointed and the farmers left out? Simply because the governor holds himself to represent the wishes of the people. There are fifty or a hundred eminent lawyers asking for the appointment of this one and that one in their district to the vacancy in the Board of Regents, and the farmers, nine out of ten of them don't even know the names or the occupation of the applicants because their attention has not been called to it. The governor is just as ready to listen to a band of farmers as he is to lawyers, but he feels the necessity of carrying out the wishes of the people. Seventy men ask for the appointment of a man in a certain district, and the governor naturally believes that is the man that is wanted to be appointed. He appoints that man because there is no wish for anybody else. It is not a very desirable office, there is no pay connected with it and a good many kicks and cuffs, but it is an important office in the educational interests of this state.

Now, then, I say pass a resolution here, if you please, that the Agricultural Department be strengthened, and that the Board of Regents be strengthened, by those personally interested in the great interests which we are here to further, and you go up to Madison and join with your fellow farmers, and no man in Madison will be more glad and cordial to meet you than the Governor. You can have a talk with him, and if he sees there is an interest felt, that you want

to do something on the experimental farm, there will be no hesitation on the part of the Governor to carry out your wishes. I say this much, not in opposition to lawyers, for the lawyers in that body, I am proud to say, are honorable, upright men. Prof. Henry has called your attention to the preparations for fish culture in this state. I have not a word to say against anything that can be done properly for the fish culture, but look at the great interests of this state. The dairying interest is given \$500 a year. Fish culture, I think, \$6,000 annually. Now, compare the benefits resulting from the two industries in this state. What would Wisconsin do to-day, where would her reputation be to-day, if the dairy interests of this state were annihilated? She is not noted for corn or pork or beef; she only stands preëminent among her sister states because of her ability and her superiority in the production of dairy products.

There is no other industry in this state which stands out so prominent as the dairy interests, and yet we spend more for soldiers in this state than we do for the whole agricultural interests. Of course, I say nothing against the other matters, but in view of the vital importance of the agricultural Department, let us from this point on take an interest in these matters, and bring our wishes to the Governor's ear.

REPORT OF COMMITTEE ON NOMINATION OF OFFICERS.

Mr. President — Your committee on the nomination of officers for the ensuing year, would recommend the following:

For President — W. H. Morrison, Elkhorn.

Vice Presidents — All previous presidents of the association.

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

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

Respectfully submitted,

HIRAM SMITH,
R. D. TORREY,
F. B. FARGO.

Committee.

The report of the committee was adopted, and Mr. Morrison being called upon responded as follows:

Mr. President, Gentlemen of the Wisconsin Dairymen's Association — This is certainly an unexpected compliment. I am not intimately connected with dairymen, although I have a farm, but my hopes, my sympathies are with you, and I will do my part to the best of my ability. I thank you for the compliment you have paid me.

MILK AND ITS PRODUCTS.

By F. C. CURTIS, Rocky Run, Wis.

The subject of "Milk and its Products," given me by the secretary for discussion, is certainly one of sufficient latitude for a paper of greater length than I have time to write or this convention to give its attention in hearing read. I shall therefore confine myself to that part of the subject which appears to me to most interest this convention. For instance, the milk of different animals is used in different parts of the world, but I shall confine my remarks to that produced by the cow as really the only one in which we are at present interested. Milk is heavier than water — usually in proportion of 103 to 100; when taken from the animal it is slightly alkaline, but when exposed to the air it soon loses this character, and shows a slight degree of acidity. Johnson's Chemistry states that "if sour milk is gently warmed it undergoes fermentation, and may be made to yield intoxicating liquor." This is probably from the sugar it contains. Professors Chevalier and Henry give the composition of cow's milk as: Casein, 4.48; butter, 3.13; milk sugar, 4.77; saline matter, 0.60; water, 87.02. In manufacturing milk into its various products, it is well to consider these different ingredients and their bearings upon the subject. We see milk is largely composed of water, and we find that it is a bad conductor of heat; that is, it heats slowly and cools slowly, much slower than water. If this is true, and there is no doubt of it, it is for the reason that these substances it contains other than water are the cause of its non-conduct-

ing characteristics. Milk will cool much faster when the vessel which contains it is placed in water, though the water may be no colder than the surrounding atmosphere. To prove this, place a vessel of milk partly submerged in water. In a short time the lower portion of the milk will be found as cool as the water, while that portion of the milk above the water will still retain warmth. If the vessel is large and submerged in water, it will be found to cool much quicker upon the outer portion of the milk, the inner part retaining heat in proportion to the diameter of the body of milk, and if the diameter of the vessel is so large that the milk will not cool to the center within four hours, putrefaction will commence to take place. Those changing from the old-fashioned methods of raising cream, should study this subject and its bearings.

I have often heard dairywomen discuss the relative advantage of the milk pan—being full, or a less quantity of milk. My opinion would be, if the temperature of the atmosphere was sixty-two degrees, or a little colder, the full pan would be much the best. If the temperature was sixty-five, or warmer, a less quantity would be better, for the reason that the small quantity would cool sooner and putrefaction would be retarded. I am under the impression that this question of heat in milk and its bearing is not as well understood as it should be. Some call it "animal heat," as though it was different from other heat; that there is something about it obnoxious and must be separated. I hold that animal heat is not obnoxious, and not mainly different from other heat. That in separating cream from the milk we can take advantage of it and make it assist in the separation. Milk, in cooling from blood heat, ninety-eight degrees, to forty-five degrees, will shrink in bulk about one ounce to the gallon. If this is true, and I know it to be so from actual experiment, let us see if we cannot make this feature or characteristic useful.

I have shown that milk is about seven-eighths water, and that it holds heat much longer than water. This being the case it is evident that the eighth which is not water is the part that holds the heat the longest; hence a tin vessel holding milk at nearly blood heat and submerged in water cools

the milk suddenly, or its watery portion first shrinking it and making it heavier in proportion to its bulk, while the creamy portion retains its bulk and buoys to the top.

The only danger to the unexperienced is, the diameter of the vessel containing the milk may be too great, or that the water which contains it gets too warm as the warmth of the milk appears to be conducted to the water, or warms it up similar to a hot iron placed in water. The late plan of deep setting milk in cold water, and closely covering it, I think, has another advantage that has not been considered.

Johnston, after stating that milk can be made to yield an intoxicating liquor, says, "By longer exposure to the air it gradually begins to putrefy, becomes disagreeable to the taste, emits an unpleasant odor, and ceases to be a wholesome article of food."

It needs no argument to prove that milk when exposed to the atmosphere is a strong absorbent, and draws in objectionable matter that the atmosphere contains, as well as being injuriously acted upon by the atmosphere.

A few years ago I was subpoenaed as a witness in a butter suit. A party had bought quite a quantity of nice looking roll butter, and had stored it in an unused room, the butter being uncovered and exposed to a strong light—this was late in the fall. Some six weeks had transpired and the purchaser found his butter had turned white particularly on the side toward the light, and had acquired a bad taste, and upon tasting and examining he was satisfied that he had been defrauded by the mixture of tallow—this was before the days of oleomargarine—hence the suit for damage. The butter undoubtedly was good when sold, and changed by the action of the atmosphere. From my observations I hold that the less milk, cream or butter is exposed to the atmosphere the better will be its quality and the longer its keeping qualities. All animal and vegetable life after maturity commences to decay, and this decay is advanced or retarded in proportion to its exposure to atmospheric influences.

Remember milk is about one-eighth a kind of animal life, and upon being drawn from the cow this life ceases and decomposition is the early result, unless checked by some

preservative process. What can more conduce to its preservation than to exclude it from the atmosphere as much as possible.

Milk evidently varies in quality. I believe our excellent friend and coadjutor, Hiram Smith, holds that milk produced from cows soon after coming in, makes the highest flavored butter. Cataneo, an Italian, holds that milk does not reach perfection until eight months after calving. Johnston claims "that a cow does not reach perfection until she has three or four calves — and then continues good until ten or twelve years old — that the poorer the apparent condition of the cow, good food being given, the richer in general is the milk — that the quality of the milk depends much upon the race and size of the cow. As a general rule, small races or small individuals of a larger race give the richest milk from the same kind of food; that the kind of food has probably more influence upon the quality of the milk than any other circumstance. It is familiar to every dairy farmer that the taste and color of his milk and cream are affected by the plants on which his cows feed, and by the food he gives them in his stall. If madder is given to cows the milk is red; if they eat saffron it becomes yellow." Remember this is from an English chemist.

Pure water accessible at all times is very necessary to the production of good milk. A near neighbor the past season found his cows giving less milk, becoming nearly dry, and the butter product could hardly be used; upon examining for the cause, he found the pond from which they drank was putrid and nearly dry. He then watered them from his well, and the change for the better was perceptible at once.

It is well known that animals of the same breed, fed on the same food, will yield milk not only in different quantities, but also of very different quality; while we find the cows of the present time variable in quality, we find them much improved above the cow in a state of nature, and I doubt not, still susceptible of further improvement. Our true policy undoubtedly is to feed and shelter our cows well, and improve them by judicious breeding. We can select our breeding males from the best sources, although the increas-

ing demand for cows seems to require of us to raise all the heifer calves.

As to a further discussion of the products of milk, it is hardly worth while to occupy the time of the convention. I have but little knowledge of cheese making, and have so many times written up my experience in butter making, that I have nothing new to add in that direction.

In closing I would congratulate this association upon the great benefits derived from its labors, to the state, and nation at large, and its individual members.

THE OBJECTIVE POINT IN DAIRYING.

By H. J. WILKINSON, Secretary of the Wisconsin Sheep Breeders' and Wool Growers' Association, Whitewater.

Whoever will look over the ten annual reports published by this association, with sufficient care to realize the vast amount of information their pages contain relative to all branches of industry which you have made a specialty, will agree with me, that to prepare a paper worthy of an occasion like this and a fitting response to an invitation to appear before such a class of people as gather at these annual mid-winter meetings, is a task not lightly or thoughtlessly to be undertaken. Many eminent men, justly celebrated for their thoroughly practical knowledge of dairying, have taken active and honorable part in them, and have given us the benefit of their experience and research.

How well Wisconsin dairymen have profited by the "line upon line," and "precept upon precept" thus laid down to them, let their present position attest. Less than a quarter of a century ago the popular verdict was, that neither good butter nor palatable cheese could be produced in the west; yet in 1880, according to the census reports, Wisconsin stood sixth in the list of milk-producing states, fifth as to production of butter, and third in the manufacture of cheese. As to the quality of the product let the premiums won by Wisconsin exhibitors, when competition was open to the world, tell the story.

But the pathway to success has not always been an easy

one. Progress has sometimes been slow and difficult. Obstacles of a discouraging nature had to be met and overcome. Periods of depression sometimes almost discouraged further effort. A radical change in all that related to the manufacture of dairy products had to be perfected, and confidence created in the minds of the dairymen as to its better adaptation to the successful development of the (almost new-born) industry, than old processes. The ill-founded prejudices of dealers and consumers had to be met and overcome — not, perhaps, the easiest part of the task.

But the battle has been fought, and a victory gained, and many of the men engaged in the van of the conflict — for a conflict it *was*, with dealer and commission — still survive, hale and hearty, to wear for years to come the laurels so honorably *won*. Looking back over the past, and forward to a future bright with promises of further success, what do we see? It is said that revolutions do not go backward, and while it is true that influences not clearly connected with dairying have hastened and promoted the new era, there is no room for doubting that the old methods have passed away never to return. The modern innovations have come to stay.

The general principles evolved relating to the manufacture of butter and cheese will, in the main, be found to hold good, although changes in details, to perfect the general plan or system of conducting the business, are likely to occur.

The relative proportion of good butter to the whole production has been immeasurably increased; a fact due in a very great degree to the direct influence of the various dairymen's associations, which have thus been performing missionary labor of a very valuable kind. There are some yet who have not been reached by this influence. Those who, having eyes, see not, and ears, hear not.

I have thus far spoken of the industry only in general terms, but the picture is not complete without a nearer view of the man who performs the manual labor — who owns, cares for, and milks the cows. How does he find himself situated now, that so great a change has come over his business?

The average dairyman is the owner, generally, of say 160

acres of land, stocked with from 25 to 30 cows, of ordinary capacity for producing milk and butter. Within the last ten or fifteen years comfortable barns and sheds have been provided for their shelter in winter, and better pastures, supplemented by other provision, insure good summer keeping. He is generally out of debt, and at least money enough ahead to construct a working capital sufficient to meet any emergency in his business likely to occur. He is within easy reach of a cheese factory or creamery, and the surplus product of his farm is turned into cash monthly, or as often as demanded by the interests of the patrons. He has adopted the modern improvements, has learned to take care of his cows, and, in short, has left a long way behind the aimless and unthrifty practices of former years. He has grown with the growth of the system into a more systematic business man, and conducts his business with method and more in accordance with the well-established rules which underlie any successful business. He has also learned something of vital importance, to wit: that dairying, pursued as a specialty, and intelligently and systematically conducted, can be depended upon for a series of years to return an income from the farm satisfactory in amount and certain in its character. His observation satisfies him that his income so derived is better than that of the general farmer; the element of certainty commends it strongly to his favor; it gives him faith in his business and in its permanence, and his freedom from anxiety as to his financial future is a source of constant gratification.

The old-time dairyman went to the yard, pail in one-hand and milking stool in the other; with a great deal of migratory labor, bitten by mosquitoes, worried by the heat or chilled by the cold, he succeeded in obtaining a scant allowance of milk from his too often neglected and poorly kept herd. Under similarly discouraging and unfavorable circumstances the product was manufactured and marketed, and the net returns were as unsatisfactory as any part of the operation.

The modern dairyman has good and substantial barns, often convenient and attractive, where the well fed and cared for cows are milked, winter and summer. At the fac-

tory or the creamery, or with improved dairy implements at home, the manufacture of the product, instead of being a continual drudgery, is performed with ease, and becomes almost a pleasant task. The results financially are satisfactory, and the effects are seen in the changed appearance of the farm and its appointments, of the farmer, and all his surroundings.

It is found that the farm and stock represent a certain amount of paying capital, safely invested, where financial panics will not sensibly disturb it. It would seem that the dark ages in dairying had passed away, and that henceforth the bright sun of progress and prosperity would never be obscure. Has, then, the objective point been reached? Let us see.

I do not know of any compilation of statistics showing the number of farms in Wisconsin devoted exclusively to dairying, their size and, the number of cows kept upon them. Such information is certainly desirable, as from it we could very nearly determine the actual cost of keeping a cow the year through on a Wisconsin dairying farm.

The statistics gathered by the state and by the United States, embrace the whole area, and furnish no data of real value in any consideration of this question.

The returns sometimes made by the factories, I think, to this association, so far as I have observed, are equally without value on this point.

But any array of statistics practically within our power to obtain would fail to cover the whole ground, as every dairyman resorts largely to the mill and warehouse for grain for his cows.

My sphere of observation has been limited, and can afford no certain criterion by which to judge on a large scale. On a number of farms devoted exclusively to dairying, with which I am tolerably well acquainted, on an average, one cow is kept to every 6 2-3 acres. But this is only nominal, as on each farm large quantities of mill-stuffs are fed every year. So it takes 6 2-3 acres of land in Rock and Walworth counties, and one or two in Minnesota or Dakota, to support one cow a twelve month.

Many factories have not a single patron who makes dairy-

ing a specialty; and on such farms the cost of keeping a cow is greater in the number of acres, but less food is purchased, and the returns also are less satisfactory. I notice also that the larger the farm, the smaller the number of cows generally kept in proportion to its size, although on one farm of 80 acres, 20 cows are kept. Now, as I have already said, dairying as at present carried on, is a fairly remunerative business, and the industry even on its present basis is more likely to grow in importance in the future than to diminish, but I submit for your consideration these questions as relating directly to the objective points in dairying: How shall the number of acres now required to support a cow be reduced, and can it not be done without proportionately adding to the general expenses of the farm? The man who submits such questions in an open convention, in an argumentative way, ought to be able to answer them, but I confess my inability to do so. Of course I have a theory on the subject, but I have noticed that my acquaintances among dairymen have seldom cordially endorsed them when brought to their consideration.

But I reason like this: To begin with, the rent my friend Mr. Beach, for instance, pays per acre for the use of Minnesota land is very high, and in the aggregate, no inconsiderable amount yearly. Is it not practicable to save a large part of that outlay at least? To take care of a herd of forty cows and have everything move along smoothly, and do things up in good shape, three men are necessary, but the third man will not be confined to actual labor but a portion of the time. But their time will not be fully occupied in milking and caring for the cows and stables and cutting the hay, and with the teams indispensable on such a farm, I have claimed that the three men could, in a majority of cases, produce the given rations for the cows, on the farm, without adding to the expense for labor. There are, of course, other ways of economizing the cost of keeping a cow. Ensilage promised a great deal in this direction, but has not yet made good all that was predicted for it. Some pastures are too low and wet, and the grass is poor in quality and innutritive; others are too high and often dry, and except in favorable seasons, produce a scant supply of feed. Too often, that which

might be done to remedy either condition, is neglected and never done.

A few years ago feeding roots was in great favor with dairymen. I have thought, sometimes, that it was all right to build silos, as with little additional expense they could be used for storing roots, and of their economic value as food for cattle there is no doubt. The only question in regard to them is the cost of production.

But there are those among you who have had much greater opportunity for observation than myself, and to them is left any further consideration of this really important feature of the subject.

In September, 1847, a man who had contracted to build a saw mill on the Sacramento river in California, in digging the race discovered some shining particles in the gravel which proved to be virgin gold. The news spread like wild fire, was carried all over the world on the wing of the wind, and from its uttermost parts soon came in hot haste eager seekers for gold. The discovery of auriferous deposits in Australia, New Zealand and in the different territories of our own country soon followed, and the amount of wealth from these sources poured into the channels of trade and commerce has been simply enormous and is steadily increasing. It has formed a most substantial basis upon which to transact the business of the world. Nor is this all. Less than fifty years ago the great Northwest was uninhabited by civilized men. Not a bushel of grain, not a pound of meat, butter, cheese, wool or other product, nothing even to satisfy the pressing wants of the few widely scattered pioneers was produced in all this great region. Take to-day its surplus products from the commerce of the world, and famine prices and financial disaster would prevail as the result. It is a common thing to speak of certain events as "turning points" in the world's history, and as remarkable through their influence upon the destinies of men and nations. Often these causes have been slow to operate and have wrought great changes only through the lapse of ages. The changes wrought in our own time and mainly by the enormous increase in the supply of gold and silver and the extended area of wealth producing territory have been

rapid beyond all precedent; and in so far as human foresight can determine, are destined to be as far reaching in their influence upon mankind as the downfall of Rome on the discovery of the new world. All classes of people are affected; and the differences in condition between the rich man of a quarter of a century ago with his modest million, or even less, and the money kings of to-day with their fifty or one hundred millions apiece, is not greater, or, in fact, so great, as between the ordinary farmer and common laborer of that period and the same class of the present time.

We view with wonder the colossal enterprises inaugurated by men like Vanderbilt and Gould, but they are of secondary importance when compared with the increased comfort and convenience, and the appliances of elegance and refinement brought within the reach of the toiling masses. We are blinded by the glitter of the fabulous fortunes of the few, and fail to appreciate the happy change brought to the lives of the many.

It is nonsense to berate wealth, or to deprecate honest effort to obtain it for legitimate use; admit that it is a blessing or a curse, according to the manner of man into whose coffers it finds its way. Shylock is entitled to little sympathy for the loss of his golden ducats, and it is to be regretted that his spendthrift debtor, Bassanio, could not have changed places with Antonio, and paid in mental anguish, the forfeit of his own bond. Rightly used, wealth unlocks stores of genuine happiness denied to those who cannot command its potent influence.

All classes of people, as before said, are affected by the influences which have been alluded to; but no class is more favorably situated for reaping the full benefit to be derived therefrom, than the dairymen. Already secure against the common wants of life, he may still promote his pecuniary interests by conducting his business on a broader basis than heretofore, and secure a greater degree of comfort and happiness, by recognizing in all that he does, the spirit of progress so noticeable in all that is taking place around him.

At no time in the history of the world has there been so great a demand for fine stock, as now exists, and the

period is justly noted for the great number of models of excellence and beauty to be found among domestic animals.

This love for fine stock, amounting almost to a passion, is the natural growth of so large a proportion of our people in wealth and intelligence, in elegance and refinement, and it will continue to grow as those conditions continue to enlarge and expand.

The effort of skillful breeders of domestic animals to outdo everything that has gone before in excellence and beauty, will keep even pace with the development of art and science in other directions, with the accumulation of wealth among our people. Solomon Jewett, of Missouri, wrote to the *Rural World*, "that he went to Vermont last winter to look over the fine flocks, for which the Green Mountain State is so justly famous; that he saw a \$10,000 ram in a \$10,000 barn, with other appointments about the place to match." The tendency of the age points to a time in the not distant future, when he might go to Vermont or come to Wisconsin and see a \$20,000 ram in a \$20,000 barn, and the princely owner as justly proud of his skill as a breeder, as the architect of his grandest achievement, or the artist of his most wonderful production. Have dairymen so far, or has any considerable proportion of them given this subject—so closely connected with—and really so important part of their business, the attention it deserves.

How many can point to the best cows in their herds as the result of their own effort, to establish from the dam to its offspring a pedigree of greater value than that which merely recalls some fancy strain of blood in a fashionable breed? It is an old adage that a "good cow may have a poor calf," but it is equally true that a poor cow is by no means sure to have a good one.

The intrinsic value of a *good* cow is always under-estimated. The best cow in the herd will probably net her owner seventy-five dollars profit during the year. The poorest one *may* pay for her keeping. Now, pray tell me how many like the latter will have to be kept to return a net income equal to that from the former. How many have stopped to think that the cow which is worth seventy-five dollars for dairy purposes, according to the present scale of

prices, is worth ten times seventy-five dollars if she will transmit to her offspring the good qualities which make her so valuable?

Supposing there was as much pains taken to breed up from the best animals in every dairyman's herd, cows noted for their production of milk and butter, as there is to develop speed in the horse, beauty and beef in the Short-horn, fashionable points in the Jersey, heavy fleeces from the Spanish Merino, and swine all hams, shoulders and lard, what would be the result in a few years? I believe there is a wide and almost untrodden field in this direction, inviting attention and labor, and where perseverance will be handsomely rewarded. It will pay in money, and it will give to the industry a broader scope and a degree of importance second to that of no other industrial pursuit in the land. To a practical knowledge of dairying would be added the skill of the breeder, involving a much wider range of thought and experience.

Too many dairymen have been accustomed to consider a cow as simply a machine, with a capacity for producing so many pounds of milk in her natural lifetime. If this amount could be forced from her in one-half the time, and the cow sent to the shambles, a clear gain was made. Such a policy in regard to poor cows is all right, but with the best ones it is all wrong. A few years ago a cow was sold at auction, at New York Mills, for \$35,000. She brought this magnificent sum simply because she could be depended upon to transmit with certainty to her offspring the qualities that make Princess or Duchess blood so aristocratic. Sooner or later dairy cows that can be depended upon to transmit to *their* offspring the qualities desirable in such animals, will bring prices that would now be considered extravagant.

With improved circumstances and improved herds, naturally come other changes, not less important in their bearing upon the life of the dairymen.

Elegant barns will be provided to shelter from the storms of winter, and luxuriant pastures, shady groves, and crystal fountains, to alleviate the fierce heats of summer. The home of the justly proud owner will not be allowed to disgrace its surroundings. A pleasing exterior and a comfort-

able interior invite to quiet family comfort and social enjoyment. A wider range of business will demand a wider range of thought and action, and that he be conversant with the current literature, which treats of the subject in which he takes daily or hourly interest, and a different mode of living may be adopted from what old time dairying would permit.

Something more of elegance and refinement may properly be indulged in, in the adornment of the house; in the supply of good books and periodicals and works of art, which exert a healthful influence upon all who come within. He may, with hearty good will, assist wife and daughter, in the efforts which they will surely make, to beautify the home and to excell in womanly graces and accomplishments. He may incite ambition in his sons to rear and milk better cows than can be found elsewhere; to take pride in having none but the best of any kind of domestic animals on the farm; to take a manly part in all that concerns the pecuniary and social welfare of the household of which they are an important part. Adopting the rule that no debt is to be incurred beyond present means to pay, for any object that will not return help in dollars and cents to pay the debt itself, he may still have more social enjoyment with neighbors and friends, know something of the pleasure of travel, and by mingling more with the world, get a better knowledge of men and methods and results, than it is possible to get in other ways.

If I have taken more time, and used more words than necessary to say all I have said of any value, the importance of the subject is not over-estimated. The advanced position of the dairyman of to-day compared with the situation of the same class twenty-five years ago, fully justify the assumption indulged in as regards the future. The objective point so long and so anxiously looked forward to, seems to have been reached, and lo! we find that it has been moved a long way ahead and still beckons us on with promise of greater reward.

That Wisconsin dairymen will maintain their supremacy against competitors — that they will keep fully abreast with advanced work in other industrial pursuits, that in the

future as in the past they will be able to point to the history of their association with justifiable pride, as a potent means of encouraging, promoting, and elevating the industry they make a specialty, I have abundant faith to believe.

REPORT OF THE COMMITTEE ON RESOLUTIONS.

Mr. President:—Your committee on Resolutions beg leave to submit the following:

Resolved, That the thanks of this Association are hereby tendered to its officers of the past year for their care and efforts in promoting its interests and the cause of dairy husbandry in Wisconsin.

Resolved, That the thanks of this Association are due the railroads of this state for their courtesy and consideration in extending reduced rates to all members attending this Convention.

Resolved, That this Association desires to express in fitting terms its profound sorrow over the death of the late Hon. X. A. Willard, of New York, whose distinguished services in behalf of dairy husbandry entitles his memory to be held in grateful remembrance by every true dairyman in the land.

Resolved, That in the opinion of this Association, the time has come in the history of our state, when practical effort should be put forth to establish an Experimental Dairy Station on the Experimental Farm in Madison, under the care and direction of the Professor of Agriculture, and we ask of the legislature to take action in this direction. We believe that when an interest like the dairy interest of our state reaches an annual production of seventeen millions of dollars, it has attained a dignity of station that should merit this action on the part of the legislature.

Resolved, That the Wisconsin Dairymen's Association respectfully ask the legislature to appropriate a sum of money to enable it to invite men of science, ability and practical knowledge to instruct them in conventions in the improvement and advancement of the great industry we represent.

Resolved, That this Association requests Prof. Henry to make certain experiments concerning the relative value of a ration of bran and corn meal, bran and oil meal, bran and gluten meal, bran and ground oats, fed to cows, and to report to this association at its next meeting, with a detailed account of the same.

Resolved, That this association desires to express its acknowledgments to the Executive Committee and General Manager of the late Dairy Fair in Milwaukee, for their laborious efforts in promoting and managing so creditable an exhibition, and we desire to record our entire approval of such fairs as a means of dairy education.

Resolved, That this Association calls upon the cheese factory men of this state to unite themselves at once with the Wisconsin Dairymen's Protective

Association in its brave effort to fight the Hubbell and other fraudulent patent claims. The many should not in all honor stand by and allow a few to protect the whole.

Resolved, That the thanks of this Association are hereby tendered to the good people of Elkhorn, for their hospitality in promoting the comfort and success of this convention.

W. L. HOOD,

J. M. SMITH,

D. G. CHEEVER,

Committee.

On motion, the resolutions were adopted.

DISCUSSION.

President Beach — Will Mr. Hiram Smith tell the convention what he knows about this patent suit, pending on the Frazer cheese hoop?

Mr. Hiram Smith — As I am requested, I will make a statement in regard to the suits now pending in the United States court in the southern district of Wisconsin, commenced for infringement of the patent of the Frazer cheese hoop, by one Tyler, who has sued five different parties for infringement. These suits were commenced a year ago last June. One of the cases was taken as a test case; the others remained upon the docket, and that suit has been prosecuted under the auspices of the Wisconsin Protective Dairymen's Association. Counsel was employed. The Hon. William Pitt Lynde, of Milwaukee, has had charge of this case. Money was raised by the members of the association, on the basis of one dollar per hoop for each hoop that was used in the factory. That money was exhausted, and the members reassessed themselves another dollar. That money is nearly exhausted. The case has been tried and submitted to the court. Testimony was taken in Milwaukee and in New York on the part of the complainant, the lawyer from Wisconsin going to cross-examine the witnesses. A large amount of evidence was taken, the case argued, and they are now waiting for Judge Dyer's opinion. Of course we know nothing of what that opinion will be, though we have strong confidence that we shall win.

Another suit has been commenced against the factory men

of Sheboygan county by one J. G. Hubbell & Co., upon a patent which takes in all the hoops in the state. Hubbell expected this suit would take the same course as the other; that a great deal of testimony would have to be taken, and an expense of not less than \$3,000 involved. But Mr. De Land, our counsel in that case, entered a plea that they should immediately make a plea on the case, without examination of witnesses, upon the validity of the Hubbell patent, which he denied. The lawyer for the complainants made a motion that the plea made by our lawyer be set aside, and he be required to make answer. The court took it under consideration and decided to deny the motion, and required counsel for defendant to file his answer to the bill. That is the condition we are in, and a very favorable condition for us, as we think.

Now then, if these suits are defended, it will require money to conduct them. There are not a great many members outside of Sheboygan and Jefferson counties belonging to that association. A resolution was passed that \$400 be raised in the Sheboygan County Board of Trade, \$300 at Jefferson county, and \$300 at Elgin. The Sheboygan Board of Trade immediately paid in theirs, also the Jefferson County Board of Trade; not a dollar has come in from the Elgin Board of Trade. This will be a test suit; if we beat, they get all the benefits and none of the expenses. But the complainants are wily men — they understand their business thoroughly well. They understand there are but few members who have joined the protective association in the Hubbell suit, and they know how to make a proposition to these members, that they can drop out and get a receipt in full if they will withdraw from the suit. And that leaves every man in Wisconsin exposed to the rapacious claim of Hubbell & Co. at \$7.00 per hoop, if this suit is withdrawn for want of funds, and then how are you that are not members of this association going to defend yourselves? You will have to pay the penalty for not joining the association to make it strong enough to defeat this claim.

That is the condition of this case. None of us who have examined into this matter think there is the least justice in the original claim. Now, will you strengthen the Wiscon-

sin Dairymen's Protective Association, or will you let them fight alone until they are discouraged, until they are forced to compromise and will leave these men to prey upon those who are not members. They will have no defense. The only way to prevent that, I say, is to supply funds for the exhausted treasury of those who are fighting, laboring for nothing, spending their time merely to defend the dairymen of the northwest against the frauds of these patent right men.

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.

BEST TUB OR PAIL OF BUTTER.

First premium.....	\$10 00
Awarded to J. L. Taylor, Elkhorn.	
Second premium.....	5 00
Awarded to McCanna & Harris, Spring Prairie.	

CLASS II.

PRINT BUTTER.

No entry.

CLASS III.

GRANULATED BUTTER.

First premium.....	\$3 00
Awarded to Marr & Dyer, Whitewater.	
Second premium.....	2 00
Awarded to G. N. Wiswell, Elkhorn.	

CLASS IV.

THE AMERICAN DAIRY SALT CO'S. PREMIUM.

First premium.....	\$15 00
Awarded to McCanna & Harris, Spring Prairie.	
Second premium.....	10 00
Awarded to G. N. Wiswell, Elkhorn.	

CLASS V.

Higgins Challenge Cup Premium.

Must be won two years in succession to retain the same permanently.
Awarded to McCanna & Harris, Spring Prairie.

CLASS VI.

PREMIUMS ON CHEESE.

First Premium	\$10 00
Awarded to C. L. Calkins, Palmyra.	
Second Premium.....	5 00
Awarded to Marr & Dyer, Whitewater.	

CLASS VII.

Geo. S. Hart & Co., Silver Cup.

Must be won three years in succession to hold the same permanently.
It has been won by A. H. Wheaton, Auroraville; Olin & Clinton, Waukesha; H. A. Conger & Son, Whitewater, and August Klessig, Centerville.
Awarded to Marr & Dyer, Whitewater.

Respectfully submitted,

W. W. INGRAM, Chicago.

T. D. CURTIS, Syracuse, N. Y.

D. G. CHEEVER, Clinton, Wis.

Committee.

REPORT OF THE COMMITTEE ON DAIRY GOODS AND MANUFACTURES.

Mr. President—Your committee beg leave to submit the following report on Dairy Goods and Manufactures:

F. B. FARGO & CO., LAKE MILLS, WIS.,

Exhibited a sample of their June Golden Butter Color. Between the two samples of Butter Color exhibited, we could see no difference in them, but in the samples of butter colored by each, we give the preference to the Color manufactured by F. B. Fargo & Co.

BEAN & PERRY MANUFACTURING COMPANY, ROCKFORD, ILLINOIS.,

Exhibited their Natural June Golden Butter Color. It seems to possess all the merits of the June Golden Butter Color, so far as your committee could decide, but from the samples of butter colored with each, we give the June Golden Butter Color manufactured by F. B. Fargo & Co. the preference.

The Barrel Churn exhibited by the same firm is a substantially made churn for dairies and small creameries. It is extensively used, and by many preferred to any other churn.

CORNISH & CURTIS, FORT ATKINSON, WISCONSIN.

The Rectangular churn exhibited by this firm is too well and favorably known by the dairymen of the northwest to need any recommendation at our hands. We think it has *no superior* for the dairy.

Curtis' Improved Square Box Churn, manufactured by the same firm, is better adapted for large dairies and creameries, and its general use is a sufficient guarantee of its merits.

They also exhibit a Lever Butter Worker, which is a plain, efficient and substantial machine for working butter.

CHAS. MILLAR & SON, UTICA, N. Y.

This firm exhibit Jenk's Automatic Cheese Maker, untried by any of our committee, but think it has merit in its construction and operation, and would recommend to cheese makers that they investigate this labor saving machine.

Millar's Sensible Cheese Bandage we think worthy of a trial.

The Glass Reflector for steam boilers seems to be a very convenient little instrument in its place.

Respectfully submitted,

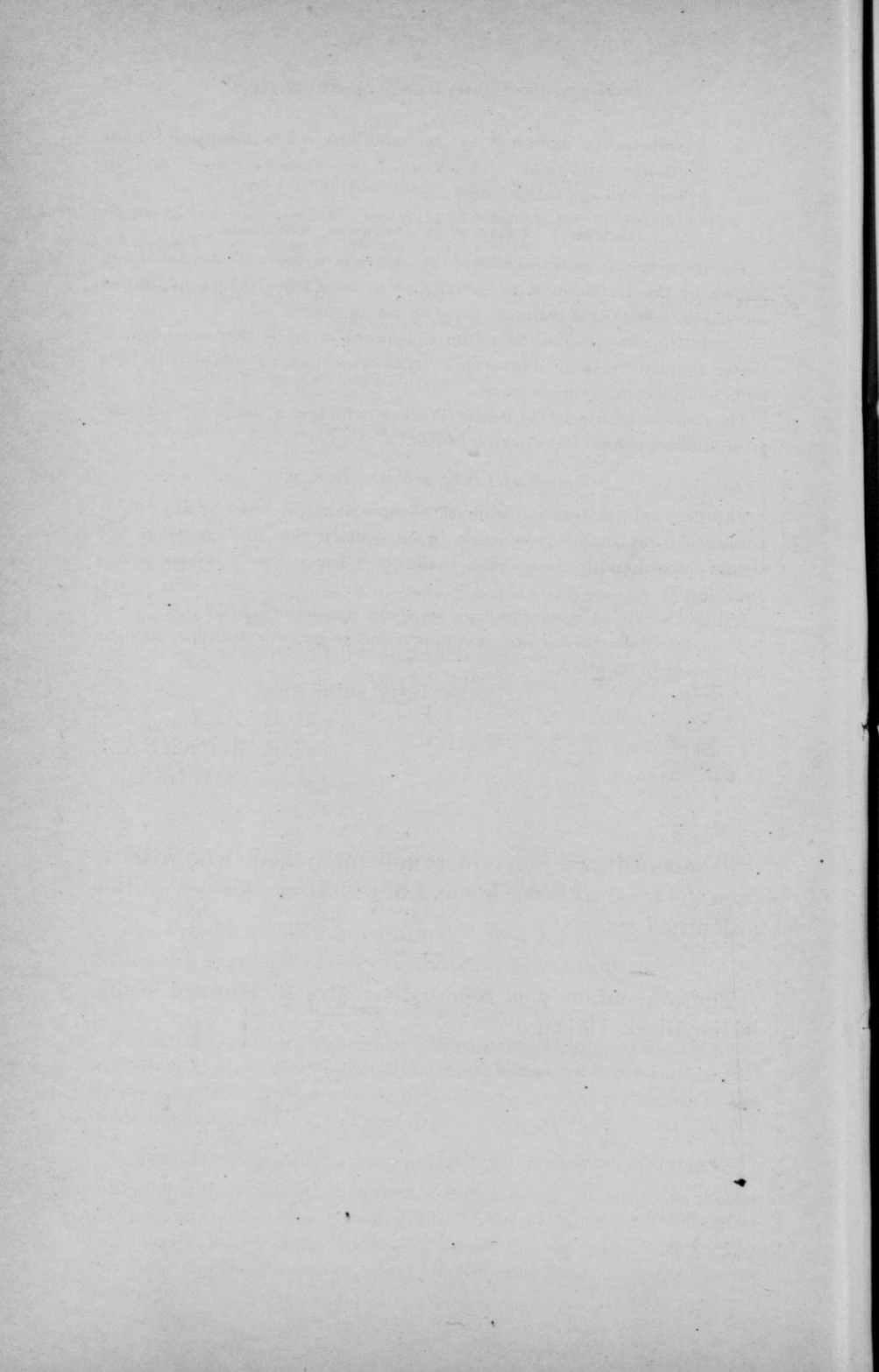
C. HAZEN,

C. B. McCANNA.

J. A. COWLES.

President Beach — As there are many here who wish to take the noon train for home, I now declare this convention adjourned *sine die*.

The convention was reported by Mrs R. Howard Kelly, Major Block, Chicago.



APPENDIX.

SUMMARY OF MILCH COWS, BUTTER AND CHEESE, AS SHOWN BY THE CENSUS OF 1880.

States and Territories.		Milch cows.	Butter. (e)	Cheese. (e)	
		Number. (a)	Pounds.	Pounds.	
The United States.....		12,443,120	777,250,287	27,272,489	
1	Alabama.....	271,443	7,997,719	14,091	1
2	Arizona.....	9,156	61,817	18,360	2
3	Arkansas.....	249,407	7,790,013	26,301	3
4	California.....	210,098	14,084,405	2,566,618	4
5	Colorado.....	28,770	860,379	10,867	5
6	Connecticut.....	116,319	8,198,995	826,195	6
7	Dakota.....	40,572	2,000,955	39,437	7
8	Delaware.....	27,284	1,876,275	1,712	8
9	District of Columbia.....	1,292	20,920	.....	9
10	Florida.....	42,174	353,156	2,406	10
11	Georgia.....	315,073	7,424,485	19,151	11
12	Idaho.....	12,898	310,644	20,295	12
13	Illinois.....	865,913	53,657,943	1,035,069	13
14	Indiana.....	494,944	37,377,797	367,561	14
15	Iowa.....	854,187	45,481,958	1,075,988	15
16	Kansas.....	418,323	21,671,762	453,987	16
17	Kentucky.....	301,882	18,211,904	58,468	17
18	Louisiana.....	146,454	916,059	7,618	18
19	Maine.....	150,845	14,103,966	1,167,730	19
20	Maryland.....	122,907	7,485,871	17,416	20
21	Massachusetts.....	150,435	9,655,587	829,528	21
22	Michigan.....	384,578	38,821,890	440,540	22
23	Minnesota.....	275,545	19,161,385	523,133	23
24	Mississippi.....	208,118	7,454,657	4,239	24
25	Missouri.....	661,405	28,572,124	283,484	25
26	Montana.....	11,308	403,738	55,570	26
27	Nebraska.....	161,187	9,725,198	230,819	27
28	Nevada.....	13,319	335,188	17,430	28
29	New Hampshire.....	90,564	7,247,272	807,076	29
30	New Jersey.....	152,078	9,513,835	66,518	30
31	New Mexico.....	12,955	44,827	10,501	31
32	New York.....	1,437,855	111,922,423	8,362,590	32
33	North Carolina.....	232,133	7,212,507	57,380	33
34	Ohio.....	767,043	67,634,263	2,170,245	34
35	Oregon.....	59,549	2,443,725	153,198	35
36	Pennsylvania.....	854,156	79,336,012	1,008,686	36
37	Rhode Island.....	21,460	1,007,103	67,171	37
38	South Carolina.....	139,881	3,196,851	16,018	38
39	South Carolina.....	303,900	17,886,369	98,740	39
40	Tennessee.....	606,176	13,899,320	58,466	40
41	Texas.....	32,768	1,052,903	126,727	41
42	Utah.....	217,033	25,240,826	1,545,789	42
43	Vermont.....	243,061	11,470,923	85,535	43
44	Virginia.....	27,622	1,356,103	109,200	44
45	Washington.....	156,956	9,309,517	100,300	45
46	West Virginia.....	478,374	33,353,045	2,281,411	46
47	Wisconsin.....	3,790	105,643	2,930	47
47	Wyoming.....				

a On farms, June 1, 1880. e Made on farms in 1879.

TABLE showing the number of cheese factories and creameries in the United States, and the number of pounds made by each and their values, as shown by the census of 1880.

	States and Territories.	Establishments.	ALL FACTORIES.					
			Capital (real and personal) invested in the business.	Average number of hands employed.			Total amount paid in wages during the year.	Total quantity of milk used at the factory during the year.
				Males above 16 years.	Females above 16 years.	Children and Youths.		
	No.	Dollars.				Dollars	Pounds.	
	United States.....	3,932	9,604,803	6,419	1,330	154	1,546,495	2,747,427,429
1	Arizona.....	2	2,100	4	2	.....	600	184,000
2	California.....	216	1,039,365	357	20	14	70,434	57,471,634
3	Colorado.....	2	11,000	6	.....	.....	1,050	667,000
4	Connecticut.....	16	36,775	29	4	.....	11,360	10,621,600
5	Dakota.....	4	10,200	3	.....	.....	210	125,200
6	Delaware.....	3	18,200	4	3	1	610	620,000
7	District Columbia.....	1	10,000	8	.....	.....	3,300	1,825,000
8	Idaho.....	6	15,250	8	5	.....	2,100	1,098,000
9	Illinois.....	285	933,586	631	50	11	233,974	316,636,778
10	Indiana.....	49	82,345	104	16	2	20,587	20,826,012
11	Iowa.....	244	657,508	670	91	34	139,813	181,635,746
12	Kansas.....	48	81,765	70	12	6	10,420	7,983,102
13	Kentucky.....	8	20,100	11	2	1	1,200	1,276,900
14	Maine.....	41	82,512	48	9	1	8,213	7,627,901
15	Maryland.....	14	22,950	18	.....	.....	3,471	5,821,000
16	Massachusetts.....	22	97,550	46	5	1	14,277	16,671,069
17	Michigan.....	74	129,925	88	23	3	21,103	35,161,812
18	Minnesota.....	27	71,149	31	5	2	7,680	6,424,923
19	Missouri.....	30	123,990	38	12	7	8,464	9,185,585
20	Montana.....	3	10,250	6	.....	.....	470	470,000
21	Nebraska.....	21	81,165	28	7	2	5,921	4,443,801
22	Nevada.....	2	3,200	3	.....	.....	130	87,500
23	New Hampshire.....	2	10,400	1	3	.....	780	2,539,868
24	New Jersey.....	11	42,170	30	1	1	8,395	9,683,992
25	New York.....	1,652	3,576,214	2,526	808	34	623,391	1,335,333,504
26	North Carolina.....	2	900	.....	.....	.....	.....	19,000
27	Ohio.....	452	948,702	701	104	14	162,985	325,527,447
28	Oregon.....	24	192,650	32	6	1	6,170	3,467,942
29	Pennsylvania.....	146	395,020	253	43	8	51,943	98,218,237
30	Tennessee.....	2	1,800	4	.....	1	300	198,000
31	Utah.....	11	22,402	14	.....	6	2,035	1,645,985
32	Vermont.....	85	202,300	126	28	2	22,535	48,440,401
33	Virginia.....	4	33,700	8	.....	.....	950	934,500
34	Washington.....	2	16,467	8	.....	.....	1,600	1,684,860
35	West Virginia.....	7	7,550	8	3	.....	1,104	987,929
36	Wisconsin.....	414	613,643	497	62	2	92,920	181,841,161

TABLE, showing the number of cheese factories and creameries in the United States, and the number of pounds made by each, and their values, as shown by the census of 1880.

CHEESE FACTORIES.			BUTTER FACTORIES.			
Cheese made. (a)	Total value of materials.	Total value of products.	Butter made. (a)	Value of buttermilk and skimmed milk sold.	Total value of materials.	Total value of products.
Pounds.	Dollars.	Dollars.	Pounds.	Dollars.	Dollars.	Dollars.
171,750,495	10,063,670	13,991,221	16,471,163	41,393	2,732,333	3,868,235
17,700	2,640	6,195	400		120	200
1,154,121	70,567	122,967	2,074,344	5,990	269,367	467,467
64,500	5,400	8,335	2,100		502	840
201,820	12,479	19,762	93,365	1,140	17,962	28,127
700	70	140	5,800		932	2,130
			25,800		4,620	7,710
97,000	6,010	12,535	3,600		580	704
4,977,286	336,278	462,178	2,414,668	2,300	439,609	591,604
1,153,714	75,192	111,060	281,232	2,567	64,125	87,059
2,302,933	139,400	215,729	5,458,595	8,245	965,304	1,304,763
791,384	42,308	70,247	11,482	25	1,551	2,536
			49,100		7,854	14,178
777,365	46,852	73,942	6,000	150	840	1,650
			190,525	4,741	47,710	69,616
1,093,943	65,117	99,297	52,150	8,200	18,142	28,737
3,291,738	200,152	292,971	9,850		1,114	1,994
452,191	25,062	41,618	62,450		9,735	14,426
550,265	38,934	54,219	126,884	275	23,020	32,989
24,500	2,450	4,660	9,000		2,250	3,240
273,506	15,332	26,077	20,672		2,782	4,456
			3,500	25	875	1,587
			99,068	2,700	20,683	27,887
36,400	3,276	10,920	15,600		3,510	3,900
108,722,852	6,375,556	8,720,490	4,197,424		626,669	870,383
			1,000		152	250
17,808,191	1,013,663	1,361,124	235,341		30,133	39,933
146,534	9,869	18,548	84,500	45	10,364	24,668
6,087,805	340,001	487,629	453,020	1,855	82,728	110,563
9,000	540	900	3,600		643	1,080
140,022	10,059	18,974	12,020	515	2,036	2,954
4,575,341	282,535	339,956	5,000	100	600	1,100
26,000	1,690	2,600	29,100		5,096	8,021
70,000	4,480	7,000	47,963		7,314	11,820
96,678	6,378	10,238				
16,806,994	932,380	1,340,860	386,010	2,520	63,401	99,673

(a) Not including farm products.

CHEESE AND BUTTER—Continued.

States and Territories.		COMBINED BUTTER AND SKIM CHEESE FACTORIES.				
		Butter made.	Cheese made.	Value of buttermilk and skimmed milk sold.	Total value of materials.	Total value of products.
United States		Pounds. 12,950,621	Pounds. 44,134,866	Dollars. 32,060	Dollars 4,540,718	Dollars. 6,335,460
1	Arizona					
2	California					
3	Colorado					
4	Connecticut	126,546	23,662	19,203	32,456	57,684
5	Dakota					
6	Delaware					
7	District Columbia	67,600	155,460	2,535	36,500	44,920
8	Idaho					
9	Illinois	4,136,361	15,240,839	5,802	1,803,606	2,374,562
10	Indiana	53,287	155,550		18,280	26,930
11	Iowa	724,518	473,877	375	157,612	215,908
12	Kansas					
13	Kentucky					
14	Maine					
15	Maryland	38,800	62,000		12,480	18,340
16	Massachusetts	92,067	277,922		34,596	47,487
17	Michigan	33,366	221,307		17,213	22,912
18	Minnesota	21,000	10,030		3,465	6,050
19	Missouri	13,980	39,800	75	3,996	8,920
20	Montana					
21	Nebraska	45,100	50,447		9,677	15,780
22	Nevada					
23	New Hampshire					
24	New Jersey	342,802	406,818	3,314	78,705	103,243
25	New York	4,758,354	12,078,272		1,116,372	1,652,089
26	North Carolina					
27	Ohio	1,852,902	12,553,247		941,249	1,355,736
28	Oregon					
29	Pennsylvania	533,820	1,870,246	120	262,639	317,276
30	Tennessee					
31	Utah					
32	Vermont	6,837	8,500		1,287	2,066
33	Virginia					
34	Washington					
35	West Virginia					
33	Wisconsin	103,281	446,919	636	40,576	60,554

TABLE showing the number of milch cows, pounds of butter and cheese made on farms in Wisconsin as shown by the census of 1880.

Counties.		Milch cows.	Butter.	Cheese.	
The State..		Number. (a) 478,374	Pounds. 33,353,045	Pounds. 2,281,411	
1	Adams	3,496	289,205	12,068	1
2	Ashland				2
3	Barron	1,942	142,852	595	3
4	Bayfield	19	670		4
5	Brown	8,164	513,882	4,719	5
6	Buffalo	6,636	321,000	59,382	6
7	Burnett	933	36,995	4,534	7
8	Calumet	7,388	459,091	9,475	8
9	Chippewa	3,928	238,403	1,903	9
10	Clark	3,185	242,005	10,124	10
11	Columbia	13,430	998,938	43,288	11
12	Crawford	5,425	376,581	6,890	12
13	Dane	25,939	1,960,801	17,479	13
14	Dodge	22,259	1,647,286	34,096	14
15	Door	2,699	153,874	491	15
16	Douglas	91	5,036		16
17	Dunn	5,916	349,511	5,390	17
18	Eau Claire	4,037	277,920	6,803	18
19	Fond du Lac	16,931	1,348,571	47,385	19
20	Grant	16,965	1,188,952	57,610	20
21	Green	18,931	993,770	402,165	21
22	Green Lake	5,713	396,015	5,845	22
23	Iowa	13,494	816,635	4,831	23
24	Jackson	4,654	328,854	2,225	24
25	Jefferson	18,415	1,001,687	114,225	25
26	Juneau	4,919	332,059	1,795	26
27	Kenosha	7,894	808,800	158,443	27
28	Kewaunee	5,728	284,147	106	28
29	La Crosse	6,329	388,151	46,979	29
30	La Fayette	13,933	1,082,602	11,011	30
31	Laplace	109	6,002		31
32	Lincoln	261	7,195		32
33	Manitowoc	14,505	772,647	63,974	33
34	Marathon	3,670	202,130	664	34
35	Marquette	522	28,791	6	35
36	Marquette	4,433	275,219	2,154	36
37	Milwaukee	7,429	780,329	31,012	37
38	Monroe	7,651	532,753	16,887	38
39	Oconto	1,764	133,505	658	39
40	Outagamie	8,987	766,926	47,940	40
41	Ozaukee	7,878	646,897	19,465	41
42	Pepin	2,275	155,886	18,745	42
43	Pierce	5,802	384,907	7,558	43
44	Polk	3,139	201,890	4,058	44
45	Portage	4,840	315,621	10,305	45
46	Price	19	1,479	26	46
47	Racine	8,697	738,874	12,388	47
48	Richland	7,479	561,667	3,425	48
49	Rock	17,686	1,486,729	9,126	49
50	Saint Croix	5,624	390,396	4,306	50
51	Sauk	11,647	836,078	14,557	51
52	Shawano	3,145	134,572	622	52
53	Sheboygan	19,123	801,862	584,488	53
54	Taylor	268	19,428		54
55	Trempealeau	7,581	437,560	19,446	55
56	Vernon	8,962	621,110	10,335	56
57	Walworth	14,672	1,183,596	17,153	57
58	Washington	10,664	834,507	57,618	58
59	Waukesha	13,631	1,078,470	51,755	59
60	Waupaca	7,094	494,854	12,971	60
61	Waushara	6,415	492,353	16,766	61
62	Winnebago	11,160	889,772	192,058	62
63	Wood	1,842	124,924	1,088	63

FARM AREAS AND FARM VALUES OF WISCONSIN AS SHOWN
BY THE CENSUS OF 1880.

Counties.	Farms.	Improved land.	Value of farms, including land, fences and buildings.	Value of farming implements and machinery.	Value of live stock. (a)	Cost of building and repairing fences, 1879.	Cost of fertilizers purchased, 1879.	Estimated value of all farm productions (sold, consumed, or on hand), for 1879.
	No.	Acres.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
The State...	134,322	9,162,528	357,709,507	15,647,196	46,508,643	2,623,458	178,892	72,779,496
Ajams	1,273	78,394	1,399,642	81,202	330,247	15,630	696	471,592
Ashland								
Barron	1,160	33,308	954,860	60,146	211,764	13,346	10	282,638
Bayfield	7	496	23,500	1,150	1,770	175		4,290
Brown	3,119	113,416	3,890,437	244,613	578,773	25,739	2,575	905,190
Buffalo	1,976	135,365	3,734,729	253,476	1,086,097	34,700	234	1,145,558
Burnett	394	12,589	341,080	21,565	73,863	7,748		77,867
Calumet	2,273	115,893	6,200,370	275,014	632,567	22,993	3,003	1,005,736
Chippewa	1,566	81,287	2,516,615	152,491	458,644	25,223	2,497	679,222
Clark	1,566	66,501	2,147,618	66,514	333,449	22,511	1,424	440,150
Columbia	3,190	308,933	9,822,086	332,445	1,435,042	68,371	6,767	2,027,038
Crawford	2,058	111,967	2,612,225	180,160	527,804	51,459	982	872,116
Dane	5,826	550,538	18,775,273	861,587	2,594,862	158,707	10,798	3,941,670
Dodge	5,186	437,639	22,060,655	815,753	2,008,399	86,298	13,497	3,727,407
Dor	1,444	43,179	1,564,188	94,141	247,331	15,182	995	378,178
Douglas	40	1,070	35,930	1,649	9,654	710		9,743
Dunn	2,072	124,946	3,365,522	212,593	597,896	38,757	1,484	816,478
Eau Claire	1,450	113,054	3,049,548	209,503	483,085	35,701	1,128	900,843
Fond du Lac	4,531	354,919	17,075,430	673,957	1,671,600	65,264	8,170	3,038,824
Grant	4,298	409,377	11,575,913	500,074	1,914,248	135,410	5,823	2,716,921
Green	2,651	283,198	9,779,744	317,423	1,736,289	86,857	2,815	2,029,286
Green Lake	1,716	165,665	5,311,851	209,955	673,710	50,411	1,975	1,023,278
Iowa	2,568	253,677	7,503,489	335,087	1,196,786	91,736	3,620	1,615,758
Jackson	1,572	95,906	2,223,441	154,396	440,718	33,314	1,357	705,676
Jefferson	3,443	261,797	12,022,953	441,083	1,262,092	63,293	3,971	2,185,326
Juneau	1,888	109,461	2,830,168	147,525	444,441	27,911	1,968	723,484
Kenosha	1,328	176,415	5,919,446	220,059	871,566	35,126	589	1,224,179
Kewaunee	2,286	81,234	3,196,598	191,975	405,685	37,519	1,970	684,275
La Crosse	1,715	123,617	4,438,675	227,907	589,082	36,097	1,517	1,017,256
LaFayette	2,463	330,127	10,230,916	309,230	1,470,380	114,143	679	1,903,509
Langlade	97	1,562	79,810	2,176	14,087	1,293	25	18,271
Lincoln	153	3,287	171,525	9,022	28,769	7,800		30,973
Manitowoc	4,361	200,477	10,830,102	586,759	1,051,350	65,220	5,364	1,616,989
Marathon	1,705	41,315	1,914,804	94,262	295,590	37,377	515	377,187
Marquette	293	10,220	323,430	12,807	49,636	3,026	333	82,773
Marquette	1,321	105,633	2,100,595	110,203	368,317	18,707	1,272	585,626
Milwaukee	2,353	109,199	13,295,105	362,521	754,683	25,047	4,256	1,567,269
Monroe	2,914	154,917	4,832,132	259,182	785,809	50,420	6,040	1,237,975
Oconto	858	25,848	925,643	48,441	159,769	10,010	806	239,261
Outagamie	2,936	142,434	6,911,368	332,642	816,637	40,192	1,024	1,381,489
Ozaukee	2,006	103,232	6,898,030	355,780	621,025	21,727	6,707	1,164,608
Pepin	902	45,784	1,428,945	89,266	213,376	11,272	114	359,151
Pierce	2,473	129,781	4,921,137	248,853	677,796	35,495	582	1,205,873
Polk	1,484	47,008	1,937,786	124,998	330,628	28,307	233	490,101
Portage	2,022	103,370	2,300,358	124,411	420,011	27,843	1,489	724,166
Price	42	255	20,480		1,772	50		2,104
Racine	1,919	191,125	8,368,551	325,469	878,982	35,062	3,458	1,333,220
Richland	2,623	131,145	4,077,418	197,973	817,782	51,742	744	1,074,921
Rock	3,696	332,194	15,546,092	615,091	2,174,663	122,236	2,908	3,372,742
Saint Croix	2,289	202,588	7,015,198	346,374	810,525	42,630	1,205	1,815,266
Sauk	3,612	222,642	7,401,654	316,996	1,105,468	68,561	2,514	1,741,534
Shawano	1,491	45,550	1,679,331	75,735	254,882	20,359	6,137	329,317
Sheboygan	3,740	210,546	12,579,145	553,348	1,344,176	60,117	7,182	2,088,472
Taylor	266	3,184	200,050	4,273	24,961	2,484	2	36,199
Trempealeau	2,459	177,178	4,517,843	285,405	760,458	60,017	2,079	1,307,939
Vernon	3,547	178,759	4,950,584	272,469	956,127	44,379	1,929	1,332,309
Walworth	2,761	292,710	11,745,809	432,318	1,709,907	75,718	1,642	2,539,955
Washington	3,075	180,707	11,839,835	479,909	938,876	51,643	14,548	1,836,736
Waukesha	3,208	257,530	15,481,680	571,724	1,415,183	64,801	14,553	2,465,757
Waupaca	2,795	132,278	4,015,655	154,742	605,720	40,241	4,113	873,990
Wausara	2,082	131,880	3,112,888	161,675	569,701	40,431	1,199	838,405
Winnebago	2,871	213,533	10,795,662	407,940	1,124,928	50,192	4,734	1,917,907
Wood	869	29,639	908,340	41,819	160,025	16,773	32	177,683

a On farms, June 1, 1880.

REPORT

OF THE

GRAND UNION DAIRY FAIR

Held in Exposition Building, Milwaukee, Wis., December 4-9, 1882.

PRELIMINARY ORGANIZATION.

MILWAUKEE, May 18, 1882.

At a meeting called to meet at the Exposition Building, to take into consideration the feasibility of holding a dairy fair some time during the fall, Hon. R. D. Torrey, general manager of the Milwaukee Exposition Association, called the meeting to order, stating that it would be necessary to have a president and secretary of the meeting.

Hon. Hiram Smith — As the dairy interest reaches to all parts of the northwest, I would nominate J. H. Lumbard, of Chicago, president.

Mr. Lumbard was elected; and D. W. Curtis, Fort Atkinson, Wis., secretary.

R. D. Torrey — This meeting was called to see if we could not hold a dairy fair this fall for the exhibition of dairy products and cattle. Room for at least 500 head could be had in the Exposition Building. The Exposition Association will furnish the building and money for a liberal class of premiums. I can see no reason why we cannot hold a successful fair.

W. D. Hoard, president of the Northwestern Dairymen's Association, said the first dairy fair ever held in the United States was held in Milwaukee in 1875. I have this idea in my mind: If we could secure the money and the co-operation of the different dairy organizations, we could hold a large dairy fair, unite all the elements, and success would be certain.

Hiram Smith — Mr. Hoard has stated this thing about as I would state it myself. If all the interests could be united, and nothing in the name to arouse suspicion of any one having the advantage, success would be certain. The N. B. & E. Association should be invited to take part with the other associations, as they have been invited to come to Wisconsin to hold their next meeting.

Col. R. M. Littler, Davenport, Iowa — As a representative of Iowa and secretary of the N. B. & E. Association, I think I might say that the fair would be the largest ever held. There is one common interest, and the idea would be to have the largest display of butter and cheese ever seen in the United States; I shall do my duty to make it so.

Col. R. P. McGlincy, secretary Elgin Board of Trade, Elgin, Illinois — My opinion is that the Elgin Board of Trade would make a grand exhibit of butter and cheese. The Illinois Dairymen's Association, of which I am secretary, meets in December next, and I do not know as I shall be able to change the date of the meeting should you decide to hold this dairy fair in December. I think the different associations will all work together, and make the largest display of butter and cheese ever seen in the northwest, if not in the world.

C. R. Beach, president Wisconsin Dairymen's Association — I can see no reason why we should not hold as successful a dairy fair, as was ever held, if we all take hold of it in earnest; we certainly have the butter and cheese, and it only needs bringing out to make a successful fair.

Chester Hazen, Brandon, Wisconsin — Our dairy interests in the northwest are becoming among the largest interests we have, and should be looked after more carefully. The fair would no doubt be well patronized by dairymen generally. We patronized the eastern dairy fair, and no doubt eastern dairymen would come here to compare their products with ours. We can certainly make it a grand success if we undertake it.

W. W. Ingram, Chicago — I can see no reason why you cannot have a successful fair. It seems to me that you have all the facilities for a successful exhibition of dairy products; all you need is organization and united work. No doubt the

east will come here and exhibit with the west. There has got to be hard work and plenty of it.

W. H. Morrison, Elkhorn, Wis.— I can promise a good exhibition from Walworth county, and I see no reason why the fair cannot be made a grand success.

W. D. Hoard offered the following resolution:

Resolved, That a dairy fair be held at some date in December next in the Exposition Building in Milwaukee under the auspices of the Exposition association. That all dairy associations in the United States and Canadas are hereby cordially invited to co-operate to this end.

Resolution unanimously adopted.

A. V. Pierce, Milwaukee— I would suggest that the fair be held not later than the tenth of November.

Chester Hazen— I would say December would be early enough.

H. Smith— I think a little earlier date would be better for cheese, but if the premium list was published it would make but little difference.

Col. Littler— I move that the fair be held the next week after Thanksgiving.

The motion was carried.

W. D. Hoard— I move that an executive committee of seven be appointed by the chairman, of which R. D. Torrey be made chairman, to fix date of meetings, make premium lists, and arrange for all necessary details.

Motion carried.

President Lombard— I think some one more familiar with this subject should appoint this committee, but if it is the wish of the meeting, I will appoint them.

Executive committee—Hon. R. D. Torrey, Milwaukee; Hon. Hiram Smith, Sheboygan Falls, Wis.; Col. R. M. Littler, Davenport, Iowa; W. H. Morrison, Elkhorn, Wis.; D. W. Curtis, Fort Atkinson, Wis.; A. J. W. Pierce, Milwaukee; Col. R. P. McGlincy, Elgin, Ill.

R. D. Torrey— I will name May 25 as the day for the committee to meet.

Hiram Smith— The prospects for a successful dairy fair are very flattering.

A. V. Bishop, Milwaukee—There is no doubt but what we can have the largest dairy fair ever held anywhere.

Col. Littler—I have called on nearly every commission firm in Milwaukee, and they are unanimous for a dairy fair.

Prest. Lombard—No dairy fair every started out with brighter prospects, or a better show of success, and there must be no lagging or hanging back until the fair is over. We must show the world the largest display of butter and cheese ever seen under one roof.

The meeting is now adjourned.

EXPOSITION BUILDING, May 25, 1882.

At the meeting of the Executive committee, R. P. Jennings, secretary of the Exposition Association, was elected secretary—at this meeting and subsequent meetings held by the committee. The premium list was arranged and the time set for holding the fair.

The following resolutions were adopted by the committee:

Offered by Col. Littler:

Resolved, That the proposed exhibition of dairy products be known as the Grand Union Dairy Fair.

Offered by Hiram Smith:

Resolved, That the proposition of the Milwaukee Exposition Association for the use of their building and the willingness to arrange for a premium list and general preparation for said Union Dairy Fair be accepted, and that Hon. R. D. Torrey be requested to take charge of the same as general manager.

Offered by Col. Littler:

WHEREAS, The National Butter, Cheese and Egg Association has accepted an invitation from his excellency, the Governor of Wisconsin, to hold their annual convention in Wisconsin;

Resolved, That the Dairy Associations of the United States and Canada be invited to unite in holding a grand Union Dairy Fair in the city of Milwaukee at such time as may be agreed upon by this committee.

Offered by W. H. Morrison:

Resolved, That the National Butter Cheese and Egg Association be invited and requested to hold their convention in the exposition building, and that all dairy associations be requested to make their headquarters at the Union Dairy Fair in same building.

PREMIUM LIST OF THE GRAND UNION DAIRY FAIR.

Exposition Building, Milwaukee, December 4-9, 1882.

DIVISION 1—*Butter.**

CLASS A.—Sweepstakes premium for best butter made at any time.. \$250
Entry, five tubs of not less than 200 pounds.

To be divided—1st Premium \$150; 2d Premium \$100.

CLASS B.—Pro-rata premium..... \$300
With entrance fee of \$1 added for each entry.

For best tub of butter, not less than fifty pounds, made at any time or place. The total of above premium and entrance fee to be divided among the exhibitors in proportion to the number of points obtained by each entry whose exhibit shall be awarded forty-two points or over in a scale of fifty, as perfection.

Creamery Butter—Entry to consist of not less than fifty pounds in each class. Premium \$240.

CLASS C.—For best butter made in June,
1st Premium \$50; 2d Premium \$30

CLASS D.—For best butter made in August,
1st Premium \$50; 2d Premium \$30

CLASS E.—For best butter made at any time,
1st Premium \$50; 2d Premium \$30

Gathered Creamery Butter—Entry to consist of not less than fifty pounds in each class. Premium \$240.

CLASS F.—For best butter made in June,
1st Premium \$50; 2d Premium \$30

CLASS G.—For best butter made in August,
1st Premium \$50; 2d Premium \$30

CLASS H.—For best butter made at any time,
1st Premium \$50; 2d Premium \$30

Dairy Butter—Entry to Consist of not less than Twenty-Five Pounds in each Class. Premium, \$240.

CLASS I.—For best butter made in June,
1st Premium \$50; 2d Premium \$30

CLASS K.—For best butter made in August,
1st Premium \$50; 2d Premium \$30

CLASS L.—For best butter made at any time,
1st Premium \$50; 2d Premium \$30

Butter in Prints or Fancy Forms. Premium \$50.

CLASS M.—Entry in this class to consist of not less than ten pounds,
1st Premium \$30; 2d Premium \$20

Best Display of Butter. Premium, \$175.

CLASS N.—For largest and best display of butter,
1st Premium \$100; 2d Premium \$75

*NOTE.—No butter competing for prizes will be received in stone crocks.

Packed Butter. Premium \$80.

- CLASS O. — For best ten tubs ladle-packed butter, exhibited by the packer —
 packages to weigh not less than fifty pounds each,
 1st Premium \$50; 2d Premium \$30.

DIVISION 2 — *Cheese.**Pure Cream Cheese (Cheddar Shape). Premium \$240.*

- CLASS A. — For best five cheese made in June,
 1st Premium \$50; 2d Premium \$30
 CLASS B. — For best five cheese made in August.
 1st Premium \$50; 2d Premium \$30
 CLASS C. — For best five cheese made at any time,
 1st Premium \$50; 2d Premium \$30

Flat Cheese. Premium \$80.

- CLASS D. — For best five boxes cheese made at any time,
 1st Premium \$50; 2d Premium \$30

Young Americas. Premium \$80.

- CLASS E. — For best five boxes cheese (four cheese in each),
 1st Premium \$50; 2d Premium \$30

Domestic Switzer Cheese. Premium \$80.

- CLASS F. — Entry not less than 100 pounds,
 1st Premium \$50; 2d Premium \$30

Cheese Fancy (Edams, Goudas, etc.). Premium \$50.

- CLASS G. — For best display,
 1st Premium \$30; 2d Premium \$20

Limburger Cheese. Premium \$50.

- CLASS H. — Entry not less than fifty pounds. Exhibits to be wrapped in
 foil,
 1st Premium \$30; 2d Premium \$20

For Best and Largest Display of Cheese. Premium \$175.

- CLASS I. — Exhibits in this entry to be arranged in pyramid or other at-
 tractive form. 1st Premium \$100; 2d Premium \$75

- CLASS K. — Pro-rata Premium, \$300
 With entrance fee of \$4.00 added for each entry.

For the best box of cheese made at any time or place. The total
 of premium and entrance fee to be divided among the ex-
 hibitors in said class in proportion to the number of points
 awarded each entry, forty-two points or over in a scale of
 fifty, as perfection.

- CLASS L. — Sweepstakes Premium, \$250
 For best ten boxes of cheese, made at any time,
 1st Premium \$150; 2d Premium \$100

SPECIAL PREMIUMS.

- No. 1—Offered by A. J. W. Pierce & Co., of Milwaukee Wis. \$25
For the greatest value of manufactured product obtained from one thousand pounds of milk. Exhibitors in this class shall, at time of making the entry, furnish a statement of the date of manufacture, quantity of product, etc.
- No. 2—Offered by Cornish & Curtis, of Ft. Atkinson, Wis.:
1 Mason Power Butter Worker, value \$50
1 Curtis Improved Factory Churn, value 40
1 Nest Butter Trays, value 10
For best 100 pounds of butter made at any time or place.
- No. 3—Offered by Walter S. Greene, of Milford, Wis.
1 barrel "Top Notch" Patent Flour, for best plate print butter.
- No. 4—Offered by Thos. Higgins & Co., of Liverpool, Eng.
1 Silver Cup, value \$50
For best lot of butter (salted with Higgins' "Eureka" Salt), made by any Creamery, Farmer or Dairyman.
- No. 5—Offered by John Boyd, of Chicago, Ill.
1 No. 4 Creamer and Strainer, value \$56
For the best tub of butter, containing not less than fifty pounds, made from cream raised in a Cooley Creamer.
- No. 6—Offered by John Boyd, of Chicago, Ill.
1 No. 1 Creamer and Strainer, value \$31
For the best package of butter, containing not less than twenty pounds, made from cream raised in a Cooley Creamer.
- No. 7—Offered by John Boyd, of Chicago, Ill.
1 First Prize Dog Power, value \$18
For the best package of butter, large or small, made from cream raised in Cooley Creamer.
- No. 8—Offered by S. Birkenwald & Co., of Milwaukee, Wis.
For best Limburger \$10
For best Brickstein 10
For best Domestic Switzer 10
- No. 9—Offered by R. D. Torrey, of Milwaukee, Wis.
For best plate of print butter made by a young lady, under 16 years of age \$10
- No. 10—Offered by L. Petit & Co., of Milwaukee, Wis.
For best butter, not less than 100 pounds \$30
For best cheese, not less than 100 pounds 20
And salted with F. F. Dairy Salt, manufactured by the American Dairy Salt Co., Syracuse, N. Y.
- No. 11—Offered by F. B. Fargo & Co., of Lake Mills, Wis.
For best 100 pounds butter made at any time, colored with Fargo June Golden Butter Color, 1st Premium \$25 cash; 2d Premium, five gallons June Golden Butter Color, value \$12.50.
- No. 12—Offered by John Mehl, of Milwaukee \$10
For best 100 pounds curd made from sour skim milk.
- No. 13—Offered by Alex. Fisk & Co., of Chicago \$50
For best five pound tub lot of butter, salted by Holmes' extra sifted Dairy Salt.
- No. 14—Offered by Borden, Sellick & Co., of Chicago.
One 400 pound Dairy Scale, value \$37
For best 100 pounds creamery butter, to be of exact weight, as shown on improved Howe Scale.
One Union Scale, value \$15
For best cheese, fifty pounds or over, branded "Howe."

- No. 15 — Offered by Elgin Board of Trade..... \$55
For best 100 pounds or over of creamery butter, made at and time.
- No. 16 — Offered by F. D. Moulton & Co., of New York.
\$100 for best exhibit of cheese.
\$100 for best exhibit of butter, all to be salted with Ashton's F. F. Salt.
- No. 17 — Offered by Hunter & Drennen, of Philadelphia.
For best five tubs Creamery Butter, made in Iowa, at any time, by the whole milk system..... \$50
For best five tubs Creamery Butter, made in Iowa, at any time, by the gathered cream system \$50
For best one tub Dairy Butter, made in Iowa, at any time \$25
- No. 18 — Offered by Plankinton & Armour, of Milwaukee.
For best fat steer, three to four years old..... \$100
- No. 19 — Offered by Col. R. M. Littler, of Davenport, Iowa \$20
For an exhibit of the best system of keeping butter or cheese factory accounts.
- No. 20 — Offered by Thomas Higgins & Co., Liverpool, England.
\$125 for best exhibit of cheese.
\$125 for best exhibit of butter, all to be salted with "Higgins' Eureka Salt."

DIVISION 3 — Dairy Cattle.

Best Cow. Premium \$225.

A.—Jersey or Guernsey.....	\$25 00
B.—Ayrshire.....	25 00
C.—Holstein or Friesian.....	25 00
D.—Devons.....	25 00
E.—Herefords.....	25 00
F.—Shorthorns.....	25 00
G.—Polled Cattle.....	25 00
H.—Natives.....	25 00
L.—For the youngest cow with calf by her side.....	25 00

Thoroughbred Males. Premium \$175.

A.—Best Jersey or Guernsey.....	\$25 00
B.—Ayrshire.....	25 00
C.—Holstein or Friesian.....	25 00
D.—Devons.....	25 00
E.—Herefords.....	25 00
F.—Shorthorns.....	25 00
G.—Polled Cattle.....	25 00

DIVISION 4 — Dairy Implements.

Butter Making Utensils.

- Display Revolving Churns.
 Display Churns with Dashers or Floats.
 Display Factory Churns.
 Display Power Butter Workers.
 Display Butter Workers for Farm Dairies.
 Display Butter Trays or Boards.
 Display Butter Ladles.
 Display Butter Moulds.
 Display Butter Stamps.
 Display Butter Printer.
 For best general display of Implements for Butter Making.
 Premium, Gold Medal.

Cream Raising Utensils.

Devise of any kind for raising Cream.
 Display of Cans for Gathered Cream.
 Currying Can for Cream.

Cheese Making Utensils.

Display Cheese Press.
 Display Cheese Vat.
 Display Curd Mill.
 Display Currying Can.
 Display Set of Scales.
 Display Milk Pail.
 Display Machine for making Cheese Boxes.
 Display of Tin or Metal Cans for dairy use.
 For best general display of Implements for Cheese Making,
 Premium Gold Medal.

NOTICE — All manufacturers or inventors of devices for the making of Butter or Cheese, or Cream raising, are invited to exhibit the same, and the Committee will pass upon their merits.

DIVISION 5 — *Machinery for Dairy Use.*

Engine and Boiler, complete.
 Engine.
 Boiler.
 Horse Power.
 Dog or Animal Power.
 Feed Cutter.
 Root Cutter.
 Wagon or Devise for Transporting Cream from farm to the Creamery.
 Devise for Attaching or Connecting Wind Mill to Churn or Feed Cutter.
 Assortment.
 Motor for Dairy or Creamery Use.

DIVISION 6 — *Butter and Cheese Packages.*

Set of Butter Tubs.
 Firkins and Half-Firkins.
 Butter Pail.
 Display of Butter Tubs.
 Butter Tubs, other than oak, ash or spruce.
 Shipping Box for Print Butter.
 Cheese Box.
 Fancy Package.
 Metal Package.
 Shipping Can for Print Butter.
 Refrigerator for Storing Butter.
 Butter Color.
 Refrigerator Car.

PREMIUMS AWARDED ON BUTTER AT THE GRAND UNION
DAIRY FAIR, BY THE FOLLOWING SCALE OF POINTS:

NO.*	FLAVOR	GRAIN	COLOR	SALT	PACKAGE	TOTAL	GRAND	AVERAGE
	20.	15.	6.	6.	3.	50.	TOTAL.	JUDGMENT.

DIVISION 1—*Butter.*

CLASS A.—Sweepstakes Premium,..... \$250
For best butter made at any time.
Entry, five tubs, or not less than 200 pounds.
To be divided: 1st Premium \$150; 2d Premium \$100

In this class there were 65 entries from Wisconsin, Illinois, Iowa, Minnesota and Ohio.

The first premium was awarded to Wm. McCredie, Algonquin, Ill.
Second premium, Hiram Smith, Sheboygan Falls, Wis.

Judges—S. H. Conover, Plymouth, Wis.; Isaac Watts, Boston, Mass.; Geo. C. Pane, Philadelphia.

CLASS B.—Pro rata premium..... \$300
With entrance fee of \$1 added for each entry.

For best tub of butter, not less than fifty pounds, made at any time or place. The total of above premium and entrance fee to be divided among the exhibitors in proportion to the number of points obtained by each entry whose exhibit shall be awarded, forty-two points or over in a scale of fifty, as perfection.

In this class there were ninety-five entries from Wisconsin, Illinois, Iowa, Minnesota, Dakota and Ohio. Premiums were awarded as follows: Horatio Merriman, Fort Atkinson, Wis.; George Laurence & Co., Waukesha, Wis.; W. H. Nichols, Waukesha, Wis.; McCredie Bros., Dundee, Ill.; French & Curtis, Nashua, Iowa; Wm. McCredie, Algonquin, Ill.; M. Waltz, De Kalb, Ill.; Chester Hazen, Ladoga, Wis.; J. H. Booth, Salem, Wis.; Kingsley Bros., Strawberry Point, Iowa; Hostock & Honon, Rushford, Minn.; R. S. Houston, Pleasant Prairie, Wis.; T. Wilson & Son, Caledonia Station, Ill.; W. R. McCrucher & Co., Fairfield, Iowa; W. Hill & Son, Springville, Iowa; Brazelton & Huyck, Prairie Berg, Iowa; S. E. Gernon, Waukesha, Wis.; Hartman, Hanford & Co., Batavia, Iowa; Mather Bros., Sheboygan Falls, Wis.; John Murman, Elgin, Ill.; H. L. Dean, Tipton, Iowa; A. M. Rowe, Vinton, Iowa; P. G. Henderson, Central City, Iowa; J. C. Ruger, Lisbon, Iowa; H. L. Dean, Cold Spring, Iowa; H. L. Dean, Cedar, Iowa; John Mewman, Elgin, Ill.; W. R. Hosteller, Mt. Carroll, Ill.; John Wilhelm, Jr., Smithville, Ohio; Wm. Beard & Sons, Decorah, Iowa; P. O. Reilley, Lawler, Iowa; Hiram Smith, Sheboygan Falls, Wis.; A. P. McKinstry, Winnebago City, Minn.; G. W. Hayzlatt, Laport City, Iowa; J. Wasson & Co., Laport City, Iowa; B. Holden, Sheboygan Falls, Wisconsin.

Judges—J. B. Nuce, Philadelphia, Pa.; Robt. McAdam, Elgin, Ill.; C. A. Huston, Cedar Rapids, Iowa.

Creamery Butter—Entry to consist of not less than fifty pounds in each class. Premium \$240.

CLASS C.—For best butter made in June,
Seven entries. 1st Premium, \$50; 2d Premium, \$30

*NOTE—The grand total is the number of points added together, given by each judge to a package of butter. The average judgment is obtained by dividing the grand total by 3, the number of judges.

First premiumHiram Smith, Sheboygan Falls, Wis.
 Second premiumH. K. Loomis, Sheboygan Falls, Wis.
Judges — Thos. Seekel, New York City; S. Birkenwald, Milwaukee, Wis.;
 A. Roberts, Pittsburg, Pa.

Creamery Butter.

CLASS D.— For best butter made in August,
 1st Premium \$50; 2d Premium \$30

Six entries.
 First premiumHiram Smith, Sheboygan Falls, Wis.
 Second premiumH. K. Loomis, Sheboygan Falls, Wis.
Judges — Same as in class C.

CLASS E.— For best butter made at any time,
 1st Premium \$50; 2d Premium \$30

Thirty-five entries.
 First premiumMather Bros., Sheboygan Falls, Wis.
 Second premiumJohn Newman, Elgin, Ill.
Judges — Same as in classes C. and D.

Gathered Creamery Butter—Entry to consist of not less than fifty pounds
 in each class. Premium \$240.

CLASS F.— For best butter made in June,
 1st Premium \$50; 2d Premium \$30

Seven entries.
 First premiumGeo. C. Mansfield & Co., Johnson's Creek, Wis.
 Second premiumJ. R. Morrin & Co., Cedar Rapids, Iowa.
Judges — Chas. E. Hoffman, St. Louis, Mo.; S. J. Stevens, Cincinnati, O.;
 J. R. Budd, Indianapolis, Ind.

CLASS G.— For best butter made in August,
 1st Premium \$50; 2d Premium \$30

Seven entries.
 First premiumM. Waltz, De Kalb, Ill.
 Second premiumWoodcock & Dexter, Chicago, Ill.
Judges — Same as in Class F.

CLASS H.— For best butter made at any time,
 1st Premium \$50; 2d Premium \$30

Forty-four entries.
 First premiumRobt. Harley, Lanark, Ill.
 Second premiumWm. Shoen, Winterset, Iowa.
Judges — Same as in Class F. and G.

Dairy Butter—Entry to consist of not less than twenty-five pounds in each
 class. Premium \$240.

CLASS I.— For best butter made in June,
 1st Premium \$50; 2d Premium \$30

One entry.
 First premiumMrs. D. C. Ladd, Traer, Iowa.
Judges — C. C. Rice, Chicago, Ill.; A. V. Laurence, Indianapolis, Ind.;
 Jerry Treat, ———, Iowa.

CLASS K.— For best butter made in August,
 1st Premium \$50; 2d Premium \$30

Two entries.
 First premiumF. C. Curtis, Rockey Run, Wis.
 Second premiumMrs. D. C. Ladd, Traer, Iowa.
Judges — Same as in Class K.

CLASS L.—For best butter made at any time,
1st Premium \$50; 2d Premium \$30.

Twenty-eight entries.

First premium..... F. M. Hay, Onawan, Ill.
Second premium..... H. G. Brandel, Ft. Atkinson, Wis.
Judges—Same as in I. and K.

Butter in Prints or Fancy Forms. Premium \$50.

CLASS M.—Entry in this class to consist of not less than ten pounds,
1st Premium \$30; 2d Premium \$20.

Thirteen entries.

First premium..... Seeds & Ferguson, Philadelphia, Pa.
Second premium..... H. Newman, Racine, Ill.
Judges—Same as in I, K. & L.

Best Display of Butter. Premium \$175.

CLASS N.—For largest and best display of butter,
1st Premium \$100; 2d Premium \$75.

First premium..... A. J. W. Pierce & Co., Milwaukee, Wis.
Second premium..... H. K. Loomis, Sheboygan Falls, Wis.
Judges—S. H. Conover, Plymouth, Wis.; Isaac Watts, Boston Mass.; Geo. E. Pane, Philadelphia, Pa.

Packed Butter. Premium \$80.

CLASS O.—For best ten tubs ladle-packed butter, exhibited by the packer,
packages to weigh not less than fifty pounds each,
1st Premium \$50; 2d Premium \$30.

First premium..... S. M. Harris, Spring Green, Wis.
Second premium..... A. J. W. Pierce & Co., Milwaukee, Wis.
Judges—Thos. Seekel, New York; S. Birkenwald, Milwaukee, Wis; A. Roberts, Pittsburg, Pa.

PREMIUMS AWARDED ON CHEESE BY THE FOLLOWING SCALE
OF POINTS:

NO.	FLAVOR	QUALITY	TEXTURE	COLOR	SALTING	TOTAL	GRAND	AVERAGE
	15.	15.	10.	5.	5.	50.	TOTAL.	JUDGMENT.

DIVISION 2 — *Cheese.*

Pure Cream Cheese (Cheddar Shape). Premium \$240.

CLASS A.—For best five cheese made in June,
1st Premium \$50; 2d Premium \$30

Eight entries.

First premium..... Geo. Weeden, Sheboygan, Wis.
Second premium..... Mann & Dyer, Whitewater, Wis.
Judges—P. Moran, Chicago, Ill.; Geo. Sitckney, Philadelphia, Pa.; Robt. Krull, Milwaukee, Wis.

CLASS B.—For best five cheese made in August,
1st Premium \$50; 2d Premium \$30

Thirteen entries.

First premium..... Chester Hazen, Ladoga, Wis.
Second premium..... Geo. Weeden, Sheboygan, Wis.
Judges—Same as in Class A.

CLASS C.— For best five cheese made at any time,
1st Premium \$50; 2d Premium \$80

Twenty-six entries.

First premium Aug. Strausburg, Ada, Wis.
Second premium H. J. Bamford, Plymouth, Wis.

Judges— Same as in classes A. and B.

Flat Cheese. Premium \$80.

CLASS D.— For best five boxes cheese made at any time,
1st Premium, \$50; 2d Premium, \$30

Thirteen entries.

First premium Alvah Loomis, Gibbsville, Wis.
Second premium Cooper & Newell, Whitewater, Wis.

Judges— E. M. Slayton, Boston, Mass.; N. J. Branden, Pittsburg, Pa.;
C. W. Gould, Elgin, Ill.

Young Americas. Premium, \$80.

CLASS E.— For best five boxes cheese (four cheese in each).
1st Premium, \$50; 2d Premium, \$30

Five entries.

First premium Fred. Widder, Sheboygan, Wis.
Second premium T. Winch, Hika, Wis.

Judges— Same as in class D.

Domestic Switzer Cheese. Premium \$80.

CLASS F.— Entry not less than 100 pounds,
1st Premium, \$50; 2d Premium, \$30

First premium S. Birkenwald & Co. Milwaukee, Wis.
Second premium John Ryf, Oshkosh, Wis.

Judges— J. Wilbert, Pittsburg, Pa.; E. Williams, Indianapolis, Ind.; D.
Hall, Chicago, Ill.

Cheese Fancy (Edams, Goudas, etc.). Premium \$50.

CLASS G.— For best display,
1st Premium \$30; 2d Premium \$20

First premium Joseph De Gans, Milwaukee.
Second premium Geo. C. Mansfield & Co., Johnson's Creek, Wis.

Judges— Same as in classes D. and E.

Limburger Cheese. Premium \$50.

CLASS H.— Entry not less than fifty pounds. Exhibits to be wrapped in
foil, 1st Premium \$30; 2d Premium \$75

First premium S. Birkenwald & Co., Milwaukee.

Judges— J. Wilbert, Pittsburg, Pa.; E. Williams, Indianapolis, Ind., and
D. Hall, Chicago, Ill.

For Best and Largest Display of Cheese. Premium \$175.

CLASS I.— Exhibits in this entry to be arranged in pyramid or other at-
tractive form, 1st Premium \$100; 2d Premium \$75

First premium divided between E. H. Conover, of Plymouth, Wis., and A.
J. W. Pierce & Co., Milwaukee.

Second premium divided between James Mahlman, Sheboygan, and H. K.
Loomis, Sheboygan Falls.

Judges— P. Moren, Chicago, Illinois; George Stickney, Philadelphia, Pa.;
Robert Krull, Milwaukee, Wis.

CLASS K.—Pro-rata premium..... \$300
 With entrance fee of \$1.00 added for each entry.

For the best box of cheese made at any time or place. The total of premium and entrance fee to be divided among the exhibitors in said class in proportion to the number of points awarded each entry, forty-two points or over in a scale of fifty, as perfection.

Forty-two entries in this class.

Premiums were awarded as follows: Henry Floyd, Berlin, Wis.; V. G. Pfeil, Plymouth, Wis.; F. A. Streblov, Plymouth, Wis.; Chester Hazen, Ladoga, Wis.; Hiram Smith, Sheboygan Falls, Wis.; Mather Bros., Sheboygan Falls, Wis.; Cooper & Dyer, Whitewater, Wis.; J. C. Peck, Peebles, Wis.; H. J. Bamford, Plymouth, Wis.; H. D. Rice, Plymouth, Wis.; Loomis & Lover, Bingham, Wis.; J. B. Harris, Stratford, Canada; H. K. Loomis, Sheboygan Falls, Wis.; J. A. Smith, Cedarburg, Wis.; Mrs. J. A. Smith, Cedarburg, Wis.; Cooper & Newell, Whitewater, Wis.; C. Hazen, Brandon, Wis.; R. Springsteen, Whitewater, Wis.; Olin & Clinton, Waukesha, Wis.; Aug. Strasberg, Ada, Wis.; A. D. Deland, Sheboygan Falls, Wis.; A. V. Bishop, Milwaukee, Wis.; C. L. Calkins, Palmyra, Wis.; Fred Widder, Sheboygan, Wis.; T. Wunch, Hika, Wis.; Geo. C. Mansfield, Johnson's Creek, Wis.; Eugene Wardwell, Lake Mills, Wis.; Willis Lang, Waupun, Wis.; H. A. Chaplin, Plymouth, Wis.

^b Judges—J. H. Groht, New York city; D. Butter, Chicago, Ill.; C. E. Udell, St. Louis, Mo.

CLASS L.—Sweepstakes Premium..... \$250
 For best ten boxes of cheese, made at any time,
 1st Premium \$150; 2d Premium \$100

Fifteen entries—150 boxes of cheese.

First premium E. P. Ingalls, Milford, Wis.
 Second premium F. A. Streblov, Plymouth, Wis.

Judges—James Anderson, New York City; E. W. Woodman, Philadelphia, Pa.; A. A. Kennard, Baltimore, Md.

SPECIAL PREMIUMS.

No. 1.—Offered by A. J. W. Pierce & Co., of Milwaukee, Wis..... \$25

For the greatest value of manufactured product obtained from one thousand pounds of milk. Exhibitors in this class shall, at time of making the entry, furnish a statement of date of manufacture, quantity of product, etc.

Awarded Hiram Smith, Sheboygan Falls, Wis.

Judges—For No. 1 to 10—Washington B. Lane, New York City; E. R. Godfrey, Milwaukee, Wis.; A. W. Merrill, Chicago.

No. 2.—Offered by Cornish & Curtis, of Fort Atkinson, Wis.

1 Mason Power Butter Worker..... Value \$50
 1 Curtis Improved Factory Churn..... " 40
 1 Nest Butter Trays " 10

For best 100 pounds of butter made at any time or place.

Nineteen entries. Awarded to W. Hill & Son, Springfield, Iowa.

No. 3.—Offered by Walter S. Greene, of Milford, Wis.

1 barrel "Top Notch" Patent Flour, for best plate print butter.

Awarded to Daniel Hummell, Footeville, Wis.

No. 4.—Offered by Thos. Higgins & Co., of Liverpool, England.

1 Silver Cup..... Value \$50

For best lot of butter (salted with Higgins' "Eureka" Salt), made by any Creamery, Farmer or Dairyman.

Thirty-eight entries. Awarded to James Campbell, Lake Zurich, Ill.

- No 5—Offered by John Boyd, of Chicago, Ill.
 1 No. 4 Creamer and strainer.....Value \$56
 For the best tub of butter, containing not less than fifty pounds,
 made from cream raised in a Cooley Creamer.
 Six entries. Awarded to P. G. Henderson, Central City, Iowa.
- No. 6—Offered by John Boyd, of Chicago, Ill.
 1 No. 1 Creamer and Strainer.....Value \$31
 For the best package of butter, containing not less than twenty
 pounds, made from cream raised in a Cooley Creamer.
 Eight entries. Awarded to Hiram Smith, Sheboygan Falls, Wis.
- No. 7—Offered by John Boyd, of Chicago, Ill.
 1 First Prize Dog Power..... \$18
 For the best package of butter, large or small, made from cream
 raised in Cooley Creamer.
 Awarded to C. P. Baldwin, Baldwin's Mills, Wis.
- No. 8—Offered by S. Birkenwald & Co., of Milwaukee, Wis.
 For best Limburger..... \$10
 For best Brickstein..... 10
 For best Domestic Switzer..... 10
 Not competed for.
- No. 9—Offered by R. D. Torrey, of Milwaukee, Wis.
 For best plate of print putter made by a young lady under
 16 years of age..... \$10
 Awarded to Miss Walliham, Footeville, Wis.
- No. 10—Offered by L. J. Petit & Co, of Milwaukee, Wis.
 For best butter, not less than 100 pounds..... \$30
 For best cheese, not less than 100 pounds..... 20
 And salted with F. F. Dairy Salt, manufactured by the
 American Dairy Salt Co., Syracuse, N. Y.
 Twenty-one entries. Butter premium awarded to Hiram Smith,
 Sheboygan Falls, Wis. Cheese premium awarded to Chester
 Hazen, Ladoga, Wis.
- No. 11—Offered by F. B. Fargo & Co., of Lake Mills, Wis.
 For best 100 pounds of butter made at any time, colored with
 Fargo June Golden Butter Color, 1st premium, \$25 cash; 2d
 premium, five gallons June Golden Butter Color, value \$12.50.
 Ten entries. First premium, W. H. Nichols, Waukesha, Wis.;
 second premium, R. Springstun, Whitewater, Wis.
*Judges—No. 11 to 20—John Cull, Boston, Mass., R. H. Smith,
 Pittsburg, Pa., A. D. Hill, Iowa.*
- No. 12—Offered by John Mehl, of Milwaukee \$10
 For best 100 pounds curd made from sour skim milk.
 Awarded to William Reineck, Elkhart Lake Wis.
- No. 13—Offered by Alex. Fisk & Co., of Chicago..... \$50
 For best five tub lot of butter, salted with Holmes' extra sifted
 Dairy Salt.
 Awarded to Arthur Jordon, Indianapolis, Ind.
- No. 14—Offered by Borden, Sellick & Co., of Chicago.
 One 400 pound Dairy Scale.....Value \$37
 For best 100 pounds creamery butter, to be of exact weight, as
 shown on improved Howe Scale.
 One Union Scale.....Value \$15
 For best cheese, fifty pounds or over, branded "Howe."
 Butter premium awarded to Davis Creamery, Evansville, Wis.;
 cheese premium awarded to Chester Hazen, Brandon, Wis.
- No. 15—Offered by Elgin Board of Trade..... \$50
 For best 100 pounds or over of creamery butter, made at any
 time.
 Eleven entries. Awarded to Cooper & Newell, Whitewater, Wis.

- No. 17 — Offered by Hunter & Drennen, of Philadelphia,
 For best five tubs creamery butter, made in Iowa, at any time,
 by the whole milk system \$50
 For best five tubs creamery butter, made in Iowa, at any time,
 by the gathered cream system..... \$50
 For best one tub dairy butter made in Iowa, at any time.... \$25
 Sixteen entries. Creamery butter — Premium awarded to I.
 S. Hanna, Nugent's Grove, Iowa. Gathered cream butter — Pre-
 mium awarded to A. M. Bingham, Jessup, Iowa. Dairy butter —
 Premium awarded to Mrs. D. C. Ladd, Traer, Iowa.
- No. 19 — Offered by Col. R. M. Littler, of Davenport, Iowa..... \$20
 For an exhibit of the best system of keeping butter or cheese
 factory accounts.
 Awarded to Mower & Huston, Cedar Rapids, Iowa.

SALT PREMIUMS.

Offered by F. D. Moulton & Co., of New York.

- For best exhibit of cheese \$100
 For best exhibit of butter..... \$100
 All to be salted with Ashton's F. F. Salt.

Offered by Thomas Higgins & Co., Liverpool, England.

- For best exhibit of cheese \$125
 For best exhibit of butter \$125
 All to be salted with "Higgins' Eureka Salt."

Wm. McCreddie, Algonquin, Illinois, was awarded first premium in Class
 A. Sweepstakes on Butter, and was paid the Salt Premium by Thomas
 Higgins & Co., his butter being salted with Higgins' "Eureka Salt."

Offered by American Dairy Salt Co., L., of Syracuse, N. Y.

Three hundred dollars, to be divided equally between the package of
 butter and the package of cheese exhibited at such fair, under the rules
 and regulations of the Association, which take the highest premium —
provided, that said butter or cheese is salted with Onondaga F. F. Salt.

E. P. Ingalls, Milford, Jefferson Co., Wis., was awarded first premium in
 Class L. Sweepstakes on Cheese, and was paid the Salt Premium, by the
 American Dairy Salt Co., his cheese being salted with Onondaga F. F. Salt.

DIVISION 3. — Dairy Cattle.

Best Cow. Premium \$225.

- A. — Jersey or Guernsey \$25 00
 B. — Ayrshire 25 00
 C. — Holstein or Friesan 25 00
 D. — Devons 25 00
 E. — Herefords 25 00
 F. — Shorthorns 25 00
 G. — Polled Cattle 25 00
 H. — Natives 25 00
 I. — For the youngest cow, with calf by her side 25 00

Jersey or Guernsey — Premium awarded to John Boyd, Chicago.

Ayrshire — Premium awarded to Chester Hazen, Brandon, Wis.

Devons — Premium awarded to L. Ranson, Oak Creek, Wis.

For youngest cow, with calf by her side, Premium awarded to John
 Boyd, Chicago.

Judges — Judge Luce, ———, Iowa; H. Merriman, Ft. Atkinson,
 Wis.; E. B. Fargo, Lake Mills, Wis.

Thoroughbred Males. Premium \$175.

A.— Best Jersey or Guernsey.....	\$25 00
B.— Ayrshire	25 00
C.— Holstein or Friesan.....	25 00
D.— Devons.....	25 00
E.— Herefords	25 00
F.— Shorthorns	25 00
G.— Polled Cattle.....	25 00

- A.— Awarded to I. J. Klapp, Kenosha, Wis.
- B.— Awarded to Chester Hazen, Brandon, Wis.
- C.— Awarded to Thos. Bell & Son, Concord, Wis.
- D.— Awarded to L. Ranson & Son, Oak Creek, Wis.

Judges — Same as above.

DIVISION 4— *Dairy Implements.*

Butter Making Utensils.

- Display Revolving Churns.
- Display Churns with Dashers or Floats.
- Display Factory Churns.
- Display Power Butter Workers.
- Display Butter Workers for Farm Dairies.
- Display Butter Trays, or Boards.
- Display Butter Ladles.
- Display Butter Moulds.
- Display Butter Stamps.
- Display Butter Printer.
- For best general display of Implements for Butter Making,
Premium, Gold Medal.

REPORT OF COMMITTEE ON BUTTER MAKING UTENSILS.

REVOLVING CHURNS.

Cornish & Curtis, Fort Atkinson, Wisconsin, made the largest and best display of revolving churns, exhibiting Rectangular, Square Box and Factory churns—in all some twenty churns.

These churns are well and substantially made, of good timber and in a first class manner.

The churning with the Rectangular is done with less power, and the butter drained with greater facility, than with other revolving churns.

H. F. Bachelor & Sons, Rock Falls, Illinois, made a fine exhibit of their popular Barrel churns, which are well made, and are a great favorite with many dairymen. They exhibited sizes for the wants of all, from a one cow dairy to fifty. These churns are a great improvement over the old dash and paddle churns.

Chas. P. Willard & Co., 20 La Salle St., Chicago, exhibited a great variety of churns, adapted the wants of all. Among them the Rectangular, Square Box, Barrel, Blanchard, Union and Thermometer Churn. It was a creditable display of well manufactured goods.

The Vermont Farm Machine Co., of Bellvus Falls, Vermont, made a fine display of Oscillating Churns, possessing many points of merit. Parties using this churn are much pleased with it.

They also exhibited Nesbet's Butter Printer.

FACTORY CHURNS.

Cornish & Curtis exhibited five Curtis Improved Factory Churns, ranging in capacity from one to three hundred gallons each. These churns are substantially made and of the best material.

Their display was the largest and best in Factory Churns.

Chas. P. Willard & Co. exhibited a Curtis Improved Factory churn, and a Factory Size Burwell Churn.

H. F. Bachellor & Sons exhibited one of their mammoth factory-sized Burwell Churns, made in a substantial manner.

POWER BUTTER WORKERS.

Cornish & Curtis exhibited two of their Mason Power Butter Workers.

These workers are a great favorite with the dairymen of the northwest, and can be found in nearly every creamery—butter can be worked as desired, and the grain not injured in the least. The workers are made of hard wood, and in a substantial manner.

A. H. Reid, Philadelphia, Pa., exhibited a Power Worker, which has the merit of being well and substantially made. It is in use in several creameries, and is highly spoken of.

Chas. P. Willard & Co. exhibited a Mason Power Worker, and Reid's Power Worker.

BUTTER WORKERS FOR FARM DAIRIES.

Cornish & Curtis made an exhibit of Lever Butter Workers, which for simplicity, ease of working, and durability, is not excelled. It has folding legs, which can be folded up and the worker set away, taking up but little room when not in use.

They exhibited four sizes, also three sizes of the Eureka or Roller worker which is used in large dairies.

A. H. Reid exhibited several of his Farm Dairy Workers, which are so well and favorably known.

It is a durable butter worker, and simple in its arrangement, is easily kept clean, and occupies but little space when not in use. It is a labor-saving machine, well manufactured.

Charles P. Willard & Co., exhibited Eureka, Lever, Reid's, and Cunningham workers. They also exhibited Butter Printers, Butter Trays, Butter Moulds, Ladles, etc.

A. H. Reid exhibited a Self-Gauging Butter Printer, which weighs or gauges the butter into pound or half pound prints. This machine will be found very convenient to those wishing square prints for transportation or packing.

Cornish & Curtis exhibited Creamery and Dairy size Butter Trays, Laddles, Milk Testers, Thermometers, etc. They also exhibited the Howe Scale and F. A. Philbrick's Milk Safe, with adjustable and revolving shelves. The dairymen who use the common pan for raising cream, will find this milk safe of great value.

W. G. Hyder, Fort Atkinson, Wis., exhibited a Milking Stool which has the appearance of being a good "thing" for every dairyman.

For the best general display of Implements for Butter Making, we award the GOLD MEDAL to Cornish & Curtis, Fort Atkinson, Wis.

Respectfully submitted.

A. D. DELAND, Sheboygan Falls, Wis.

H. L. DEAN, Tipton, Iowa.

J. B. VOSBURGH, Richmond, Ill.

Committee on Butter Making Utensils.

Cheese Making Utensils.

Display Cheese Press.

Display Cheese Vat.

Display Curd Mill.

Display Carrying Can.

Display Set of Scales.

Display Milk Pail.

Display Machine for Making Cheese Boxes.

Display of Tin or Metal Cans for Dairy Use.

For best general display of Implements for Cheese Making,
Premium, Gold Medal.

REPORT OF THE COMMITTEE ON CHEESE MAKING UTENSILS.

The committee found but one cheese press and hoops on exhibition—the Frazier Gary press and Telescopic hoops. It is known to the committee that said press and hoops have become the standard utensils for molding and pressing cheese, and recommend it as the best known. Exhibited by C. P. Willard & Co., Chicago.

The Wire Self-Agitating Circular Cheese Vat, exhibited by H. H. Roe & Co., Madison, Ohio, we regard as a great advance in cheese making, for use in large factories. A device for stirring milk and curd by machinery. Jenk's Automatic Cheese Maker we deem of utility, as it can be applied to any of the rectangular vats now in use.

The Self-Heating Vat exhibited by G. H. Simons, Keil, Wisconsin, we regard as one of the best now in use.

The large copper kettles for the manufacture of Swiss cheese were finely made and seemed well adapted for their special use. Manufactured by Otto Zwitush, and by F. Richter, Milwaukee, Wisconsin.

In Cream Carrying Cans we award the preference to J. G. Cheny, Cedar Rapids, Iowa.

The Howe Scales exhibited are fine in construction, and were without competition.

The Knife Curd Mill, shown by C. P. Willard & Co., is the standard mill in use.

The only display, and that a partial one, of cheese making implements, was made by C. P. Willard & Co., Chicago.

J. A. SMITH, Cedarburg, Wis.,

O. S. BLISS, Georgia, Vt.,

D. E. WOOD, Huntley, Ill.,

Committee.

Cream Raising Utensils.

Device of any kind for raising cream.

Display of cans for gathered cream.

Carrying can for cream.

REPORT OF COMMITTEE ON CREAM RAISING AND CREAM CARRYING UTENSILS.

Your committee upon the above articles beg leave to submit the endorsed statements relative to their work.

They find the devices for raising cream numerous, and evidently of greatly varying worth. They have not attempted to report upon the relative merits of any in comparison with others. The wants of dairymen in different sections of our country vary greatly, and it would be an injustice to manufacturers to give rigid decisions. The poor articles will be driven to the wall rapidly enough without a word from us.

The methods of raising cream may be set down as four in number, judging from the exhibits.

First and oldest, the shallow pan; second, the deep setting; third, the vacuum process; and fourth, the centrifugal. The submerged process is but a form of deep setting.

With all the deep setting cans it is most evident that all attention is turned toward cooling the milk rapidly.

Your committee would state that upon the day of their examination of the apparatus, Thursday, December 7, the articles were not all tagged and tabulated, so that some exhibits may have been overlooked.

THE COOLEY CAN.

John Boyd, 199 Lake St., Chicago, Ill.

This deep, round can is constructed for submerging. The cover is so held over the top of the can that when the whole is under water a cushion of air under the rim of the cover prevents the water from rushing into the can. A glass gauge on the side of the can enables one to see the depth of cream, and a rubber siphon at the bottom permits of removing the milk from under the cream without disturbing it. The cream is then turned out by inverting the can.

THE DANISH WESTON CENTRIFUGAL MILK SEPARATOR.

The Philadelphia Creamery Supply Co., 1140 Ridge Avenue, Phila., Pa.

In this machine we have a novel method of cream separation. The machine consists of a drum, which is made to revolve at high speed. Milk is let into the machine in a continuous stream through a tube. As the milk climbs the sides of the drum, in partaking of the motion it separates into two parts; that heaviest, or the skim milk, works to the sides of the drum, while the lighter, cream, flows to the part nearest the center of the drum. Tubes let down into the drum are so arranged that one carries out the skim milk and the other the cream. After starting, the machine works continuously.

THE LINCOLN CHANNEL CAN.

William E. Lincoln, Warren, Mass.

This is a round, deep can with a channel extending clear through it, and reaching fully three-fourths of the way to the top. By this arrangement the milk in all the lower part of the can is none of it over one and a half inches from the cooling surface.

THE STANDARD MILK CAN.

Brown & Rosa, Wellsville, N. Y.

Used in deep setting. The can is oval in cross section, being six inches wide, sixteen inches long, and nineteen inches deep. It is provided with a tight-fitting cover, and has no tubes, spouts, etc., being a simple can.

GEO. W. KENNEDY'S MILK HOUSE.

Geo. W. Kennedy, Garnavillo, Iowa.

A small building with a wall sixteen inches thick divided into three four-inch spaces. The outer and inner of these spaces being filled with a non-conductor of heat, as sawdust, and the middle space left for air, which can be rendered "dead" by closing all openings, or ventilated at will. The house is built large enough to contain a water tank, into which deep cans of any make can be plunged. The house is designed to obviate intense heat in summer and too great cold in winter.

THE CALKINS COOLER.

I. T. Martin, Davenport, Iowa.

This consists of a tank for water, into which deep cans can be plunged. The metallic lid of the tank shuts down over the tops of all the cans, leaving a common cushion of air over them. This lid is so constructed that it will hold several inches of water, thus cooling the milk from above. Water poured on top of the lid of the tank first fills up the lid and then flows into the tank. A receptacle in the lid holds ice.

HEWES' AIR-PRESSURE CREAMER.

B. F. Hewes, Crete, Illinois.

This consists of a tank for water, into which deep cans can be set. A metal lid with deep sides is placed over the tops of the cans, after which water is allowed to run into the tank. The water rising meets the cushion of air held by the lid, and is forced up over the lid. In this state there exists a body of cold air below a body of slightly compressed air at the top of the cans, and cold water above.

BLACKMER'S VACUUM CREAM EXTRACTOR.

N. B. Blackmer, Portage, Wisconsin.

In this process the milk is placed in cans which are air tight. By a very simple air pump, connected to the cans by rubber tubes, a vacuum is formed over the milk. After the vacuum is produced, the cream is left to rise. The cans may be used with or without water.

COLDITZ REFRIGERATOR CREAMER AND MILK COOLER.

William Colditz, Rochelle, Illinois.

A tank with movable, deep cans. The tank is filled with water to within an inch of the top of the cans. The lid of the tank holds water to a depth of several inches. Ventilators from the air space below pass up through this lid.

THE NUBSON MILK COOLER.

Frank R. Peck & Co., 146 West Water St., Milwaukee, Wis.

A milk can and water tank combined. A can with a hollow tube extending to a chamber below. Water being poured into the hollow tube fills the chamber and tube. This cools the milk at the middle and the bottom. A tube below permits of emptying the chamber of water at will.

WILHELM'S IMPROVED MILK CAN.

Manufactured at Wooster, Ohio.

This is a can twelve inches in height, with a conical cover extending down over the can six inches. The cover is constructed with a tube extending down into the can so as to form a cold air chamber through the center of the milk. The screw valve on top of the cover enables the air to be excluded and the can can be sealed by setting into water six or more inches deep.

HYDE'S DOUBLE CHANNEL MILK PAN.

Kenosha Milk Pan Manufacturing Co., Kenosha, Wis.

A large shallow pan with a double bottom, allowing cold water to pass under the milk, which is set only a few inches deep.

CLARK'S REVOLUTION MILK PAN.

A. C. Clark & Co., Manchester, Iowa.

A water tank with two or more chambers, in each of which are two long, narrow, deep pans or cans, with a spout in front. These cans are so attached to the tank by iron bales that when lifted they pitch forward and allow the cream to be removed at the spout, and by further elevation and tilting they can be emptied of the skim milk.

THE FAIRLAMB MILK CAN.

Davis & Fairlamb, 170 Lake St., Chicago.

This is a deep, circular can, enlarging upwards, with a central cooling tube extending from the bottom to about three-fourths of the way to the top, where it connects with the exterior again by a smaller tube running to the side of the can. This arrangement, when the can is plunged into water, cools the milk at the center, but does not interfere with the skimming surface.

THE CHAMPION CREAMERY.

The Dairy Implement Company, Bellows Falls, Vt.

Immovable, deep cans set in a water tank. These cans have funnel-shaped bottoms, through a faucet in which the skim milk and later the cream is drawn.

THE CHERRY CAN.

J. S. Cherry, Cedar Rapids, Iowa.

A broad, deep, circular can, with central cooling tube and tin cover so arranged as to permit being sealed by water. The milk is removed either by a siphon at the bottom or by skimming at the top.

A. H. REID'S CREAMERY.

A. H. Reid, 26 S. 16th St., Philadelphia, Pa.

A cabinet cold-water tank, with two stationary long, narrow, deep tin cans having rounding bottoms, which slant towards the faucets through which the milk first and later the cream is drawn.

PROF. W. A. HENRY, Madison, Wis.

O. F. HOUCK, —, Iowa,

E. A. MCKENNA, Geneva Lake, Wis.

Committee.

DIVISION 5—*Machinery for Dairy Use.*

Engine and Boiler, complete.

Engine.

Boiler.

Horse Power.

Dog or Animal Power.

Feed Cutter.

Root Cutter.

Wagon or Device for Transporting Cream from farm to the Creamery.

Device for Attaching or Connecting Wind Mill to Churn or Feed Cutter.

Assortment.

Motor for Dairy or Creamery Use.

REPORT OF COMMITTEE ON MACHINERY FOR DAIRY USE.

Your committee to whom was referred the examination of machinery for dairy use would report that they found on exhibition a very excellent and interesting array of useful and thoroughly practical machinery.

At the head, in point of extent of exhibits, was the display of three upright and two horizontal engines, and also one force pump, from the dairy supply firm of Chas. P. Willard & Co., Chicago,

These engines combine compactness, economy of fuel, safety and ease of management in an eminent degree, and are well worthy of attention from all who desire a first-class engine for dairy purposes.

The Watertown Steam Engine Co., of Watertown, New York, exhibited a four-horse-power engine and boiler, which, in the estimation of your committee, shows a very good degree of merit in thoroughness of construction and adaptation to the uses of the dairy

H. P. Yale & Co., of Milwaukee, also exhibited a very neatly-made portable engine of desirable pattern.

The Kriebel Vibrating Engine, exhibited by C. B. Rice & Co., Chicago, attracted the attention of the committee on account of the novelty of its construction and development of power. Your committee, of course, could not pass upon its merits in any critical sense, but deem the engine well worthy of the attention of dairy men. This firm also exhibited a very good steam generator for cooking feed, and other farm purposes.

The extensive and well-known manufacturers of churns and butter workers, Cornish & Curtis, of Fort Atkinson, Wis., exhibited a very neat and effective power for churning purposes. This device can be made very useful in the work of the dairy by employing a dog or a sheep, and we would highly recommend it for this purpose.

A. H. Reid, of Philadelphia, also exhibited a like power, which combined many excellent features. It is well constructed, and portable.

An interesting feature was the display made by the American Grinding Mill Co., of Chicago. This company exhibited three of their feed mills and one meal sifter, the whole driven by one of their Taylor Horse Powers. The

whole exhibit was composed of machinery which has become highly popular among dairymen and stock growers.

The committee desire to commend the interesting display of Feed and Ensilage Cutters made by David Lawton, of Racine, Wis., under charge of Mr. A. Forester. These machines show great strength and perfectness of construction, as well as ease of operation. They are becoming deservedly popular among dairymen. Mr. Lawton also exhibited a combined corn sheller and roller feed grinder which, in the opinion of your committee, possesses decided merit.

W. D. HOARD, Fort Atkinson, Wis.

H. J. BAMFORD, Plymouth, Wis.

W. E. LITTLE, Strawberry Point, Iowa.

Committee.

DIVISION 6 — *Butter and Cheese Packages.*

Set of Butter Tubs.
 Firkins and Half-Firkins.
 Butter Pail.
 Display of Butter Tubs.
 Butter Tubs, other than oak, ash or spruce.
 Shipping Box for Print Butter.
 Cheese Box.
 Fancy Package.
 Metal Package.
 Shipping Can for Print Butter.
 Refrigerator for Storing Butter.
 Butter Color.
 Refrigerator Car.

The report of the committee was not put in shape to publish. In this division there were twenty-eight entries, including the best devices for packing and shipping butter and cheese, and it is to be regretted that a detailed report was not made.

The Grand Union Dairy Fair was in many respects the finest and largest exhibition of dairy products and utensils ever made in the United States. The extreme cold weather alone prevented it from being a success financially. The Exposition Association, which promised liberal premiums at the outset, paid every dollar of the premiums in a most generous manner.

Much credit is due General Manager R. D. Torrey, and R. P. Jennings secretary of the Exposition Association, as well

as all the other gentlemen composing the executive committee, for their gratuitous and yet untiring labors to make the fair a grand success, whereby the dairy interests of the northwest, in particular, have been greatly benefited.