Thirtieth annual report of the Wisconsin Dairymen's Association : held at Menomonie, Wis., February 11, 12, 13, and 14, 1902. Report of the proceedings, annual address of the president, and interestin...

Wisconsin Dairymen's Association
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THIRTIETH ANNUAL REPORT

OF THE

WISCONSIN

Dairymen's Association

HELD AT

Menomonie, Wis., February 11, 12, 13, and 14, 1902.

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

COMPILED BY

GEO. W. BURCHARD, Secretary.

MRS. A. L. KELLY, Stenographic Reporter.

MADISON, WIS.
DEMOCRAT PRINTING COMPANY, STATE PRINTER
1902.

LETTER OF TRANSMITTAL.

WISCONSIN DAIRYMEN'S ASSOCIATION,
Secretary's Office,
FORT ATKINSON, June 18, 1902.

To His Excellency, ROBERT M. LAFOLLETTE,
Governor of the State of Wisconsin.

I have the honor to submit for publication, as provided by law, the thirtieth Annual Report of the Wisconsin Dairymen's Association showing the Receipts and Disbursements the past year, also papers relating to the dairy interests read, and discussions had at the Annual Convention held at Menomonie.

Very respectfully,

GEO. W. BURCHARD,
Secretary.

OFFICERS, 1902.

PRESIDENT.

J. Q. EMERY,
ALBION, DANE COUNTY.

VICE PRESIDENTS,

HON. A. D. DELAND, SHEBOYGAN, SHEBOYGAN COUNTY,
President 1877.

HON. STEPHEN FAVILL, MADISON, DANE COUNTY,
President 1880.

HON. H. C. ADAMS, MADISON, DANE COUNTY,
President 1887-9.

PROF. W. A. HENRY. MADISON, DANE COUNTY,
President 1890.

HON. W. D. HOARD, FORT ATKINSON, JEFFERSON COUNTY,
President 1891-93.

HON. C. H. EVERETT, RACINE, RACINE COUNTY,
President 1894-95.

HON. H. C. TAYLOR, ORFORDVILLE, ROCK COUNTY,
President 1898-99.

HON. C. P. GOODRICH, FORT ATKINSON, JEFFERSON COUNTY,
President 1900-1901.

SECRETARY.

G. W. BURCHARD.
FORT ATKINSON, JEFFERSON COUNTY.

TREASURER.

H. K. LOOMIS,
SHEBOYGAN FALLS, SHEBOYGAN COUNTY.

HON. CHESTER HAZEN, RIPON, FOND DU LAC COUNTY,
President 1872-74. Died 1900.

HON. HIRAM SMITH, SHEBOYGAN COUNTY,
President 1875-76. Died May 15, 1890.

HON. H. F. DOUSMAN, WAUKESHA COUNTY,
President 1878.

HON. C. R. BEACH, WALWORTH COUNTY,
President 1881-82. Died September 15, 1896.

HON. W. H. MORRISON, WALWORTH COUNTY,
President 1883-86. Died December 15, 1893.

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 this association shall consist of a president, secretary and treasurer.

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

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

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

ARTICLE VI. The regular annual meeting of the association shall be held 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 place 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.

MEMBERSHIP, 1902.

Names.	Post Office Address
A.	
Adams, M. J.	Milwaukee.
Aderhold, E. L.	Neenah.
Aune, J. G.	Baldwin.
Ausman, J. F.	Elk Mound.
Ausman, H.	Elk Mound.
Ausman, H. W.	Elk Mound.
Arnold, A. A.	Galesville.
B.	
Bais, Charles E.	St. Paul, Minn.
Bast, J. H.	Calumet Mills.
Bates, R. R.	Madison.
Berkholz, H.	Middleton.
Boetcher, John E.	Guthrie.
Brunner, J. A.	Tarrant.
Bleuer, Dan.	Omro.
Bush, F. H.	Knapp.
Bradley, W. C.	Hudson.
Broe, William	Menomonie.
Benson, James.	Elk Mound.
Bartlett, W. B.	Chippewa Falls.
Barber, A. G.	Cedar Falls.
Brooks, M.	Menomonie.
Bryce, E. L.	Caryville.
Bryce, A. O.	Caryville.
Blume, Emil.	Mondovi.
Bradley, Charles.	Hudson.
Burchard, G. W.	Fort Atkinson.
C.	
Cafdisch, W. H.	Baraboo.
Craill, A. L.	Nelsonville.
Cornish, O. B.	Fort Atkinson.
Cronk, R. W.	Menomonie.
Chapin, C. J.	Amherst.
Cole, A.	Magnolia.
Cronk, W. W.	Rusk.
Czamanske, Amelia.	Randolph.
Crippen, G. E.	Minneapolis, Minn.
Cope, F. G.	Caryville.
Clayson, William.	Memomonie.
Clementson, Ole.	Menomonie.
Chickering, J. B.	Menomonie.
Crawford, John K.	Dunnville.
Cockram, O.	Menomonie.
D.	
Dailey, J. G.	Hudson.
Dufner, S. J.	Leon.
Duxbury, E. L.	Green Bay.
Denhoff, Albert.	Rusk.
Daub, C. H.	Eau Claire.
Donaldson, H. A.	Eau Claire.
Decker, A. J.	Fond du Lac.
Dickson, John.	Cedar Falls.
De Ryder, C. L.	Menomonie.
Devenport, S.	Eau Galle.
E.	
Ehrhard, Louis.	Menomonie.
Emery, J. Q.	Albion.
Esker, Ole.	Bloomer.
Ebert, H.	Menomonie.
Ebert, Wm.	Menomonie.
F.	
Flint, R. J.	Menomonie.
Flick, John.	Dunnville.
Fladoes, Martin.	Menomonie.
Foster, D. B.	Fairchild.
G.	
Gilbert, F. H.	Hebron, Ill.
Goodrich, C. P.	Fort Atkinson.
Galloway, Geo.	Menomonie.
Gardner, E.	Elmwood.
H.	
Hall, F. T.	Hillsdale.
Hallstein, John.	Menomonie.
Harrison, Paul.	Taylor.
Hammann, A. C.	Sunset.
Hill, C. L.	Rosendale.
Heintz, John.	Menomonie.
Hoimyr, John.	Irvington.
Holbrook, B. F.	Durand.
Holden, H. R.	Dekora.
Heughland, H. C.	Chicago, 14 N. Clark St.
Holmes, Geo. H.	Baraboo.
Hagen, L. E.	Meredian.
Houser, W. L.	Mondovi.
Hyne, W. J.	Evansville.
Holbein, J. H.	Menomonie.
Hislop, Andrew.	Mondovi.
Heafner, H.	Menomonie.
Hunt, Wescott.	Menomonie.
Hoyem, S. S.	Eau Claire.
I.	
Imrie, John.	Roberts.
Iron Creek Cheese Co.	Menomonie.
Imrie, David.	Roberts.
J.	
Jackson, S. W.	Menomonie.
Jacobs, E. C.	Menomonie.
Jones, W. T.	Lake Mills.
Jordan, G. A.	Amherst.
Johnson, A. H.	Menomonie.
Jessel, H.	Elk Mound.

MEMBERSHIP.— Continued.

Name.	Post Office Address.
K.	
Kates, C. M.	Custer.
Kielsmeier, O. J.	Hika.
Klevin, O. L.	Meridean.
Kolkind, Andrew.	Menomonie.
Kent, William	Rusk.
Kouz, John	Augusta.
Krause, W. E.	Wheeler.
Kirber, Peter	Rusk.
L.	
Laughlin, O	Downsville.
Lucus, H	Menomonie.
Leirmann, Frank	Menomonie.
Love, Wm	Rusk.
M.	
Massie, O. W	Louisville.
McCready, John	Madison.
McGilton, T. W.	Menomonie.
McKerrow, Geo.	Sussex.
McCormick, E. C.	Hetzel.
Meracle, Asa L.	Whitewater.
Michels, M.	Garnet.
Moody, Wm.	Rusk.
Myrick, J. J	Menomonie.
Moore, E. B.	Menomonie.
Maves, Fred	Rusk.
Miller, Wm	Menomonie.
Meyers, F. J.	Rusk.
Marks, E.	Menomonie.
McLaughlin, W. J.	Menomonie.
Martinson, C	Menomonie.
Maves, Albert	Menomonie.
Miller, Robert	Rusk.
Macauley, R. H	Dunnville.
Miller, H	Menomonie.
N.	
Nelson, Peter	Meridean.
O.	
Oleson, Torger	Meridean.
Ohnsted, O	Menomonie.
Oddie, J. M.	Boyceville.
P.	
Peterson, Adolph	Menomonie.
Phelps, W. F	River Falls.
Philips, A. J.	West Salem.
Pierce, C. S	Milwaukee.
Puerner, Arthur	Stoughton.
Park, W. H.	Downing.
Peterson, Peter	Meridean.
Pitman, Frank	Arkansaw.
Q.	
Quilling, A.	Menomonie.

Name.	Post Office Address.
R.	
Rathburn, Roy	Sand Creek.
Remington, A	Elk Mound.
Reiley, John	Milwaukee, 87 Michigan.
Rolloy, A. K	Downsville.
Roach, Ed	Cedar Falls.
Roen, Carl	Menomonie.
Roen, J. H	Menomonie.
Ribenick, W. C.	Menomonie.
Robie, Gunder	Elk.
S.	
Sherburne, W. R.	Rusk.
Stratton, J. R	Meridean.
Steres, Fred	Menomonie.
Simpson, A. D.	Colfax.
Schutte, Wm., Sr.	Menomonie.
Schutte, W. C	North Menomonie.
Stout, J. H	Menomonie.
Scribner, F. H.	Rosendale.
Skidmore, E. L.	Rosendale.
Steinman, J. V.	Irvington.
Smith, J. C.	Elk Mound.
Sondvig, Olaf E	Menomonie.
Scott, E. W.	Menomonie.
Smith, W. H.	Eau Galle.
Squire, C. A	Elk Mound.
Schutte, August	Manitowoc.
Scott, L. E.	Stanley.
T.	
Taylor, H. C.	Orfordville.
Torgerson, Ole	Menomonie.
Torgerson, Ever	Meridean.
Thum, Geo	Menomonie.
Tibbitts, C. P.	Cedar Falls.
Tibbitts, O. S.	Downsville.
V.	
Van Dreser, M. L	Bloomer.
Van Duser, James	Hebron.
Vasey, F. T	Menomonie.
Vasey, F. A	Menomonie.
Varnam, N. O.	Menomonie.
W.	
Wigginton, J. M	Black Creek.
Wallace, Wm.	Menomonie.
Wilson, T. B.	Menomonie.
Wittig, Thomas	Rusk.
Whinnery, C. N.	Menomonie.
Westphall, Wm	Menomonie.
Westphall, Louis.	Rusk.
Y.	
Young, E. B.	Menomonie.
Yates, W. J.	Menomonie.

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Dairymen's Association

AT THEIR

THIRTIETH ANNUAL CONVENTION

Held at Menomonie, Dunn County, Wisconsin,
February 11th, 12th, 13th, 14th, 1902.

The Thirtieth Annual Meeting of the Wisconsin Dairymen's Association was called to order in the city of Menomonie, Dunn county, at 10 o'clock A. M., February 11th, 1902, by the president, C. P. Goodrich, of Fort Atkinson.

The Chairman: Once more we meet to do what good we can in helping on the industry that has made Wisconsin one of the most prosperous states of the union.

As I look into the faces before me, I am glad to see many old friends, but there are some that are absent; the angel of death has been in our midst. We heard today of the death of that staunch old pioneer dairyman, F. C. Curtis, and we shall very sadly miss him from the ranks of the Old Guard. However, I have heard somewhere words something like this: "The Guards die, but never surrender." We are not going

to surrender until we surrender to the King of Destiny. The following program has been arranged for this meeting:

TUESDAY, FEBRUARY 11, 1902.

Morning Session, 10 a. m.

Address of Welcome.
Response .....C. H. EVERETT, Racine
General Remarks.
Appointment of Committees.

Afternoon Session, 1:30 p. m.

President's Annual Address .....C. P. GOODRICH, Fort Atkinson
Silos, Silage and Cows .....F. H. SCRIBNER, Rosendale
The Patron and the Factory—The Duty of Each to the Other,
E. L. ADERHOLD, Neenah
Address .....H. C. ADAMS, Dairy and Food Commissioner

WEDNESDAY, FEBRUARY 12, 1902.

Morning Session, 9 a. m.

Powers for Farm Use .....H. C. TAYLOR, Orfordville
The Hog as an Adjunct to the Farm Dairy .....THEO. LOUIS
What Dairying Has Done for Trempealeau County,
A. A. ARNOLD, Galesville

Afternoon Session, 1:30 p. m.

The Importance of Wheat Bran to Wisconsin Agriculture,
Prof. W. A. HENRY, Madison
From Cow to Consumer .....E. J. JACOBS, Menomonie
Address .....W. D. HOARD, Fort Atkinson

Evening Session, 7:30 p. m.

Addresses, Music, Readings .....Special Program

THURSDAY, FEBRUARY 13, 1902.

Morning Session, 9 a. m.

Some Mistakes of Cheesemaakers and Patrons,
JOHN MCCREADY, Madison
Combined Dairying and Beef Production.....CHARLES THORP, Medford
The Relation of Dairy Husbandry to Soil Fertility,
GEO. A. SMITH, New York

Afternoon Session.

No Excellence without Cleanliness ....MRS. ADDA F. HOWIE, Elm Grove
Some Observations and Figures on the Present State of Dairying in Dunn County .....C. P. GOODRICH, Fort Atkinson

Evening Session, 6:30 p. m., Sharp.

Annual Banquet, with a Post-prandial Supplement of Wit, Humor, Wisdom and Repartee.

FRIDAY, FEBRUARY 14, 1902.

Morning Session, 9 a. m.

Reading of Scores and Discussion of the Exhibits,
PROF. T. L. HAECKER, Minnesota
The Importance of Cleanliness in Dairying.....W. J. MCLAUGHLIN
A Poultry Talk .....C. A. SMITH, Knapp

Afternoon Session, 1:30 p. m.

The Farm a Savings Bank ..GEO. MCKERROW, Supt. Wis. Farm Institutes
Wisconsin Dairy Exhibits at the late Pan-American Exposition,
H. K. LOOMIS, Sheboygan Falls
The Question Box.

ADDRESS OF WELCOME.

Hon. J. H. Stout, Menomonie.

Mr. President, Members of the State Dairymen's Association, Ladies and Gentlemen: On behalf of the citizens of Dunn county, I extend to you a hearty welcome, and trust that the meetings you are about to hold may not only be of great benefit to our county, but to the state at large. In the largest sense, I consider the work your association has been doing for years throughout the state, a training school for those who are interested in the manufacture of butter and cheese.

In looking over the program, I notice the names of gentlemen who are well qualified to give valuable instruction along these lines. In connection with this comes the thought, that if we take, we must give. It is only through the long continued efforts of the State and Government Experiment Stations that

these meetings can be made interesting and instructive. The work of these stations has been pumping information into the minds of many men, and some of them now come before you and pump it out for your benefit. It is much better in this world to be like a pump to suck in and throw out, than like a tank, to be used only for storage. Those of us acquiring wealth or education should return a large portion of it for the benefit of the public.

As I recall it, your Association was organized in 1872. At that time the total output in dairy products of the State of Wisconsin did not exceed $1,000,000 dollars. This year it amounts to 35,000,000 dollars. I think this wonderful increase is, in a large measure, due to the organized efforts of the State Dairymen's Association. Two counties, Green and Sheboygan now show 3,000,000 dollars each, dairy products, yearly. Green county has 16 towns and Sheboygan 15. Land in Green county is worth from $100 to $115 an acre. The best lands in Dunn county are worth from $50 to $60 an acre. Farmers in St. Croix, Dunn and Chippewa counties have been shipping cream to Duluth for years, so that it cannot be said we lack a market and are not as favorably located as Green and Sheboygan counties.

I consider this meeting of great importance to our county, and I hope we may all profit by it.

Again I welcome you to our city.

RESPONSE.

C. H. Everett, Racine, Wis.

Mr. President, Senator Stout, Ladies and Gentlemen: In behalf of those from abroad, who represent this association, I desire to thank your representative for this kind and courteous welcome. We feel that we are welcome among you, that you are glad to have us come here. We are always welcome wherever we go, because we go for a good purpose.

I have traveled about considerably during my lifetime, meeting a good many farmers and dairymen of this country and Canada, and I have come to the conclusion that there is no better class of farmers than we have in Wisconsin, and there are none better in Wisconsin than you have in Dunn county. We know that you know a good deal about dairying; we know that the average butter yield in this county is something over 200 pounds per cow, which is a very good average as averages go, but it is not good enough, and we want to help you raise that average.

We all want to feel at home in this convention; we all want to take part in the discussions; we want to hear about your experiences. We want to compare experiences, because the experience of successful farmers everywhere is of value to other farmers. There is very much for all of us to learn about dairying. No man lives who has mastered the science of feeding the dairy cow, or the science of breeding her, or getting the most out of her, or taking the best possible care of the product. In order to become successful dairymen we must study the cow herself, the dairy machine, as a special purpose machine; we must get rid of general purpose ideas, because experience has shown that those who have become successful dairymen are perfectly satisfied that in order to reach the greatest results, only the special purpose cow will do it.

We shall urge upon you the construction of buildings upon scientific principles, the care of your dairy cow, the care of the milk; we shall urge the study of the composition of foods and becoming more intelligent in feeding what we term a balanced ration. We shall ask you to test your cows, to weed out your poor cows, to keep only those that give you a profit for the food and the labor that you put into them. There are thousands of cows in this state and there are hundreds of cows in Dunn county which today are not paying for the food they consume upon the farm. Some are returning you a loss for the food you give them, and it is your duty as business men to find them out and get rid of them. I heard a young man last week, at Madison, at a Farmers' Conference, give a little talk upon the benefits he had derived through the use of the Babcock test. He was a "Short

Course" student, and he told how he went home from Madison to his father, and said "I think we ought to take a test of all our cows, perhaps we have some poor ones that don't pay." He succeeded in persuading his father to buy a test that cost $8.00, and he made the test of the whole herd, and found that two among the herd of seventeen cows produced a pound and a half of butter per day, while five other ones produced about a pound a day and the balance the father gave a free ride to the Stock Yards in Chicago, because they were not paying for the food they consumed. Now, that state of affairs could undoubtedly be found all over this state and suggests one of the most important things that we shall hear about at this meeting.

We want to talk about the silo, about giving our cows warm water to drink, and a thousand and one other things that concern you. We also want to have a good time, mix a little fun with our good hard sense.

Again thanking your representative for this kindly welcome, and assuring you that we are glad to be with you today, I will close.

Ex-Gov. W. D. Hoard, of Ft. Atkinson, being called for, spoke as follows:

Mr. President: Last year in Mondovi we opened up our convention with a splendid attendance, which held to the last hour. I have attended twenty-nine out of the thirty meeetings of this Association, and I don't know that I ever faced a more earnest, zealous set of men than were at Mondovi last year. I am a little disappointed at the attendance here this morning, but undoubtedly the farmers will come in later. I sometimes think that our prosperous times are taking away our hunger and thirst for knowledge. In these days of high prices and good times, as the old man said about sliding down hill, "The blamed thing will run herself." But there is a time in coasting down hill when you have got to drag the sled up the hill again. I notice that all over the State, all over the Union and in Canada too, the farmers

are liable to drop into a state of mind where they think that effort for their own improvement is no longer needed, and they trust the Lord a confounded sight more with regard to their business than they do in any other direction. Now, we need a constant effort. Today, in my own farm work, I feel the necessity of more and more study, for I tell you that it is a more difficult thing to run a dairy farm than it was forty years ago. I came to Wisconsin forty years ago, the State was fresh from the hands of God Almighty, and God Almighty is a good farmer. The forces of nature had filled the soil of Wisconsin full to repletion with fertility, and the farmers were prodigal, wasteful of the forces of nature. All you had to do was to tickle Wisconsin soil and it would laugh with the harvest; but as we kept on farming and each man thinking only of what he was going to get out of the soil in the fall of the year gradually we began to see a depletion of the productive forces of our soil. The result has been that the people of today need a great deal more intelligence in regard to the handling of the soil. I have a farm of about 180 acres, which has been farmed since 1835. It has seen all kinds of handling; it has a good strong clay soil; I bought the farm about three or four years ago, and I have got to work at the latter end of my life to do the work that the men who handled that farm years ago ought to have done. I have got to refertilize it and put it into such shape that it shall answer my business sense of what I think it should do. I have got to handle my business on the farm as I do my business in the printing office, or anywhere else. That farm has suffered at the hands of men who would not think, who just acted stupidly with this magnificent piece of land. I have bought all the ashes that I could find in the city of Fort Atkinson and paid ten cents a bushel and all the farmers have been laughing at me and asking, "Hoard, do you think that will pay?" They had no faith, no reason, no judgment; they did not know that God had been putting potash into that soil by repeeated burning over for hundreds of years, and that that potash has been steadily drawn out and put into the market and sold, and it must be replenished. I put 100 bushels of ashes on three acres of clover land and took nine tons of beauti-

ful clover off that three acres. The 100 bushels of ashes cost me $10.00, and I got about $30.00 for the hay. Remember, they were wood ashes.

I am talking to you from the standpoint of the farmer, a farmer who is studying all the time. Now, then, in dairy farming there are two standpoints, one from the acre and one from the cow, and my herd of cows have given me some very instructive lessons.

I have about twenty acres of alfalfa on that farm. Last year was a wonderfully instructive year to me. I watched my alfalfa and saw it steadily grow right through that terrible drought, and I got three crops,—the first a good crop, the second a little poorer and the third still poorer,—but I got on that field of alfalfa about three tons and a half to the acre, and it grew when nothing else grew. This subject will be up later, and is a most important one for the farmers of Wisconsin.

The silo has been used in Wisconsin for nearly twenty years. About that time a man by the name of Gilbert in Fort Atkinson built the first silo in Wisconsin. Its value has been proved, and yet there are thousands upon thousands of dairy farmers in Wisconsin who are not yet convinced.

I am not finding fault, nor scolding, but I feel as though there was a tremendous lack of, what I call, initial mental force in the minds of Wisconsin farmers along these lines. There are men down in my county who have seen their neighbors year after year fill their silos and yet they say, "Well, I wish I knew whether it would pay or not." Last year, as you all know, we had a tremendous drought. The year before it took fifteen acres of corn to fill my 120-ton silo; last year it took twenty-five, as the effect of the drought, but there was no place I could put that twenty-five acres of corn that would return me anywhere near, through the coming winter, the value of that silo in connection with my cows.

I am studying the men who bring milk to the Hoard Creamery and as I said before, a man should understand the production of his dairy, figuring per acre and per cow. He must be a student of the soil, for he is a producer of cow food; and then he

must be a student of the cow in order to get the largest return from her. In my herd today is a little cow which I raised from a heifer. I bought her mother at a sale in Chicago and that little cow weighing only about 950 pounds, started as a two-year old heifer and produced 396 pounds of butter, as a three-year old, 386 pounds and as a four-year old, now with her third calf, this past year she has produced over 500 pounds; and it cost $34 to keep her. Now, I am after as many more just such cows as I can get into that herd, and I am bothered tremendously that I don't know enough yet to get out of her, or any of the rest of them, all she will give me; and my neighbors don't know enough; but I have bred this cow and I see some principles in breeding and handling, and I shall be watching out for more of the same kind. Now, you can see yourselves, it makes a tremendous difference with my revenue whether I am milking 350-pound or 150-pound cows. It costs just as much to take care of a 150-pound cow as a 350-pound cow, doesn't it? The stable room costs just as much, and the feed costs very nearly as much, and it isn't near as satisfactory. Now, my friend Everett said that the average cow in Dunn countyo gives 200 pounds of butter. You see it would take about two and a half of such cows to equal that one little cow of mine, and they would certainly cost more to keep. Every farmer in Dunn county ought to stop today and think long and hard, if he is going to continue in the dairy business. He ought to say to himself, I propose to think out this breeding question.

I have seen the dairy product per cow in Jefferson county raised 100 pounds in twenty years, and the foundation of the whole thing, my friends, was thought. It began by all the farming becoming interested in putting better bred sires at the head of their herds, which is the foundation of dairying. Then they took hold of better feeding, and as they enlarged the capacity of this cow machine, by better breeding, then the better feeding answered to it, don't you know? I took the census of 100 dairies in Jefferson county, and we have seen the effects of larger and better study. If the brain doesn't get calloused, I don't care how hard your hands are! If a man's thinking part doesn't swell

and improve and take in more and better judgment, he can work himself into the grave and die with hands as hard as a hammer and as big, and what is he? The day of stupid, heavy labor in agriculture is past and gone. The day of better, deeper, stronger thinking is coming. Wise old Solomon said, "As a man thinketh, so is he." He did not say as a man laboreth, so is he, and nowhere is this truer than in agriculture; though it is true in medicine, in law, in banking, everywhere. We must labor,—we can't escape that,—but we do need a strong baptism all over Wisconsin into the value of better thinking. I see farmers everywhere sneering at knowledge, sneering at book farming, sneering at this and that, and they die sneering, and I tell you their boys feel it, their boys see the truth, though the old men cannot see it.

A farmer boy came to me last fall, and he stood talking to me over my fence, and the tears were in his eyes as he said, "Mr. Hoard, I want to go to the short course, and father says that I shall not go, he says it is nothing but a humbug. He says it simply makes dudes of farmers' boys and I wish you would go and talk to my father."

I tell you, the farmer of today has to meet many serious problems, and he cannot meet them without more intelligence; there are many difficulties coming up in modern farming,—all these droughts, all these diseases, all these many questions that come up necessitate more and more thought and better and better judgment. So I plead today for the work of this association, for the work of the Short Course, for the work of the farm institute, and of every other influence that shall enlarge the horizon of men's minds and give them a better and a wider view of things. I am glad that we have come into Dunn county, and I hope that this meeting may be productive of larger and stronger faith and purpose and comprehension.

APPOINTMENT OF COMMITTEES.

On Nominations: C. H. Everett, F. H. Scribner, A. J. Decker.

On Resolutions: W. D. Hoard, W. A. Henry, F. F. Morgan.

On Membership: J. B. Chickering, T. W. McGilton, Paul C. Wilson.

On Exhibits: A. J. Decker, E. L. Aderhold, H. C. Taylor.

Convention adjourned to 1:30 P. M.

Convention met at 1:30 P. M.

J. Q. Emery in the chair.

PRESIDENT'S ANNUAL ADDRESS.

C. P. Goodrich, Ft. Atkinson.

Ladies and Gentlemen and Members of the Wisconsin Dairy men's Association:

The Wisconsin Dairymen's association was formed for the purpose of advancing the dairy interests of the State, and now at its 30th annual meeting it may not be amiss to look back over the ground traversed, and see what has been accomplished.

We have constantly pleaded for better dairy cows, better care and feed of cows, better and purer milk and better butter and cheese.

Something over a quarter of a century ago, when dairying in Wisconsin was in its infancy, and the Dairymen's Association had barely commenced to make its influence felt, some effort was made to determine what was the average yearly product per head of the cows of the State. It was a difficult thing to do, but, after gathering the available statistics from private dairymen and from factories, the conclusion was arrived at that the average product

per cow did not much exceed 125 pounds of butter or its equivalent in cheese. Now what is it? Some effort has been made to find out in, at least, two different parts of the State.

About a year and a half ago the present secretary of this association addressed letters to the proprietors or buttermakers of 78 creameries of Jefferson county, asking them to make careful inquiry of the patrons of their respective creameries and find out the exact number of cows kept during the year previous, the milk of which had been delivered to the creameries; and also report the number of pounds of butter made.

Reports were received from a large proportion of the creameries of the county and the result seemed to show that the average number of pounds of butter per cow was about 240. This seemed incredible. We could not believe that the figures were reliable that made so high an average.

Soon after this a "cow census" was taken in the vicinity of Fort Atkinson, Jefferson county, of one hundred creamery patrons, not making selections but taking them by course. In this case each farm was visited and the cows looked over and the owner questioned so as to get at the exact number. Then the record of the amount of butter for the year was taken from the creamery books, and when this was divided by the number of cows it showed that the average was 244 pounds per cow. This we were obliged to believe.

Last November a similar "cow census" was taken here in Dunn county and the result showed that the average was 220 pounds per cow.

This shows a wonderful gain in the productiveness of our dairy cows in 25 years. It is the result of education among farmers in relation to breeding, feeding and caring for dairy cows.

The Dairymen's Association has surely done a part of this educating. We have helped; and with the great work done by the dairy press, experiment station, agricultural college and farmers' institutes this wonderful improvement has been brought about.

A similar "cow census," taken in Eastern Iowa two years ago, showed that the cows there averaged but 149 pounds of butter per

cow. There seems to have been no effort made by the educational forces to improve the average cow as far as milk production is concerned; but, when attending their dairy convention a few years ago I found that the cow was ignored entirely and all the talk was in relation to how to handle the milk after it was brought to the creamery and how to market the butter. Is not this the reason why the cows of Wisconsin have increased in milk production more than have the cows of Iowa?

In one very important respect, it seems to me, we have not improved much, if any. The milk brought to creameries and cheese-factories today is no cleaner or purer than it was 25 years ago. It is true that the patron does not put in water or take off cream very often. The Babcock test and the Dairy and Food Commissioner have put an end to that, or nearly so.

We have have other tests—the curd test and acid test—which, if used as much as they should be, ought to help educate the patron so as to get him in the way of furnishing cleaner and better milk.

It is true, that by the use of the separator, which removes a portion of filth, and the use of a heavy starter which, for a time, keeps in subjection the bad germs in the milk, the educated buttermaker can succeed in making butter that starts out in the world fairly respectable. But its respectability is short lived, the bad germs soon assert themselves and the "flavor is off."

It is also true that the butter made in the state averages much better, and brings a better price, than it did 25 years ago when it was made on a thousand different farms; but this is not because cleaner milk is used, but it is because of the skill of the buttermaker and the uniformity of the product. Many of those who furnish milk to the creameries seem not to care whether their milk is good or not. If the creamery man will take it, that is all they care for. They rely on the separator and the buttermaker's skill to make butter that will bring the highest price in the market, no matter what the milk is. If this cannot be done the buttermaker must bear the blame and they refuse to try to remedy it by furnishing better milk.

In the case of cheese the situation is still worse. There the

cleansing effect of the separator cannot come in and the casein as well as butterfat enter into the product. So it becomes absolutely impossible to make good cheese from filthy milk, though a fairly good article of butter might be made from the same milk.

One of our cheese instructors told me that he would not undertake, under any considerations, to make cheese in a district where the farmers had patronized a creamery for a long time. They have got into such such slovenly habits in regard to their milk that it would be impossible to make good cheese of it.

How can this state of things be remedied? is the vital question. It seems to me that there ought to be a more rigid inspection carried on, not only of the creameries and cheese factories, but on the farms where the milk is produced; an inspection of the cows, the stables, the food and water of cows, the milk cans and, in short, everything that affects the quality of the milk supply of the creameries and cheese factories and also the milk supply of cities.

For several years the Dairymen's Association has employed two or more cheese instructors and for a part of the past year one creamery instructor. They visit the factories and creameries, hold meetings of the patrons and in other ways do what good they can. These instructors are furnished with blanks on which they are required to make reports, to the secretary, of the condition of things as found at each factory visited. In many instances, after receiving such reports, the secretary has written personal letters to the operators of the factories, calling their attention to some glaring faults reported and urging reform and suggesting remedies. Also he gave praise where in his opinion it was deserved, thus giving encouragement to good work by showing that it was appreciated, and discouraging poor work by letting the offender know that his sins had found him out.

Following are copies of some of the letters of the secretary, which are fair samples of the work he has been doing:

..... CHEESE FACTORY,

....., ...

Gentlemen:—I have Mr. McCready's report of his visit to your factory of the 15, 16, 17 of this month and regret to note that he does not find matters in as promising condition as could be desired. I observe that you pay your maker good wages, but you require him to guarantee his make and to stand the loss if there is any, and yet at the same time the milk was only in ordinary condition in the cans and that the most of it was not properly aerated. He also reports the curing room in a poor condition.

While I realize that a factory cannot have everything all right at all times, yet I trust that Mr. McCready's visit and the explanation he gave you at the patron's meeting will help to overcome some of the objections that he raised. It is really too bad that one or two or three negligent and careless patrons can easily run down the general average so that it is impossible for the best maker in the world to make superior cheese. It is therefore in the interest of the great majority that they stand by the maker and insist that he refuse every can of milk that is not properly aerated and good in every way, regardless of where it comes from or to whom it belongs.

The use of the Wisconsin Curd Test will point out these delinquent patrons, and when pointed out if they will not mend their processes they should be debarred from sharing in the conveniences and profits of the factory.

.....,

....., Wis.

Dear Sir:—I have Mr. Aderhold's report of his recent visit to your factory, and feel like congratulating you on the very favorable comments he is able to make, notwithstanding the terribly oppressive weather.

I am particularly glad to note that nearly all of your patrons were out to attend the evening meeting and trust that the instructor's explanation of the Babcock test and the Wisconsin Curd test will go a great ways towards convincing those who listened that it is essentially wrong to divide cheese money simply on the weight of milk.

Having yourself attended the Dairy School at Madison, no argument of course is needed to convince you of this fact and of course so far as you are personally concerned there is not such need for using the test as there is on the part of the patrons themselves, and yet, all experience with the test shows that where it has been adopted as an

arbiter and faithfully tried it begets a much more harmonious feeling among the patrons and towards the cheesemaker.

I consider the Wisconsin Curd test the cheesemaker's best friend, the one that he ought to have at his elbow all the time so that he may call upon it for assistance whenever there is any reason for him to suspect that any milk offered him is off in quality.

.....,

....., Wis.

Dear Sir:—Mr. Aderhold has made his report of his second visit to your factory this season and it is much to be regretted that he did not find the condition of affairs there more satisfactory. I want to say to you in all candor that no man can make a pound of good cheese from ten pounds of milk testing only 3.5 per cent. of fat, and this practice of agreeing to give a pound of cheese for ten pounds of milk ought to be abandoned. Its whole tendency is to make patrons careless and indifferent, if not worse. Moreover, where the maker guarantees the quality of his make, the patron ought to guarantee the quality of the milk he delivers to the factory and that he is to deliver it in good condition. This I am satisfied your patrons do not do, and it is your privilege and duty to instruct them how to do better. Try to encourage them in a friendly way to take better care of their milk, show them the importance to them as well as to you of doing so, and if the writer or the Association can be of any further service to you in any way we shall be very glad to do so.

.....,

....., Wis.

Dear Sir:—I have Mr. McCready's report of his visit to your factory July 30–31 and regret to observe that he found the milk that is supplied to you in very poor condition, and in consequence the cheese on the shelves do not show up as they might. He reports that you keep your factory clean, that there are screens to keep out the flies, and that you keep the whey tank clean, but in spite of all these things the milk in the cans was gassy, and that it had not been properly aerated.

I observe with much satisfaction that he called an evening meeting and that nearly all of your patrons were present, and that he explained to them the Babcock Test and the Wisconsin Curd Test. The latter of these if properly used ought to result in securing you a better quality of milk, that is, milk in much better condition for making good cheese. I hope you will find your patrons willing to co-operate with you when they come to understand that really it is their fault that the cheese do

not show up better. Make frequent use of the Wisconsin Curd Test and show its results, especially to the delinquent patrons, and tell them how they can avoid the trouble; urge them to be more careful in milking, to take care to brush the udders and flanks of the cows before commencing to milk, and then to aerate the milk and put it in a clean place where it will not be likely to become contaminated. A little tact and patience in dealing with your patrons I trust will have a great deal to do with helping you to get better results.

What has been said in relation to the bad condition of milk does not apply to all the creameries and cheese factories of the state but to only a part of them, and in these there is only here and there a careless offender. But there is great danger from these few, for they damage the product of all the patrons and endanger the reputation, not only of that particular creamery or factory, but of the dairy products of the whole state, so that the innocent and guilty suffer alike.

These are some of the things that this association has helped to do, and tried to do.

It is to be hoped that our meeting here will result in great good; that the dairymen of the state and particularly this part of the state will be stimulated and inspired to put forth more intelligent effort in the way of improvement.

Although the dairymen in this part of the state have been doing exceedingly well as shown by the "cow census" which was taken in this county, yet we know that they can do better; and we cherish the hope that they will make each generation of cows better than the preceding one, as producers, and that they will learn each year, to feed better, more economically and profitably; care for cows better and produce purer and cleaner milk which will make a better product and consequently bring a better return.

The war on fraudulent butter which this association has been waging in the interest of both producer and consumer, is still raging, and the result now seems trembling in the balance.

But if defeat, at the present time, awaits us, it will only stimulate our determination and courage to continue the fight, feeling sure that in the end the cause of pure and unadulterated dairy products will triumph.

We hope at this meeting to hear from Dairy and Food Commissioner Adams and Ex-Gov. Hoard, who, with others have been doing invaluable service in the good cause, and hope they will be able to tell us what the present prospects are.

On motion of Mr. Everett, the following were appointed a committee to act upon the President's Address: C. H. Everett, H. C. Taylor and Mrs. Adda F. Howie.

President Goodrich resumed the chair.

The President: I think I will call upon the Secretary at this time to make a report of some of his work along the lines of what I have already said.

SECRETARY'S REPORT.

To the President and Members of the Wisconsin Dairymen's Association.

Gentlemen: I have the honor to submit the following report for the past year:

Number of orders drawn on treasurer to date...	37
Amount of same.....	$2,230 52

These expenditures are classified as follows:

Expenses of officers and speakers at Mondovi convention	$399 10
Premiums awarded at Mondovi convention.....	156 72
Paid creamery instructor	289 70
Paid cheese instructors.....	1,385 00
Total as above.....	$2,230 52

Acting upon a resolution adopted at our last convention I prepared a bill to be presented to the legislature increasing our annual appropriation to $4,000. This bill was favorably acted upon and would have passed as introduced, had not certain per-

sons, representing the Swiss cheese industry, at the last moment, proposed an amendment in the form of a provision requiring $1,000 of this sum to be expended under the direction of the Southern Wisconsin Cheesemakers' Association for the benefit of the Swiss cheese industry.

The bill having passed with this provision, I wrote to the leading member of that association to the effect that this association would expend this sum in the employment of any instructor whom that association might recommend. The reply was indefinite and no request for any expenditure from this fund has been received. I am advised by what I consider good authority that the Wisconsin Dairymen's Association would not be justified in transferring this sum or any part of it directly to the Southern Wisconsin Cheesemakers' Association, but can only pay it out on approved vouchers.

I have been unable to find a suitable person to fill the position of creamery instructor, which was made vacant by the resignation of Mr. De Witt Goodrich in May to accept employment in the Model Dairy at the Pan-American Exposition. It is a position requiring not only experience and ability as a creamery buttermaker but special tact and patience to overcome the objections and suspicions of the proprietors and patrons of creameries as well as the buttermakers. Mr. Goodrich was well equipped in all these directions and it is a distinct loss to our state that upon his return from Buffalo he preferred not to resume employment under our association.

There are conditions in many creameries which demand reform. I am persuaded that in some cases the patrons are not impartially treated even when the Babcock test is used, and that in very few creameries or cheese factories is proper attention given to rejecting milk which has not been properly cared for. Our instructors have been doing good educational work along these lines, and I have endeavored during the past year to supplement their endeavors by correspondence. To this end I have written a large number of letters, based upon the reports submitted by the instructors, calling attention to the defects reported and suggesting how they might be remedied. This has largely increased

the labor of the Secretary and with the consent of the president I have employed a stenographer from time to time.

Of course there has been a very considerable amount of other correspondence, and this with compiling, editing, and indexing the annual report and reading proof of same, preparing program for the current meeting and mailing reports, programs and circulars, has involved a good deal of labor and occupied a good deal of time.

It gives me great pleasure to say that the active cooperation and advice of the president from time to time have been of great value and I am also indebted to the members of the Executive Board for their willing cooperation and sharing of responsibilities.

I thank the association for the confidence reposed in me and esteem it an honor to be

Its Obedient Servant,

GEO. W. BURCHARD,

Secretary.

SILOS, SILAGE AND COWS.

F. H. Scribner, Rosendale.

Farmers as a class are the most conservative of workers, and as a rule, the last to make up their minds to join in the procession of progress.

For some reason or other the western part of this State has not kept pace with other dairy sections in the erection of silos, and yet those that followed the right principles have obtained the best results, and it is not so much a question now "Is silage good?" but what is the best and most economical way of building silos?

The high prices in lumber may have been a god-send to us in silo building. It has driven us to look for something to take its place, and naturally we look to stone or brick or cement;

and while the cost perhaps is no less, yet being so much more substantial and durable, in the long run it means economy, and the objection that so many bring up as to silage freezing, in a stone silo, is fast disappearing, by the experience of those that have them, who say it freezes no worse than in a wooden one.

Everyone in building a silo must be governed by his own conditions and circumstances. If in his locality stone are abundant, and the cost of hauling is not too great, build of stone; if brick will cost less, use brick; either is equally good.

In planning for my next silo, which will soon have to come, unless some other way presents itself to me more satisfactorily, it will be made in this wise: As we are situated on a side hill, it will be no trouble to get into the ground 10 feet, so the first 20 feet will be of stone; on top of this we will put a sill on which 2×4 studding 20 feet in length will be set, then boarded inside and bricked, then plastered from top to bottom with the best Portland cement. Outside the studding, ship-lap will be used. Such an one as this ought to last a great many years.

The prices of grain feeds were never so high as at present, and as milk and other dairy products have not advanced accordingly, economy in feeding is of greater importance than ever, and I don't know of any way possible to handle corn fodder to get the best results as through the silo. The natural water of green feeds, called succulence, not only makes the feed more palatable, but more easily assimilated and digested, and has a value that the tables of rations have no way of measuring.

The economy of feeding silage in preference to any other soiling crop was conclusively demonstrated in the Pan-American Model Dairy this last year, and as the awards were made on the economic production, the effect of various rations were very closely studied, and in a letter recently received from Mr. S. I. Murphy, herdsman of the Guernseys, he says: "The supply of silage was exhausted about August 5th, and we found it absolutely impossible by any combination of grain and green soiling crops to maintain the flow of milk or production of butter without it, any attempt to eliminate it from the ration being followed by an immediate decrease in production. During

the first part of the season, with well cared silage fed in reasonable quantities, about 35 to 40 pounds, nothing could compare with it for securing results at the least cost; but in the latter part of the season, in their haste to again have silage, corn was put in very immature, and although they ate very heartily of it—some eating as high as 70 to 75 pounds—yet it neither increased the product nor cheapened it." It seems to me this thoroughly corroborates the theory that has always been advanced that there is a proper stage to put corn in the silo, to get the best results.

Now, while we have been considering the good qualities of the silo, let us not forget that there is something back of that, that is of just as much importance, and even greater, and that is, the right kind of cow to feed. Some one has said that good cows "are born, not made." Now, while it is unquestionably a necessity to have good breeding, it is of equally as much importance that they should be cared for and fed properly to have the best results. A calf that has been stunted in its growth and capacity to handle feed is handicapped in every way to become a great producer, no matter how good its ancestry may have been. Oftentimes a heifer has been roughly handled in "breaking in" and has not sufficient confidence in the milker to let down her milk, and possibly may never be so good a cow. And then we have fed wrong and scantily, which also results in a lot of poor cows; but with the best of breeding and care and feed, there will often bob up some that don't pay to keep, and I think the high prices in grain are going to lead us to a weeding out, and getting our cows onto a more paying basis. A few years ago Mr. Vanderbilt wrote: "I want to tell what the Babcock test did for me: it killed eleven of my cows." Now, if Mr. Vanderbilt, who is worth his millions, could not afford to keep poor cows, how in the world can the dairyman who is barely coming out even from year to year afford it?

One very common mistake among dairymen is to postpone the purchasing of a sire till absolutely needed, and consequently has to take up with anything he can find that is the right size,

and he is apt to undo the work of several years in building up. The better way is to keep posted as to the work of some of the best cows, and when one has dropped a male calf that suits, try to bargain for it, and in this way avoid one of the breaks in building up a good dairy herd.

The actual feed cost of a pound of butter at Buffalo was a little less than 10 cents a pound, and some of the better dairymen of the state have done equally well, but this has only been accomplished by having a good grade of cows, with a good feeder and good feed; and I am satisfied that with the grade of cows that some are keeping, and the way they are fed, every pound of butter is costing them nearly 15 cents and frequently more.

In conclusion, would say, I believe it is a better breed of dairymen we want rather than better breeding in cows. I would not be surprised if there were cows right in our own herds that would be awful glad of an opportunity to show what they could do; but poor feed, dry feed and not enough feed, would drive all the good resolutions out of even a thoroughbred in a very short time. As dairymen, let us get a little nearer the front, by getting a better line of feeds, and more digestible feeds—"Ensilage, if you please"—and incidentally we will have a better lot of cows.

DISCUSSION.

A Member: Is your silo round or square?

Mr. Scribner: My silo was built fifteen years ago, in the barn and very cheaply,—only cost about $80 for a 300-ton silo. We have used it ever since, and it has been very profitable; in all these fifteen years I have not had one single failure. The nearest I came to a failure was the first year, when we put in "B. & W." corn which, being too immature, made quite sour silage; but since we have found out the right kind of corn, we have no trouble.

Mr. Aderhold: Last summer I told a dairyman at Water-

town how to build a silo, and I got a letter from him a couple of days ago, and he said he had hauled in the stone and commenced building a silo, and his neighbors were laughing at him. He wants to know how many doors to put in and how far apart to have them. It is to be twenty-five feet high and twelve and a half in diameter.

Mr. Scribner: I think he is making a mistake. I think sixteen feet is small enough, and twenty-five feet is hardly high enough; thirty is better. Such a silo will keep twenty-five cows during the winter.

Mr. Aderhold: But he hasn't that many.

Mr. Scribner: A man that puts up a silo will increase the number of his cows right away; he will find out he can keep them so much more cheaply that he will add to the number. As to the doors, I don't think I would make them much larger than two feet and a half square, and then have a space tied together with your wall—the stone work—perhaps as wide as your door, and so continue on from the top to the bottom; not have a continuous door, because that will weaken your silo, but have it tied together at least the width of your door.

Mr. Phillips: When you built your silo in the barn, you built it square?

Mr. Scribner: Yes.

The Chairman: We hardly ever hear the question asked now in going around to the institutes in this state, Is the silo a good thing? That question is settled. But we do hear many questions asked as to the best way to build a silo, and they are asking that question even down in the parts of the state where they have had silos for a good many years. Now, considering everything,—durability, convenience and the keeping of the ensilage,—what is your idea about it?

Mr. Scribner: I would build it of stone if I had the stone sufficiently handy. If I were on level ground, I would build partly of stone, build into the ground about five or six feet. There is no trouble in throwing the silage out five or six feet, and the best silage is in the lower part of the silo. I think I would build it round.

Mr. Jacobs: I believe it will be better still to throw the silage out from eight feet of depth below the ground. We found in hot weather it kept very much better down in the lower part than in the upper part of the silo.

Mr. Favill: With your experience, would you advise building a silo large enough so as to have it for both winter and summer feeding, or would you build two?

Mr. Scribner: That is a very serious question. When the summer comes we want feed, we must prepare for droughts; and if we have got a good, big silo, your silage is going to keep pretty well. I am satisfied that I will be all right to have my silage all in one. I will have it forty feet deep, and by the latter part of the summer I will get down to the bottom and it will be all right.

Mr. Favill: What I want to find out is whether you insist upon providing silage for summer use?

Mr. Scribner: We have fed silage winter and summer, every day in the year, and I don't know how we should have got through last year without it. Last year we were very short of pasture, and the cows suffered some; but with the silo, we kept them up very close, as we were only two or three dollars short on each cow of what we were the year before, and we would have been a great many dollars short if we had not had the silo.

Mr. Bartlett: I have two neighbors who built stone silos this last summer; one is eighteen feet in diameter and some twenty-four or twenty-five feet deep, and a two-foot wall. Of the other I cannot give you the dimensions. The first one is laid up in mortar, just pointed up with cement, not plastered smooth. The other one is plastered smooth, and as they fed out their silage this winter, they found from eight inches to a foot all around, clear down, that is injured, moldy and spoiled. Now, I would like to know the reason of that. They claim that the wall absorbed the moisture.

Mr. Scribner: I can't explain it in any other way, only perhaps it was too dry. We found out by experience that to wet the top of silage is very beneficial; we always pour several bar-

rels of water on top of the silage after it is all in, and we do not have a bit of loss, only just what little we take off the top.

Secretary Burchard: Which one of these silos was it that had this loss, the one that was plastered smooth?

Mr. Bartlett: Both of them as near alike as could be.

Mr. Scribner: What time did he finish making the silo?

Mr. Bartlett: I think before haying, and it was well dried out.

The Chairman: I have examined several stone silos, some that were made in 1880, and some as far back as 1879, belonging to the Steel Brothers, near Oconomowoc, and Mr. Hayes; and after those silos had been filled twenty years, the ensilage was perfect next to the wall. When they first built them, they did not plaster them up perfectly smooth, and the ensilage was damaged some. Afterwards they pointed them up and made them smooth, covered them with the best Portland cement, and since then the ensilage has kept perfectly.

Mr. Everett: It might have been that the silage was so put into the silo, that when it settled it would draw away from the wall slightly, enough to let air down a little faster than the ensilage is taken out of the silo, and that will spoil the ensilage. Then again, if the wall is not protected from frost, that will damage the ensilage next to the wall.

Secretary Burchard: In my silo that I built a year ago this last summer, I had twelve feet of stone wall at the bottom. Both this winter and last winter the silage kept perfectly, clear out to the wall. I don't know what caused the loss referred to unless, as Mr. Everett suggests, in filling this silo it was not sufficiently tramped near the wall, or for some other reason the silage was loosely thrown in and did not settle evenly. In filling our silo, we are very careful to tramp around the edges and overcome the friction against the sides, which tends to keep the silage up—just as it is in a mow of hay up next to the sides, it doesn't settle as it does in the center of the hay. Mr. Scribner spoke of sour ensilage. What is the objection to sour ensilage.

Mr. Scribner: I don't think, in the first place, it is as

healthy a food. We found it was absolutely injurious to our cows; it caused a kind of physicking which was detrimental. I am sure of that. Then, otherwise, I don't think it has the goodness in it. I think the cornstalk wants to be pretty near maturity to get it in its very best state. After it reaches maturity it begins to deteriorate.

Secretary Burchard: I have been wondering, in recent years, whether the objection to sour silage was not more on account of the lack of nutriment in it than for anything else. If you put in immature corn, it makes sour silage; but I think the objection is not so much on account of the sourness, but that the nutriment is not in it. Now, I want to ask you, Mr. Scribner, where a man must necessarily build his silo on level ground, how deep would you build it?

Mr. Scribner: I would not go beyond thirty feet.

Secretary Burchard: And in that case, how far in the ground would you put it?

Mr. Scribner: I would go as far as I could conveniently; I don't think eight feet would be too much. Of course, there have been cases where gas has formed in silos, and if we go too far below the ground, we might have trouble at some time, so that I would prefer not to go much farther down than the height of a man.

Secetary Burchard: Don't you think a man can have very great success with a silo, if he has twenty feet of depth?

Mr. Scribner: Oh, yes. I have a cousin who made up his mind that he must have a silo, and he started two of them sixteen feet across. He only got them up thirteen feet and he did not have the time or money to finish them, but he filled those thirteen feet, and I never saw better ensilage in my life; so do not let the depth stop you from building a silo. He just built a board roof over the top to keep the storms off.

Mr. Bartlett: I have two silos, not to exceed fourteen feet in depth, and I have always had good success with them. They are getting old and rotten now, and we think we will build stone silos if they work all right. I want to ask, is it advisable to cut all the corn into the silo, no matter how heavy it is with ears?

Mr. Scribner: Certainly; we put in corn this year that husked out 170 baskets to the acre.

The Chairman: What is your opinion, Prof. Emery? Is the silo the best place to put corn?

Prof. Emery: Yes, sir.

The Chairman: The question that Mr. Bartlett raises is often raised. Mr. Victor Louis, out at Palmyra, once said that he did not get the full value of the corn out of the silo where the ears were so heavy, but I believe his latest utterance is to get all the corn you can grow on the stalk into the silo.

I want to tell how some of the best posted men have built silos lately, so you can think the thing over, and take your choice. Mr. H. B. Gurler, who milks 220 cows at De Kalb, Ill., and every quart of the milk sells at 12 cents, feeds his cows ensilage every day in the year, winter and summer. He has built six silos, and the last three are on a little different plan from any that have been mentioned here, and he says now, after three or four years' trial, that that is the best way to make them. They are made round—I won't say anything about what goes below the ground, but describe the wood part. The studding, 2×4, is set up in a circle, from a foot to 16 inches apart. The inside is lined with half-inch stock, bent round, like hoops. On that is put some lath, 16 feet long, running around in the same way, and the lath is what they call dove-tailed; I suppose you folks in this lumber country know what that is. Then it is plastered over with good Portland cement. When a square silo is plastered with cement the walls will spring and crack; but in a round silo, the walls are rigid and it does not crack. Mr. Gurler takes the precaution to go over his whenever it is empty, with a cement wash and brush, so as to make perfectly sure that it does not leak air anywhere.

Now, about two years ago a Mr. Barber, who lives up at Warren not far from here, wanted to build a silo, and he came down to Jefferson county to talk with men who had built. He went to Madison and talked with Prof. King and at the Fort he talked with Governor Hoard and with me. I told him, after talking over the different styles of silos, about Mr. Gurler's, and he

thought a minute, and he says: "That strikes me just right, but I can beat Mr. Gurler's lath; I would have what I call a diamond lath; with dove-tailed lath, it will take a good deal of pressure to make the cement go up and fill the cracks full, but with this diamond lath, it will be a good deal easier." So Mr. Barber went home and built a silo after that fashion, and it seems to be doing perfect work. I was talking with a man only a few days ago that had been in it, and he says he hasn't any idea that that will ever rot, because the cement keeps the moisture from the wood. So, under certain circumstances, that is the cheapest way to build a silo.

A Member: How thick a coat of cement does it need?

The Chairman: As I understand it, they put it on about as thick as they put mortar on a house—half an inch thick, perhaps.

Secretary Burchard: You have omitted the very important consideration of what Mr. Gurler puts on the outside of his silo to hold it together.

The Chairman: It was the inside part I was talking about; I let the outside go. Well, he puts on the outside some more covering, bent around, that holds it together. The inside lining will do that, without the outside covering. He has two or three silos that are in a building, sheltered, and there isn't much on the outside, anyway.

Mr. Aderhold: What is the thickness of that diamond lath?

The Chairman: Half an inch, and it is sawed from inch boards.

Mr. Jacobs: That isn't the same as we call battened lath, made from inch boards by a groove being taken out?

The Chairman: Oh, no, the face is sawed right off.

Mr. Everett: There is still one other kind of silo it may be well to speak of, from the fact that there may be in this section convenient material from which to build it, and that is, the concrete silo. A year ago, I supervised a building for a residence that cost $90,000, all of concrete. There is a silo built of concrete upon the same farm. It is made of pure, sharp sand, one part; Portland cement, one part; and two parts

crushed stone or gravel. After it has stood over night, twelve inches more are added until you reach the desired height. That is on the inside of the barn. Outside, it would have to be enclosed with a wood building, I suppose. That silo is everlasting, made perfectly smooth and durable, and in some localities would be perfectly feasible.

Secretary Burchard: I made an important discovery a year ago last summer in the matter of cementing the doors to my silo as we put them in; and that was, to have some clay mixed up, about the consistency of mortar, and put a little clay around on the outer edge of each door as it is put in place. I found it worked excellently, and it did not prevent our taking out the door when we came to it. It is a very simple and effective way of shutting out the air until you come to take out the door. We have tried everything else, and the air seemed to get in.

Mr. Taylor: We have another plan similar to that. We built a round silo last year, and of course there are two doors, the inner and outer, and when we finished building the silo, we simply put on lath on the outside of the inner door and went over it with about an inch of good cement, and it makes it perfectly air tight. These doors are so destroyed in taking them out that we cannot use them again, but they are made only of half-inch lumber. I believe that is the best way I ever discovered for shutting out air around the doors, just plaster around the outside.

A Member: As I fill my silo, I put the door in place and take a little putty and a knife and smear the putty over the crack, and I have had silage in there four years and it was as good near the door as everywhere else.

Mr. Scribner: We just take a piece of tar paper and put it right over the door, with lath on each side, and we never have any spoiled. Of course you waste the tar paper.

The Chairman: I don't know but I shall have to tell you how the best silo I ever saw was made. It may not be the most economical; it belongs to the Jefferson county poorhouse farm. A few years ago the members of the county board made an appropriation, and directed the trustees of the asylum to build a

silo. Now, the chairman of the trustees was a good man, but he was an old man, and he did not believe in ensilage. I have heard him say a good many times that no animal of his should eat such stuff as that. But he was directed to build a silo, and he was one that believed in getting things right, and he went around and visited silos, and talking to everybody, went to Madison, and then he went to work and built one. The wall is about eight feet from the bottom to the top of the ground, which slopes off from it. Then he made a sill by cutting planks in short pieces to go on top of the wall. Then he set up 2×6 studding, lined it on the inside with half-inch stuff, on the outside with half-inch stuff, and put one tier of brick on the outside, making a four-inch brick wall, and the same on the inside, and on the inside it was plastered with Portland cement. It keeps the ensilage perfectly; it has got two brick walls and an air space between; no frost ever did get through and probably never will, and the county board this year made an appropriation and directed them to build another silo, because they have increased the amount of stock that can be kept on the farm very largely, and it is self-sustaining.

Mr. Taylor: I want to make an amendment in the matter of this brick wall.

The Chairman: I was not advising this, I was simply telling how the best silo I ever saw was built.

Mr. Taylor: You can put up one this way, of brick burned hard; you can get them for about two-thirds of the regular price and put them up flatways in your silo, and you need not put any cement on the surface, if you don't want to. Leave it that way for awhile, and if you find it necessary to do it afterwards, you can do it any time when it is empty.

Mr. Philips: You don't need to take near so much pains as in laying your stone wall; you can put those brick up yourself. I laid the brick myself, though I confess they were not very smooth.

Mr. Taylor: Did you lay them the long way or endways?

Mr. Philips: Stood them up endways. Your circle is all right.

Mrs. Howie: There is something quite as important as silage. We want to know something about those that are going to eat this silage, so as to get good returns for the silage.

Mr. Everett: What is the best kind of cow to eat that silage?

Mr. Scribner: Oh, for my part, I would say Jersey, but everybody don't agree with me. We have in our neighborhood all kinds of cows, Guernseys and Holsteins, every breed.

Mr. Philips: Say "good cows."

Mr. Scribner: Yes, I do say that, but Jersey cows are the kind I like. Prof. Emery asks me to tell how large my farm is. We have a small farm, only eighty acres. That is large enough for me, and we find we can make it profitable. The hired help question is the great question, but if we farm it right and get the right kind of help, we find we can make it profitable. We turned off from our eighty acres twenty-three hundred and twenty-five dollars' of cream from twenty-six cows; not so bad, after all. Besides that, we have the skim milk to feed to our calves, and the calves to sell or keep, as we wish.

Mr. Favill: What do you do with that cream? Do you sell that to the village creamery?

Mr. Scribner: No, we don't. It is every man's privilege and duty to do the best he can for himself, find the best market. We live about 70 miles from market. We raise all the coarse feed for those cattle. We are keeping at present between 60 and 65 head of cattle, and raising all the coarse feed and also selling some grain to help pay for the bran that we buy.

A Member: What would that cream bring at a creamery, not what you can get at a special market?

Mr. Scribner: I don't know that I can answer that question, because I never patronized a creamery but one year in my life.

Mr. Taylor: What per cent. of cream do you sell, and what do you get for it?

Mr. Scribner: We are selling an average 25 per cent. cream, at 60 cents per gallon.

The Chairman: That would be about 26 cents a pound for butter at the same rate.

Mr. Scribner: There is nobody but what can get a market for his butter at 25 cents a pound for the year. If I did not have this cream business, I should make my own butter. In fact, I used to, but as I got more bald headed I didn't like to work quite as hard, so I found a market where I can ship my cream. I had rather drive to the depot than churn.

Mr. Taylor: The Milwaukee people can afford to pay two cents for every per cent. of butter fat in the cream; that is about it, isn't it?

Mr. Scribner: I think that is as good as 65 cents, about that. I should like to answer Mrs. Howie's question, and I don't know any better way than as intimated in my paper: get a good sire. That seems to be the foundation. All of us have some good cows, and we want to build up our herds, saving only the good cows, and with the good care and with good feeding we have been talking about so much in our farmers' institutes and in our dairy meetings, it seems as though we all ought to know pretty nearly what to do. The trouble is, we don't do it. I am positive we all know how to do a good deal better than we do.

Secretary Burchard: Why not emphasize what Mr. Vanderbilt did, reject the poor cows?

Mr. Scribner: The Babcock test will show what to do.

Prof. Emery: What has a cow got to do in order to stay in your herd?

Mr. Scribner: She has got to be able to make 400 pounds of butter, or she doesn't stay there.

Mr. Favill: What will you do with her?

Mr. Scribner: Sell her to Mr. Favill, if I can. I have two cows,—one made 406 pounds and the other 418 pounds in their first years, but these things don't come about by "happenstance." I believe they will make 600-pound cows yet, if nothing happens. They are only two years old.

Mr. Taylor: Does it cost 400 pounds of butter to keep a cow a year?

Mr. Scribner: Why, no. If it did, I wouldn't keep them.

Mr. Everett: Wouldn't you say, Mr. Scribner, to the farmers who want to improve their cows, that if they will produce 200 pounds of butter a year on the farm, you will advise them to keep them, and breed them to a good, pure-bred dairy sire and gradually increase the yield?

Mr. Scribner: I am sure I would, yes. I would not say for them to discard their cows unless they produced 400 pounds.

Mr. Everett Do you buy any feed?

Mr. Scribner: Oh, I buy lots of it. We raise all the coarse foods, like hay and corn, but we buy a great deal of bran and gluten food.

The Chairman: Do you get any income from your stock besides the cream?

Mr. Scribner: Oh, yes.

The Chairman: Will not the proceeds of the skim milk buy he grain food you have to buy?

Mr. Scribner: I think so; yes. We feed all our skim milk out on the farm, to the calves, and we find that profitable.

Mr. Bartlett: In what proportion do you mix your gluten feed with the bran?

Mr. Scribner: We do not mix them—that is, not in bulk together. We feed according to the individuality of the cow; we feed what we think each cow needs of bran, and then what we think each cow needs of gluten, and let the cow mix it herself as she eats.

Mr. Jacobs: It seems to me that from cows producing 400 pounds of butter a year, you would get too much skim milk for the calves.

Mr. Scribner: They eat it all right. We don't mind feeding a calf that is a year old. Of course, with that breed of cows, we have quite a large per cent. of butter fat.

Secretary Burchard: About what is the average yield per year of your cows, in milk, in pounds?

Mr. Scribner: About 7,000 pounds; I guess a little more.

A Member: What do you do for the summer pasture with 60 head of cattle on your farm?

Mr. Scribner: We summer pasture a great deal out of the silo. We have three silos, and we put 100 tons in each one.

Prof. Emery: How many acres of corn do you raise?

Mr. Scribner: We raised last year twenty-two acres, and we put seventeen of that in the silos, and that seventeen acres will carry the 60 head through the winter. That includes young stock and all. Of course there is some of this stock don't eat very much silage.

THE PATRON AND THE FACTORY: THE DUTY OF EACH TO THE OTHER.

E. L. Aderhold, Neenah.

From my knowledge of the quality of cheese and butter that is made in Wisconsin factories, I am convinced that, under the trier of a critical judge, the average score would not exceed 90 points of perfection. I am likewise convinced that the average quality would be improved from five to eight points if the factoryman and the patrons would perform the duties they owe each other.

The factory operator is the most conspicuous figure in the bunch, and his duties are many. He should equip himself with sufficient knowledge to enable him to manufacture a superior article. He should be a judge of the finished product. He should be careful what sort of factory he engages to work in, because in some of them conditions are such as disgust and demoralize a well meaning man. He should demand good machinery and sanitation and insist on having them. He should understand milk testing, and be honest about it. He should be exacting with himself and patrons, but not in such a manner as to make himself obnoxious. He should not knowingly mix low grade with high grade milk. He should strive to enlighten his patrons by seeing to it that they are supplied with Farm Institute and similar bulletins, and by object lessons, factory meetings, etc.

DUTIES OF PATRONS.

The paramount duty of the patrons is to furnish the factory with milk that is *pure*. By pure milk, I mean that it shall be free from food flavors, stable odors, and filth.

Mr. H. B. Gurler, of Illinois, a producer of pure milk, in an address last winter said: "If we had perfect milk, we would have to have a new score card," and "all fine goods are made from high grade milk." I conclude from this that very little, if any, *fine* goods are made in factories. Mr. Gurler gave the following illustration: "If a man goes into the stable and remains but a few minutes, then goes into the house, the women will tell him where he has been; his clothing has absorbed the stable odor."

The fact that milk will absorb odors as readily as clothing teaches us that if the milking is done in a filthy or illy ventilated stable, or if the milk is exposed to objectionable odors, it *must* suffer in quality. For this reason, and because cows should breathe pure air, it seems absolutely necessary that stables be kept comparatively clean and that a system of practical ventilation be connected with each one.

I find that the milk of a very large proportion of patrons has a black sediment at the bottom. This indicates that the dirt and dung on the udder are allowed to drop into the pail. This filth carries with it injurious germs.

Now, let us view the folly of such neglect. Let us briefly consider what it costs to produce milk: It requires a big investment—a farm, buildings, cows, utensils, etc.; the cows must be fed 365 days in a year; they must be milked twice a day. Look at the investment, expense and labor required to produce the milk; then, because of a little carelessness in the last act of production, we allow the quality to suffer. We foolishly tear down with one hand what we have built up with the other; we produce an impure article of food where with the same expense we could produce a superior article.

The cost of milk lies in the investment, food and labor; it costs nothing to keep filth and impurities out of it, yet I be-

lieve that more than 80 per cent. of the patrons of Wisconsin factories are, as a rule, furnishing milk that contains filth and stable odors. Thus the paramount duty of the patrons is almost entirely neglected.

The duty of the patrons next in importance is to see to it that their factory is so complete as to permit of economical, high grade work. They should study the construction, equipment and sanitation necessary for thorough work; they should be willing to pay for such work, and insist on having it.

A set of patrons can have any kind of factory they desire if they will work together intelligently; they have a right to insist on their demands if they are willing to pay for what they demand. They should insist that the maker visit them on their farms at milking time for the purpose of inspection and instruction, and they should back him up in his efforts to improve the quality of milk. Both maker and patrons should practice cleanliness in their work and the spirit of good will should prevail between them.

DISCUSSION.

Mr. Scribner: You spoke about food flavors. Don't we find flavor in any kind of food? And how are we going to get rid of it?

Mr. Aderhold: Yes, we do; but I don't suppose it is necessary to get rid of it where you ship your cream to the city. The trouble with food flavors comes particularly from foods that have a very strong taste, like turnips, rape, garden stuff, cabbage leaves, weeds, etc., also from silage if it is not fed at the proper time. If I had a cheese factory I would not allow the feeding of rape or turnips, nor garden stuffs; nor even potatoes, I think. The trouble is, if you allow one to feed it, the next one has the same right.

Prof. Emery: When is the proper time to feed silage?

Mr. Aderhold: After you are through milking, I think, so that you have not the odor in the stable while you milk.

Mr. Scribner: Don't you think there is just as much trouble comes from stirring up your silage in the stable as from feeding the silage itself?

Mr. Aderhold: Yes, I think there is.

Secretary Burchard: You have read the experiments tried at Madison of impregnating milk with silage odors, I suppose?

Mr. Aderhold: I think I read them some time ago, yes. I think the milk took the odor very readily.

Secretary Burchard: Oh, no; they could not detect it at all, and they had the products made and shipped to Chicago, and they could not detect the silage odor in the products at all, nor in the milk.

Mr. Favill: Is it a fact that the milk that is warmer than the temperature which is around it will absorb odors? Doesn't it have to get colder than the atmosphere in order to take on odors?

Mr. Aderhold: No, I think it will absorb the odors. We conducted an experiment at Madison a couple of years ago at the Experiment Station, and they found that it would absorb odors, whether warm or cold, and I think they had the same effect with silage, they found that it absorbed as readily when it was warm as cold.

The Chairman: I believe that wants a little explanation. These odors, or gases that pass off from the milk, are passing off all the time, and I don't think the odors that are in the stables get back into the milk, because the current is all going the other way; but the atmosphere is full of bacteria, or something, that get into it. I have been asked if separating milk in the stable would not impregnate it with bad odors, and I made the same statement that Mr. Favill has made here, and Dr. Babcock was sitting near by, and I did it with fear and trembling, but I had to say it; and so I turned to Dr. Babcock, and I said: "Isn't that so?" And he said, "Yes."

A Member: That may be true, but the odor——

The Chairman: I don't know what the difference is between an odor and bacteria.

Mr. Aderhold: In regard to the duty of the factoryman to the patrons, I will speak of one thing more. At a factory last year in Sheboygan county, I inquired as to the size of each patron's dairy, the number of cows he was milking and the average production per cow for the season, also the richness of the milk. I found the cows of the best patron averaged 6,000 pounds of milk a season, and the poorest patron's cows averaged 3,500 pounds of milk; and the test of the milk of those two different patrons was alike, one as rich as the other. I estimated that they fed them $28 worth of food apiece per year. Now, this poorest one got just exactly $28 a head for his cows, and the other one got $48; and that proved an object lesson to hold up before those patrons that was very effective.

A Member: I understood you to say high grade and low grade milk should not be mixed. I wish you would explain the reasons.

Mr. Aderhold: Well, it is too bad to mix filthy milk with clean milk.

A Member: Oh, I thought you meant high testing milk.

Mr. Aderhold: No, I didn't mean that. I mean the purity of milk when I speak about grade. Milk that tests three per cent is just as good as the other, only it takes more of it. You can make just as good goods of it.

Mr. Favill: Make just as good cheese out of three per cent milk as you can out of four or five?

Mr. Aderhold: Yes, if it is normal milk. When you get up to five or six per cent, it makes a little difference.

Mr. Favill: What is the advantage of rich milk, then?

Mr. Aderhold: Well, I don't know as there is any for the cheesemaker.

Mr. Favill: Don't you make more?

Mr. Aderhold: But you would not have so much of it. The man that has rich milk probably wouldn't have as much as if it was poorer in fat.

The Chairman: One hundred pounds of five per cent milk is worth more than one hundred pounds of three per cent milk.

Mr. Everett: The cow that gives the higher per cent milk has a greater value for cheese or butter making.

Mr. Aderhold: The cow that gives the highest number of pounds of butter fat for the food she eats is the best cow for the cheese or butter maker, either one. It doesn't make so much difference how rich the milk is.

The Chairman: Is the amount of cheese in proportion to the amount of butter fat in the milk?

Mr. Aderhold: It is, within certain limits. When you go to extremes, it does not quite conform to the proportion.

Mr. Favill: Will the amount of butter and cheese be the same?

Mr. Aderhold: Very nearly. Now, I haven't any experience in the yield of cheese per 100 pounds of milk, only as I find it tests in the cheese vat. I have had no experience in making up three per cent milk alone, or five or six per cent milk, because we don't find it averaging that way in the cheese vat, but I find where the cheese vat tests from 3.5 up to 4.5 that the yield of cheese was exactly in proportion to the tests, providing the other conditions were equal. In the fall, when they have the richest milk in the cheese factories, or where they make up the milk every other day and and it is older, for that reason they lose a little yield.

Question: Did you say you wouldn't feed cows rape, turnips or rutabagas?

Mr. Aderhold: I didn't mention rutabagas. The others I did.

A Member: I had no kick coming when I fed rape last fall.

Mr. Aderhold: You took your milk to a creamery. They take almost anything at a creamery.

Mr. Taylor: Do you think rape injures the quality of butter?

Mr. Aderhold: I am not a buttermaker. They say it will not. I believe it would.

Secy. Burchard: Of course all food flavors milk more or less. When you turn your cows onto a fresh pasture, particularly a clover pasture, you can easily detect the clover flavor in the milk; so when you feed silage to excess you can detect the silage odor in the milk. Now, I like the silage flavor fully as well as I do clover flavor or rye odor.

I think you can feed turnips or rape or clover or almost anything if you will only feed it with discretion—some sort of judgment,—and your milk won't be seriously hurt even for cheese making.

Mr. Aderhold: I didn't say it couldn't be done. I said I wouldn't permit it at all, because some of them would abuse it.

Mr. Scribner: In the winter where would you advise a man to keep his milk over night. The odor of cooking is easily detected if it is put in the kitchen.

Mr. Aderhold: In cold weather, when there isn't a suitable room,—that is, a room where the milk won't freeze and the air is pure, I would advise to cool the milk down thoroughly, and close the can and take it into a room where it won't freeze—not into the stable.

The Chairman: You haven't said anything about the care of the utensils. I have been at creameries where I saw a yellow kind of substance stuck onto the can that I could scrape off with my thumb nail. Is that anything that does the milk good or harm? And then about the whey cans. In Canada I found most of the cheese makers wouldn't allow whey to be carried home in the same cans that the milk was brought in. Mr. Ballentyne, a member of parliament, enforces that rule. He found in some places the cans were allowed to stand out in the sun, with the whey in all day; in others the whey was emptied out, but the cans were not washed, and he just said, "I can't have it and I won't have it." He had to have good milk to make good cheese. I don't know whether Canadian cheese is bringing more than Wisconsin cheese, but I do know it is better cheese, and it is just because they have rigid cheese inspection. There were twenty-nine inspectors in the Province of Ontario just traveling around, inspecting dairies, cans, stables, factories, everything.

Mr. Aderhold: I don't think there is a factory in Wisconsin but what would receive good by regular inspection.

The Chairman: I think it would do more good to be irregularly inspected.

Secy. Burchard: Why shouldn't the cheesemaker do that inspecting?

Mr. Aderhold: The patrons ought to insist upon it.

The Chairman: The patrons usually insist on his not coming around. They are doing things they don't want him to see.

Mr. Everett: The trouble is, where one cheese maker insists upon more cleanly milk a farmer can drive right along to the next cheese factory and they will be glad to take his milk in.

Mr. Aderhold: Yes, we have those conditions in some localities. We have other makers who control their patrons and make them take good care of things, and still they don't antagonize them. It depends a good deal on the man. Of course, the worst place is where they have the pound for ten system. That seems to stop all progress. But that will be a thing of the past in the near future.

Mr. Sweeting: For the past two years Wisconsin cheese have brought more money than either Canadian or New York.

Secy. Burchard: We have a better climate than either Canada or New York.

Mr. Aderhold: I believe that if we did not make anything but fine cheese we could sell them all right at home and get two cents a pound more than we are getting. The average consumption is only three pounds of cheese per head a year. Our population is growing more rapidly than the cheese output, and besides that, this three pounds is not all good cheese. If it was, they would eat four, and try to get more.

Mr. Sweeting: Why do you say Wisconsin cheese is better than New York cheese?

Mr. Aderhold: I don't know that there is much difference in quality, I don't know much about New York cheese.

Secy. Burchard: At the Pan-American the Wisconsin cheese did not score quite up to the New York cheese.

The Chairman: Our factories and creameries are too near

together in many places, and the consequence is that poor milk, if refused at one place will be taken at the next, and there is no chance of reform. The factory men are afraid to complain, as I have found in many places. They ought to join together and refuse to take any milk that is rejected at other factories.

Secy. Burchard: Mr. Aderhold, who has just been reading the paper, has been for some years one of the traveling cheese instructors employed by this association and has had abundant opportunities to observe the defects in our system of factory management, particularly with reference to cheese making and what he has said ought to receive very serious attention at your hands. There is probably no one in the State who has had better opportunities for observation along these lines, particularly with reference to managing patrons and getting at them in the right way. I think he would tell you that it is not a good plan for a butter maker, or a cheese maker, to go at his patrons in a sort of hammer-and-tongs way; it generally will not work. But if he will take him off in a quiet way and talk with him in a friendly style, and particularly if he will go out to his place and suggest improvements, he can have a very beneficial influence over the patrons, and he can help them individually, and help them collectively, and thereby help himself and the community. Their interests are all common. It will pay them all to have the very best grade of goods made. Perhaps the weakest point in our cheese and creamery factories today in Wisconsin is the lack of confidence and co-operation between the man who furnishes the milk and the man who manufactures it into the product that goes onto the market.

I am very sorry that Mr. Adams, who was expected to be here this afternoon, will not be with us. He was in Washington, but received a telegram about a week ago that his father had suddenly died at Madison, and he finds it impossible to be here.

Senator Stout invited the members of the Convention to visit the Manual Training School the next day at 1:15 P. M.

Mr. Philips: Our creamery is made up of patrons pretty nearly divided between Germans, Norwegians and Americans. I brought with me from my creamery some figures showing the average of a whole year to be 21 3-4 cents a pound for butter fat. That is net, after paying for all expenses. We paid out to the farmers, after paying all expenses, $131,176.64. The expense included gathering the cream, taking the butter to market, paying the manufacturer and the butter maker. It is put on board the cars for less than two cents a pound.

Mr. Everett: I think that report is valuable as showing that it is possible for a lot of farmers in a community to do well at dairying at 25 cents net for butter.

The Chairman: There is a mistake there—21 3-4 cents for butter fat would be 18 3-4 for butter.

Mr. Phillips: No, you are off, you will have to go to the "short course."

The Chairman: I am right. Butter fat is worth more than butter. Six pounds of butter fat makes seven pounds of butter.

A Member: I would like to ask about the over-run. We get 12 per cent, 15 per cent, and I have seen by reports that that makes all the difference in the world on butter fat. What I mean is, he pays so much for the test, and his over-run is on that test, on his cream he has a certain per cent of over-run on his cream.

Secy. Burchard: He is not figuring that way. He is paid by the amount of butter fat, and then they make it all up and sell all the butter fat, and all the money is divided among all the patrons in proportion to the amount of butter fat, so it don't make any difference about over-run. I wish that over-run talk could be knocked out of everybody's head. It is the butter fat they are after, and that is all.

The Convention adjourned until 9 o'clock A. M. the next day.

Convention met at 9 o'clock A. M. Wednesday, February 12, 1902.

President Goodrich in the chair.

POWERS FOR FARM USE.

H. C. Taylor, Orfordville, Wis.

There is a demand on most farms for a suitable power.

The old sweep power, brought into use by the farmers about the time the traction engine supplanted them for threshing purposes, have proved in many cases impracticable. Although purchased at a low price as second-hand machines and used to advantage by some, in other cases they served a good purpose of demonstration to the farmer that the right kind of a power would be a profitable investment. Many of our dairy farmers have already invested in and are now using some of the better class of power. Others have felt the need of it and are contemplating the purchase of one, and the object of this discussion is to record your experience and opinion.

Of the many uses for farm powers I have classified them as follows:

Sawing wood, 5 per cent of total needs.

Running ensilage cutter, cutting fodder and husking corn, 35 per cent.

Grinding feed and shelling corn, 20 per cent.

Running cream separator and churn, 35 per cent.

Pumping water, 5 per cent.

This is a general classification and will vary on different farms as a power is required that will perform all the work for these various needs. It is therefore apparent that sweep power cannot be regarded as practical.

The tread power comes in next and has been used by some for part of the work such as running the separator, churn and pumping and in this capacity they have proved a practical machine and

by using the head of the dairy herd to run the power, he has been kept in good health and some think there is nothing like it.

Only a few have used them for more than 2 or 3 years for filling silos and grinding feed, securing some other power for this heavy work. Very naturally they have turned to the steam engine.

Regarding this power, I will say with the farmers that understand caring for and running a steam engine, they have been satisfactory, provided an engine of suitable size has been secured. Usually the man casting about for a steam outfit will settle on a second-hand engine because of price, not fully considering its adaptability to the work required. This buying an engine all out of proportion to work required has ruined the usefulness of this power. We now come to the consideration of the gasoline engine.

The gasoline engine is a powerful, economical, safe and practical power, far ahead of any power I know of for farm use. They are built of various sizes suitable for all classes and grades of work and on the dairy farm fill every requirement completely as a power, but some object to it for the reason it does not furnish steam for use in the dairy house for cleansing dairy utensils. The gasoline engine requires but very little skill or attention to operate it. A 5 or 7-horse power gasoline engine can be run 10 hours for 50 to 70 cents doing full work for which it is built. I would recommend to locate this power permanently in a building next to or adjoining the creamery or milk room. This is usually located near to the well and is also a good place to locate a steam engine. The engine should be placed permnently in relation to other buildings in which machinery is likely to be placed. This engine will run a cream separator perfectly using no more gasoline than is required to perform this work. It will run a 16-inch ensilage cutter either to cut green corn or dry fodder. It will run a 2 or 4 roll corn husker and cutter transmitting the power 50 to 100 or 150 feet by means of rope run over groove wheels that are made to run fast.

DISCUSSION.

A Member: I think if Mr. Taylor wil stand right up and tell just how he does this work on his own farm it will be the best way to open the discussion.

Mr. Taylor: We started with a sweep power. I gave $15.00 for the sweep power, a triple gear, 10-horse power, and we filled the silo with it three years. We then used the 8-horse power steam engine. I learned to run the engine myself, and after a time I got so I could run it all right, and we used that three years to do our grinding and filling our silo. We then purchased a 5-horse gasoline engine that we used for seven years for filling our silo and cutting our fodder. This is located in a building which stands about three feet from the creamery building. The creamery building is about 14 by 18, and we work up all our cream there into butter. The counter shaft runs from the engine room through the creamery room right straight over the leader, and there is a little shaft attached. We attach the power to the pump so we can run the creamery machinery, or we can run the pump with this engine. We have a feed grinder in this little engine room. I wish it was closer to the power and the belt should run directly from the engine to the grinder. It is a steady grind and you must have everything tight, and you want all the power you have got. Our ensilage cutter is just 100 feet away from the engine room and the two shafts 100 feet apart. We transmit this power with a 3-4 inch Manilla rope. It cost $3.00 at the time I purchased it, and it run five years without being spliced or giving out. When we had to get a new one we got a little larger one.

Mr. Hoard: Does that rope run onto the engine, that grooved pulley on the engine?

Mr. Taylor: No. We have a counter shaft in the engine room, and belt from the engine to the counter shaft, and then outside of the building is this large rope wheel, a grooved wheel, three feet in diameter, which runs 650 revolutions in a minute. The wheel on the cutter is put right onto the cylinder shaft, and

that is 2 1-2 feet, and the knives right close to the center. That rope runs very fast.

Now I was surprised to find that this 5-horse power engine run a 12-inch cutter and kept us all busy putting corn in. In fact, we could cut a ton of green ensilage in six or seven or eight minutes. Then we got a 16-inch cutter, and I am fully persuaded that a 16-inch machine will cut a ton of green corn silage requiring no more power than a smaller machine, it don't scatter.

Mr. Hoard: Tell us how you handle your corn from the field.

Mr. Taylor: Three years ago we raised an immense amount of corn, and we cut it all up and filled the silos and then had a lot left out in the field, and we stacked it. Then we went to husking it in the field, and the boys didn't like to do that, and some of them got sick and they laid all their sickness to husking corn in the field. I knew what they were after, and I bought a 2-rowed husker and we have placed it right where the cutter is, I might say that our first silo was built in the barn, and we run this cutter carrier right up into the end of the barn, into the bay adjoining the silo and clear up to the peak, and let the silage fall onto a door and fall off its own way into these two silos, the silo is divided in the middle. And we have that advantage that you should always study in locating machinery. We use this same carrier, slip the cutter away and put the 2-rowed husker with a 16-inch blower there and we husk our corn with this very satisfactorily. Mind you, we had a carrier and we had a cutter and we kept those knives sharp, and we can run a load of corn through this husker with less power and do it quicker than we could run it through the cutter. Of course the corn ears do not go through.

Mr. Hoard: You take these stalks from the field, about three loads to a stack, and when you want to use the cut corn stalks you husk this corn at the same time and cut the stalks into 1-2 inch lengths?

Mr. Taylor: Yes. And all it costs us to husk the corn is the one process, and it is in splendid condition when it is done. Of course we have two silos and fill them with green fodder, but

we want some dry fodder besides. This husker will fill a wagon box, with ten inch sides, in an hour and fifteen minutes to an hour and thirty minutes when it is a good day. There is a great difference in days about husking corn with a corn husker. A good day is when it is just damp enough for the stalks and leaves not to fly, when the sun don't shine. There is great danger of cutting too much at a time. You only want enough for a few days. If you cut too much it is about like your wife cutting up all the bread in the house so as to have it on hand.

Mr. Everett: After your experience, which kind of power do you prefer?

Mr. Taylor: I prefer the gasoline engine by a very large majority.

The Chairman: How many different kinds of work can you do with it at the same time?

Mr. Taylor: We can run the separator, but we can't churn at the same time; we have not our counter shafts so fixed; we can't run both the separator and the churn on the same pulley and have it fixed so that it wouldn't turn too fast, but it will run a separator perfectly. But be careful not to set your separator too close up to your power, it will buzz away too fast.

The Chairman: Do you have a flange on the pulley of the separator?

Mr. Taylor: We have two pulleys on the separator; one is a loose pulley and one is a tight one.

The Chairman: There should be a flange on the one that runs on the separator, so that if the belt slips a good deal it would not throw off, and you can run it then with a very loose belt, and if you don't run it with a loose belt you will wear out your separator very soon.

Mr. Taylor: They sent the separator out without any flanges on the pulleys. We have an attachment, a cast iron finger that keeps it from running off. Of course any ordinary farmer has ingenuity enough about him to arrange all those things. We can go to this engine in the morning without any preparation whatever, and as quick as you can take your coat off, or put it on, you

have got the engine started, and before you can get the belt on it is running to its full speed.

The Chairman: So you don't waste fuel in getting up steam?

Mr. Taylor: No, nor time, and there is no man standing around watching it.

The Chairman: Some people think gasoline is very dangerous, how is that?

Mr. Taylor: No, it is always safe enough; you want to keep it out-doors. Our tank is in the ground just outside the building. The supply of gasoline is pumped into the reservoir—I should think about half a pint of gasoline. I wouldn't run a machine where the gasoline is kept up above and conveyed down with a rubber pipe or tube. I would have one of those that pump up and is out of doors.

Mr. Hoard: What did your gasoline engine cost you?

Mr. Taylor: For this 5-horse gasoline engine I have an eight barrel tank that supplies the boiler. These and the counter shaft and these two rope wheels cost me $300.

A Member: How large an engine would you need to run a husker and sheller?

Mr. Taylor: Oh, you would want a large engine, 8 or 10-horse power.

Mr. Dickson: I understand you run a dairy. Now, what means do you take to provide hot water for cleansing the utensils?

Mr. Taylor: We have in the creamery a boiler that is made to furnish steam for a 3-horse engine. It is one of these upright things. We set that in the creamery, fill it with water and it makes steam.

A Member: You have to dip out some of the water occasionally and throw it away, the hot water in the engine?

Mr. Taylor: No. You see our creamery being here and our engine room here, our gas tank is away down 100 feet away. In the creamery is an eight-barrel tank. We attach a rubber hose from that tank to our engine for the purpose of cooling it and letting the water run right along. We have a faucet on the engine, so we can get a larger

or smaller amount of water. When we want hot water in the summer we stop that little faucet until it gets real hot and then we draw out a pailful of hot water. It takes a pretty hot engine, you know, to burn the oil. Then there is another thing, that is the oil cooler that they have on engines now-a-days, and especially for out door work you ought to have one of those. Of course we can't get steam in our creamery, although we get plenty of hot water.

Mr. Hoard: You paid $300 for this engine. Now how much does it cost an hour to run when you are using it?

Mr. Taylor: Well it varies. You can run it at from fifty to seventy cents a day of ten hours doing full work, although there is really very little of the time you are doing full work.

Mr. Hoard: I want to get at what expense the power is a year. Now the $300 at 6 per cent interest amounts to $18 a year rental that you are paying for that power, so far as the engine is concerned; add for the depreciation and repair—can you give us any idea of about how much your engine costs you during the year?

Mr. Phillips: How many barrels of gasoline have you bought?

Mr. Taylor: I didn't keep track of that, I didn't want to.

Mr. Hoard: But we want you to. That is what we are here for.

Secy. Burchard: He has stated the cost per hour.

Mr. Taylor: I have never kept track of the gasoline; we bought it by the barrel, ten or fifteen barrels at a time.

Mr. Hoard: Do you think it costs you $50 a year?

Mr. Taylor: No, about $35; perhaps with interest and everything $50 a year. I can use that engine all day in cutting corn fodder and pay a man $1.50 a day, and make him earn it too, without wasting any time standing around. You simply have to slip on your belt and you are working.

The Chairman: Does it start real easy?

Mr. Taylor: I can start it all right. They have got a patent starter on it.

The Chairman: Tell how much work it is to start it. They may think that a ten year old boy can start it.

Mr. Taylor: The balance wheel on the one I have is quite heavy, and you have an electric spark or a torch. If you have a torch it will take twelve to fifteen minutes to get them up to where it will produce an explosion, according to how much of the tube has been burned already. After you have got that lighted you take hold of this big wheel and about the fourth revolution it will be going itself and it will go all day. You get your little gasoline engine according to the size you want and locate it nicely, and it will be a complete pleasure and satisfaction all the way through. We bought a barrel of gasoline, paying 11 cents a gallon for it the 3rd day of December, and put it into the tank. We ground our corn, cut our fodder, used it twice a day, and we haven't got any since. I consider it a wonderful thing. If you are prejudiced against it, cut your prejudices down and step on them.

Secy. Burchard: What is the benefit of a stationary engine over a mounted engine?

Mr. Taylor: What do you want a mounted engine for on a farm, unless it is to saw wood?

Ex-Gov. Hoard: The environment on my farm is entirely different from yours.

Mr. Taylor: You can use this power anywhere up to 200 or 250 feet away very nicely with a three-quarter inch manilla rope running over a grooved wheel from one building to another.

Prof. Henry: Can you turn corners with your rope?

Mr. Taylor: Yes, and go up and down hill. We don't have to, but you can do it. You can run it wherever you can run a rope by having a wheel on the corner.

The Chairman: Why not have a mounted power?

Mr. Taylor: You can have it if you want, but I don't think that farmers do, generally speaking. You can certainly get your wood sawed cheaper than you can do it. Of course you want a supply of wood on the farm to furnish all your stoves part of the year and the kitchen stove all summer. You go to the woods and get your wood ready and draw it all into one pile, and in

every community in Wisconsin there are men who make a business of sawing wood. There are several outfits in our neighborhood.

These men will come with their power and drop down by the side of your woodpile early in the morning and they will saw up every stick of that wood and charge you five or six dollars for it, and the thing is done for the whole year. I don't believe it pays a dairyman to bother to saw wood. I am in favor of the farmers doing all the work they can themselves, we have three men the year around and we have a saw of our own, but I am sure it don't pay us.

The Chairman: I don't agree with you.

Secy. Burchard: Your conditions in Rock county may differ from those in other places. I am on the outlook for a power on my farm next year, and I am very much inclined to get a gasoline engine, and the question is whether I shall get a mounted power, or a stationary power. One reason for thinking the mounted will be the better, is that after I get through filling my silo, I can go down to Hoard's and fill his silo with my mounted power. Then another neighbor may come along and say, "Can't you come and bring your engine and fill my silo next week," and I say, "Yes, I can." With one mounted power in the neighborhood, you can do the work of two or three stationary outfits. Now, what is the objection to the mounted power? Won't it run exactly as well; or won't it last as long? Is the vibration on the wagon going to interfere with the operation of the machine?

Mr. Taylor: I think not.

Mr. Favill: How about having that power at home to separate your milk if you are off filling silos for Hoard?

Secy. Burchard: You can drive home, I have got to go home to milk anyway.

Mr. Taylor: The man whose silo you are filling would find fault with you if you didn't stay as long as you could see, and pretty soon you would be saying, "I wish I hadn't a mounted engine, I have been an old fool long enough." I tell you when you want to go away from home and do threshing or filling silos

for somebody else, you better sell your cows and go at it and get a good outfit, and do a good day's work every day, and give every man satisfaction.

Mr. Scribner: I have used a treadpower on my farm nine years, and it has never failed to give satisfaction. I heard a statement made the other day, and I am inclined to agree with it, that there never was a gasoline engine but what would fail to go some time or other, even with the best experts in the country. When I can get a gasoline engine that will go every time, I will buy one.

Mr. Taylor: You needn't wait.

Mrs. Howie: Mr. Scribner, I advise you to wait before you get it. I have a Brown engine, a 7-horse-power, and I never had a lot of men all ready to fill my silo that that power did not give out.

Mr. Bartlett: Do you consider dry corn fodder cut as you cut it in your cutter as good to feed the cattle as the shredded corn fodder?

Mr. Taylor: Oh, yes, there is no material difference if you feed it out pretty soon after it is cut. If it is to lie a long time, I think the shredded fodder will deteriorate much faster than the cut corn fodder. You must remember one thing: that the shredder runs harder than the cutter; it takes more power to run the blower than the cutter.

Mr. Scribner: What about putting the blower attachment onto the cutter?

Mr. Taylor: I would not recommend you to do that, unless you have got thirty per cent more power.

Mr. Bartlett: Wouldn't it be economy to have another man rather than the extra power?

Ex-Gov. Hoard: It is simply a question of whether thirty per cent was more economy than the other man.

Mr. Taylor: We don't cut enough fodder at a time on our farm to need to consider that question. If you wanted to run that blower, you would have to have the power big enough to run it. We had a nine-inch buhr grinder, and they put this six-horse gasoline engine on it; I had been running it with a

ten-horse, and it wouldn't grind the corn fine enough. Then I got the five-horse engine onto it and there wasn't very much difference—I couldn't grind it quite so fine. Mind you, I had not bought a power yet; I had sweep power. I had an engine I could run some way, but better judgment helped me and I went and got a new grinder, and it has been running seven years and doing good work.

Mr. Scribner: The question is whether it would be economy to keep the power on hand to do this extra work.

Mr. Taylor: It is hard work to do business for other people; you must use your own judgment about that. If you have an ensilage cutter that you want to run to fill your silo and also run it every week in the winter on dry corn fodder, and you have got eight or ten days of husking corn, you must use your judgment.

Mr. Scribner: Will it cost any more to run a ten-horse engine, running your feed mill, than a five-horse engine?

Mr. Taylor: A very small per cent more with the gasoline engine.

Ex-Gov. Hoard: Your cylinder expansion is a little larger.

Mr. Taylor: If you are running a ten-horse gasoline engine, and only utilizing the five-horse power, that is all the gasoline it takes.

Mr. Thorp: Wouldn't it give better satisfaction to get a larger engine?

Mr. Taylor: I think the general mistake is in getting too large an engine.

Mr. Thorp: I think it is just the other way.

The Chairman: The advocates of the tread power have been pretty quiet. Let us hear from them.

Mr. Taylor: I want to say that in connection with running a separator and other practical machines used by dairymen, the tread power does very good work, but when you undertake to fill your silo with all hands ready, and three horses to run it, two or three years will be about the limit of your experience with the tread power for filling the silo and grinding corn.

Ex-Gov. Hoard: I have got one more year then.

Mr. Taylor: That is all I will give you.

The Chairman: Mine lasted for ten years, and it wasn't dead then.

Mr. Scribner: It costs me about $26 a year outside of our tread power to fill the silo. Now, whether it would be policy for me to own a gasoline engine for this extra money is a question. All I need it for is for filling the silo and cutting dry fodder.

Prof. Henry: Is that $26 for the power or the power and labor addtional?

Mr. Scribner: That was for the power and men to run it and includes fuel also.

Mr. Philips: There is another consideration in Mr. Scribner's case; it gives his bull work twice every day, which, in breeding cattle as he is doing, more than offsets the $26.

Ex-Gov. Hoard: Now, let me say something. I don't know that my experiene will be any guide to anybody—I am not much of a guide for myself or my wife—but I will state a few facts concerning my own experience. When I built my barn two years ago, I made a good many mistakes that I can see now. But I provided two tread powers—one a single tread power, for the amusement of the bull, and he goes onto that in the morning and he works about an hour and a half, while the milk is being separated, and there are about 28 to 35 cows in the herd. Now, I think that that tread power is worth to me in the person of that sire, a good, handsome interest on the outfit, which cost me $85. When a man asks me what is the cost of a thing, I don't know of any better rule than to charge up the interest on the outlay. When I am asked what my tread power cost, I paid $85, but it costs me the interest on the outlay, whatever that may be, and the oil and repairs necessary to keep it going, and that interest can be reckoned at six per cent, and it doesn't cost a cent more. Now, the bull separates the milk every morning and every night. There are other advantages that come in here, and one is, I believe, an increase of fully fifty per cent in the value of the skim milk to feed to my calves and pigs and poultry.

I have a three-horse tread power that I bought at Manitowoc, and that furnishes me all the power necessary to run a sixteen-inch cutter and keep three teams in the field going and one man cutting with the power cutter. There is one thing that must be looked after: I have broken once one of the slats and injured a horse by getting his foot through. Another was broken the other day, but the horse did not happen to put his foot through. Of course, I don't like that feature, the danger of a good horse being injured in that way. That power cost me about $160, if I remember correctly. I have my horses in the barn, they are doing but little all through the winter and they are a power that I can use; they are easily adjusted, easily handled, they don't explode, and like my Brother Taylor here, I cut up my cornstalks, and I can husk as he does. Now, the tread power has some advantages and some disadvantages; but let us get down to a right definition of what a thing costs, and figure it at six per cent interest, and then we know what we are talking about.

Prof. Emery: How many feet do you lift your silage?

Mr. Taylor: Twenty-eight feet.

THE HOG AS A FACTOR IN SUCCESSFUL DAIRYING.

Theodore Louis.

My text for this paper, as received from the Dairymen's Association is, "The Hog as a Factor in Successful Dairying." I honor their motives to draw attention to the possibilites that are greatly underestimated for want of knowledge to put dairying on the most remunerative and paying basis, by converting the by-products into their true value.

Is not the dairyman a manufacturer? Is not the safeguard of all manufacturing and its financial success to turn by-products as a defrayer of the expenses of the main manufacturing inter-

ests? Why hold dairy meetings, farmers' institutes, and state and county fairs, or send our boys to agricultural colleges? Is not in all of these the underlying principle a higher and correct knowledge of our calling? Lawyers, doctors, mechanics, business men are ever searching in their avenues for correct and higher knowledge. Why should not we who are supporters of all these search equally for hidden light and truth that is wrapped up in nature's mysteries?

I have found in the long journey of life (no doubt many others with me) that the higher we climb, the larger our field of vision; the more we study, the better understanding we have of our own ignorance, and that therefore we must ever be pupils in the great school of experience. It will be many long years before a man can truthfully declare that he is a graduate in animal husbandry and agriculture combined, or even that he knows all about the hog,—favorite with us because he stuck to us in prosperity and adversity, proved his financial value on farm and dairy, and was not discarded because an unappreciative world elevates its contemptuous nose at the mere mention of him.

Prominent dairymen and writers have tried long and hard to dispense with the hog nuisance (?) on the dairy farm, by feeding the by-product back to the cow, but this practice has gained but few followers. When these controversies were at their height, the late Hon. Hiram Smith, one of the most influential men to lay a sure foundation for the now great dairy achievements in our state, when saying farewell to me at the Waukesha farm institute, said: "Theodore, true, I think my brother is right that we can feed the skim milk back to the cow to advantage; but when I feed it to my hogs, and the hogs' products will buy me a carload of shorts and bran, I then think I am feeding"—now, mark—"my soil with the waste of western farms. Go on, talk, write and teach feeding the adjuncts."

Cannot anyone see the force of this argument, so far-reaching in its final conclusions?

When I recall that I carried home my first pig in a sack, five miles, on my shoulders, forty-five years ago, over hills, val-

leys, swamps, as roads were then an unknown luxury, and commenced in a primitive way to master the columns of the Orange Judd American Agriculturist with the aid of a German and English dictionary, and by long years of study, observation and failure in the dear school of experience have tried to solve the art of swine husbandry, I become impressed more than ever that the doors today stand wide open for whoever is willing to avail himself of opportunities that call aloud and say, "Come, sup with us."

The dairy offers advantages to swine husbandry that can hardly be duplicated under any other system. With the aid of skim milk, the farmer can raise spring, fall and winter pigs, or at least two litters a year.

However, the question often arises, would it not be more profitable to buy pigs than to raise them? It would be decidedly an advantage if the supply could be filled with any kind of certainty, and of a quality that would give full compensation for labor and feed, and the risk of buying infectious diseases could be eliminated. Is it not true that whoever engages in animal husbandry should become a master eventually both as breeeders and as feeders? If it is essential to select a good dairy cow and sire, it is no less important to select good breeding sows, of robust constitution, rustlers at the feeding trough, prolific, docile (most of this last depends on ourselves, in humane treatment), a good mother and milker, for like will produce like to a greater or less degree. But we are the modelers of improvement, and when we develop points by our own management, we have a better guaranty that we can perpetuate them. There must be of necessity a system of breeding that will insure a supply of pigs of nearly the same age for the different seasons, in order to have advantage of feeding the by-products to the young growing pigs. There should be also proper shelter for feeding and breeding, so as to reduce labor, enhance comfort, and insure full compensation for food consumed. We of the northwest ever and anon encounter zero weather, and once in a while forty degrees below. Clean floors and troughs and dry beds are as essential for sows and pigs as for cows and

calves. The hog is by nature a cleanly animal, and never otherwise except by force of his untidy master.

The ignorance existing about feeding dairy by-products is astounding. Skim milk, buttermilk and whey are often so plentiful and considered of so little value for want of knowledge, the waste is beyond comprehension. In my travels I have had opportunity to see various methods of milk feeding (I should have said, *wasting*), and have answered hundreds of letters about "What ails my pigs." The pig, I have observed, is always to blame for so-called ailments, but never the feeder.

No. 1 has plenty of milk, and considers it a waste to combine it with grain or add more pigs by purchase; so he stuffs his pigs with milk to a dyspeptic point. He wants relief by return of mail, What ails my pigs? Of course he forgot a return stamp.

No. 2 will feed in winter in open troughs out doors, cooled down to forty degrees, chilling to pigs beyond a point of digestion, never reflecting that if the same amount of watery fluid was mixed with a small amount of grain they would fish out the solids and leave the slush. But pigs like milk; ain't it queer they don't do well?

No. 3 will actually mix the skim milk with water, leaving the tempting color. The pigs fill themselves, and he says in gratifying tones: "Ain't they plump? Milk is great feed."

No. 4 knows that loppered or coagulated milk is better and healthier than sweet milk (someone has said so), and therefore he empties his skim milk into barrels that are never fed empty, and the whole becomes like acetic acid. He writes: "My pigs are lame in loin, have bowel trouble. What ails my pigs?"

Still others will persist in feeding this sour stuff that was once wholesome food, and feed it without addition of grain, and turn them to clover pasture, forgetting that he increases thereby the acidity. If he would catch and throw one of these hogs, pull out its tongue, he would find it large and pale, showing that the blood and digestive organs were in acid condition, that alkalies are needed. He, of course, writes: "What ails my pigs? They root beyond all description. Some have died.

They eat sand, gravel, clay, mortar from the barn walls, yes, they even gnaw at stones." Those that died probably died of dry murrain, the small intestines had become clogged with the above substances.

The up-to-date farmer knows the nearer we can feed a food in its purity, the better. Is not the thrifty, well-fed, nursing sow, with a lusty litter of pigs, an object lesson? Her milk is ninety degrees warm, is sweet and pure, richer in nutriment than cow's milk and rightly proportioned in protein and carbohydrates, unless the feeder himself contaminates it by senseless over-feeding, or by abrupt change of food causing bowel trouble. Why not imitate nature? Feed at regular hours after daylight and before dark. When I see a man feeding pigs with a lantern, I set it down: he is blind to his own interest and disregarding nature's law.

Feed what they will eat clean and no more, so they will come hungry to the next meal. If the portion consists largely of milk, feed three times a day, it will aid in assimilation and digestion, as portions and quantity will be small at each meal. Milk should be fed warm, at least eighty degrees in winter. No up-to-date feeder would attempt feeding milk without an addition of grain in order to receive the largest return from the combination. My experience bears me out in saying that until pigs are from three to four months of age, ground grain or mill stuffs is the most economical method of feeding, although in summer soaked corn will give equal and often better results when fed on clean floors, as it is eaten slowly and masticated more perfectly. Other grains, as barley, rye or oats, if fed whole, will have a portion pass unmasticated and non-assimilated, and therefore such grains should be ground for best results, and if mixed with skim milk will not only add to its food value but add to its digestibility.

It has been my practice for years, when shelling my corn for soaking, to save and store the cobs and burn them in a pit into charcoal; break them into small fragments, and to eight bushels of this charcoal add one and one-half bushels of wood ashes, eight pounds of salt; mix the compound well, then dis-

solve one and one-fourth pounds of copperas in a large pail of hot water, and with a sprinkling pot sprinkle on the mixture above and mix with a shovel as you sprinkle. Have or make a self-feeding box, with cover to it so as to exclude rain or snow, large enough to hold three or four bushels, and place it where hogs and pigs have free access to it. Now, don't say, "Nonsense," before you try it, for your pigs and hogs will remind you when the box is empty by rooting it over unless well staked down. Most of my success for many years in having healthy hogs I attribute to this, and judicious care. The condiment often will avoid complications that arise from errors in feeding.

Prof. Henry, when visiting my place these many years past in winter time, to acquaint himself with the possibilites of northwestern Wisconsin farmers and their methods, was unlike the average visitors in my hog department, who see and observe nothing but pigs or some grand old sows. Nay, verily, his observations and questions were in the line of feeding and management to its smallest detail. Why do you soak feed? Why do you feed those fattening shoats their grain meal wet? What do you feed your brood sows in their breeding condition? Do you feed old and young sows in the same pens in the same troughs? How do you separate them? Do old and young sows receive the same composition of food? If not, why not? Do old and young sleep in the same department? If not, why not? Show me their sleeping places. How often do you change their beds, and why? What are those cards over each pen for, showing names, dates of service and farrowing? Why do you keep these platform scales in this narrow feed alley? What is this self-feeding box for, containing charcoal and what else? My memory fails to rehearse more. Finally he came across a new broom. "What is this for?" And when I answered, "to sweep the pen and floor," he dropped the remark, "Stole it from the wife."

He saw the prevalent error in feeding dairy by-products. Chemists long ere this had determined their high feeding value, but he chose the pig as his chemist to decide what he could

get out of it, and patiently, and with care and scrutiny, during a long series of years arrived at the following conclusions, which he gives in his great book, "Feeds and Feeding," that no stockman and live stock feeder should be without.

"When corn is worth $10 per ton (twenty-eight cents per bushel) separator skim milk has a value for pig feeding of fifteen cents per hundred, provided not more than three pounds of milk are fed with each pound of corn meal. If, however, the feeder gives nine pounds of milk with each pound of meal, the skim milk is only worth nine cents per hundred pounds. The average of all trials is eleven cents.

"With higher values for corn there is a relative increase in the value of skim milk. In the above, we have measured skim milk with corn meal for making gains with pigs. Those familiar with these feeding stuffs, appreciating its worth for bone and muscle building, know that in many cases it has a higher feeding value than is here given, especially for growing pigs."

I will add here in conclusion, that the table referred to quotes corn at $18 per ton or fifty cents per bushel—the present price of corn in Dunn county—when feeding from one to three pounds of skim milk to one pound of corn it is worth twenty-eight cents per hundred pounds, but when feeding from seven to nine pounds of milk it is worth only sixteen cents per hundred. Who, then, Mr. President, will go without knowledge when it can be had for asking?

DISCUSSION.

A Member: How many pounds of sulphur in that mixture of the charcoal, ashes and copperas?

Mr. Louis: I do not add any sulphur; it is copperas, charcoal and ash. When you want to burn the cobs, dig a hole about four feet in diameter on top, and about five feet deep, and a little over a foot in the bottom. Then start the fire in there with some shavings, take a bushel of cobs and let those cobs

get well aglow, lay an old rod over the center, and then keep putting in cobs by the barrelful. It takes quite a while before they are all aglow, but when they are in this condition, have a sheet iron cover that will set down about six inches in the hole and seal it up with dirt, and the next morning you can take out about eight or nine bushels of charcoal. I used to buy my charcoal of the tinners, but they are using something different now, and so I find I have to burn my own charcoal.

A Member: Is oak charcoal as good as corn cobs?

Mr. Louis: It is better.

Question: Is not any kind of hard wood as good as cobs?

Mr. Louis: Yes.

Secy. Burchard: And better than all the rest is charcoal made from poplar, isn't it?

Mr. Louis: Well, now, I couldn't really determine as to how that would be. My son was telling me this morning about a neighbor of mine who ought to know how I do it, for he has been a neighbor and I have been there thirty or forty years; but he gave his pigs, as he said, ashes and coal well balanced, but they were not doing well. Of course ashes and coal will kill pigs, it will ruin their digestion, they will get so they can eat nothing else and kill themselves.

A Member: Can you raise hogs successfully without the dairy product?

Mr. Louis: I have raised hogs without the dairy product to a great extent, but the men who can avail themselves of the dairy product certainly have the advantage.

A Member: In the winter time?

Mr. Louis: In the winter time, if he feeds it warm. In Minnesota I stopped at a place where the man bought his skim milk at ten cents a barrel, and he had long troughs, and the hogs slept in the straw stacks and they came out steaming and sweating, and the troughs stood there and he had skim milk in them and it was frozen. He said to me: "Mr. Louis, these pigs don't do well; they are losing their hair, they don't do well." "No," said I, "Mr. Schmidt, of course they don't do well." "Well, why?" Now, a man ought not to ask why,

when his animals are sleeping in the straw stack and become heated to a hundred degrees, and are then turned out in forty degrees below zero, and then given cold, sour, frozen food that has to be chopped out of the trough. No, there is no profit in feeding in the winter in that way.

Ex-Gov. Hoard: What is the value of whey?

Mr. Louis: I have had little experience with whey, but I think, if I am correct, that ten pounds of whey are equal to five pounds of skim milk in feeding value.

Prof. Henry: I wish to call the attention of dairy farmers to the high value of skim milk for furnishing bone building material for the growing pig. One hundred pounds of milk contain seven-eighths of a pound of bone material. Nature intended milk for the young calf; that is, the cow's milk is for the purpose of nourishing a calf; now, if you feed that to the pig, there is the material in that milk which is intended to build up the bone of the calf, and it will build up the bone of the pig. When we use corn, we use a material that is weak and lacking in bone material; the exclusive feeding of corn gives us pigs that have weak bones. The supplementing of corn with skim milk gives us a combination food, which is very strong in bone building material, and the farmer should not forget that fact. You who complain of too fine bone bear in mind what Mr. Louis has said here. When you come to the fattening process, you don't need that bone-making material so much, and you don't get its value to yourself so much as with the younger pigs. Aim, then, to use skim milk for your growing pigs, but you must be careful not to use too much; from one to three pounds of skim milk with each pound of corn meal is about the right proportion. If you use eight or nine pounds of milk to each pound of corn meal, you don't get the top of the value from your skim milk.

There is one man in this country who has done worlds for the live stock interest, and that is Mr. H. B. Gurler of De Kalb, Ill. About eighteen years ago he conducted some pig feeding experiments, and he deduced a rule which farmers would do

well to remember. He says that for the feeders of hogs, skim milk is worth half as much a hundred pounds as corn sells for a bushel; if corn is worth thirty cents a bushel, then the skim milk is worth fifteen cents a hundred pounds for fattening purposes.

Mr. Louis was right in saying that whey is worth about half as much as skim milk.

WHAT DAIRYING HAS DONE FOR TREMPEALEAU COUNTY.

A. A. Arnold, Galesville, Wis.

Lands were entered in Trempealeau county from government, as early as 1852, a large amount during the years from 1855 to 1862, and finally as late as 1870. The early settlers were mostly American born, with a few Scotch, English and Irish. They possessed themselves of the best lands, most of it near Trempealeau, and in the valleys of Beaver creek, Trempealeau and Black rivers. From the years 1860 to 1868, large numbers of Polanders, Germans and Norwegians, emigrated to this county; and with their descendants form nearly one-half the present population, the Norwegian largely predominating. Trempealeau county, lying adjacent to the Mississippi river, like Grant, Vernon, La Crosse, Buffalo and Pierce counties, has high bluffs running along and back from the river, with a great variety of soil, streaks of sand on one side or the other of all large streams, deep, rich valleys of loam, and rich clay soil to the tops of the bluffs. When first settled, it was mostly barren of timber, having been burned over yearly by the native Indians, but now wood is plentiful on the bluff slopes, and along the large streams where the lands have been protected from the prairie fires. It is doubtful if Trempealeau county would have been settled at this date and certainly not improved

as it is, were it not for these industrious emigrants from Europe.

From the earliest settlement up to the time when this association held its convention in Arcadia in 1881, and the time when the first Farmers Institute was held in Trempealeau county, little attention was given to dairying or stock raising. Up to that time wheat had been the main crop, and notwithstanding the then long haul to market, the farmers still persisted in raising it until God Almighty interfered, and the land faled to produce; the chinch bugs destroyed most of it, until we got down to from eight to ten bushels per acre.

Most of the early settlers were poor; many of them had hardly enough to pay the entrance fee, or make a part payment if purchased from second hands. We farmed from fifteen to twenty years, and found ourselves possessed of land; but it was worth little more than when entered from government, save the few improvements and a mortgage on four out of every five farms in the county. At least one-half of these mortgages were foreclosed, or deeded to the mortgagee; and the parties went west, still in debt, to which their creditors could testify, to their sorrow.

Trempealeau county on the whole is naturally a rich county, and peculiarly adapted to stock raising. We can raise abundant crops of corn and oats and no better grass lands can be found. These crops (the necessary adjuncts to profitable dairying), together with the pure, crystal streams that flow through nearly every quarter section, make it an ideal dairy country. Directly after the dairy convention in Arcadia, the farmers began to erect co-operative creameries, and to manufacture butter; good butter, less "buther," and more butter, both at the factories and in the homes. A better price was obtained, and thus came the encouragement.

What is the result? Today, seven out of every ten of our farmers are out of debt. Lands that were worth from two to twenty dollars per acre at the date of the said convention, are now worth from ten to seventy. Neat farm houses and commodious barns are the rule; the old shack of a house, the hovel

or scarecrow of a barn, the exception. The holdings are not altogether more valuable by reason of the improvements, but largely on account of their productiveness. Stock raising has done the business, thereby working in harmony with nature's laws. Lands need rest, and when seeded to grass, this rest comes more rapidly than it would if no grass seed had been sown. A naked soil will finally become barren in the best climate, no matter what kind of farming is followed. The nitrates are necessary to plant growth, but the vegetable mold or humus is equally necessary, and this can best and most cheaply be maintained on stock farms where the ground is shaded in summer, and where the hay, straw and stalks are all fed on the farm, and returned in the shape of manure to the land. Sunshine, heat and moisture are as necessary as good land, and unless there is humus in the soil, there is no friability, no sponge (so to speak) to retain moisture to serve the growing crop in dry weather. The so-called worn-out lands of the east and south are mainly the result of the lack of humus in the soil, which results from continuous croppings. Once return this element, and often they are as productive as when in their virgin state. Heat and moisture produce decay, and without decay there is no vegetable life. Many a barren field has been restored by plowing under crops of weeds and clover. Should the chemist analyze these crops of weeds or clover, he would find but a small percentage of nitrogen, phosphoric acid or potash (three of the principal elements that promote plant growth) as compared with the amount of these already in the soil; but by this process these have been given to the soil and with them another element of fertility, vegetable mold, an equally important factor. Thus it is apparent that to maintain the productiveness of our soils we must pursue the kind of farming that necessitates a perpetuation of humus in our lands.

Dairying, if rightly managed, does this. Farming in Trempealeau county is by no means perfect, but I maintain that with the means at hand, such progress as has been made could not have been, with any other one line of farming—dairying having been more of a specialty for the last fifteen years than any

other one line. Young stock has been raised and large crops of corn and other grains, and with these and the milk from the cows, numbers of hogs have been raised and fattened. This trio,—the corn, the cow, and the hog,—are joint co-workers to raise the mortgage, raise the house and barn, and maintain the quality of the land.

Twenty years ago there was not a bank in Trempealeau county. Most of the farms were mortgaged to outside parties. Today we have seven banks, and in these the farmers have on deposit $426,000.00, three-fourths of which are time deposits. Of the few farmers that still owe on mortgages, a large proportion are in favor of other farmers who have money to loan. Twenty years ago it was hard to find a farmer that had money to loan. Today plenty of them have; some few are keeping it buried or hid, fearing to have it known lest it be found by the assessor. I can pick out quite a number of farms in Trempealeau county where I had occasion to stop years ago, where the chief ornament about it was the neat, frugal, industrious wife and honest, practical husband and perhaps a house full of children. Today with these, there is the palatial dwelling with all the modern appliances, hot water, hot-air furnaces, bath rooms, etc.; large, commodious barns, high and long, with driveways, patent stalls and hay carriers, and always painted (any color, so that they are red). These people are now enjoying the fruits of their well earned toil, their children well settled or perhaps attending the "high," the college or the agricultural school at Madison. We have thirteen in the state university, and five in this last school now; and as many or more each year of late. This shows something of the intelligence and sentiment, as well as the financial prosperity that prevails.

Twenty years ago the amount of grain raised in Trempealeau county was much less than is now shipped out. The past year, 1901, there has been shipped from the several railroad stations in this county eleven hundred and ninety-one carloads of grain, four hundred and sixty-five carloads of hay, one hundred and thirty-four carloads of sheep, two hundred and eighty carloads of cattle, six hundred and ten carloads of hogs, one hundred and

twenty carloads of flour, seventy carloads of butter, a total of two thousand eight hundred eighty-eight carloads of farm products, bringing to the pockets of the farmers of Trempealeau county, say, at the probable rate of five hundred dollars per car, one million four hundred forty-four thousand dollars. This is in addition to what has been consumed in the families and by the stock or sold in small lots in the villages and adjacent cities. A carload of hay would probably be worth about one hundred dollars; wheat, six hundred dollars; oats, nine hundred dollars; hogs, about one thousand, and a carload of butter, four thousand dollars.

Note the difference in the value of these carloads, the cost of freight compared with the money value, also the draft on the soil in an inverse ratio to the amount received. Figures can't lie even if men do lie when they figure; let us figure. Of the two thousand eight hundred eighty-eight carloads shipped, only seventy carloads were butter, or about one-forty-first (1–41) part of the whole shipment; and still this one-forty-first part of the total was worth one-fourth (¼) of the other two thousand eight hundred eighteen carloads of products. Note the difference in the value of the finished product as compared with the raw material.

During the past year the creameries have paid the farmers two hundred and seventeen thousand dollars for cream. It would take one million three hundred thirty-one thousand two hundred fifty pounds of butter, at sixteen cents per pound, to bring this amount. At the estimated cost of collecting, manufacture, freight, etc., it has cost the farmers fifty-three thousand two hundred fifty dollars to put it on the market, provided it has brought twenty cents per pound on an average. The assessors' returns show the number of cows in the county to be fourteen thousand six hundred ten, and the number of pounds of butter produced, one million seven hundred thousand seven hundred thirty-seven pounds; there is no knowing whether this is right or wrong, but it is nearly the same as the creamery making the total output about two hundred thirty-four pounds for each cow.

Of course, these are not *certain* figures, as certain figures cannot be shown outside of a single dairy; but from what I know I believe the amount consumed in the homes of the farmers and the amount manufactured in private dairies and sold outside of the creameries will about equal the output of our butter factories which is sold in car lots, principally in Philadelphia and Boston. Beside this, our cheese factories made one hundred one thousand pounds of cheese, which should be credited to the cow.

Our butter factories are mostly co-operative, and however expensively they are managed the farmer has what there is in it, has no care of it after it is placed in the hands of the cream gatherers; the principal loss sustained is on account of the long hauls and by several cream wagons going over the same road. These are only blamable to the farmers themselves, many of whom patronize a creamery as they do a mill or store, going from one to another as their whim or fancy may dictate. However, with all their failings, neglect of business principles, and lack of cohesiveness, they are making money. They have utilized their large families and taught them habits of industry and promptness, in which there is no better school than in running a well-managed dairy.

Some people used to call Hiram Smith an extremist, but he was a thinker, a reasoner, and logical man. He and his compeers, like Hoard, Favill, Charles Beach and others, set the pace. Some have gone over the river, but Goodrich, Burchard and others are still marching on. Still the ideal is not reached. Well do I remember these grand men working for the welfare of their fellows in the dairymen's conventions and in the farmers' institutes. At that time, there was no pay, it was a labor of love. I was a small factor in the pleasant task. A consciousness of duty done is the chief and best compensation man can have. Today, not in Trempealeau county alone, but in the state at large, we see the fruits. We may justly boast of having, I believe, as advanced and thrifty a lot of farmers in proportion to our numbers as any commonwealth in these United States.

DISCUSSION.

The Chairman: I want to tell a little bit that I know about dairying in Trempealeau county. Down in the town of Oakdale lived a man by the name of Jacob Zimmer. I had not heard of him for many years. I was up at Independence attending an institute, and I met a man by the name of Zimmer; he looked like the man I used to know thirty years ago, and I spoke to him, and told him that I knew Zimmer down at Fort Atkinson. I told him he looked just the same, and he says: "I am little Jake. I came with my father to Trempealeau county in 1872, and my father left me in debt and I kept getting in debt deeper each year as the chinch bugs robbed me of my wheat. I thought I was going to lose my farm, but they had a meeting of the Dairymen's association up there." Well, he went on to tell how he went to that meeting, and he heard Gov. Hoard and Prof. Henry and Hiram Smith talk, and he went home and he said to his wife: "I am going to make one more trial; I am going to get some cows and go into the dairy business." "What, run in debt still more?" "Yes, we are going down anyway, and I might just as well go down and make a great big hole in the ground as a small one." So Mr. Zimmer went at it, and I understand he is now out of debt, owns a big farm, and is a very prosperous man, and he dates his prosperity from the time the Dairymen's association held its meeting at Arcadia.

On the invitation of Senator Stout, the members of the convention arranged to visit the Manual Training School at 1:15 P. M., same day.

Convention adjourned to 2:15 P. M. same day.

AFTERNOON SESSION.

Convention met at 2:15 P. M.
Mr. Taylor called to the chair.

PROTEIN ON THE FARM.

Prof. W. A. Henry, Madison, Wis.

Mr. Chairman, Ladies and Gentlemen, I was billed to speak on the subject of Bran, but we have talked so much about bran and advertised it so thoroughly, that the millers are getting the best of us at this time, so I think we should better let them and their bran alone, as much as we can, and try to produce substitutes, and I have asked the permission of Secretary Burchard to take up another topic along the same general line.

In all our meetings let us get in a little good solid groundwork, and so, for the benefit of some of you who do not know, I will say that the air is composed largely of a gas called nitrogen. The most useful gas for our personal use is oxygen, and our school teachers don't have much to say about nitrogen. Now, although the air is four-fifths nitrogen, it is useless to plants and animals, both of whom must have nitrogen. The nitrogen that the plant gets, it gets through the soil in a combined form, it cannot use the free nitrogen gas. The nitrogen in the soil is in organic compounds, found in roots, leaves and trunks of plants. There are certain conditions of the root and the leaf and plant by which it reaches the material, takes it to itself, feeding on such material. This vegetable matter is called humus. The humus gradually works into a shape where the nitrogen gets into the combination and there the plant roots take hold of it. The farmer feeds his plant upon this nitrogen in the soil; it is difficult for the roots always to get all they want so soon as they want it, there is a

great deal of this nitrogen that is not available for immediate use. In the East where land has been long cultivated, farmers are going out and buying great quantities of nitrogen in the shape of fertilizers. They buy saltpeter and guano. Now, this nitrogen brings from twelve to fifteen cents a pound, and often the Eastern farmer will pay ten or twenty dollars for the nitrogen to grow his crop of potatoes or his corn. Now, we wish to avoid reaching such a condition before it is too late, and how can we best do it?

When I was in college, I was taught by my professor of chemistry that a plant could get no nitrogen from the air; that a clover plant, the leaf or the root could not get any of this free nitrogen. Since then they have found that the clover plant can get nitrogen from the air. Now, I want every farmer of you next spring as soon as the ground is well thawed out to take his penknife and dig down around the white or the red clover plant and notice the little knots on the roots. You can find a number of little knots on the roots about the size of clover seeds; some of them will be white, some of them will have a brown tinge. Farmers saw those little knots hundreds of years ago, but they thought the root was bruised or something, but a learned German found out that those knots were filled with bacteria, innumerable bacteria in every one of those little knots. He wondered what they were there for, and studying further he with others found out that those bacteria were able to take this free nitrogen out of the air and fix it in their own bodies. Now, bacteria are plants, not animals, and these plants are able to take free nitrogen from the air and build it up into their own vegetable bodies, and when those knots decay, there is this free nitrogen from the air rendered so that the clover plants can utilize it and live on it. These bacteria were boarders, who paid their board by furnishing the plant with nitrogen. Now, the amount of nitrogen that these little creatures, or rather little plants, will gather is sometimes worth five, ten and fifteen dollars an acre in a year to the clover plant. As farmers then we have a means by growing clover plants of getting the nitrogen into our soil at small expense to ourselves.

Now, the corn plant has no such plants on its roots; the beet plant has not; the potato plant has not; the timothy plant has not; they cannot gather up that nirogen and so you see that the clover plant is a very important one.

Now, what I have said of clover is equally true of the field pea, of the bean, of alfalfa, and some other plants; any plant that has the same kind of a flower as the clover, like the sweet pea, the honey locust and alfalfa; they all have the same kind of blossom, and their roots can all gather nitrogen from the air. This being true, it is very important that we grow leguminous plants on our farms.

Nitrogen is the basis of protein which we have heard Mr. Louis and others talk about. The clover plant is rich in protein; so is alfalfa, beans, pea straw, all rich in protein. When we feed our animals upon foods rich in protein, the animals passing the food through the intestines absorb from it some of the protein. The cow puts it into her milk to furnish the cheese part of the milk, or into her body, to furnish the muscles, and so the farmer gets that nitrogen from the air through these plants at practically no expense to him except the labor, very different from the farmer who has to buy that nitrogen in the shape of certain fertilizers upon the market. We get our protein in the meat that we eat, in the milk we drink, in dried beef, in fish and in oatmeal. For our dairy animals we get it in bran, in middlings, in gluten meal, cottonseed meal and oil meal, and in clover hay. The question for us to consider is how we can get this nitrogen the cheapest. When you order a carload of bran or middlings or oil meal, you are after the protein it contains, pretty largely. Now, if you can get that protein cheaper on your farm than the miller sells it to you, how much better it will be for you; and you will get it in clover hay and in alfalfa hay. I think the cow pea and the soy (or soja) bean from Japan are being now somewhat used. We are running experiments with them at Madison, but you can all grow field peas and clover, and I am quite sure you can grow alfalfa. I do not mean that farmers shall give up their red clover, but we must treat clover differently than we did in pioneer days, when the soil was filled with humus. The circum-

stances have changed, and you must change your style of farming to meet new conditions and not expect in the future to get a catch of clover and timothy where weeds don't grow in the same field. I hear some of you say, "I can't afford to grow clover? Yes, you can; you must, or you will have to quit farming. You must grow nitrogen in some form on your farm; try to grow clover instead of trying to grow oats. You can sow clover by itself if your field is quite free from weeds, and get from half a ton to a ton and a half the first year. You can't expect to get two crops in one season. If the weeds are high, run the mower right through it, set it two and a half inches high, and run it over, cut the weeds off, and let them fall down as a mulch, do that twice and you will have a clover crop the first year, and a heavy set for winter. The only difficult problem we really have is winter killing, and that can be stopped by not pasturing very closely the first year; if you do that the crowns are badly exposed. Sow timothy at the same time, and if the clover fails, the timothy will hold up.

Now, the second point; sow clover and timothy and oats, and when the oats are six inches high turn the stock to pasture on that field. We have tried that twice at the Experiment Station with excellent success. You will think that the stock will ruin the whole field, but they won't; you will have a splendid catch of clover and a splendid pasture the first year. Our dairyman and shepherds didn't approve of this, but we did it and had a perfect stand of clover the first year. The third way is to sow oats, clover and timothy, and then when the oats get to the early milk stage, put the mower in and make hay out of it for your stock. Cure the oats as you would timothy. You can get a good crop.

Do you know, farmers, that a great point to consider is that every pound of oats or oat straw that you grow, the field has to furnish from three to five hundred pounds of water.

Ex-Gov. Hoard: So, on fifty acres, there are approximately 80,000,000 pounds of water used for the crop besides what the sun draws.

Prof. Henry: Now, by cutting your oats for hay three weeks earlier than you would otherwise, you have saved a large portion

of the water that would go into those oats and left to the clover, in the soil.

I would like to feel that I could rely on the farmers' wives to help me out next summer on this proposition, to talk to their husbands about this, and to appreciate the importance of these matters. I am not going to talk to you about alfalfa, because Governor Hoard is here, and he is an apostle of alfalfa, but I am going to show you some alfalfa hay cuttings, the second or third cutting from the University farm. We all know it was an excessively dry season. Now, I wish you farmers would realize that alfalfa has got as much nitrogen in it as wheat bran, and if you should put that into a mill and grind it up and feed it to your cows, you could feed it pound for pound instead of bran. A farmer from Texas wrote me three weeks ago that he took away the cottonseed meal from his cows, and put in alfalfa and they were giving richer milk than before, showing that the alfalfa was just as rich in protein as the bran, and if you had ten tons of that, you would have the equal of a carload of bran for your cows. If you can grow that, grow it at any hazard.

Farmers of Dunn county, do not give up this question of growing a protein producing plant. When bran is cheap, buy it, but arrange to produce as much of this nitrogen as you can on your own farm. Remember how it is put in your soil through these bacteria, and instead of buying it from Minneapolis millers at a high price I am sure you can well afford to become students of these problems. You can afford at almost any cost to learn to produce nitrogen on your farms in the future as once you did in the past.

Perhaps it will be better for Governor Hoard to talk to us now about alfalfa.

Ex-Gov. Hoard: A word first as to the feeding value of the plant. I went down to New Jersey a year ago, and Prof. Voorhees, who occupies the same position with the New Jersey Experiment station that Bro. Henry does with our own, had been making a series of experiments for several years as to the feeding value of alfalfa. Prof. Voorhees has taken forty cows, and experimented with this little plant as to its feeding value, and he

has found that eleven pounds of alfalfa hay cut at the right period and cured rightly, are the equal of eight pounds of oats and corn and bran as a milk-producing food. Now, think what that means to you.

Prof. Emery: In what proportion?

Ex-Gov. Hoard: One quarter oats, one quarter corn, and one half bran. Now, when a farmer can grow a plant like alfalfa, as Prof. Henry says, pound for pound, worth as much to produce milk as bran, or that eleven pounds of it are the equivalent of eight pounds of mixed grain, it is a proposition that ought to appeal to the bains of every farmer in the United States sure.

Now, alfalfa is a peculiarly ticklish kind of plant. It is a stubborn plant. It is a plant that will have its own way, and if you won't be patient with it, why, it won't stay with you.

The drought was tremendous with us last summer. In digging the ditches for our water works in Fort Atkinson last fall, we had to put in our pipes seven and a half feet deep, and we found the ground dried out down to the very bottom of the ditch; we have never seen a year in the history of Wisconsin when so little water has fallen on the soil as from the first day of last July to the present time. Every particle of clover sowed last spring, for a hundred miles of the Southern part of Wisconsin is dead. I threw sixty dollars worth of clover seed away. Every single seeding of alfalfa sown last spring that I know anything about is alive, and I know of ten or fifteen people whom I have coaxed into it. Now, that shows the relative power of the alfalfa plant as compared with clover to withstand severe drought.

The ticklish time in the life of alfalfa is its first year; it is necessary for you to do certain things, and rigidly do them, or you will go down. Alfalfa will stand the drought better than clover for the reason that it has a very deep root and strikes down quickly if you prepare the soil rightly, and if the soil is full of nutriment—and that proposition of nutriment is the underlying proposition I am after here. I did not like to accept the statement that I heard all over Wisconsin that you can't grow alfalfa, so I went to work with some lots I had in the city of Fort Atkinson, experimenting with it, and I have had all sorts of ex-

perience, and I am going to tell you a few things that I do know and have learned so far as I have gone and the rest I will leave to conjecture. I do know in the first place that you must prepare the soil extra well for alfalfa. Now, what does that mean? You must make a seed bed, eight inhes deep, just as fine and as nice as you possibly can. Now, how will you do it? Plow it twice, put on a good spring tooth cultivator, harrow it two or three times until that ground is all thoroughly comminuted, broken up. That is proposition No. 1.

Proposition No. 2 is that you put it on just as rich land as you can get. Proposition No. 3 is that you put it on land that is at least fifteen to twenty feet from the water line, not any nearer than that, because in two years its roots will go fifteen feet deep. You never saw anything reach down as alfalfa does, and when you come to plow it up, you will say so, but you don't want to plow it up, if you can possibly help it. So put it on land at least fifteen feet from the water line. Don't be so particular as to the kind of soil either, whether it be sandy or gravel or what not. Give it a soil that has got a subsoil that it can reach to and if it is hardpan, or rock, you simply clinch the roots there.

Proposition No. 4. Use some fine lime. I put a carload of lime last year upon the ground I am going to set to seed this spring with alfalfa, I put on about thirty bushels to the acre. Mine is a heavy clay soil; it will pay every man among you to send out and buy ashes. I am buying all the ashes I can find at ten cents a bushel to put on my land, wood ashes, but it will pay every man to send and buy a few hundred pounds of muriate of potash. It will cost about $52.00 a ton. Suppose you had an acre of ground, and you laid out five dollars for potash to put on that land, and you say, "I am going to have an acre of alfalfa." When you have got a good stand of alfalfa, you will feel as if you are well paid. It will produce from four to seven tons an acre, and every ton worth pound for pound with bran. Now, I ask you, can you afford to do well by it? I should say you could.

Now, Proposition No. 5. When you have got your alfalfa grown never allow a single hoof on the field. A German farmer in the town of Oakland a year ago last fall had four acres of as

beautiful a stand of alfalfa as I ever saw. It came up and was about ten inches high, and the cows were looking longingly at it, and that fellow couldn't resist, and turned those cows on it. My friend Goodrich said to him, "You are wrong."

But he was obstinate, "Ach, I understand all about that, I saw it in Germany." But he didn't have Germany in America, and you have to govern yourself by all the circumstances of the country you are in, and we have a much more rigid climate. Well, he fed that alfalfa down and it wasn't worth ten cents the next spring.

The Chairman: It is the bruising of the crown I think that is the trouble.

Ex-Gov. Hoard: Yes, and taking from it its protection. Now, never turn a thing on it. It is worth to you as a cow feed $50 an acre, in a good stand. I grew last year on three-fifths of an acre, three lots, (and a lot is one-fifth of an acre) over $50 worth of hay, as it sells in the markets of Ft. Atkinson.

Now, then, Proposition No. 6. When it comes to curing it, ah, there is a pretty hard row to hoe, because your first cutting will be about the 25th of May, and you will have a cutting about every four or six weeks thereafter, and you will be haying all summer. Now, when you come to the 25th of May, you are in the showery period of the year. Now, I got around the difficulty in this way. I went to the store and took No. 1 A sheeting, 40 inches wide, and tore off 40 inches long, and made a hay cap; I tied a good stout string to each corner, went to the blacksmith shop and got a lot of old horse shoes, cut them in two, punched a hole in each half, and tied that half horseshoe at each corner with a string about a foot long. I made the first cutting when the first blossoms appeared, not waiting for it to be all in blossom, but may be one-twentieth or one-thirtieth of it in bloom. I gave it about a day's sun, it wilts very slowly; then I raked it up into cocks, then I took these hay caps, put them on a stone boat, with the hay caps on one side and the irons on the other, so they should not tangle; I drove around and laid a hay cap on each cock. I wanted to cure the alfalfa in the cock, for the reason that you must cure it in a semi-damp condition in order to save the leaves.

Prof. Henry: Yes, the leaves are the part that I meant are as good as bran.

Ex-Gov. Hoard: You want to cure it as you would clover. We drove around and capped each hay cock; then left it about thirty-six hours in the cock, and it does not hurt if you leave it five or six days, if every other day you will go around with the fork and move it the width of the cock so as to prevent smothering under the cock. It will stand there through all the storms that will come. I had three heavy rains on my first cutting last year and you couldn't detect it, because that little hay cap turns all the water. Those hay caps cost me 10 cents apiece, and I have 500 of them.

When the alfalfa is fit to haul to barn, it should be drawn in when the weather is quite fine, and having gone through the sweat, it is perfectly safe to put into your barn. Hitch your stone boat to the hind end of your wagon and drag it right along after your wagon through the field, and as you take off the cap, lay it on the stone boat, and when you start for the barn, unhook the stone boat, and then when you come back to the field hook on again. Then the next cutting do the same thing again; it is the economy of labor. These hay caps will last you five or six years if, when you are through for the season, you take a 2 by 4 scantling, and hang these caps over them. They are the most important part of my hay making mchinery today, because I cure everything under caps in that way, even my oat hay—and I am quite a grower of oat hay,—also my clover as well as the alfalfa.

Now, I have gone through the processes with you, and probable nine-tenths of what I have said you won't be able to remember. It will take about 25 to 30 pounds of seed to the acre on all soils.

A Member: Where do we get the seed?

Ex-Gov. Hoard: Salzer of La Crosse is advertising alfalfa seed, and you will find the ad in the "Dairyman" this coming week.

One thing I forgot to say to you; when the fall comes be sure that there is a growth of at least ten inches to a foot high, and let that alfalfa go into the winter with that growth, it will serve

as a mulch, prevent the sun from thawing it out and freezing, etc. Sow the alfalfa just as early in the season as you can sow your oats. Sow it with oats, sow about a bushel and a half of oats to the acre, and just as soon as the oats are headed out, go on with your reaper and cut that off, give the alfalfa all the chance you can during that summer, and if it grows very long, cut it about the first of August. If it don't grow rank, let it alone. You can get sometimes a thousand pounds of good alfalfa hay the first summer, but I never cut it so as to prevent its getting at least a foot of growth to go through the first winter on; I always believe in giving it that growth every year. Last summer, when everything stopped growing in the drought, I cut three crops of alfalfa in the season. The crops were somewhat short. I secured about three tons on a portion of it, and on a portion of the ground I grew as much as five or six tons to the acre cured. You will remember it was on these three little lots, the first crop I cut I secured 3,400 pounds of cured hay, the second crop, something like 3,000; the third, 2,800, and the fourth crop 1,900. It came up and had a growth of at least a foot before the frost came in and stopped it.

Now, I am a profound believer in it so far as I have gone, but I don't know how soon I may be upset on this thing.

Prof. Henry: Now, I am afraid these farmers, some of them, will go home and say, "That is such a good thing I will put out a great big field of it."

Ex-Gov. Hoard: Don't you do it. You don't know enough, and that isn't anything against you either. Don't make that mistake. First put out an acre or two next spring, every farmer of you. Buy a bushel of the seed, and put out two acres; study the plant, come up along with it, and in about three or four or five years, you will know something about alfalfa. I commenced with these little lots. I tried it two or three years before I would commence with it out on my farm, but I am confident today with my knowledge that I can get along with it and make it very profitable, but I cannot take that same knowledge over to my neighbor and give it to him. He will try an acre or two of it, he will very soon get the "hang of the barn," as the boy

said, when the farmer complained he didn't do a good day's work breaking flax, but you will get the characteristics and learn the habits of the plant. I sowed my seed as early as I could get the ground in condition.

Secy. Burchard: I sowed a little alfalfa last year, and when we cut the oats in a few weeks afterwards, we went over the field, and we couldn't see it, and that was the experience of others in our neighborhood, but after awhile, now and then, one shot up, and as far as I know every alfalfa seeding in that community showed fresh and green in the fall, while every seeding of clover that came forward early just as well or better than the alfalfa did, was beyond the hope of resurrection.

Now, I am responsible a little bit for what goes into our published report, and I would like to have Ex-Gov. Hoard state again how many thousand tons of alfalfa he raised on three-fifths of an acre.

Ex-Gov. Hoard: I raised over $50 worth at the price of hay.

Secy. Burchard: I don't want that to go into the book without a little bit of explanation. You must not expect to raise that amount of alfalfa hay on your ordinary farms. He told you that that enormous crop of alfalfa was raised on his city lots. For years and years those city lots have been receiving heavy coatings of manure, and the land was about as rich as land could be. It is possible for Prof. Henry, on his experimental lands, to do the same thing, but it is hardly practicable for an ordinary farmer to have forty or fifty or a hundred acres so thoroughly enriched as that soil was. On Governor Hoard's farm, he did not raise such large crops as on those lots in the city, but he did raise, as I happen to know, very profitable crops of alfalfa. He got more pounds of hay per acre on his farm—and on some portions of that farm the land had been very seriously run down—than he could get of any other forage crop that he could raise—perhaps I should say than any other hay crop that he could raise. Of course, he could get more pounds of corn fodder than pounds of alfalfa hay, but a pound of corn fodder is not worth near as much as a pound of alfalfa hay. So you must not be disappointed if on your first trials you do not get such enormous

yields on your ordinary farms as Governor Hoard got on his city lots, but with anything like proper care you can get crops that will pay wonderfully well.

A Member: Is it a perennial plant?

Ex-Gov. Hoard: Yes, it is everlasting. There are roots today near Pueblo, Colo., that were planted by the monks over a hundred years ago.

The Member: How near the surface must you run?

Ex-Gov. Hoard: It must not have wet feet, and it will get them if you put them where the water is nearer than fifteen feet. I have got it on land where I have to go seventy feet in digging a well. I want to say a word about its food value, and I can give you a practical illustration from my barn. In putting in the alfalfa last year I had to put the clover crop in between the cuttings of alfalfa in the mow, and in first feeding the cows in the fall of the year, I commenced with the alfalfa and bran and gluten. I started in about the first of December, with my silo. I commenced to feed about ten pounds of alfalfa hay, and about thirty-five pounds of good corn silage, and I noticed the cows were pouring out milk. I commenced adding a little grain, I got up to about four pounds of bran and gluten a day per cow, and I thought they were at about their maximum, and they went right along ten pounds of alfalfa, four pounds of grain and thirty-five pounds of ensilage. After a time this upper layer of alfalfa was fed off, and we struck as fine clover hay as I ever saw in my life, cured under hay caps and everything fine about it, cut early. I commenced to feed the clover hay and the cows commenced going down in their milk and the man was instructed to keep them up, not let them shrink, and he commenced adding grain (bran and gluten), and giving about fifteen pounds of clover hay instead of ten of alfalfa, until he struck about eight pounds of grain a day and then the cows held. Now, then, in due time the clover hay was fed off, and they struck alfalfa again, and he commenced lowering the grain ration and the cows held, and kept lowering the grain ration, until we were back to four pounds of grain and the alfalfa and the ensilage and the cows holding to their flow. Now, what did that mean? That ten

pounds of alfalfa were equivalent to at least four to six pounds of grain. Now, you can take that and just think it over, and get an idea just about what was the practical value of that plant.

Mr. Louis: If we sow alfalfa, will we have the same benefits to our soil as we have from clover?

Ex-Gov. Hoard: Yes, it has the same bacterial habit.

Mr. Louis: But will the roots give us equally as much additional nitrogen to our soil?

Ex-Gov. Hoard: Yes, if you want to use it in rotation, you can do so just the same.

Mr. Taylor: Do you think it is advisable to put it in rotation?

Ex-Gov. Hoard: I don't know, but I think it so.

Mr. Louis: Twenty years ago I sowed alfalfa, half an acre of it, and it lived through the winter after growing about nine inches high the first season. The land was sandy, but yet not very sandy. Then Prof. Henry was writing about the fertility of clover, and how it could enrich our land, and I plowed it under the next season; I had no faith in it. The question of increasing the fertility of the soil is a vital question up here where our lands are sandy.

Prof. Henry: Alfalfa is a leguminous plant the same as clover; it is a clover. Now, for rotation, you better keep on with your clover; just set aside a part of your land for alfalfa and keep it there; having a good catch it is too valuable to plow up. Don't give up your clover for anything that has been said here today. Stick to clover and then grow an alfalfa patch, even if it is not bigger than this room. When you buy your seed, be sure to test it. Often alfalfa seed fails to germinate, and you lay it to everything except the lack of germination. Manure your land, cultivate it and grow a small piece of it. Don't grow ten or twenty acres, but one or two acres in a choice spot, and let it educate you.

Capt. Arnold: If it costs so much to prepare the soil in order to raise a crop of alfalfa, will it pay the farmer to add that permanent crop?

Ex-Gov. Hoard: Would it pay you to produce four to six tons of bran to the acre?

Capt. Arnold: Oh, I think this is a cheap way of getting nitrogen.

Prof. Henry: That settles it then; we are after nitrogen.

Capt. Arnold: But I have sowed alfalfa on good land; I got it nine inches high, and the next year I didn't have any. I concluded it was not proper for this latitude. There is danger of our going too fast, as the Governor suggests. I remember when we thought that sugar cane was a thing to raise in Wisconsin. However, I would like to try some alfalfa, but it isn't every farmer that can afford to keep a little piece on purpose for alfalfa.

Prof. Henry: There isn't a farmer in the state that has sheep or cows but what can afford to have alfalfa. You can all afford to sow a little piece and put five acres' worth of crops on one acre of land.

Mr. Taylor: I sowed two acres, one piece on land that had been previously in corn. I manured this little strip quite heavily, and plowed it and sowed it to alfalfa, and on the richer soil we got about three times as much alfalfa as on the other. I had a gentleman to see me who had a farm in Nebraska and raised lots of alfalfa, and another gentleman from the Yakimi valley, who had raised alfalfa for a number of years, and he said to me to turn my cattle on; so I turned the cattle on last fall and pastured it off, and I don't know how it is coming out. According to Governor Hoard, it is probably dead. This gentleman from Washington said he had just been breaking up a piece of alfalfa that had been there twelve years; he said he put two big horses on and plowed it four inches deep, and it was lots of work; but he found there was a great deal of fertility in the soil, and he liked it. He sent me a package of alfalfa by mail, and got me to thinking about it, and then he came and visited me, and he laughed when he went out into my little patch of alfalfa. I have just ordered some more seed, and I am going to try it on good soil.

Capt. Arnold: The question is, whether we have positive

proof that this is going to succeed in all places. I know you can get from two to four tons of clover. I want to know how much protein there is in three tons of ordinary clover; then I want to know the amount of alfalfa you can raise on the same acreage. Then I want to know how much extra expense it is to raise an acre of alfalfa above an acre of ordinary clover, and when we have found out all those things, we will be able to judge how much more profitable it is to raise alfalfa than to raise clover.

Prof. Henry: The gentleman thinks that because we have praised alfalfa that we have run down clover. Now, I tell you all to keep on with your clover, we are not running down clover; but if you want to grow half an acre of alfalfa, try it, don't be afraid of it.

Prof. Emery: A year ago last spring I got some seed of Governor Hoard and sowed about an acre of land to alfalfa. A portion of this land was very rich, in fact, it was an old barn yard; and the other portion of it was not very rich. On the portion that was very rich I had a very large crop of alfalfa, while on the thinner, poorer soil I had a much poorer crop. I made a mistake in sowing this alfalfa without any oats, and in that part of the state it was very rainy that year, and the result was, a good many weeds came up with the alfalfa, to the detriment of the alfalfa. Of course sowing the oats and cutting the oats for hay early would prevent the growth of weeds. I mean to raise more of this alfalfa. Now, as to Mr. Arnold's question about determining the relative cost of these things before we undertake to do it, it seems to me very much like the advice of the old lady to her son, not to go in swimming until he learned to swim. It seems to me what we have to do is to find out the cost by making the experiment.

Ex-Gov. Hoard: You can compare the analysis of clover with alfalfa. As I understand it, clover has about seven per cent and alfalfa about eleven per cent of nitrogen.

Mr. Goodrich: Gentlemen, I have a telegram from Washington, sent this afternoon, stating that the oleomargarine bill,

in which we are interested, has just passed the house by 44 majority. [Applause.]

Ex-Gov. Hoard: Mr. Chairman, I move that the secretary be instructed to send a telegram of congratulation to Congressman Henry of the Agricultural committee, on behalf of the Wisconsin Dairymen's Association, for the brave stand taken by those men in the defense of the cow and honest butter.

Motion seconded and carried.

Prof. Henry: I wish to move a vote of thanks to our worthy Ex-Governor Hoard and to H. C. Adams, the Dairy and Food Commissioner, and to Secretary Charles Y. Knight, of the National Dairy Union, for their constant and able services in behalf of this bill, at the city of Washington and elsewhere.

Motion seconded, and carried unanimously.

Prof. Henry: I wish to introduce this resolution, that our secretary be directed to forward to our senators in Washington a resolution urging them to use their influence and exert themselves to the utmost to secure the passage of this bill through the upper body of our national legislature.

Motion seconded and carried.

The Chairman: The secretary is so instructed.

A Member: It seems to me it would be quite proper for each member of this association, and every farmer here, to send a letter to his senator, urging this matter.

The Chairman: Yes, let the letters come in thick and fast, so that they will be buried under them.

FROM THE COW TO THE CONSUMER.

E. C. Jacobs, Menomonie.

The methods and steps by which the product of the cow is manufactured and forwarded to consumers are many and varied, but while I think the factory system is the most practical and no doubt the best for the great majority of farmers, I will call

your attention only to making and selling butter and cream directly from the farm to the consumer, in which I have had a little experience and which I think does not receive the attention it should in favorable locations.

Good butter sold regularly by the maker directly to the consumer has an increased value, from the confidence that will be established between buyer and seller, over that bought in the open market; and even butter that would not score very high at a dairy convention will be eaten without complaint because Mrs. So-and-So made it, or because their butter-man is a "good fellow" and they have used his butter for a long time.

This extra price should find its way to the pockets of the dairyman, together with the cost of making at the creamery, transportation charges, jobbers' and retailers' profits, with a premium on whatever skill can be put into the business, and he will be able to have a voice in fixing the price instead of being obliged to take whatever is given him with no chance to do anything but grumble about low prices. But, what is of more importance, it will inspire a pride and an interest in the business that will be lacking when the only inducement is to produce milk that will not offend the nose of the man at the weigh-can of a creamery, for we know that when milk is once by that, the individual responsibility of the producer ceases and his reward is governed entirely by the amount of butter fat delivered; but when we sell our product to the consumer under our own brand, we know that the responsibility for its quality cannot be put on the shoulders of the creamery man or the grocer. While, no doubt, we should love our neighbors as ourselves and exercise the same degree of diligence in the care of milk when taken to a factory as we would when manufacturing it ourselves, still the fact is that while human nature remains unchanged, the best effort of the average man will be put forth only when working individually.

I think there is a growing demand for dairy products that not only appear to be of good quality, but which consumers are assured have been produced under good sanitary conditions, and the private dairyman is in the best position to supply this

demand, for he has the whole process, "From Cow to Consumer," under his own control. But with these conditions in favor of the private dairy, it is very often the fact that creamery butter scores higher than dairy butter, which shows that, although the possibilities of the business are great, private dairymen have got much to learn about making butter.

In this, as all other systems, if a profit is to be obtained, good cows must be kept, and for the private dairyman especially I think cows of dairy breeding should be selected, as their offspring will be more valuable in renewing and increasing the herd. They should be kept in a warm and well-ventilated barn, and cows and barn should be kept neat enough at all times so that we should not be ashamed to receive a visit from one of our customers. The herd should be subjected to the tuberculin test often enough to be sure that tuberculosis does not gain a foothold and ruin the herd and business. Not only is this important for the protection of the herd and the safety of the milk, but it helps to establish a confidence in our product with the consumer which is very desirable for us to have exist.

In proof of the fact that more information is needed on the subject of tuberculosis I will quote a few of the reaosns that I have heard assigned in the last few months as its cause, in the order of their seeming importance: Jersey cows, the feeding of ensilage, warming water for cows, and keeping the temperature of the barn above freezing point.

It would seem as if it should be unnecessary to say that milking should be done in a cleanly manner, but when we consider the amount of filth introduced into milk at this operation and the amount of milk that is ruined in this way from being converted into a really first class product, it would seem that there was great need of reform in this operation and that "line upon line and precept upon precept, here a little and there a little," was not out of place on this subject.

Nothing short of thorough brushing and wiping the udder and flank of the cow with a damp cloth, and dry milking with clean hands should be allowed. Then, by thorough straining and separating immediately we shall not have very much use

for patent aerators for removing that cowy flavor, believed by many to be inseparable from milk. Neither will pasteurizing be necessary to insure its keeping a reasonable length of time if properly handled.

If I have made any success in the dairy business, there is none need be discouraged, for, although brought up on a farm, I thought a cow was a good thing to keep away from and always practiced it as diligently as possible until about nine years ago, when I concluded that if I was going to keep on doing business at the old stand it would be necessary for me to become more intimately acquainted with her. I arrived at this conclusion, principally from attending farmers' institutes, and it is mainly through them and the Wisconsin Dairymen's conventions, together with a good dairy paper, that I have been enabled to obtain what little knowledge of the dairy business I have, but that has made it possible for me to improve my conditions on the farm and more than double the gross receipts from it—the receipts now, other than from cows, being about the same as when no cows were kept.

As there were no factories within reach at that time, our only course was to make the butter on the farm and sell it as best we could, first to the store, and soon a few customers were furnished, but they did not come very fast and the price was not high, but our faith was great and we made the very best butter we knew how and put it up in the most attractive manner we could, and when the Dairymen's Convention met I went to it and took some butter along and, although we were "behind the money," as was to be expected, the information gained was of considerable value.

When we commenced to use the separator, we found the cream was of superior quality for table use, and took a few samples to our butter customers, with the result that it soon had a prominent place in our weekly load, with a profit to us and a satisfaction to the customers that has resulted in our seldom being able to supply the demand for it. It seems strange that with so much dairy product seeking a market, good, rich, sweet cream is often hard to obtain in the city at any price. From my

own observation I think that much more cream is being used than a few years ago, and much more would be used if a good article could always be obtained.

I know of no more profitable way of selling cream than in connection with a butter trade, as then the delivering can be done at the same time and usually to the same people. Then, it is a profitable way to dispose of a surplus that is quite liable to accumulate in May and June, as more cream is usually wanted in summer than in winter and it is often difficult to adjust the supply to the demand throughout the year, but by selling both I think it is easier to manage.

Cream is taken immediately from the separator, set in ice-water, and stirred until cold. Think it would usually test about 32 per cent butter fat, although do not make a practice of testing it, being guided by the amount of butter yielded at the previous churning and the appearance of the cream, aiming always to have cream rich enough to whip when in proper condition. Think it is better to regulate the profit by the price charged per quart (not trying to get rich too quick) instead of by the amount of milk taken with it, as is too often done. Cream, if properly handled, will be more satisfactory when it is two or three days old, as it will then be thicker and apparently richer.

Cream is put in pint and quart bottles packed in ice and delivered twice a week in warm weather; in winter, once a week. Butter is put up in pound prints wrapped in parchment paper, put in tin trays with loose hard-wood veneer bottoms that slide into a refriegertor, which is loaded into the wagon on market day, the butter ariving in good condition in the hottest weather.

It is often necessary to caution patrons in regard to the care of butter and cream after they have received it, as some will put it in a refrigerator along with a great many other kinds of food too numerous to mention, where it soon acquires flavors that may be all right in their way but are very undesirable in butter, and the butter-man will be held responsible for them. Although being wrapped in parchment paper will help some, I usually recommend keeping immersed in brine or in a cov-

ered dish if butter must be kept in refrigerator with other food. And we must be sure that the quality of our goods is right when delivered, so that if any complaint is made we shall have no hesitation in locating the trouble where it belongs.

In this meagre outline of a very large and important subject, I have given only such impressions and conclusions as my own narrow experience and observation have led to, and if they are wrong we are now in the best possible place to have them corrected.

As to the equipment required to carry on a business of this kind, no doubt a suitable building with all the modern appliances is needed and should be provided as soon as circumstances and the demands of the business will justify it ,but good results can be obtained with a very simple outfit if a little ingenuity is used. But the prime factor to success is a strong desire for a thorough knowledge of the business and an ambition to always produce the best.

DISCUSSION.

Ex-Gov. Hoard: I just want to accentuate one or two points brought out by Mr. Jacobs. We look on that map and we see with pride how the state of Wisconsin is dotted with cheese factories and creameries; we speak with a good deal of pride about 1,086 creameries, but I want to say to you that every patron of a creamery has got to put forth a special effort or a dry rot will set in on his mind. The creamery stands between him and the market, and he loses sight of all his personal responsibility for the final outcome. Jefferson county had 1,500 farmers in 1884, who sent their butter to Chicago, consigning it to Merrill & Eldridge and other men, and these farmers were every week being educated by a sharp slap in the face from the market. Back would come a letter from the man in Chicago, saying, "Your butter isn't right," and those men found out that when they produced the milk, they were responsible to the market for the final outcome, and they looked after the details.

Now, the creameries have come, there are hundreds of them; and I know hundreds of farmers that today are not as bright, intelligent dairymen as they were fifteen years ago, because the creamery stands between them and the final result. So the creamery, while it is a blessing in one particular, is a curse to the brain and the judgment of men as farmers and producers of milk and in the study of their own business. That is a thing you must look out for.

Another point I want to suggest: We are in the cream shipping business, and we have found a little thing that may be of service to you, and that is that the square bottle is much better than the round bottle. You can pack it solid, so that there is but little breakage, and no waste of room.

Prof. Henry: I want to ask Mr. Jacobs if there is a market for dairy butter, such as can be made under favorable conditions?

Mr. Jacobs: We are not able to supply the demand of the market that we have, with either butter or cream.

Prof. Henry: Has the creamery run you out, then, as a private dairyman?

Mr. Jacobs: No, sir, it has not. Of course, when the farmers can patronize a creamery, they would rather do it; it makes less work for them, and consequently there is less competition for us.

A Member: You spoke of making 32 per cent cream. Isn't that pretty low for the average city man to drink?

Mr. Jacobs: They seem to do pretty well on that. My experience leads me to think that it is more satisfactory to people to pay a relatively high price for rich cream than for a thin cream, and we are to the same expense in washing bottles, delivering, etc., with one as with the other.

Mr. Goodrich: If they want thin cream, they can thin it; but if they want thick cream they can't thicken it.

Question: What is supposed to be the commercial standard?

The Chairman: There isn't any. There is no legal standard.

Mr. Jacobs: There is another point on rich cream: I think it keeps better.

Question: What do they get for 32 per cent cream?

Mr. Jacobs: We are getting 25 cents a quart now, a dollar a gallon.

Mr. Goodrich: At that price, it is equivalent to about 32 cents for butter.

Mr. Jacobs: I think it brings it to about 33 cents.

Capt. Arnold: Isn't it a fact that the people in cities had rather have good dairy butter than creamery butter?

Mr. Jacobs: That is my experience.

The Chairman: And others, too.

Capt. Arnold: I think it is the universal experience. The only question is to get good dairy butter.

Mr. Jacobs: The final test in this matter is the people that eat the butter, and while we come to this convention on an equal footing with creamery butter, when we appeal to the consumer, we have the advantage. The creamery butter is shipped to the retail grocer, often kept in a refrigerator with all kinds of cheese, and by the time the consumer has got it, he has got altogether a different article than what is brought here. We deliver our butter direct, under the best conditions all the time, and, although our butter may not be as good to start with, by the time it reaches the consumer, it has the advantage.

The Chairman: That is all very well for one or two private dairymen in Dunn county, but if every dairyman in this county was making butter, and depending on your local market, you would soo find the demand was not equal to the supply. The final arbiter is the great butter market.

Mr. Bates: There isn't much question as to whether the creamery butter is better than private dairy butter for the average man. I know private dairymen who are buying butter of creameries for 11 or 12 cents a pound, and shipping their own.

Mr. Thorp: We must not forget that what is classed as dairy butter is not all dairy butter; it may be farm-made butter, but dairy butter is made by a man who devotes his energy to pro-

ducing something that is better than creamery butter, and he can do it.

The Chairman: Mr. Thorp has made a good distinction, but, unfortunately, the farm butter comes in, and is called dairy butter. Mr. Jacobs said in the early part of his paper that in every community there are a few good butter makers, and all the good butter sold at the groceries is made by those people. That is all right for the groceryman.

A Member: We get 27 cents a pound today for our creamery butter. Now, will a private dairy pay any better for us common farmers?

Mr. Jacobs: We get 25 cents the year through. I would not recommend anybody to take this up, unless they were situated just right, and had an inclination to go in the business.

Adjourned till 9 o'clock tomorrow morning.

Thursday, February 13, 1902.

MORNING SESSION, 9 A. M.

The President in the chair.

SOME MISTAKES OF CHEESEMAKERS AND PATRONS.

John McCready, Madison, Wis.

During the past two seasons it has been my privilege to visit quite a number of the Wisconsin cheese factories in the capacity of traveling instructor for this association, and in doing so I have had an opportunity of studying existing conditions to an extent only possible to one employed at this work, except it be to one traveling for the express purpose of seeing things as they really are.

It is no doubt rather unpleasant to be constantly reminded

of our mistakes and shortcomings, yet by being aware of mistakes made, we are guarded against a repetition of the same and are more apt to profit by some one else's experience.

I can think of no better time or place to speak of some of the mistakes of cheesemakers and patrons than right here and now, and in doing so I speak from experience and observation both. Being a Canadian by birth, and having learned my trade in that country, which is now recognized as the leading cheese producer in the world, the first mistake which attracted my attention was that of the number of small, poorly constructed factories and their apparent closeness to each other. It is a sad mistake to imagine we can have a factory every mile or so, at every cross-roads, which shall be properly built and thoroughly equipped with the best machinery necessary for the manufacture of first class cheese. In my opinion, there are but few model cheese factories in Wisconsin, and as I said before, I speak from observation. The reason why they are not all model factories is plainly visible: because it is an unsafe speculation in the first place; because another year may see a factory built in opposition to yours a mile up or down the road as the case may be. If we would stop to consider the cost of all these small factories, and then figure the cost of one model factory centrally located, we would quickly see that our figures would all be in favor of the larger one. Figure then the skilled labor that could be employed with less money than is expended in several small factories, the uniformity of cheese produced, the extra yield obtained by the cheese having been cured at the proper temperature, which can only be obtained in a model factory, and we have the whole thing in a nutshell.

Those of you wide-awake farmers, then, who are considering the advisability of building a plant in the future, consider well the cost before doing so.

The idea that any old piece of land is good enough for a factory is another mistake, and one that must be rectified. A central location, good water supply, good drainage, are all important factors to consider before building.

I will not speak of the construction of factories. Volumes have been written on this subject, and anything I might say would not add to them, but I will say that our average curing room is most unfit for the curing of cheese, and every hot day that we have cheese in them is giving us our experience, and we are paying for it with interest, yes, compound interest at that. Until the patrons and the factory owners can be convinced of the loss they are suffering day after day, the necessary improvements will not be made; but the time is not far distant when they will either have to get in the wagon or fall out of the procession, for improvements are being made and will continue to be made until we have curing rooms in which the temperature can be controlled at will.

The hiring of poor, inexperienced cheesemakers is the next grave mistake. I claim, and I believe I am justified in doing so, that no man, no matter how clever or intelligent, ever became proficient in cheesemaking in one season: no, nor in two. In Canada, they will not hire a man who has not had at least two years' experience, and if he has had three, his chances for a good position are greatly increased. It is foolish for our young cheesemakers to imagine that a few months' experience fits them to take charge of any factory offered them. I will admit that there are some who have gone into factories with but a few months' experience, and done well; but they are the exceptions to the general rule.

Mistakes in drawing up contracts between maker and patrons or owner is the next on the list. Now, I do not wish to pose as an agitator like Pat, who, when asked how he was going to vote, replied: "Agin the guivernment, of course," but I must say that some of these contracts are both unjust and unreasonable,—unjust for the owners to make, unreasonable for the cheesemaker to sign. I am pleased to be able to say that in the territory I have traveled I have never yet found a factory where the cheesemaker is hired on the old plan of making a pound for ten. I know nothing more of this plan than just what I have heard, and I am glad I don't, for I consider it the height of injustice to ask any man to make a pound of cheese

for every ten pounds of milk delivered, regardless of the season of the year and the quality of the milk. It puts a premium on dishonesty at the weigh room, for its almost impossible to give just weight and live up to this contract. Abolish this old, unfair plan, adopt the Babcock test system of paying for the milk, and let your cheesemaker make an honest living.

Some in their hurry to secure a position in a factory will make any kind of contract in order to get work. These are the ones who curse the contract system, and it serves them right. Good men can procure positions at fair wages any time, and do not have to make lop-sided contracts. Poor ones can't, but they make a fool contract, and bemoan their fate afterwards. A good cheesemaker is ready and willing to guarantee his work at all times, and it is right that he should do so; but no one should warrant top market prices on flavor or any of the points liable to be affected by a defective curing room.

The past season has taught a number the fallacy of some of their contracts, and another year will see some changes; and I believe it will be to the owners' and patrons' interest to be a little lenient in their bargains.

A good cheesemaker should be willing to guarantee to do his work in a workmanlike manner, to stand all losses incurred through his ignorance, carelessness or neglect, to keep the factory, utensils and surroundings in a neat and cleanly condition, to give every patron his just weight and test, and to continually work for the best interest of his employer and patron.

In return for this let the owners guarantee him: 1st, A factory equipped with the best machinery for the manufacture of good cheese; 2d, A curing room in which the temperature can be controled; 3d, The best of supplies to be used in the manufacture of cheese; 4th, An abundant supply of good water; 5th, The right to reject any or all milk unfit for the manufacture of a first class article. This form of contract will give each an equal chance for an honest profit.

The care of milk is an important subject in itself, and the best methods of caring for it would make a paper in itself. I will say, however, that the most mistakes are made by the pat-

rons in this very important work. It is a mistake to expect to have good milk, when dirty, sour whey is left standing in the cans all day. And it is another, to expect the milk to be sweet and wholesome in the morning when it has not been given a thorough airing and cooling the night before.

A grave mistake is made by the cheesemaker who receives milk at his factory, knowing it to have been rejected as unfit for cheese at his competitor's; but it is one made quite frequently, I am very sorry to say. In order to obtain a little more patronage, the cheesemaker puts a premium on uncleanliness and has no one to blame for his losses but himself. This is one point brought out at the Wisconsin Cheesemakers' Convention in a paper on the necessity of co-operation among cheesemakers. They can talk co-operation until they are black in the face, but until this mistake is rectified it will avail them nothing.

What is the use of traveling instructors holding evening meetings to teach the farmers the proper method of caring for the milk if, when the cheesemaker tries to impress the lesson more firmly on the patron's mind by refusing to take the milk if not first class, some other maker can be found a mile further on who will take it at the risk of his reputation, and to the loss no doubt of his other patrons?

I have spoken of the mistakes; bear in mind they are not to be found in all factories, nor in all locations, but they can be found. I have not said one word in regard to the points at which you excel and are nearly perfect. That was not the subject chosen.

We must admit we have made mistakes and no doubt will make more of them, but you are assembled here now for no other reason that I can see than to learn wherein you are mistaken and whereby you can improve. Acknowledge, then, that you have made mistakes, and go home with a grim determination to do your share in the great work of not only putting Wisconsin on top, as the greatest cheese producing state in the world, but also to do your part in keeping her there, knowing that this can best be accomplished by a hearty co-operation among cheesemakers and patrons.

DISCUSSION.

The Chairman: Mr. McCready has discovered a whole lot of mistakes. Ask some questions and let us see if there is any way to cure some of them.

Capt. Arnold: This question of the delivery of poor milk is one that applies to both butter and cheesemaking, and it seems to me this convention ought to undertake something that will get at that difficulty. Governor Hoard was right in saying yesterday that we have less intelligence among the farmers in this regard than we had ten years ago; the temptation is all the time handy for the slovenly man. The stock buyer comes around and pays me the same price for poor stock as for good stock. There is no inducement for me to use effort to improve quality in stock. I wish we could find some way by which we could tempt the farmers to be honest.

Mr. McCready: That is a pretty hard thing to do, but I am afraid all the talk will never amount to anything, until there is some kind of co-operation, and factorymen will refuse all milk that is unfit for use, and keep refusing it until it is improved. I don't know of any better way of inducing a man to improve his milk than by sending it home until he does so. Of course, we try to do the best we can with bad milk, but I wouldn't have any milk that was bad, if I could help it. The milk itself is all right, but it is spoiled in the handling. The cow does her part unless we have made a serious mistake in feeding, of course. If we could only convince some of these cheesemakers that they must, to begin with, discard these underground whey tanks and clean those that they have, every day, that would be a good beginning; and then try to convince the farmers that they cannot possibly keep milk in good condition in whey-soaked cans, where the whey has fairly soaked into the tin and left to dry there.

Mr. Philips: At our creamery, our people have improved the quality of the milk very much by pursuing this course: Our buttermaker is there whenever a can of cream is weighed in, and he has a pretty good nose and can detect a bad odor, and

then by co-operation of the cream gatherers he is able to locate bad cream, and when he does so, it doesn't make any difference whether it comes from the richest or the poorest farmer, when he finds cream that is not fit to make butter out of, he puts that in a receptacle by itself, and it is churned by itself, and it goes onto the open market without the brand of the creamery, and the man has to take what he can out of it; so that while the other patrons are getting 25 cents in December, some fellow discovers that he can only get 15 cents for his butter, and it opens his eyes; he begins to look around and see how he can improve his cream. Our buttermaker is independent; we have 400 patrons, and if a dozen or twenty drop out it doesn't affect the creamery very much. Of course, we haven't the competition of the small factories that they have in so many parts of the state.

Mr. McCready: That is what I pointed out as one of the greatest mistakes in the business: we are getting too many small factories. Competition is a good thing to keep you straight, but there are some factories that have competitors within a mile or a mile and a half, and they are just cutting one another's throats all the time. It might be all right if the poor milk could be made up by itself, but you can't very well do that in a cheese factory.

Capt. Arnold: This factory at Salem is the largest one in the state of Wisconsin, and they have many advantages which do not apply to the ordinary creamery. I think we have the next largest one at Galesville; we have to haul our cream all the way from one to fifteen miles. There are other creameries running over the same routes that we do. Now, would it be practical for us to say to these other creameries adjacent to us: "Here, we will take this territory, and we won't go into your territory at all." He would probably say that every man has a right to go where he wants to, and of course that is true, but the creamery has some rights, too. I have thought that perhaps we might lay out the ground, and confine ourselves each to our own territory.

Mr. Aderhold: I wish Mr. McCready would tell us what he considers first class machinery in a cheese factory.

Mr. McCready: I do not consider any cheese factory as properly equipped without a steam boiler, to start with. In the next place, I want a steam heating vat, and I want a gang press with continuous pressure, and I want a curd sink,—that is one thing we haven't got in Wisconsin that they do have in Canada. I do not claim that you can make a better cheese with a curd sink than you can with racks, but I think there is a whole lot of cheese can be improved by using the curd sink. Of course, curd sinks have racks in them; we get the curd in proper shape.

Mr. Aderhold: How about the curd agitator?

Mr. McCready: I believe that a curd agitator is one of the best things we can possibly have in our factory. They had them in the factory where I learned the trade at home, and I know it used to be nip and tuck with the fellow that had to take the extra vat where we did not have the agitators, because we took considerable pride, each one of us, in getting our curd on the racks in the best possible shape, and I know that the curd that went on the racks with the agitators was the best always, and we got a better yield. Mr. Smith, at the Cheesemakers' Convention in Milwaukee, told us that there was a time when the steam agitators cost about $40, and I think he said they were down to $12 now; the patent has run out, I believe. Somebody is sure to make them over here in time, anyway, and I hope they will sell them to everybody.

Mr. Aderhold: Do you mean to say that the agitator produces a more uniform cook and a better yield?

Mr. McCready: That is it exactly.

Mr. Aderhold: Then what are we dubbing around with rakes for?

Mr. McCready: Because the rakes are cheaper than the agitator, to begin with, although they are not cheaper in the long run.

Mr. Bradley: Mrs. Howie says that Mr. McCready has left out three of the most important implements to be used in the factory: the broom, the scrub brush and the mop.

Mr. Aderhold: And he has left out one more implement, and that is the weighing machine for the whey. I think that

ought to be distributed the same as the skim milk at the creameries, so that each patron would get his share. It is worth something, and he ought to have it; then again, sometimes they don't want all their whey in the spring of the year, when the pigs are small, and some of them will leave it in there, and it decomposes and makes a terrible stench.

I want to tell something that I saw at a cheese factory in Manitowoc county. This man had one of these big pumps and he had a wire that came from the pump running under the ground to the factory up to the weighing stand near the scales. The patrons didn't know he had it, and when the patron was pumping too much whey, he would pull that wire, and the whey, instead of coming out of the spout, would run back down into the tank. He had just explained this to me, and he said: "Here comes a patron that always likes to take more than his share, he is a pig man. Now, you watch him." So he came along and he commenced to pump, and when the cheesemaker thought he had about enough, he pulled the wire, and the man kept on pumping but the whey didn't come, and the patron said, "What is the matter with this pump?" The cheesemaker said, "The sucker is on the wrong end of it."

Mr. Martin: How is the best way to get a good curing room?

Mr. McCready: I take delight in being able to say that it was at Mr. Martin's factory that I held a meeting this summer, and the subject of sub-earth ducts was talked of. They are figuring on putting in a sub-earth duct. Mr. Aderhold knows more about sub-earth ducts than I do, and I wish he would speak about it.

Mr. Aderhold: Are you the parties who have already got the tile in the ground?

Mr. Martin: Yes, we have got two shafts sunk, one in the curing room, and one 131 feet away, with eight rows of tiling connecting them.

Mr. Aderhold: How deep are those tiles?

Mr. Martin: Six feet at one end and five the other.

Mr. Aderhold: The way we have been building our horizontal ducts in the last years is to use four rows of seven-inch

tile, lay them side by side, and we like to get down eight feet deep if we can, and we make them 100 feet or more long. The larger tile is a little better, because there is not so much friction, the air goes through more freely; but you will get very fair results from your tile. Now, you ought to have a wind cowl. If there are no trees or anything around there, from 20 to 30 feet will be high enough. If there are buildings there, you want that to stick up above the buildings. I have had wind cowls made by a party in Plymouth. He has castings made, makes them strong and heavy, and they work all right; and I don't know but what it is a good plan to get them there.

Where you can get a vertical duct, it is better possibly, and a little cheaper. If you can get a well that is 35 or 40 feet to the bottom, or to the water, and three or four feet in diameter, that will give you better ventilation than the horizontal duct; it will maintain a lower temperature in hot weather, that is, the best we can get out of the ground.

Mr. Martin: At our place we cannot go any deeper than eight feet, because we strike water.

Mr. Aderhold: You haven't made any serious mistake. You can slope your tile a little to one end and dig a little pit there, so that if any water gets in, it will gather in that pit, and you can make arrangements to pump it out.

Mr. Martin: And how deep a standpipe do you need?

Mr. Aderhold: We make a box 12 by 14 of inch boards, running up and down. They are 12 inches wide, and we simply nail them together, and then we put corner straps on outside, nothing on inside. If we have to make it as we generally do of two or three lengths of boards, we must lap the joints; that is, we keep the boards even on the opposite sides, but on the other side we lap these over joints. You want good, sound lumber, and square ends, and of course straight edges, and nail it together on the ground, and the base of the wind catcher is square, and it will fit right up over the box and nail it on. Then put on guy wires, use heavy fence wire double, and put on four guy wires. There is a hook around this wind catcher to put the wires on, you raise the whole thing up and fasten your wires.

This chimney, where it sets on, should come up just above the ground, so it is tapered, say, two feet square, so you can put on the sill, that will reduce it. Let this square box go on the inside of the sill and set on the shoulder; then put in a coat of mortar, or something that will shed water so that the water wont rot the the base of it.

Mr. Martin: How will galvanized iron do for that pipe.

Mr. Aderhold: I never used it. I think it is a little more expensive, it is not quite so rigid, and it will heat through from the sun and heat the air inside, and there would be a little tendency for it to rust. I think the wood would be a little better in hot weather.

Mr. Martin: Do you have any ventilation from the curing room up to the roof?

Mr. Aderhold: No. There is no danger but what the air will leak out there all right. It is a good curing room above ground. There is a chimney hole in there. Don't let the sun shine through the glass, put on storm windows and have tight double doors. When this air is forced in, it will crowd out the air that is in there, and prevent the air from leaking through the walls. Many people do not understand how much air will go through walls, wood, plaster, brick and everything, so that if everything is closed up, and the air from the duct is crowding in, it has got to leak out, and there is a tendency to prevent the air from leaking in.

Secy. Burchard: A good many of these people, in listening to Mr. Aderhold talking about wind catchers and cowls may have thought there is something mysterious in it, but it is a simple arrangement very like what many of us have on the tops of our chimneys, or stove pipes, when we want to get a draft from the chimney, and the wind troubles us; we put a cowl on top with a vane that will turn away from the wind and the smoke will go out. Now, for one of these ducts, just put the vane on the other side and turn the cowl around and the air will go in instead of out and come through the duct and into the curing room.

COMBINED DAIRYING AND BEEF PRODUCTION.

Chas. Thorp, Medford, Wis.

Mr. Thorp: Mr. President, Ladies and Gentlemen:—Quite a number of years ago I found myself in a position to buy forty acres of land. Previous to that time I had had one hundred acres and had run a dairy. I had gone into the dairy business just as extensively as I cared to go, and the question arose with me, when I bought this other land, what to do with the products that I would raise on it. I did not want to extend my dairy business, because I would have to build another dairy outfit and equipment. That was one reason, but I also would have to get more hired help, and that would require another tenement house, and after looking the thing squarely in the face, as we all ought to do when we are making any changes, and after traveling a good many years over the state of Wisconsin, and listening to different people talking about feeding beef cattle, I came to the conclusion that I would feed some cattle on my place and make some money in the production of beef, and after six years' trial, I am satisfied that it can be done.

Now, I don't want you to think for a minute that I took steers from dairy cattle and tried to make beef of them. I did not. I had a herd of nice Jersey cattle, good dairy cattle, better than the average perhaps in Wisconsin, but not as good as the best. I found out several things. I found that I did not want to keep as many cattle in the summer season as I did in the winter season; I found that pasturing cattle is too expensive for land that is worth from $75 to $100 an acre; I found that I could raise large quantities of good fodder on this land and if I only had something to feed it to in the winter, I could make some money out of it. Not knowing very much about feeding cattle, I went out and bought only five to begin with, until I could see if I knew enough to feed cattle. I knew I could feed dairy cows, so that I could pay for the food and make some money out of them, but I wasn't posted in this other branch, so I bought five steers, and

ran them through the winter, and sold them in the spring and I was pleased with the results. The next year I bought twenty-four, a full carload, and I continued to do that for six years, and every year I turned out better cattle in the spring than I had the season before, and the last load of cattle that I finished off sold in the Chicago market for only ten cents less than the best cattle sold in that market on that day.

Now, these cattle that I bought were of course raised by some one, not by me. The farmers in my community raised those cattle. I had all the cattle that I cared to keep on the place in the summer time. My Jersey cows were all that I wanted; but in the winter, with the large quantities of corn fodder that I had raised I knew that the only thing to do was to feed it out on the place and keep the fertility there. When I went out to buy steers, I found that the farmers, as a rule, asked too much, that is, they asked *me* too much, so I would go to a stockbuyer to buy my cattle, and he would go to the farmers and gather them up and I could buy them from him cheaper than I could from the farmers.

Now, for these steers that I would buy in the fall, I could not raise grain enough upon the farm. You all know that we can raise more fodder than we can grain, and the fodder part of it was what I wanted to utilize. We have hay and corn fodder and oat straw, and such things as that, but we had to buy some grain, and that is something that a great many farmers are opposed to. They would rather sell grain. But I figured it that if I could buy that grain and get as much for it in feeding it to cattle, and keep the fertility on the farm, I was making something out of the grain—if nothing more than the fertility, and that is a great thing for our farmers to keep in mind.

I dare say there are a great many here who thought when they heard that I was going to talk about combined dairying and beef making, that I was going to defend some particular breed of cattle that would produce both beef and butter. There are people who think that can be done, but I want to say right here that I do not believe, from the experience I have had and the talks that I have had with different men in the state of Wisconsin, that that thing can ever be done successfully. What I mean is this:

—that a man who is going into the dairy business and the beef producing business never can get a breed of cattle from which he can attain the highest degree of success both in the dairy line and in the beef line. He will get cattle that will produce him large quantities of milk and he will get cattle the offspring of which will produce good beef, but it will never be the best of either. It will work all right when he first starts out, but after a time his idea will be to get more milk and more butter from the cow, and better beef from the steer that he raises, and there will be one or the other of those that will be so fixed in his mind that he will be working on that side, and he will want a little bit better cow, a little bit better milk producer, and when he gets that kind of an animal, the offspring from her will be more of a dairy animal, and when he comes to feed that animal, it will not have the broad back, the thick, heavy loin of the beef steer that he wants; it won't make the first class, ideal beef animal. So I would not advise any one to try to combine the beef and the dairy business in that way; but if he wants to combine them, do as I did, and stick right to the dairy cow for his dairy product and then go out and buy the beef animals from the man that raises that kind, and finish them off.

Somebody says there will be a time come when you can't buy those animals. I don't believe that time will ever come. There will always be men who will raise these steers and will sell to somebody else. Those steers that I bought averaged somewhere in the neighborhood of 800 pounds when I bought them. They cost me from $4 to $4.10 a hundred pounds. I fed them through the winter into the spring and made them weigh—one lot that I had, made an average gain of 404 pounds, weighed something over 1,200 pounds. I had bought 800 pounds of that steer for $4.10 per hundred, and sold that same 800 pounds for $5.50, and that was where we made some money, although more came from the increase in weight than from the fact that we bought at a lower price. But this increase in value must not be overlooked. It may sometimes cost more to put on the last hundred pounds than they will sell for, but if you increase the value of the whole a half cent per pound there may be a good profit after all.

Now, perhaps I have talked long enough.

DISCUSSION.

Mr. Philips: Where do you go to look for your steers? To the man that keeps the best beef sires?

Mr. Thorp: I would go to the cattle buyer that was shipping car loads out every few weeks. He knows the farmers, he buys these cattle during the summer season, and puts them on his own farm, and in the fall, when he had a bunch accumulated, I would pay him his price for the choice of twenty-four out of that lot. I had a nephew who was a judge of cattle, and he would pick them out, I never said a word to him about the cattle, because I thought he knew more than I did about judging cattle, and he only made one mistake in buying that whole carload, he got one with a mealy nose, had a little Jersey blood in him. He was a good feeder, but the buyers, when they came to look at those cattle, spotted that one the first thing.

Mr. Scribner: The steer was not to blame.

Mr. Thorp: No, the breeder was to blame.

Mr. Aderhold: What age were those steers?

Mr. Thorp: The steers were what they call long yearlings; they were past two when I sold them. There is another point. We had a few old feeders in Dodge county, old grayheaded men who used to feed three and four year old steers, who told me I was making a mistake in buying yearlings. They said a yearling steer couldn't eat corn, but I proved that they could, because they did, and the yearling steer requires a great deal less food to produce one pound of beef than the four-year old. There may be cases where a three-year old steer is very poor when you buy him, but he has the right form, and you can feed him and he will eat enormous quantities, and he will put on fat, or meat very rapidly, and you can make some money out of him. But if you were going to take an average steer, with considerable flesh on him and keep him growing, then the young steer is the most profitable to feed.

Mr. Aderhold: Is the market for finished animals usually higher in the spring than it is in the fall?

Mr. Thorp: I don't know as it is; but it usually is in May

and June, at the time I sell mine. The summer feeding of steers is something I never tried, just simply because I did not have the pasture to do it, but there are a good many men who feed steers in the summer, and they make money out of it; but as I told you my idea was to utilize this rough feed I was raising on the place.

A Member: Would you rather buy these steers in medium low flesh, or pretty heavy flesh?

Mr. Thorp: I like to have considerable flesh on them, because then I know they are thrifty. You can pick out a whole lot of poor steers, and there may be some of them, there is very likely to be some of them, that had something the matter with them to make they so poor, and they won't take on flesh fast enough. I like to get them all as near alike as possible, and have considerable flesh on them so that I know they are thrifty. You can tell what kind of a feeder he will be if he is in good condition.

Mr. Favill: How long did you feed those steers?

Mr. Thorp: I generally bought them in September, and turned them into my rape pasture, or anywhere where I had pasture; then I began to feed them corn and turned them off about the first of June. That bunch that nearly topped the market, I bought the 24th of September, and sold the 8th of June.

Mr. Bartlett: Did you stable them in the winter?

Mr. Thorp: No. I had to do some building in order to feed the steers, but I built a cheap shed and just let them run in and out of the shed, and I found that nine-tenths of the time they spent out in the barnyard. They didn't go inside the shed to stay unless it was wet outside, or the thermometer was way down below zero. But always that shed was open, one of the doors was never shut.

Question: Did you dehorn them?

Mr. Thorp: Yes.

Question: Did you feed these steers ensilage?

Mr. Thorp: Yes, some; but I never had ensilage enough. When I sold my farm, I was just making preparations to build a 300-ton silo on purpose to feed beef animals.

Question: Did you turn them on the green grass in the spring?

Mr. Thorp: I did. I had talked with a great many feeders about that, and I found that there was about an equal number of them would advise turning them out, with those who advised not to turn them out and I made up my mind that those people that said, turn them out, were just as good feeders as the others, and I looked in Prof. Henry's book, and I found that he agreed with me. I found, however, that they should be turned out before they can find a great deal of grass to eat, just as soon as the pasture is settled, so they won't cut the pasture up. They won't get too much before they are used to it, and they will come back and get their regular feed and so for six years I practiced turning them out in that way, and I never had a steer get off his feed, or shrink in weight, or refuse to come up and eat his regular rations three times a day. I avoided abrupt changes. If you will wait till the grass is five or six inches high and turn them out, they will refuse to eat grain, and eat nothing but grass. I always did that same way with my dairy cattle, though I did not turn any of them into regular pasture; I had a small piece of pasture that I turned them into early in the spring. They were more comfortable out there. You know a dairy cow has got to be kept comfortable; that is the whole secret of success in the dairy business, and it is the secret of success in making pork and the same thing with these cattle. If he can be more comfortable out in the pasture than in your yard, or in a hot shed, let him out.

Prof. Henry: How many days were your steers on grass before you sold them?

Mr. Thorp: Well, I can't say. We turned them out somewhere about the first of April, and they ran there till we sold them, the 8th of June.

Prof. Henry: Mr. Thorp has quoted my book. He would find in that book reports of two experiments by the Ohio Station, where steers were kept on pasture thirty days in the spring, being quite fat when they were turned out, and there was a loss. When it came to keeping them out forty-five days, then they came out even, so don't turn them out just for a few days, fifteen or twenty.

Mr. Thorp: That pasture that I turn my steers into would not have supported the steers without the grain, and when I sold them that was still good pasture for the dairy cattle or anything else. I fed those steers ground feed all the time, everything that they had had during the winter season.

Prof. Henry: Secretary Wilson, the present Secretary of Agriculture, then Prof. Wilson of the Iowa College, had a large experience in changing cattle from the feed lot to the pasture, and from pasture to the feed lot, and proved every time that the changing period is a losing period. Of course you can even it up after a time, but you have got to look out for that.

Capt. Arnold: I think what Mr. Thorp has said is sound. I am feeding fifteen head of steers now, and after those steers run fifty hogs, and all the grain those hogs have is a bushel and half basket full twice a day with buttermilk, and they are growing finely; the hogs are comfortable and the steers are happy. As Mr. Thorp says, the success of all kinds of animal husbandry is to have the animals contented and happy. During some of those cold nights, I fastened my steers in, and every time I know by their looks that they lost flesh. The animal is heated up, it is fed always to its full capacity, there is an effort on the part of nature to get rid of the extra heat, which is right the opposite of the dairy cow, she wants to husband all the warmth in her, she must have a warm place. I have found out in mild weather there is no trouble with a hog or a steer making an average gain of two pounds per day, and perhaps the expense in either case is about the same, but in cold weather it is hard to gain a pound, and the same in hot weather; there is an effort on the part of nature to get rid of the heat in summer as well as in the winter. It may look a little out of place to talk of feeding steers in a dairy convention, but there are lots of farmers who will be helped by this talk, because they are not so situated as to be able to run a dairy to its very best, and there is going to be a demand for a better product if this Oleo Bill should finally pass, and a great demand for beef for the next five years. I feel sorry for the farmers who raise cattle after putting a lot of money on their

farms and then sell their cattle to such men as Mr. Thorp, but he can find just such fellows, plenty of them.

A Member: Mr. Thorp, do you cut your corn, stalks and all?

Mr. Thorp: Not all of it, I cut some of it. I run it through the threshing machine, and that is a very good way to do; it makes first class feed for cattle.

Question: Have you any respect for color in buying your steers?

Mr. Thorp: Yes; I don't want to mix black and red and all colors together. Reds and roans will go together all right; that is, they will sell on the market all right. But don't put in any black spotted cattle or mealy nosed animals, if you want to make a nice looking bunch on the market.

THE RELATION OF DAIRY HUSBANDRY TO SOIL FERTILITY.

Geo. A. Smith, New York.

Mr. President, Ladies and Gentlemen of the Wisconsin Dairymen's Association, I am very glad of the honor of being present with you today and talking with you on dairy subjects. I don't expect that I am going to tell you very many things that you don't know; agriculture is old; the coming together of a dairymen's association is simply for the purpose of talking over these subjects.

Financial prosperity is the one great end that many of the American people are striving to attain. It is a commendable ambition, if with that desire to get wealth we have a desire to make ourselves better citizens and to live so that the world will be better for our lives. In most business ventures money is apparently made easier, and more rapidly than in cultivating the soil. Few men who follow agriculture as a business lay aside large fortunes, and in many cases they fail to secure returns for their labor at all commensurate with the necessities of their fam-

ilies. Depreciation in land values for various causes, and lower prices for farm products have led many to leave the farm and engage in other lines of business which for the time appeared to offer better returns for their labor.

The foundation of the financial prosperity of this country is its agriculture. For this reason the manufacturer, the merchant and men in other lines of business are generally interested in knowng how the farmer lives, what his capabilities are and whether he has the necessary knowledge to enable him to compete successfully in the markets of the world. It is because of this feeling that the United States government has expended the large amounts of money for agricultural education and experiments along agricultural lines. It was hoped in this way to bring out facts that could be used by the farmer and would make his business more profitable. It is for the farmer alone that the government has expended money in an effort to introduce improved methods, thus recognizing the fact that agriculture is the foundation of the country's prosperity. The farmer has been very slow to accept this proffered aid, in most cases seeming to believe that his practical experience and training are of more value than anything he could get from what he termed "book farming." The very desirable thing for us to learn and to accept is, that while knowing how to plant and care for a crop is of prime importance, a fair command of the underlying principles which govern the plant's growth and some knowledge about the soil will greatly better our chances of success. We might say, and I think without fear of contradiction, that the first requisite of successful agriculture, especially in a newly settled country, is muscle and a willingness to use it. The early settlers in this country had these requisites and their muscle working on the virgin soil gave bountiful crops. Conditions were such that it did not require careful thought to succeed. The virgin soil and industry were the foundation stones of this country's wonderful prosperity; and if those conditions of soil could be maintained we might succeed in growing crops profitably without much thought. Yet hard manual labor undirected by brains and knowledge is not usually economical. The man who shovels the

dirt to make the grade for a railroad track receives small pay in comparison with the man who takes the levels and runs the line for the grade, and this is true everywhere. It is the man who has the ability to think that the capitalist is looking for and who makes a success in business.

The manufacturers of all classes of articles today are studying to reduce the first cost of the yard of cloth or whatever they are producing; and in order to do that they employ the experts in their line, the best that they can find. In many cases several manufacturers of the same class of goods combine their interests in order to get the united effort of all to cheapen production. On the other hand farmers, to quite an extent, have been inclined to reject the advice of those who were studying subjects relating to their business; and continue to work on the same plan as their fathers before them, not appearing to realize that conditions have changed fully as much in agriculture as in manufactures. The men who first settled Western New York soon found that their soil and climate were favorable for growing wheat, and so they followed that line of agriculture almost exclusively. They kept hardly any live stock, but summer fallowed the land quite often, and depended upon that to make the elements of plant growth already in the soil more available for the succeeding crop. The whole system was planned to get all that was possible out of the soil and put very little back. These methods succeeded for a time but after a series of years the crops became so small that the farm was not profitable and the farmer sold out for what he could get. Then he went west to obtain more virgin soil on which to follow the same system over again. A considerable number followed this moving plan as long as there was plenty of new land to be obtained, realizing as soon as possible on the stored up fertility which was easy to get. Nature had been ages in preparing and putting the soil in shape to grow plants. They cultivated the land, grew wheat and sold off the farm the fertility of the ages in a decade or so. In that way they brought wealth to the country, but at the expense of those who should come after and try to obtain a living from the soil. A striking illustration of that style of farming is shown in certain parts of

New York state on what are known as leased lands. It is a section that was secured by letters patent to certain wealthy families in the very early history of the country, and as settlers came in farms were leased to them for a term of years at a fixed sum per acre. A few of the lessees took good care of the land and either purchased at the end of the lease or returned the farms to the owners in good shape, but a large proportion worked on the other plan. One has only to go through that section to be convinced that any such method of tilling the soil is a lamentable failure. In those older settled sections where some kind of stock husbandry has been followed, the results have not been as serious, but very many of those farmers have failed to realize the importance of saving the voidings of the animals and putting them back on the land, in that way restoring quite a part of the plant food removed. When they have not done this the results are not very much better than in the cases when they made no pretence of fertilizing the soil. The process of nature in building a soil is slow. It begins with pulverizing rock and growing lichens, mosses and plants of no special value, but as those decay the material for holding moisture is furnished which helps to put in shape plant food for growing a better plant and so there is gradually built up a soil that holds soluble plant food and we can grow good crops. The question for the farmer to solve is how to maintain in the soil a condition such as nature has put in it when he first begins to cultivate it. No one, I think, disputes the fact that this is what we want, the question is how to accomplish it best.

When we purchase land the thing we pay for is its ability to grow a good paying crop and not the simple dirt that is there, but which may for various reasons lack that productive capacity. The average of a large number of analyses of soils from different sections of the country shows that in the first eight inches there is about 3,000 pounds of nitrogen, 4,000 pounds of phosphoric acid and 16,000 pounds of potash to the acre, a suffiicent quantity of plant food to grow innumerable crops if it was all in such shape that the plants could get it as they required it. That provision of nature that holds quite a large proportion in reserve in an insoluble form is a wise one, as the average Yankee would take

it all the first year if he could get it. The average wheat crop, which, according to the figures of the United States Department of Agriculture, is about fourteen bushels, takes 29.73 pounds of nitrogen, 9.49 pounds of phosphoric acid and 13.69 pounds of potash from the soil. When we compare these amounts with the amount given as being in the soil, we cannot help but wonder why it is that the average yield is so small; and when we see on neighboring fields a yield on one of fifteen and the other of forty bushels to the acre, we cannot help but be surprised at the difference. If we give the subject any thought we must be convinced that there is something which controls the productive capacity of a soil beside the simple nitrogen, phosphoric acid and potash which are talked about as the principal things required. The New York Agricultural Experiment Station, at Geneva, has been studying the question of the productivity of the soil in several different ways, doing things over several times, and noting the results.

So far they have found that all of the experiments show similar results, whether in pot experiment in the greenhouse or in the larger work in the field. Prof. Beach, the horticulturist, has been working in the greenhouse for several years trying different plans of treating the soil. In some boxes various formulas of commercial plant food were used, in others stable manure and in others neither one. He has been growing lettuce and then corn after it, using for the soil to begin with, in a part of the boxes a good clay loam, in others a sandy loam. The commercial fertilizers were compounded to give the plant what it needed to make a normal growth. In some boxes certain proportions of barn manure were used and in every case the addition of manure gave increased size and more vigorous growth. Anyone observing the plants could not help but notice the difference in growth, as it was very marked in every case.

A good illustration was shown by him last year. One dozen heads of lettuce were cut from the boxes fertilized with commercial fertilizer and the average weight was 3-4 of an ounce; the same number of heads cut from boxes where manure was used weighed on the average 4.13 ounces. When corn was grown

after the lettuce in the same boxes, those having commercial fertilizers made an increase of ten to fifteen per cent. over the ones with no fertilizer. When manure was added with commercial fertilizer the increase was from twenty to fifty per cent. and when manure was used alone the increase was fully as much.

Of course this might not be true to such an extent in field work; it would depend on the physical condition of the soil and the way it has been handled previously. This work is being continued at the present time and I wish you might have the privilege of looking the plants over and seeing the marked difference in the growth. I am sure it would be impossible for anyone to see it and not be convinced that there are conditions affecting plant growth that on some soils, are not met by supplying commercial fertilizers. In the boxes where neither manure or commercial fertilizer were used, the plants are small and lack color and vitality. When the commercial fertilizer is used they are larger and better color, but when the manure is used they are much larger and of dark green color. In some boxes sphagnum moss was used with the commercial fertilizer; "the analyses of the moss shows only a trace of fertility, it is simply a vegetable growth that holds a large amount of moisture" and the boxes in which it was used show a considerable better growth and color, not as good as when the manure was used, but quite an improvement over no vegetable matter added. In a field experiment, including twelve acres divided into eight plots, and carried on since 1897, some equally striking results have been obtained.

In this work two plots were fertilized with stable manure, on two plots no fertilizer was used, on two plots 750 pounds and on two 1,500 pounds of a good commercial fertilizer were used. Catch crops have been sown on a part of the plots in the form of winter vetch and crimson clover at the last cultivation of the corn the years that corn was grown. I will not go over all the figures but will simply give those of last year's hay crop which show the trend of the experiment. This work is to be continued for a series of years in a regular four year rotation. On the two plots on which the manure was put, there were cut 6,281 and 7,388 pounds of cured hay. The no-fertilizer plots weighed out

2,917 and 3,406 pounds, the plots with 750 pounds commercial fertilizer 4,828 and 4,826 pounds and the plots with 1,500 pounds fertilizer 5,028 and 5,502 pounds cured hay. The amount of fertilizer applied is about the same in the manure and the larger amount of commercial fertilizer. The results so far are very much in favor of the plots on which the manure was put and have not shown very much effect from the catch crops.

I have given quite a little time to this part of the subject, but it seemed to be a wise thing to show some of the results which have been obtained in order to make clear the desirability of working more on the line of building up the vegetable matter in the soil if we are to get the best results. We often hear farmers say that they do not believe it pays to haul out manure, that they can buy commercial fertilizers and get better results, and it did not cost any more than hauling out the manure. If you are willing to accept the statement which I have made of the results obtained when the conditions were such that there could be no mistake about the facts shown, and when it has been done several times with closely agreeing results, you must acknowledge that the farmer holding to such a belief is mistaken. Allowing that the expense was no more to obtain an equal amount of available plant food in commercial fertilizers, "which would not be true," they certainly cannot be depended upon to give as good a crop year after year on the majority of farm lands which have been cropped for a long series of years. All soils are not alike and we cannot put down any strict rule to follow on every farm, but the man who succeeds best in keeping up the supply of vegetable matter in the soil will be most truly successful. New lands which have been cropped only a few years will admit of very different methods for the time being and give fair returns, than will the farms in the eastern part of the United States which have been cultivated for a long time and in many cases very unwisely handled.

You probably have heard of the deserted farms in some of the eastern states and perhaps have known some of them. In some cases it is not all due to bad management; but in a large number of cases it is the result of unthinking, injudicious methods. Such farms may be made productive again with good management. I

might illustrate this by giving a little history of one of those farms situated in the neighborhood where I spent quite a part of my younger days. At the time I first remember the farm, to notice its condition, it was in the hands of a family that first settled upon it and cleared it up. There were eighty acres in the farm, good, level, tillable land, with the exception of about four acres of woodland. The soil was a sandy loam capable of producing a bountiful crop when well cared for. The system these people had followed for a long time was to summer fallow, sow wheat in the fall, seed with timothy, cut three or four crops of hay according as the crop yielded, plow up, summer fallow, sow wheat again and so keep going year after year. The stock which was kept and had been for a long time, consisted of two cows and three horses. The manure was thrown out to the side of the barn and left until some convenient time, when what little that had not leached away was put on a piece of land near the house that they were anxious to put in shape to grow some sweet corn or garden truck for the family. The straw, hay and grain, everything that would sell, was disposed of, excepting the little required for the stock they kept. I remember hearing when a boy neighboring farmers say that the land was worn out, and I think some of the fields were in the condition which I have heard some of the older farmers speak of as being so poor that they would not grow white beans.

A son was on the farm at that time and he became discouraged and sold the farm for a small sum to a man who had followed up the carpenter's trade, had saved a little money and wanted a farm. He changed their system completely by putting fourteen cows on the farm, buying hay to feed them at the start, saving all the manure and getting it on the land and plowing it under. If anyone had said anything to him about vegetable matter forming humus and its value in the soil it would have been blind talk to him, but he was a good observer and had noticed that the farmer who made, saved and used all the manure he could, usually had better crops than the ones who neglected the manure pile. He planted corn on the field where he put the manure and the next year he sowed oats and seeded with clover. He did not

know that clover could do anything more for him in building up the soil than timothy, but he did know that the cows liked it better and that he got more milk when feeding it than with the other coarse fodders. He mowed the field two years and then put all the manure he could spare on that sod and plowed it under, planted to corn and then to oats and clover. If anyone had talked to him about short rotation of crops he would have been in the dark as to their meaning, but he did know that his clover ran out at the end of two years and he did not get as much hay and the cows did not like it as well, so he plowed it up and started on the plan his experience had taught him was the best way to get a new clover meadow.

It was not very many years before people began to say "What is Witter doing to that land? He gets large crops right along, it must be we were mistaken about the land being worn out." They knew he farmed better than other people, but they failed to see just what he had done. When he died he left a good property practically all made on that eighty acres of land. It was sold a few years ago for $160 an acre and is one of the most productive farms in that valley today.

I have given this little history of that farm for the reason that I think it brings out the point I want to make more effectively perhaps than any other way I could present it to you. Happening as it did, it made a strong impression on my mind and as I have come to know about the principles involved I have often wondered at the wisdom Mr. Witter showed and thought why it was he came to get on that line, and after he did, why more farmers could not see those things as he did and make their farms more fertile by doing the same. If they had, the agriculture of New York would be in much better shape than it is now and there would be no such depreciation in the value of farm lands as has taken place.

Many dairy farmers have not succeeded any better than the grain farmers; they made the mistake of allowing the manure to lie beside the barn until its value was largely leached out and wasted; and what they finally put on the soil was only a skeleton

of the original value and the depletion of fertility was nearly as rapid as in the other case.

Prof. Roberts of Cornell university has carried on a large number of very careful experiments to determine this loss in the pile of manure which is left exposed under the eaves of the barn and in the open yard as so many farmers do. He found the loss averaging about 50 per cent and in some instances it went quite a little higher. To show what this loss amounts to, taking their dairy of eighteen cows fed a ration of mixed hay, silage, mangels and eight pounds of mixed grain, the analysis of the voidings, showed that, figuring the nitrogen, phosphoric acid and potash at usual prices, they were worth ten cents a day for each cow. This value of course would depend on the quality of the food used and perhaps is rather high for most farms, but putting the value at eight cents and that cared for so it is half lost, the farmer with twenty cows in the two hundred days he keeps them in the barn would lose what would cost him to replace in nitrogen, phosphoric acid and potash, $160, saying nothing about the added value of the vegetable matter plowed under, which I think you will allow I have proved to you is quite a factor in plant growth. Any such percentage of loss in ordinary business ventures would mean ruin and the only way that the farmer who manages that way avoids it is because he is realizing on the stored up plant food which he has in the soil. This, as I have tried to prove to you, is sure to fail sooner or later, depending somewhat on the character of the soil he is working. The only road to permanent success is to work all the time to see how much manure can be saved and put on the land, with the one thought always in view of increasing the productive capacity each year.

One of the successful farmers of Western New York, a man who took one of those run down farms and has made it wonderfully productive, says that while his cows usually make a good profit on the cost of the food in their milk production, if they only paid for the food, the value of the manure would give him a good paying profit. I might give numerous other instances on this line, but hardly think it is necessary to prolong the discussion, only to say that the men who are making a success in agri-

culture in New York today are the ones that have best solved the question of economically building up the fertility of the soil.

There is another phase of the dairy business which, while you might say it has no relation to soil fertility, is of such vital importance in making the business a paying investment that I should feel that I had not done my full duty if I neglected to say something about that side of it. I allude to the cow, the machine the farmer must depend on to make the business a paying investment. Governor Hoard has without doubt presented this subject to you many times and very much better than I can hope to do. If you are all heeding his advice you certainly are keeping only the best cows in your herds; if you have not all done so, I hope I may bring out some point that will convince you of the necessity of beginning the sorting process at once. It is said that from the mouths of many witnesses the truth shall be established. Judging from the books of very many creameries which I have had the privilege of examining, it will require a large number of witnesses before all the men who are keeping cows that do not pay their board will be convinced of the foolishness of that kind of business. If all those poor cows could be eliminated from the producing dairies it would work a revolution in the business. If I could only state this to you in a way that you would appreciate the damage they are doing, I am sure you would start out doing door-to-door missionary work among those unthinking dairymen who are not here and never attend gatherings of this sort, and you would not stop until you had convinced them of the advisability of either going out of the dairy business or keeping only the cow that could pay a profit on the food consumed.

I will take the record of three cows in our dairy at the New York Agricultural Experiment Station, at Geneva, to illustrate this point. Four years ago, as the cows we had were not furnishing as much milk as was required for the experimental work we were doing we purchased ten cows. I have taken the record which was made by three of them for the year, as it shows clearly what we often find in our dairies when we keep a careful account with the individual cow. At the experiment station a careful rec-

ord is kept of the production of each cow and the food she eats, so it is easy to strike a balance and see how the account stands. The food cost of keeping these three cows whose milk record I have taken was $47.50 each for the year, the amount consumed being practically the same in each case. For convenience we will name these cows Nos. 1, 2 and 3.

No. 1 produced 8,000 pounds of milk, fat test, 5.6%; pounds fat, 448; 15% moisture added, 515 pounds butter at 20 cents, $103. Cost of keep, $47.50. Net, $55.50.

No. 2 produced 6,000 pounds of milk, 4% fat test, 240 pounds fat; 15% added, 276 pounds of butter at 20 cents, $55.20; food, $47.50. Net, $7.70.

No. 3 produced 4,600 pounds of milk, 3.8% fat test, 175 pounds fat; 15% added, 201 pounds of butter at 20 cents, $40.20; food, $47.50. Loss, $7.30.

It is very easy for you to see the difference in profit in keeping these three cows when the figures are put before you, and you cannot help but realize that it is not a good busines proposition to keep the unprofitable cow.

I expect you will say I am putting it a little strong when I advance the proposition that the way some other man does business has anything to do with your success or failure, and so far as the individual management is concerned it does not.

The commercial end of the business is where you are affected, and of course it is not as easy for you to realize that part. Most farmers in speaking of their business attribute their success or failure in a large measure to the price they were able to obtain for their products. It is a very important factor, and there have been a great many plans evolved to control production and in that way get better prices. Manufacturers of all classes of goods have been at work on similar lines, but they have come to realize that the first thing for them to study is how to reduce cost of production, which is much easier for them to control than the selling price. This is regulated by the law of supply and demand, and is not usually so easy to reach.

The same thing holds true with dairy products, and with the added complication that they come under the head of what is

usually termed a perishable product, as they cannot be kept except under conditions when the temperature can be controlled. The price for butter and milk especially is regulated almost entirely by the supply; for that reason any plan that will help to regulate production will help the producer. This is illustrated very well in the city of New York. The consumption demand there is about 35,000 sixty-pound packages of butter a week, and when they get only about that amount, prices are satisfactory and well sustained; but when the receipts go to 60,000 packages and over, as they do nearly every summer, the price declines. That summer surplus is largely made by cows that do not produce enough milk in the year to pay for the food they eat.

One object I had in giving a record of those three cows was to make clear this other phase of the question. The No. 1 cow made a good profit, No. 2 made a little profit, and No. 3 lost all that No. 2 made; so we kept three cows to get a profit from one, and made a production of 10,000 pounds of milk and 475 pounds of butter to put on the market to lower the price of the No. 1 cow's product, doing all the work for the one purpose of lowering the price on the production of the good cow.

This class of cows has been very appropriately named the poor farmer's star boarders that eat up the profits of his other business. He charges his failure to low prices and thinks it is entirely beyond his control, when the facts are the trouble is of his own making, and no outside influence can be of very much assistance to him, unless he changes his methods and in that way helps himself.

In closing, I want to make this proposition in leaving the subject for your consideration: The man who makes any true success in agriculture in the future must make the feeding of live stock the basis of his operations in order to keep up the fertility of his soil. If he makes choice of the dairy cow as the animal to use, he must reject all but the very best. He must work with the twin ideas in mind that only a good cow, well fed and well cared for, promises profit, and that only careful saving of all voidings and their return to the soil will economically maintain farm fertility.

DISCUSSION.

The Chairman: This subject may not appeal to us as strongly as in older states, but it is a subject that we must wake up to the danger of. I was born in the state of New York, lived there till I was fifteen years old, have been here fifty-five years, and last summer I went back to look the ground over, and I looked over the farms that I had worked on, one that I worked on fifty-six years ago, and I knew every knoll and every hollow. That farm at that time was as good a farm as there was in the state, and it is not worth anything today. I went over almost every square rod of it, and I found some little stunted corn that never would have an ear on it. I found wild carrots and daisies and Canada thistles, and they were stunted, too. I went to another farm, owned by a boy—he is only one day younger than I am, but of all the boys on earth that I wanted to see, I wanted to see him. I hadn't heard from him for forty years. He was on a farm that I worked on when I was fourteen years old, and it is a magnificent farm. I asked him—we called each other by our first names—and I said: "Louis, what is your farm worth?" "Well," he says, "I have been offered $150 an acre." Now, that other farm was once just as good, but it couldn't be sold today for $15 an acre. I looked over his farm, I saw splendid crops; I went into his pasture, the most luxuriant pasture that I saw last summer anywhere, and I saw the dairy cow in all her glory. She was the animal that had brought up that farm, and better than everything else, he had a boy, his own boy, on the farm. I said: "How did you keep Sam on the farm when all the rest of the boys went away?" He answered: "I was determined he should stay on the farm, and I let him have his own way in everything. When he was quite a small boy, he took a notion to fancy chickens, and I said, 'My boy, you can have them.' Soon he saw some nice dairy cattle, and some beautiful Jersey calves, and he said, 'Father, I wish I had some such animals as those.' 'My boy, you can have them,' I said. Then he got some thoroughbred hogs, and then after a while he said: 'Father, what

is the reason I can't go to the Agricultural College?' 'No reason in the world, my boy, you can go.'" He took a course in the Agricultural College, and came home and talked and acted "scientific farming," and if there were any happy persons in the state of New York they were found right on that farm. I tell you it paid me to travel 800 miles to just see what my old playmate had come to. Well, I have made my speech. Now, if there is anybody else has anything to say, he can have a chance.

Mr. Foster: What is the cheapest method of removing this fertility from the stable to the outlying parts of the farm, and applying it?

Mr. Smith: The men in New York state that are succeeding best today in building up their farms, are men who are using absorbents in their stables, and drawing the manure directly from the stables to the field, where they want it, and spreading it on the field, and in that way getting the most that they possibly can out of it. They do not put it in heaps, simply spread it all out. They do that work when they haven't so much other work to do, but even if the loss was not saved, they have so much to do in the spring that it is sure to be neglected.

Mr. Foster: Do they use manure spreaders?

Mr. Smith: Only where they have a manure shed and put the manure in that, and it is kept there until the fall of the year, and they put it on the clover after the wheat is taken off. Of course, with straw and coarse manure, you can't use a spreader as well, directly from the stable.

Mr. Foster: What do they use for absorbents?

Mr. Smith: Straw, principally. Some who have not straw, cut up cornstalks, and the cow eats what she wants and the rest goes into the gutter for an absorbent. Some use coarse straw, horse manure, mix up the warm and the cold manure and get it out in that way.

Prof. Henry: You have spoken of hauling manure directly from the stable to the field, and have said that is very coarse manure. On what kind of soil is that applied, as to crops? Is it for corn or pasture or meadows?

Mr. Smith: As a rule, land that they are going to turn for corn. The practice of the best farmers today in New York state is a short rotation, corn and clover, growing corn for the silo, and the manure from the barn goes onto the field that they are going to plow the next spring for the corn crop. It is generally clover sod.

Prof. Emery: Is it found that the turning of the coarse manure under in any way affects the moisture of the next year's crop? Does it lessen it?

Mr. Smith: It would, if the farmer had not learned that the one thing necessary when he spreads that manure on the field is that the first thing to do is to go over that with a roller and press it down tight, and then cultivate and then roll until he has put it in shape that there are no air spaces between the lower strata of soil and the upper soil.

Mr. Foster: Would there be a very great loss of fertility by plowing the ground in the fall and then spreading the manure on land intended for corn?

Mr. Smith: If the land was frozen hard and there was no thawing, then, of course, there isn't any great loss by the leaching of the fertility. But bare land always is growing poorer; that is, there is constant leaching of the nitrates. Nitrogen which has been put in condition so that the plant can get to it, is in a soluble form, and that is always going down. Prof. Ladd, in the South Dakota station, found that the proportion of nitrates was considerably more five or six feet down in the soil than it was in the first foot, simply from the lack of vegetable matter and that leaching process. Where the farmer who carries on rotation has grown clover, then we find an entirely different condition; then the soluble plant food is brought up where the plants can get it. They found over here in Minnesota, where wheat was grown after wheat, that the depletion of the soil fertility was nearly three times as much as the crop took; that is, that the leaching of the plant food took it down out of the reach of the plants.

Mr. Foster: But what I want to find out is,—we will take,

for instance, where we have a clover sod, that we intend to put into corn next season. Wouldn't it be better to plow that clover sod the last thing in the fall, just as late as we can before it freezes up, and apply our manure on the surface during the winter right from the stable? Wouldn't it save more, having that surface soil loose, and in a spongy condition, wouldn't it save more fertility than would be lost by the action of the wind during the winter on the sod?

Mr. Smith: One of the things that we want to do in growing corn is to increase the heat of the soil. Your corn plant wants warmth. If you have a cold, sour season, then you don't grow much corn—your corn grows up yellow and spindling; when if you have warm weather and the moisture conditions are all right, then you grow good corn. Now, when you put that manure down under there, the fermentation of the manure has a tendency to increase the heat of the soil, and at the same time it holds the moisture right there.

Mr. Foster: Couldn't you give it that heat by cultivation, and the fertility being on top, it would wash down to the corn plant?

Mr. Smith: The only thing you cultivate corn for,—of course, incidentally to kill weeds,—is principally to make an earth mulch on top of the soil to keep the moisture there.

Mr. Foster: Would not spring plowing hold the moisture better than fall plowing—didn't you say so?

Mr. Smith: Oh, no, I did not intend to convey that impression. A great many farmers say they grow better crops by fall plowing than from spring plowing, simply because the action of the frost and the storms compact that soil and then it is in a condition that the evaporation of moisture is not as rapid. Of course, if they keep the top worked, and there isn't space for the capillary attraction bringing the water up, it is all right; but if the man plows in the spring, and then rolls that land so as to give that same compacting of the soil, he will get better results.

To illustrate this point: I saw two years ago a field, a clover sod, where the man commenced drawing out manure along in

the month of November, when he first put his cows in the barn. He kept drawing right along until in the spring, at the time that he commenced plowing that field. Now, in that corn crop there was quite a little growth of clover started up, you could see a marked difference in that corn crop between the part over here that was manured in the earlier part of the season as compared with the part which was manured just at the last end. The plant roots had taken up that soluble plant food, and the ground was in good condition for growing the corn roots.

Prof. Henry: Wouldn't that indicate that we might often with advantage put fresh barnyard manure on to pasture the preceding season as we had opportunity, and let it lie there during the summer, plowing it the next fall or the next spring for corn?

Mr. Smith: Yes, I think so.

Prof. Henry: I think Wisconsin farmers would be well pleased if they try the fertilization of pasture the last year before they turn the pastures to corn.

Secy. Burchard: Would you favor the idea of breaking up pasture ground very often? Is or is not a permanent pasture better than a pasture in rotation?

Prof. Henry: Permanent pastures may be better in some cases, but I can't say that they are for us at the University. We get, in our clover and timothy in rotation, more food than we do from so-called old fashioned grass pasture.

Mr. Favill: More food at less expense? You have to break it up and re-seed?

Mr. Smith: Of course you have not just the same conditions as we have in New York. We have a great many of those old pastures that cannot be plowed very well, and are only good for permanent pastures, and the great question for the farmer is, how to keep up that permanent pasture, how to keep it producing enough food to make it profitable at all, and the only way he can do it really is by feeding his animals grain in the summer, and the carrying of the fertility back on to that pasture, the sowing of grass seed or some commercial fertilizers,—something of that kind. But a great many of the successful

farmers have come to the point that they have got a silo for the summer just as much as for the winter, and our pasture does not furnish food for the cow very much after the first of July. It furnishes good food for six weeks or two months, and then we have got to supplement that. Of course, we at the station grow alfalfa and succeed with it very nicely, and I believe that you could grow alfalfa here very successfully, and it would be a wonderfully profitable crop for you to grow; but the farmer that is busy and doesn't want to stop to get a catch crop to feed his cows, who has got a summer silo right there, where he can take his silage out and give his cows good feed every day, is the man that has solved the question of the summer production of milk.

Mr. Favill: Are farmers now using land plaster?

Mr. Smith: Only as they use it in stables.

Mr. Favill: They do not sow it on the land?

Mr. Smith: No, sir, very little. They use it in the stable for fixing the ammonia and keeping down the smell.

Mrs. Howie: Are the farmers in New York building many silos?

Mr. Smith: They are building a great many. In one section, where I was attending an institute last week, they said there were over one hundred silos built right in that immediate neighborhood this last year.

Mrs. Howie: Are they building them of cheaper grade, or better, for permanent use?

Mr. Smith: They are building now better silos, since they found it was no longer an experiment. Their first silos were cheaper.

Prof. Henry: Then the silo is on the gain in the state of New York?

Mr. Smith: Oh, without any doubt.

Prof. Henry: I was told that the farmers of New York built 20,000 silos this year. Do you think that an unreasonable statement?

Mr. Smith: No, I don't believe it is.

Recess till 1:30.

AFTERNOON SESSION.

Convention met at 1:30 P. M.
C. H. Everett in the chair.

PRACTICAL DAIRYING.

Mrs. Adda F. Howie, Elm Grove, Wis.

In this great and somewhat intricate problem of dairy farming, one of the most important subjects for earnest and conscientious thought is the building of a suitable home for the dairyman's working partners. The man of limited experience will not infrequently give careful attention and unhesitatingly adopt plans and suggestions that his better judgment, if called into serious action, would for various reasons quickly reject. In the first place, one who contemplates a successful business career must have a distinctive object in view. And in the matter of barn building the comfort and welfare of its occupants should stand first on the list of considerations. A thought for appearance may take a secondary place, while condensing space and labor saving conveniences may justly be given a third position in the standard of requirements that fittingly belong to the modern, up-to-date dairy barn. For, while it need not be an elaborate or expensive structure, the matter of light, ventilation and thorough comfort should be given the most weighty consideration. The introduction of artificial heat, as frequently advocated, would tend to debilitate, if not positively injure, the constitution of the inmates, and cement and sloping platforms should be studiously avoided.

Two or more reliable thermometers may guide the herdsman in regulating the temperature, for a too warm or unevenly heated stable is quite liable to prove more disastrous to the health and comfort of a herd than one insufficiently heated. An even temperature of 50° in winter will secure excellent results,

whereas a higher one will cause the cattle to shed their coats too rapidly and much earlier in the season than customary, and will consequently prove a fruitful source of colds, which not infrequently will develop into congestion; while repeated exposure or change from warm barns to the bleak, nipping winds incident to unprotected barn yards, is more apt to terminate in tuberculosis that may affect the vitality of several generations.

A dairyman who wishes to obtain the best results will on no account use rigid stanchions as a means of fastening dairy cows, and while it is not a commendable method even for beef cattle, it is doubtless less harmful for an animal of an easy going, lymphatic temperament than for the highly nervous organization belonging to the accepted standard of a dairy worker. In order to do her best, a cow should have absolute control over every part of her body, and anyone versed in cattle habits knows that a cow, when sleeping in a natural position, reposes with her head lying on her side. Consequently, any stall permitting perfect freedom of movement is to be given a preference even in the face of an argument that stanchions require less room. Surely, the cases of injured udders should go far towards banishing this barbarous fastener from all well regulated barns.

Every thoughtfully planned cow barn will contain a number of roomy box-stalls for the use of cows about to freshen, so situated as to be perfectly dry and free from draughts. A wide center aisle, which may also serve the purpose of a feeding alley, with the cows facing it, will prove quite as convenient and certainly more pleasing in appearance than where the cattle are compelled, like disobedient youngsters, to stare at the cold and unresponsive space offered by a blank outside wall, or, quite as disagreeable, with blinking, unprotected eyes, face the strong light admitted by uncurtained windows.

If the herd is composed of pure bred cattle, selected and cared for with a view to increasing the income by the sale of registered stock, too great attention cannot be given to the wise selection of a sire. For by introducing a cull from any breed, the herd is not only rapidly degenerated, with a corresponding financial loss to its owner, but the waste of time, be it one year

or many, is of more vital import to the breeder who has not been allotted longer than 90 or 100 years to devote to the praiseworthy task of raising the standard of his cattle.

As a rule, the average dairy farmer has reached the pinnacle of his idea of advancement when he has placed a pure bred animal at the head of his herd. He expects, without further effort to travel a smooth road to success. If one should inquire as to the characteristics he wishes to develop and perpetuate, they would find he entertained only a vague thought as to the real benefit to be derived from such a course, further than the intention of improving his stock and a cherished belief that a transfusion of pure blood would speedily correct all evils incident to indifferent care and unwise selection. For years the dairy papers have dwelt on the importance of intelligent breeding as a means of improving our herds, and of giving painstaking attention to results.

Recently there has come under my personal observation a practical lesson that will be of value to me in discriminating for or against an animal. Heading my herd are two royally bred sires, both exceptionally fine as to individual qualities. On examining my records, I find that sire No. 1 has two daughters from the same dam, one testing from 4.9 to 5.6, the other testing from 4.3 to 5.1. Sire No. 2 has two heifers from the same mother, one of which tested 6.4 when three weeks in milk, the other 5.6, within a few days after freshening with first calf. And while it will require another year or two before completing these experiments, I am now quite satisfied as to the ultimate results. While it has been scientifically demonstrated that we cannot feed butter-fat into milk, it is quite as apparent that we may be able to breed for butter-fat, and increase the flow and flavor of milk by judicious feeding and care. Therefore the possibilities of marked improvement are largely within our control.

No up-to-date dairy barn, whether it contains one or one hundred cows, should be without its daily record sheet and accurate spring balance scales, if it be merely to intelligently estimate a year's earnings. The day has gone by when "a good

mess" will prove a satisfactory and conclusive answer to a buyer who wishes to invest his money with a clear understanding as to the probable outcome. "How many pounds and what per cent of butter-fat?" is a fair question that any reliable dairyman should hold himself in readiness to promptly answer, and the scales with carefully kept records will undoubtedly now and then relieve his conscience from a severe strain. These, together with the Babcock test, will do even more, for, by placing implicit reliance on them he will acquire a confidence that will enable him to buy as well as sell to the best advantage. The additional time and labor required has more than once been offered in excuse for slip-shod methods that ignore the use of tests or scales. Still, I am confident that every dairyman who will for one month keep an exact record of the product of every cow in his barn, will require no further argument to be convinced of the beneficial results of this practice.

Every cow worthy of being admitted as a member of the firm, whether pure bred or scrub, is entitled to a name. A moment's time will suffice for hanging the pail containing her contribution on conveniently placed scales. Half that time will serve to note the amount, opposite her name on the slate or record sheet, and when the yield of a day, a week, a month or year is required to establish her reputation as a producer, there is no guess-work. It is an absolute certainty, and if she fails to meet a reasonable standard of requirements, let her at once seek shelter elsewhere. While with choice breeding stock it would not be wise to work solely with the aim of securing a flow of milk corresponding with the utmost limit of her ability, yet, when butter or cream is to furnish the basis of revenue, a cow at the age of four years incapable of producing 5,000 pounds of at least 4% milk will scarcely insure enough profit to warrant her occupying a place that might be filled by a worker of larger capacity.

Every member of the herd should be gently and thoroughly groomed each day, not only as a means of securing a more wholesome and appetizing product, but as a stimulant to a healthful circulation, particularly when housed the greater part of the

time. A cow may safely measure her own allowance of seasonable roughage, but keen discrimination should ever be used in deciding the amount and kind of grain ration she may take with safety and profit. Cows, like humans, are creatures of habit, and may be trained to look for and appreciate a regular meal hour.

As it is not only desirable but absolutely necessary in profitable dairying to secure a comparatively uniform quantity of milk, one must be ever on the alert with practical plans that reach beyond the present needs. While the tender, appetizing grasses of early spring are materially contributing to both flow and flavor, a generous soiling crop should be rapidly coming forward ready to fall in line when pastures begin to weaken and fail under the depressing rays of a hot summer sun.

No experienced dairyman could possibly overlook or overestimate the value of an unlimited supply of clean, pure water, and and unfailing salt-box within the reach of every animal, and while I do not approve of forcing a cow to eat salt in order to increase her thirst, a cow in milk should be encouraged to drink early and often. Sixty quarts of water per day is the old Connecticut rule for a cow at flush, and many of the cows owned by some of these skillful breeders have been induced to dilute their high per cent of butter-fat with sufficient water to produce in a single day 50 to 60 pounds of deliciously rich milk.

The herdsman must be a man who by nature and practical training it fitted to look after the welfare of the cattle on which so much depends. Every successful dairy farmer will confirm the statement that no dairyman can afford, even at the price of his board, to employ an ill tempered or indifferent man to care for his cows, for every time a cow is struck, kicked or in any way abused, an indignant nature will quickly retaliate on the owner, by a shrinkage in her milk. I have known of a case where a single blow forever destroyed the usefulness of a valuable creature.

Every time an ignorant or careless herdsman permits an animal to be exposed in severe weather long enough to become chilled, a like falling off in milk may be noted. Irregular feed-

ing, watering and milking are also potent causes for shrinkage. Certain kinds of foods likewise have a tendency to decrease the flow. Loud talking or scuffling in the barn will not only prove detrimental to the nervous system of the approved dairy cow, but may be safely counted as an equal drawback to the financial interests of the owner. The penalties never vary and are always enforced, regardless of climate or locality.

Too great stress cannot be laid on the importance of cleanliness as a factor in profitable dairying. Its influence is so far reaching that many grave errors of less magnitude may be condoned by its presence, for it is not merely a source of laudable satisfaction to one's self, but a potent passport to the good opinion of others. Therefore, let the watchword be, clean barns, clean cattle, and clean, wholesome-minded employes, for they are a positive necessity to the permanent success of dairy farming.

The barn should at all times be kept scrupulously clean. By that I do not mean that the manure should be removed once or twice a week as convenience dictates, but when cows are constantly stabled, at least twice daily. The gutters should be well littered with some good absorbent, the feed-boxes carefuly cleaned and last but not least, for appearance's sake, the floor should be swept. Furthermore, if a dairyman takes commendable pride and pleasure in his pursuit, he will find a faithful whitewashing of the entire inside of barn, stalls, boxes and every bit of visible woodwork will amply reward for time and labor spent in applying this sanitary beautifier. Roller towels, wash basin and soap should occupy a conspicuous place in every dairy barn, not alone for ornament but for actual and frequent use.

When a dairyman has made good his part of the obligations of partnership, by providing his cattle with clean, comfortable quarters, well-cured fodder and sweet, nutritious grain, has groomed them and made them understand that he is their friend and not the cruel, merciless taskmaster who stands ever ready with a blow or curse to vent real or imaginary grievances on their helpless and inoffensive heads, when he has given painstaking thought to every phase of condition and circumstance, he has a

just right to be equally exacting in his demands for a sufficient equivalent in dairy products to warrant a commendable pride and insure a satisfactory financial reward. And in determining this the scales and test will be his most valuable assistant.

Many pages might be devoted to itemized instructions, of more or less service, but the intelligent, conscientious dairy farmer, who is ever seeking to condense time and labor, may find the entire secret of success quickly summed up in three great rules that stand at every turn along the entire route of dairying, a simple, plain and straightforward guide board, pointing out with immovable had the royal road to success. The directions are spelled in big capital letters and read "CLEANLINESS, KINDLINESS AND UNFLAGGING ENERGY."

DISCUSSION.

The Chairman: Mrs. Howie lives upon her own farm, she is a business dairywoman, and this is a good opportunity for you to get good advice.

A Member: Do you state from your observation that cows are uncomfortable standing with their heads to the wall, or simply from prejudice acquired in early life on your own account?

Mrs. Howie: Perhaps a little of both. I just reasoned it out. Think for yourself, how you would like it to have your dinner table set around the room against the wall, and instead of facing your friends, everybody sit and look right straight at the wall, and eat as fast as you can without looking up. Try that, and see how much good your meal will do you.

A Member: Perhaps looking out doors may be as much of a change as looking at our friends.

Mrs. Howie: Not in the average barn yard. Then there is another thing. See how we study that our schools may be properly arranged and our sitting rooms so that the light shall fall over the left shoulder, and all that sort of thing. Now, apply

this to our cattle. This is business. People in cities hire a man at a big salary to drape their windows and make everything attractive and show to the best advantage. It is a disgrace to farmers not to do the same thing. Let us make the place so attractive that people who see it will respect our calling. Let us have things so neat and clean and sweet that even if we take a person unfamiliar with cattle, it will be a delight to walk down the aisle and look into those pleasant, happy faces.

A Member: Do you think it would be advisable to sell oats at 36 cents a bushel and buy bran at $20 a ton to feed cows?

Mrs. Howie: I think it would be better to raise alfalfa as we were told yesterday.

The Member: I am not talking about alfalfa.

Mrs. Howie: Well, I will tell you, I am not so well informed on feeds, because I never talk on that subject, and we have people here who can figure it right down for you. It is only my own rations for the individual cows that I figure on.

Prof. Henry: The question is whether we shall feed bran at $20 a ton, that is a cent a pound, or oats at 36 cents a bushel of 32 pounds. It is just an even thing, I wouldn't go to the trouble of hauling my oats to make the swap.

Mrs. Howie: You will find more nutrition in the oats than you will in the bran, if you have them ground, especially the bran as prepared at the present time, with all the sweepings of the floor and everything of that kind.

Mr. Foster: Won't the individual preference of the cow settle the question of bran or oats to a large extent?

Mrs. Howie: Well, you know we can become accustomed to all kinds of things; sometimes we have to. Of course we must feed our cows the things that they like, that is for our interest, but at the same time if we don't like one kind of pie perhaps we can be satisfied with cake. It is our business to look after those things.

Mr. Foster: Do you have a silo?

Mrs. Howie: Yes, I have two of them, but, unfortuntely, this year I didn't have enough to fill but one.

Prof. Henry: Do your customers complain of the products you sell as giving any taint or evidence of the silo?

Mrs. Howie: Not at all. In the first place, our silo was put in as an experiment, I objected strongly to it. My determination was to give my cows the best feed I could get, regardless of cost. I was persuaded to try a silo, and I read up all I could find about it, and I gave strict orders that this silage should be fed only after milking, in order not to taint the milk. After awhile, during my absence, they fed it before milking, and we never had a single complaint, I believe, and that is the practice now right along. It is not he silage, it is the filthy, dirty barns and the filth that is put in the milk that taints it.

Prof. Henry: There has been some talk in this immediate vicinity that silage was causing tuberculosis, directly or indirectly. Do you think that idea should be tolerated in this community to any extent?

Mrs. Howie: It would seem a very strange theory. We might as well say the human family would have tuberculosis by eating canned goods of any kind. No, I don't believe that. I think the reason we have tuberculosis in many of these herds is that the barns are improperly constructed; there is not enough light and sunshine and ventilation; there is not thorough cleanliness; and I believe that those are the conditions that will affect our herds. Now, mind you, we may not have that condition on our farms, but perhaps in our ambition to introduce a new animal, to get something extra fine, we send away and bring in an animal onto the farm, and that animal may be affected. While I do not wish to say anything detrimental to the interests of high breeders, I have this to say, that while in the East I visited several of the most noted barns, and I was very much surprised to see a lot of calf pens with steam-heat coils running through them and possibly blankets on those little calves. I said to the manager, "When we Westerners send to you for an animal to head our herds, you don't tell us that that animal has been kept in steam-heated premises, blanketed and all this, and we take him home and give him the best care possible, and which we think is all right, but it is too great a change. You might as well take

man out of steam heated house and put him out in the cold without any overcoat. He would have pneumonia in no time, and that would soon develop into something worse." So you see we may introduce tuberculosis into our herds, in one of these ways, and we should be very particular in doing this. You can't be too particular in knowing all about the man and the place and surroundings, from which an animal comes, and what the sire and dam were; find out all about it, and don't jump at it because it is cheap; it may be very, very dear in the end.

Mr. Hill: With reference to this ensilage flavor, it is quite generally conceded that there is something of an ensilage flavor in the milk from cows fed ensilage, but I believe we have got to the place that the city people have come to like this ensilage flavor in the milk, not knowing it is ensilage flavor. They may think it is peculiar to the Jersey cow, and like it.

Mrs. Howie: I think that is as true as it is with the clover flavor. You will hear people beg for early grass flavor. When I made butter, I had some customers who would come to me and say, "Won't you please put me up a jar of June butter like I had in New York State,—we want the grass flavor?" Now, very likely the ensilage flavor would satisfy them just as well.

Question: How are your box stalls? Can the cow turn around?

Mrs. Howie: No, she can't turn around, but the cow is not fastended at all. The gates between them are fastened from one to another by a chain, through to a post at each end, and the head is perfectly free, they can lie down and put their heads on their sides.

Prof. Henry: I want the people of Menomonie to know that Mrs. Howie is one of the honored members of the State Dairymen's Association. She has helped the association in many ways, and she has helped many women to regard dairying in a new light. She has brought help and a broader view of dairy matters to many, and shown people that women may embark in this line of industry with vast profit to themselves. There are people in this audience who are wondering whether this lady really practices what she preaches. There sits in this audience today

one of the best stock men in the state of Wisconsin. His farm is a model. I said to him one day, "I heard a man say, Mr. Blank, that you had the cleanest barn that he was ever in." He smiled, and he said, "Well, let me tell you how I came to clean up my stables into better shape. I thought I was doing pretty well, but when I visited Mrs. Howie's and saw how much cleaner her place was than my dairy barns, I said to myself 'if a woman can keep barns as clean as that, I can keep my barns better than they are,' and I began to improve at once, and if I deserve any particular compliment, it is because I received the impetus from Mrs. Howie's stables." That man is in the room, and he may deny it, if he can.

Mr. Scribner: Guilty.

Secy. Burchard: It is often objected as to people who write papers and engage in discussions in dairymen's conventions and farm institutes, (and I am sorry to say that perhaps there is too much occasion for it), that that talk or that paper was all very well, but that the party giving the talk or the paper doesn't practice the preaching set forth. Now, I promised Mrs. Howie that I would cross examine her a little, and I want to ask her this very pointed question, Do you practice what you have been preaching?

Mrs. Howie: I would like to ask Mrs. Kelly if a witness is obliged to incriminate herself? Really, it is a pleasure for me to tell you that I make a big effort to at all time practice what I preach. There are times and occasions when it is not quite up to my standard. There are things that will come up on any farm, sickness or great stress of work, when we will hurry over some little things, but I feel that I am not afraid to ask any one to come to that farm at any time, and this, not because I have a fine farm, not because I have fine buildings, or other expensive things; I have not. There are very many of you here, farmers, perhaps, who are seeking for better methods, who have far better barns, far finer buildings than I. It is only a little, old, country house, and the barn is an old style barn, but we do try to keep it clean; we try to keep our cattle happy and content; and we have found that it pays. It pays more than two hundred per cent.

We will call one hundred per cent. of it satisfaction, and the other one hundred we have in good solid profit.

Prof. Emery: I have visited Mrs. Howie's place for the purpose of learning, and took sufficient time to note what was going on about the barn and on the farm, and I want to say to you that if you will visit the farm you will find that there is practiced there all that she has preached today, and more too.

A Member: How large a herd have you?

Mrs. Howie: I now have 62 head of pure bred stock, and one good old scrub cow, that is just as good as anybody. When I began I had two cows and a little heifer, and if they hadn't known a great deal more than I did, they would have been dead before I had been in the business six months. So don't be frightened when I say I have sixty-two head now.

Mr. Favill: Then we are to infer from that last statement that you regard yourself as a better woman today than you were when you commenced?

Mrs. Howie: I certainly do. I certainly feel very much honored to be in this profession and to know these people.

Secy. Burchard: The announcement made was that Mrs. Howie would talk on Practical Dairying. I suspect that probably eighty per cent of this audience will think that she has not said very much about practical dairying, for it is too often the thought of people who keep cows and make butter that dairying does not commence until after the milk has been drawn from the cow, and that dairying consists in setting the milk in pans and raising the cream and churning it into butter, or sending the milk to the creamery. Now, I would like to ask Mrs. Howie to explain why it is that she has placed the emphasis of dairying in the barn and not in the milk house, not in the churn or on the butter worker?

Mrs. Howie: Because that is the foundation. If you begin to clean house, you would look nice to clean up your parlor and leave the attic and the cellar uncleaned. That is where the woman comes in, and that is why I should love to see more women in the cow barn. You can make it a little parlor, if you like, and it isn't hard work either. I am not always standing up before people and talking. I am sometimes down on my knees

scrubbing the dairy floor, and I feel just as much of a lady in my calico dress as I do when I stand before a large and intelligent audience like this. I hope and expect to be right there year after year, and do you know, that I feel that I have not only added to my mental attainments a big store of valuable knowledge, but I am physically a much better woman, and when you get a woman who is well physically, and who is all the time looking for bright remarks from these dairymen mentally, she is in a pretty happy state of mind.

Mr. Everett: It might be explained to this audience that Mrs. Howie was originally a city-bred lady, residing in the city of Milwaukee in a beautful home, but because of ill health she sought the country life, and accidentally discovered the possibilities in the dairy cow, and became a dairywoman.

Mrs. Howie: Mr. Everett is awfully nice to me, and what he says sounds very pleasant, but if I should tell you the truth, I would tell you that I was a discontented woman and did not want to go on the farm. I went there because I was compelled to, almost, and with the result that I would not go back again if I could.

Mr. Favill: I want to just tell this audience that from my positive knowledge of dariying, which extends back more than seventy years, I know that dairying, intelligently followed, will always make valuable men and women. I do not say that every slipshod man that buys cows, but every man who will give the cow that kind of attention that Mrs. Howie has shown in her paper, will inevitably grow into strong manhood and make a financial success as well. It is the best thing going for the farmer that will intelligently follow it.

Prof. L. D. Harvey, State Superintendent of Schools, being present, was called upon, and spoke in part as follows:

Mr. Chairman, Ladies and Gentlemen, I want to assure you of my pleasure in being here, because in the educational work in which I have been engaged for more than thirty years, I find that we are on common ground. You are here discussing educational questions of the broadest character. The paper to which you have just listened and the discussion following it give an illus-

tration of what has come through education, through the study of the practical problems of life, and you are here studying these problems; and at the bottom of it all is that which is at the bottom of most effort. You are here hoping that you will get something that will enable you to get more out of life and more out of your work, more money and more happiness. I wish that meetings of this kind could be held in every county in the state every year, so that the people could come together and discuss these practical problems of education.

The great problem in education is not the higher education, not the education which the universities and the colleges and the normal schools give, not even that which the high schools could give. The great problem, almost the despair of men engaged in educational work, is the problem of education in the rural communities. Why has it not been solved? Because it is so difficult a problem to solve. Some of the best minds of this country, for a score of years, have been devoting their attention and their energies to the solution of this problem of how the rural schools might be improved. A few years ago a committee of twelve of the leading educators of the United States spent two years in an investigation of this problem, and they made some very good suggestions, but little came of it, and I want to tell you that this problem is not to be solved by the educator, nor by the superintendent, nor the teacher; it is to be solved by the people themselves, and until they realize the rights of their own children, and that the demands of this century are greater upon those children than ever before; that it takes better training and education to fit them to meet the responsibilities of life today than ever before—until they realize that, they will not furnish the opportunities that they ought to furnish and there will be no solution of this problem. There has been an effort made in this state to find a solution of the problem, for many years, which means the education of over one-half of the children in the schools of this state, —over one-half of the 440,000 children enrolled in the public schools are in the district schools today, and out of every hundred less than two go from the district schools into the higher schools. You can see what that means to these children, that 98 per cent

of the total get no other education than in the district schools, and even then, many of them, are very irregular in their attendance.

It seems impossible to reach and interest the farmers on this question. As a rule they show a positive lack of interest in this matter which means so much to their children in the future, and that is a very great mistake.

While this responsibility rests upon the parents and taxpayes, it also rests upon every man in the state who had a better opportunity himself for education. We should all work towards a better state of things.

Wisconsin has been the pioneer in the movement toward the agricultural school and I want to interest you all in the agricultural school which is to be established in Wausau, and which is the first of its kind in the United States. There will be afforded facilities for the children in those communities to get the kind of education they need. We ask your co-operation; we invite your assistance, we ask you to study this problem as citizens of the state and as a matter of your own self interest, and the vital interest of your children, and the still larger interest to the state itself, to the end that the children in the rural communities shall have a longer period of schooling, and better schooling.

Now, there is pending and to be voted upon at the next election an amendment to the constitution, which provides for the election of the State Superintendent in the spring instead of in the fall, and making it a term of four years instead of two, and I appeal to you as citizens of Wisconsin to uphold that measure. It is an amendment which will put into the hands of the legislature the right to fix the qualification of that officer, and I believe will be strongly in the best interest of your children all over the state.

SOME OBSERVATIONS AND FIGURES ON THE PRESENT STATE OF DAIRYING IN DUNN COUNTY.

C. P. Goodrich, Ft. Atkinson.

In view of the fact that the meeting of the Dairymen's Association was to be held this year at Menomonie, it was thought best to make some investigations of the dairy business as conducted in this part of the state, so that we could be able to do as much good as possible by finding out what methods were practiced by those dairymen who were making the most profit out of the business; and, in cases where men were making small profits, or no profits at all in the business, to determine if possible the reason why, and lay the facts before this convention.

It was decided that the best way to accomplish this was to take a "cow census" of the patrons of some creamery.

Accordingly, last November, I visited this place and decided to make my investigations among the patrons of the Rusk creamery. This I did. I was unable to visit every patron of that creamery, but I interviewed 52; not selecting them here and there but taking them right along by course as I found them. I believe these 52 will represent a fair average of the whole.

My plan was this: Go to a man and find out the average number of cows he kept during the past year—the year, in each case, beginning Oct. 1st, 1900, and ending Sept. 30, 1901. Then make particular inquiry as to the kind of feeds and the amounts of the same given the cows; figuring the value of them at the market price at the time, determine the average cost of keeping the cows of the herd a year per cow. Some other inquiries I made which I may bring out later.

After obtaining this information from the patrons I visited the creamery and obtained from the secretary's books the amount of milk delivered during the year by each of the patrons interviewed, also the amount of butter it made and the amount of money the patron received for it.

From these data was figured the average returns from creamery for butter per cow, the pounds of milk per cow, the pounds of butter per cow, average net price of butter per pound, average price of milk per 100. Also the amount of money received for butter for one dollar's worth of feed given the cows, and the net profit per cow on butter above the cost of feed.

After doing all this work I constructed the following table. It was thought best not to use the names of the patrons, but to use numbers instead. Before going further I wish to say that while pursuing my investigations I was treated with the utmost consideration and afforded every facility and assistance possible to obtain the information I was seeking. Many of those whom I met expressed themselves as highly pleased that such work was being done to be used at this convention, for they believed they would be able to learn something that would enable them to make dairying more profitable.

One man said: "I am not doing as well as I would like to, and if I can find out how those do who are making more money out of cows than I am, I want to find out how they do it."

I also wish to say that I feel under special obligation to Mr. Chickering, Mr. Ross and Mr. Wittig, the butter maker, and several others for the invaluable assistance they rendered me while pursuing my investigations.

FACTS AND FIGURES FROM FIFTY-TWO DAIRIES IN DUNN COUNTY, WISCONSIN.

Patron's number.	No. of cows.	Kind of cows.	Cost of feed per cow.	Return for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter.	Average price of milk per 100 lbs.	Value of butter for one dollar's worth of feed.	Net profit of butter per cow over cost of feed.
							Cts.	Cts.		
1	18	Grade Guernseys	$28 00	$50 00	5,799	277.5	18	86.3	$1 79	$22 00
2	11	Mixed dairy grades and Natives	26 00	39 33	4,841	221	17.8	81.2	1 51	13 33
3	12	Grades of different dairy breeds	27 00	39 81	5,055	225	17.3	78.8	1 47	12 81
4	25	Natives and a little Shorthorn and very little Jersey blood	30 00	29 53	3,566	166.5	17.7	82.8	98	loss47
5	11	Natives and two grade Jerseys	29 50	37 06	4,397	210.4	17.6	86.3	1 26	7 56

FACTS AND FIGURES FROM FIFTY-TWO DAIRIES IN DUNN COUNTY, WISCONSIN.—Continued.

Patron's number.	No. of cows.	Kind of cows.	Cost of feed per cow.	Return for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter.	Average price of milk per 100 lbs.	Value of butter for one dollar's worth of feed.	Net profit of butter per cow over cost of feed.
							Cts.	Cts.		
6	22	High grade Holsteins—a few grade Jerseys	$ 2 00	$6 19	5,657	256.8	18	81.6	$1 44	$4 19
7	20	Mostly grade Guernseys—a few grade H. and J	27 00	53 24	5,875	298.2	17.8	90.6	1 97	26 24
8	9	Common cows	30 00	33 77	3,976	187	18.1	84.9	1 13	3 77
9	14	Mixed dairy grades; good dairy type	27 00	55 77	6,605	309.3	18	84.5	2 07	28 77
10	10	A little Jersey—mostly scrubs	27 50	29 27	3,832	165	17.7	76.4	1 07	1 77
11	6	Jersey and Holstein grades	29 00	38 10	4,550	214	17.8	83.7	1 31	9 10
12	11	Mixed dairy grades; some Shorthorn grades	23 00	52 23	5,984	293.3	17 8	87.3	2 01	26 23
13	18	Holstein and Shorth'rn gr'd's	24 00	34 05	4,504	190.8	17.8	75.4	1 42	10 05
14	16	Holstein grades	23 00	29 07	3,760	163.9	17.7	77.3	1 26	6 07
15	10	Common cows	22 50	43 04	5,184	239	18	83	1 91	20 54
16	9	Grades of dairy breeds	30 00	51 33	5,846	286.5	17.9	90.9	1 71	21 33
17	21	Grades of dairy breeds and some Shorthorn	23 00	35 18	4,565	197.2	17.8	77.7	1 21	6 18
18	14	Mixed dairy grades and Natives; good dairy type	23 00	53 20	6,168	295.2	18	86.2	2 05	27 20
19	10	Mostly common cows; some dairy blood mixed	29 00	47 39	5,659	243 4	18	83.7	1 63	18 39
20	13	Common cows	22 00	22 19	2,701	124	17.9	82	1 01	19
21	12	Natives	27 00	39 25	4,606	219	17.9	85 2	1 45	12 25
22	7	Holstein and Durham grades	31 00	37 84	4,427	211	17.9	85.4	1 22	6 84
23	7	Common or Natives; dairy type	23 00	53 79	6,574	304.4	17 7	80 3	2 15	28 79
24	15	Mixed; different breeds	27 00	44 15	6,055	248.7	17.6	72.8	1 63	17 15
25	18	Grade Holstein and Durham and a little Jersey	36 00	43 30	5,556	240.7	18	78	1 20	7 30
26	23	Holsteins and H olstein gr'des	23 00	34 85	5,221	195.9	17 8	66.8	1 52	11 85
27	9	Holstein grades and Common cows	32 00	32 39	4,230	178.5	18 1	75.5	1 47	10 39
28	8	Common or Native cows	22 00	37 98	4,433	214	17.7	85.4	1 72	15 98
29	8	Four grade Holsteins, rest Common	21 00	40 81	4,893	229.1	17.8	81.4	1 70	16 81
30	11	3 grade Jerseys, 2 garde Holsteins, rest grade Durham	30 00	35 34	4,157	197 8	17.9	85	1 14	5 34
31	10	Scrub stock	28 00	28 10	3,476	160.2	17.5	80.8	1 00	10
32	8	Common cows with a little Holstein and Jersey blood	30 00	41 77	5,030	232.6	18	83	1 39	11 77
33	8	2 Jersey grades, 1 Holstein grade, rest common	28 00	28 03	3,0 2	157	17 9	93	1 00	03
34	13	Common cows	28 00	40 76	4,786	231	17.7	85	1 46	12 76
35	6	Common and a little Holstein and Jersey blood	26 00	39 73	4,653	225.1	17.6	85.4	1 53	13 73
36	7	Common stock	25 00	42 65	4,812	239	17.8	88.7	1 71	17 69
37	14	Natives and a little Jersey and Holstein blood	28 00	35 31	4,284	195.2	18	82.4	1 26	7 31
38	14	A little Jersey and Holstein blood; rest scrub	27 00	38 33	4,58	211.7	18.1	83.7	1 43	11 33
39	8	Holstein and Jersey grades and scrub	21 00	36 85	4,505	202	18.2	81.8	1 75	15 85
40	11	Mixed lot	25 50	30 55	4,037	172.6	17.6	75.7	1 20	5 05
41	26	Common cows	32 00	37 55	4,844	209.5	17.9	79.5	1 17	5 55
42	10	Common with some Jersey and Holstein blood	30 00	32 72	3,855	181.5	18	85	1 09	2 72
43	10	Grade Jersey and Durham	25 50	36 69	4,511	207	17.7	81.3	1 44	11.19
44	12	Common stock	29 50	33 32	4,135	189.8	17.6	81	1 13	3.82
45	13	Grade Holstein and grade Jerseys	38 00	41 88	5,438	250.2	17.9	82	1 18	6 88

FACTS AND FIGTRES FROM FIFTY-TWO DAIRIES IN DUNN COUNTY, WISCONSIN.— Continued.

Patron's number.	No. of cows.	Kind of cows.	Cost of feed per cow.	Return for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter.	Average price of milk per 100 lbs.	Value of butter for one dollar's worth of feed.	Net profit of butter per cow over cost of feed.
							Cts.	Cts.		
46	8	Grade Holsteins	$22 00	$41 87	4,737	232.8	17 9	88	$1 90	$19 87
47	14	Grade Holsteins	22 00	32 69	4,110	185	17.1	79.3	1 48	10 69
48	13	Jersey, Holstein and Shorthorn grades	31 00	41 70	4,849	233 3	17.4	83	1 35	10 70
49	6	Jersey and Holstein grades	22 00	41 70	4,847	232	17.5	86	1 89	19 70
50	12	Common stock	22 00	40 08	4,634	222.4	18	86.5	1 82	18 08
51	8	Common cows	26 00	43 98	5,296	245.5	17.9	83	1 69	17 98
52	15	Holstein and Jersey grades and Shorthorns	25 00	51 74	6,406	283	18.3	80.8	2 07	26 74

The number of cows kept during the year by these 52 patrons was 647.

Average cost of feed per cow, $27.

Average pounds of butter per cow, 220.

Average returns from creamery per cow, $39.51.

Average returns for one dollar's worth of feed, $1.46.

Average net profit per cow, $12.51.

Average price of butter 17.9 cents per pound.

We find by looking over the table that 7 patrons—Nos. 7, 9, 12, 16, 18, 23 and 52—get over $50.00 per cow in return for butter from creamery; and 6 patrons—Nos. 7, 9, 12, 18, 23 and 52—get over $25.00 net profit for butter per cow above cost of feed. Five patrons—Nos. 9, 12, 18, 23 and 52 get over $2.00 for butter for each dollar expended for feed.

Nos. 4, 20, 31 and 33 get just about enough for butter to pay for feed.

What are we all working for? I never got a man to do a single stroke of work for me without he expected pay for it. We are all working for wages, and we all want higher wages, and because men want higher wages, we have strikes and riots and bloodshed and destruction of property, suffering in homes, women and children starving, all for the sake of this one idea. Why, you would think the whole world was crazy for wages, and I be-

lieve they are. Nobody is satisfied; the man that gets $1,200 a year wants $1,800, and the man that gets $1,800, wants $2,000, and so it goes down through the whole list. Now, look at this table. No. 20 is doing the same kind of work that No. 9 is. No. 20, why don't you demand higher wages? You are working right along and getting nothing for it, and who is to blame. I say to No. 20, and to all the other numbers on this list, every one of you can get just as much as the best man there, if you will only take the same means to earn it.

Let us look into this matter and see if we cannot discover the cause of one man making a good profit and another making no profit.

Take No. 7 and see how my notes read concerning this herd. No. of cows, 20; mostly grade Guernseys, some grade Holsteins and grade Jerseys; good dairy type; fresh in fall. Cost of keeping, $27 per year; ration, oats and corn ground and bran, 8 lbs., shredded cornfodder and oat straw in winter. In summer, pasture and about 1-2 as much grain as in winter. Returns from creamery for butter $53.24 per cow. Average number pounds of milk per cow, 5,875; pounds of butter, 292.2; average price of butter, 17.8 cents per pound; price of milk, 90.6 cents per 100; returns from creamery for butter for one dollar's worth of feed, $1.97. Net profit per cow, $26.24.

No. 9: Number of cows, 14; mixed dairy grades, good dairy type, fresh in fall; cost of keeping, $27. They had corn and oats ground, and bran, 4 tons in all, during the year. In winter, clover hay, which was cut early and very nice; shredded corn fodder with some ears on and straw. In summer, pasture and a little grain. Returns from creamery per cow, $55.77; pounds of milk, 6,605 per cow, pounds of butter, 309.3. Stable very comfortable, well lighted and ventilated. Average price of butter, 18 cents per pound; average price of milk, 84.5 cents per 100. For one dollar's worth of feed $2.07 was received; net profit per cow, $28.77.

Contrast this with No. 20: Number of cows, 13; common cows, scrub type, fresh in early spring and winter. By a scrub I mean a cow that does not show that she has got the ability to

make either meat or milk in profitable quantities, just such stock as they drove up from Illinois into this state fifty-five and sixty years ago. Cost of feed, $22. Ration: Corn, oats, and shorts, 4 lbs., shredded corn fodder, clover hay and straw in winter. In summer, pasture only. Returns from creamery, per cow, $22.19; average number of pounds of milk per cow, 2,701; average number of pounds of butter per cow, 124; average price of butter, 17.9 cents; average price of milk, 82 cents per 100. One dollar's worth of feed brought in butter, $1.01; net profit per cow, 19 cents.

Truly, No. 20 worked for very small wages when feeding, milking, caring for his cows and hauling the milk to the creamery and took his pay in a scrub calf, a little over 2,000 pounds of skimmilk and a little manure.

I feel like making some comments on this, but I will forbear. I know that No. 20 is here, and more than one of him. They would like to do better and I believe they will after being confronted with these facts, for they don't like to work for nothing any more than the rest of us.

I must give you some more. No. 12 had during the year 11 cows; mixed dairy breeding with some Shorthorn blood; fresh at all times of the year. Cost of keeping, $26. Ration, ground oats and corn and bran, 6 lbs.; clover hay, shredded corn fodder and straw in winter. In summer, pasture and 2 lbs. ground oats.

Returns from creamery, $52.23 per cow; pounds of milk, 5,983 per cow; pounds of butter, 293.3; stable warm, well lighted and ventilated; water warmed in winter; average price of butter, 17.8 cents; average price of milk, 87.3 cents per 100. One dollar in feed brought $2.01; net profit per cow, $26.23.

No. 18: No. of cows, 14; mixed dairy breeds and natives, first class dairy type; fresh in fall. Cost of keeping, $26. Ration, ground oats, 6 lbs.; clover hay, corn stalks and straw, water warmed in winter. In summer, good pasture only. Returns from creamery per cow, $53.20. Pounds of milk, 6,168; pounds of butter, 295.2 per cow; average price of butter, 18

cents per pound, price of milk, 86.2 per 100. One dollar in feed brought in butter, $2.05; net profit, $27.20 per cow.

No. 31: No. of cows, 10; scrub stock; fresh in early spring; cost of keeping, $28; ration, ground oats and corn and ear corn, 4 lbs.; timothy hay and some clover and marsh hay and shredded corn fodder and straw in winter. In summer, pasture only.

Returns from creamery, $28.10 per cow; pounds of milk, 3,476; pounds of butter, 160.2 per cow; average price of butter, 17.5 cents; average price of milk, 80.8 cents per 100. One dollar's worth of feed brought in butter, $1.00; net profit per cow, 10 cents.

Ex-Gov. Hoard (interrupting): Won't you explain to the audience that the difference in the prices received for butter is due to the fact that certain cows were fresh and gave the most milk when the price of butter was high?

Mr. Goodrich: Yes, those that received the higher prices got them because the cows were producing a larger flow of milk at the time when butter was worth the most, which was usually in the winter time.

No. 33: No. of cows, 8; 2 grade Jerseys, one grade Holstein balance common cows; fresh in winter and spring. Cost of keeping, $28. Ration, oats and corn ground, 6 lbs.; timothy hay, corn stalks and straw. In summer, pasture only.

Return from creamery, $28.03; pounds of milk, 3,012; pounds of butter, 157; price of butter, 17.9 cents; price of milk, 93 cents. One dollar in feed brought $1.00; net profit, 3 cents per cow.

No. 23: No. of cows, 7; common or native stock, fresh at all times of the year; cost of keeping, $25. Ration, oats and barley ground and buckwheat bran, 5 pounds; corn fodder, a little millet and marsh hay near spring and straw. The buckwheat bran had middlings in it and cost but $8 a ton. In summer, pasture only.

Returns from creamery per cow, $53.79; pounds of milk, 6,574; pounds of butter, 304.4. Stable good and well lighted. Average price of butter, 17.7 cents; average price of milk, 80.3 cents per 100. One dollar in feed brought $2.15. Net profit,

$28.79 per cow. Take notice that in this case there was a well balanced ration, undoubtedly, fed and also a cheap one, and see the result in profit.

No. 52: No. of cows, 15; some grade Holsteins, some grade Jerseys, a few grade Durhams, fresh at all times of year; cost of keeping, $25. Ration, oats and corn ground, 4 lbs.; clover hay with a little timothy, and ensilage and straw. Returns from creamery, $51.74 per cow; pounds of milk, 6,406; pounds of butter, 283. Stable warm, well lighted and ventilated. Average price of butter, 18.3 cents; price of milk, 80.8 cents. Returns for one dollar in feed $2.07; net profit per cow, $26.74. This is the only case reported where I found ensilage was fed.

The next two numbers I wish to call particular attention to. No. 48: No. of cows, 13; some grade Jerseys, some grade Holsteins and some grade Shorthorns, fresh in spring. Cost of keeping, $31. Ration, ground oats and wheat shorts, 4 lbs.; timothy hay with a little clover and corn stalks.

Returns from creamery, $41.70; pounds of milk, 4,849; pounds of butter, 233.3; average price of butter, 17.4 cents; average price of milk, 86 cents per 100. One dollar's worth of feed brought in butter, $1.35; net profit per cow, $10.70.

No. 49: No. of cows, 6; a little Jersey and Holstein blood; 2 fresh in spring, 4 fresh in fall; cost of keeping, $22. Ration, corn and oats ground, 4 lbs.; shredded corn fodder and straw in winter. In summer, pasture only. Returns from creamery per cow, $41.70; pounds of milk, 4,847; pounds of butter, 232; price of butter, 17.5 cents; price of milk, 86 cents per 100. One dollar in feed brought in butter, $1.89; net profit per cow, $19.70.

It will be seen, that although the returns per cow of these two herds was exactly the same, yet No. 49 made $9.00 the most net profit per cow. This is because No. 48 fed the most expensive ration, composed largely of timothy hay which was no better for milk production than the ration No. 49 fed.

Did I tell you about the man that sold his timothy hay and bought corn fodder? If I didn't, I will. A farmer ought to be a business man, and this man was. He had timothy hay,

and he had other feed, but the timothy hay he hauled away two or three miles and sold it for $11.50; that would leave it $10 a ton on his farm. He went right into an adjoining field where a man had a lot of corn fodder, and he bought all he wanted for $2.50 a load; it was fine corn fodder, and he hauled as big loads as he was a mind to; and surely three loads of corn fodder at $7.50 would do his cows as much good, and probably more, than two tons of timothy hay, which would be $20. So there was $12.50 clean saving by that simple operation; and yet I find plenty of men that would not buy corn fodder, they won't buy anything; they say, "I must feed what I raise on my farm."

Out to Rusk it is a splendid country, finer even than here, and they raised big corn last year, and one man was feeding timothy hay, and he had two four-horse teams in the field plowing under the corn fodder that there had not been an animal on. They followed right up after the huskers and plowed that in and wasted it. There was $12 worth of good fodder to each acre,—or it was equal in feeding value to $12 worth of hay. Now, that man is a prosperous man, he is doing a good business in other ways, he has got a lot of good land and keeping some fine stock. Men look up to him for an example in that country, and yet he is turning under that good feed and giving his stock timothy hay. A poor man couldn't stand it to do that way; that man can stand it, because he has other ways of making money; I will not tell you what, because you will know who he is.

One more number I wish to call attention to. No. 25: No. of cows, 18, grade Durham, with a little Holstein and Jersey blood; fresh at all times of year; cows fat and beefy. Cost of keeping, $36. Ration, corn and oats, ground, 12 pounds; timothy and clover hay and some corn stalks in winter; in summer, pasture only. Returns from creamery, $43.30 per cow. Average pounds of milk, 5,556; average pounds of butter, 240.7. Good stable, well lighted and ventilated. Average price of butter, 18 cents; average price of milk, 78 cents. One

dollar in feed brought $1.20 in butter. Net profit per cow, $7.30.

Although this man got fairly good returns, yet his profits were small, because his feed was so expensive. His cows looked sleek and fat, and many persons admired them. But they were not strictly of the dairy type. He said he fed them all the grain they would eat, and was "bound to;" no matter whether he made a profit or not, he would have no hungry animals around him.

I have tried to draw another lesson from these investigations. There were twenty-six herds where there had been some attempt at grading up with dairy blood, and twenty-six herds where there had been no attempt,—or, at most, very little—to do so. The herds with dairy blood,—Guernsey, Jersey, or Holstein,—brought an average return of $42.39: 236.8 pounds of butter, and $15.37 net profit per cow. Those with little or no dairy blood in them averaged in returns, $36.84; pounds of butter, 205.8; net profit, $9.86—31 pounds of butter per cow less than the others, $5.55 less in returns, and $5.52 less in net profit per cow. And this in spite of the fact that some of the herds of native or common cows were of excellent dairy type and among the largest producers.

In Hoard's Dairyman of February 7th, last week's paper, you will notice a summary of a cow census that Mr. Jenkins, of Sidney Center, New York, has been taking in Pennsylvania. It is a milk shipping community. Now, amongst other things, Mr. Jenkins asked the farmers, "Do you read dairy literature?" Just half of them answered, "Yes," and half of them answered, "No." Now, who do you suppose got the most per cow, the men who read, or the men who worked so hard they didn't have any time to read? I have footed it up and averaged it. Those who said, "Yes," averaged $50.23 in returns per cow a year. Those who did not read averaged $32.95, a difference of $17.28 in their returns. Those who did read fed a little better; they fed $35.17 worth of food per cow. Those who did not read fed $32.29. Those who did read made a net profit of $15.06 per cow, and those who did not read got a profit of

66 cents per cow. Now, then, can a man afford to pay for a paper? Suppose he had twenty cows, why, he would get $300 more in a year, and he could take several papers.

DISCUSSION.

Mr. Jacobs: What did you estimate the pasture was worth?

Mr. Goodrich: I charged the cow $5.00 for her pasture during the summer. Of course, I couldn't get things right down fine, every cent. And then, there is another thing: all of them kept some milk at home; all of them fed some milk to the calves. I couldn't go into all those details. I had to depend almost altogether on the creamery. There are undoubtedly some here who may have made two or three dollars more per cow, if they count in all their milk.

Prof. Henry: Don't you consider that the farmers who have made the better grades of showing in this table have done very nicely, and are to be complimented upon the result?

Mr. Goodrich: They have, and I was very much surprised. I have found a good many surprises in the northern part of the state; before I came up here I had supposed that the only part of the state that was worth anything was down south; but I tell you I have found splendid dairymen up here, just as good as there are anywhere, and the average of 220 pounds per cow is a pretty good average.

Prof. Henry: I would like to ask Mr. Smith of New York if anything above 200 pounds is not a very favorable showing, all things considered?

Mr. Smith: It certainly is, taking the average right through, and I think it is better than a great many of the creameries in northern New York.

Prof. Henry: Of course we must remember that while Mr. Goodrich has charged these cows with all this feed at the market price, it has been sold to the cow herself.

Secy. Burchard: The cow paid her owner $10 for timothy hay, $15 for oats, and $2.50 a ton for shredded fodder. That is all they could have got for it in cash anywhere, and perhaps more, if they hauled it to market.

Prof. Henry: Farmers, you are to be congratulated. You are ahead of the class. Now, hold your position. You can make Dunn county one of the richest counties in the state. Keep on trying to reduce the cost of making butter; make your creameries bigger and get a dollar or two more out of that cow; breed up your stock; sell good veal calves. Don't forget the skim milk and what it is worth to feed to your pigs, and you will see that a herd of twenty-five or thirty cows is going to keep your family and yourself, and you will have a better income than most of the professors in the university, or merchants in the city here. I want to congratulate the farmers upon the splendid showing that a large number of them have made, and I am very glad that this investigation has shown so favorably for so many. I am sorry for the few with the poor showing, and I am sure you will change, feed less timothy hay and more clover hay; come into the rank where you are getting at least $15 profit next year, and keep climbing up.

Mr. Goodrich: I want to ask: will those whom I interviewed when taking this census who are here, please hold up their hands.

The Chairman: I count fourteen hands.

Mr. Goodrich: I am afraid that the ones who needed it the most are not here—all of them. I can see some whom I know.

A Member: Are these statistics all from one or from several creameries?

Mr. Goodrich: All from one co-operative creamery. They all had an equal chance, all went to the same market, and they had a good butter maker.

Prof. Henry: From the Dairy School,—one of our choice boys, and I want you to keep him.

A Member: Are those numbers the same as on the milk sheet at the creamery?

Mr. Goodrich: Oh, no, that has nothing to do with it. These are my own numbers.

Question: What was the average price paid at the creamery during the year?

Mr. Goodrich: Seventeen and nine-tenths cents for butter after paying for the making. Some of them got very little over 17 cents, because they produced the most milk when it was the cheapest. One got 18.3, because he produced the most milk when it was worth the most.

Ex-Gov. Hoard: Mr. Chairman, I want to call the attention of this audience to a point that I think is a very important one. This census is like a number of others that have been running through Hoard's Dairyman. The first census was taken in Iowa, consisting of 100 cows; the second was taken in Jefferson county, Wisconsin, and showed that there were men who were getting $2.08 for every dollar's worth of feed, and other men right alongside of them getting 98 cents—a clear loss of two cents. I spoke plainly yesterday. I told you that the man who keeps cows and refuses to fertilize his brains and understand the cow—this magnificent mother—the man who sits down in the row and allows himself to work for a mere subsistence, that that man deserves a charge of dynamite under him that will blow him up into consciousness somewhere. I want to tell you what would be a splendid thing in every creamery in the country. You look over this list and you will find every man's name suppressed, they are given you by numbers. If the creamery men of the state of Wisconsin would come together and solidly resolve that they will publish at the end of every year a report of every patron with his name in full, a statement of just exactly what his herd of cows has done, so that John could see what Bill did and Bill could see what Tom did, and every single man's name was spread out there, why, do you know, it would be a tremendous stimulant to these fellows. It is very clear from this statement, as it has been from these other censuses that have been taken in Ohio and Iowa and Wisconsin and New York and Pennsylvania, that the man who is a student of dairying will be sure to have a *dairy* cow; he

will be sure to feed dairy food and have dairy reading in his family, and to have dairy judgment and dairy books. The man who is not a student, the man who refuses to study, that man is punished as Mr. Goodrich has shown, punished and punished sorely.

The nominating committee, through its chairman, Mr. C. H. Everett, reported, recommending for president, J. Q. Emery, of Albion, Rock county; for secretary, G. W. Burchard, Fort Atkinson, and for treasurer, H. K. Loomis, of Sheboygan Falls.

On motion of Ex-Gov. Hoard, duly seconded by Mr. Philips, the report of the committee was unanimously adopted, and said gentlemen declared the duly elected officers of the association for the ensuing year.

Prof. Emery: Mr. President, I want to say, and with the utmost sincerity, that I consider the honor which has just been conferred upon me by this election a very great honor indeed. My greatest concern is whether I shall be able to meet the duties of this office in a manner to reflect credit upon this association. I know it is not my experience in the work of dairying in the nine years that I have been at it that could have called me to this position. For many years I have been engaged in educational work. When I was called to the office of State Superintendent, I became *ex officio* a member of the Board of Regents of the University, as well as of the Normal schools. When I entered upon the Board of Regents, I stated to them that I had but one request, and that was that I might be placed upon the committee of Agriculture, that I considered that a proper place for the Superintendent of Pubic Instruction to occupy, that the great work of agricultural education was a work to which the state superintendent should direct his energies, particularly, and that he should be a man so broad that all the educational work of the state should be-embraced in his sympathies.

I feel that this association is a great educational institution, and that in this respect I am but continuing the work of a lifetime in associating myself with educators. I want to thank you again sincerely for this honor that you have conferred upon me this afternoon, and I pledge to you, although I may not have gold and silver to give you, such as I have, will I give unto you.

Adjourned to Friday morning, February 14, 1902.

MORNING SESSION.

Friday, February 14, 1902.

C. P. Goodrich in the chair.

Secretary Burchard read the scores on butter and cheese, as follows:

Scores of Butter and Cheese, and Premiums awarded at the Wisconsin Dairymen's Convention, held at Menomonie, Wisconsin, February 11th to 14th, 1902.

Entry No.	Name.	Postoffice Address.	Score.	Premium.
		Sweepstakes.		
Cheese 5	Hugh Nisbet	Bloom City	97¼	$15.00
Butter 11	W. J. Hyne	Evansville	95	15.00
		Non-Competing.		
Butter 12	F. H. Gilbert	Hebron, Ill	91	
		Scores of 91 and over share in Pro-Rata Fund.		
Cheese 1	John Dixon	Cedar Falls	91	1 65
2	O. A. Kielsmeier	Hika	97	11.55
3	William Nisbet	Richland Center	96½	10.73
4	Iron Creek Cheese Co	Menomonie	89	
Butter 13	C. A. Squire	Elk Mound	93	4.95
14	Fred. Hatch	Careyville	85¼	
15	M. L. Van Dreser	Bloomer	93	4.95
16	John Hoimyr	Irvington	85¼	
17	O. W. Massee	Louisville	88	
18	W. H. Cafdisch	Baraboo	93	4.95
19	W. J. Yates	Falls City	85	
20	Roy Rathbun	Sand Creek	9 ½	5.78
22	I. F. Ausman	Elk Mound	90¾	
23	Wescott Hunt	Menomonie	84	
24	E. L. Duxbury	Green Bay	94½	7.42
25	A. L. Coville	Nelsonville	91½	2.48
26	C. J. Chapin	Amherst	92	3.30
27	A. C. Hamann	Sunset	87½	
28	Ole Esker	Bloomer	93	4.95
29	C. M. Kates	Custer	93½	5.78
30	James Van Duser	Hebron	93	4.95
31	Geo. H. Holmes	Baraboo	93	4.95
32	Dan. Bleuer	Omro	91¾	2 07
33	B. F. Holbrook	Durand	94	6.60

Scores of Butter and Cheese.—Continued.

Entry No.	Name.	Postoffice Address.	Score.	Premium.
34	E. C. Jacobs	Menomonie	89½	.....
35	R. W. Cronk	Menomonie	85	.....
36	F. T. Vasey	Menomonie	90	.....
37	E. C. McCormick	Hetzel	94½	$7 42
38	G. E. Jordan	Amherst	94	6.60
39	Frank Mares	Rusk	89½	.....
40	Miss Julia Samuelson	Menomonie	86½	.....
41	Wm. Miller	Menomonie	92	3.30
42	O. Cockran	Menomonie	88¼	.....
43	J. Flick, Jr	Dunnville	91¾	2.89
44	J. K. Crawford	Dunnville	93¾	5 37
45	Rusk Creamery Co	Rusk	94¼	7.01
46	H. W. Ausman	Elk Mound	90½	.....
47	H. Berkholz	Middleton	93	4.95
48	J. R. Stratton	Meridian	94	6.60
49	H. Bast	Calumetville	93	4.95
50	M. Michels	Garnet	93	4.95
51	Wm. Clayson	Menomonie	84½	.....
52	J. A. Brunner	Tarrant	91	1.65
53	A. Cole	Magnolia	91½	2.48
54	B. J Ellis	Stoughton	94	6.60
55	H. R. Holden	Poynette	85½	.....
56	W. J. McLaughlin	Menomonie R. R. 1	91½	2.48
57	J. E. Boettcher	Waukesha	92	3.30
58	Amelia Czamanske	Randolph	91½	2.48
59	Asa L. Meracle	Whitewater	90	.....
60	J. N. Wigginton	Black Creek	92	3.30
61	S. J. Dufner	Leon	91½	2 48
62	Mrs W. T. Evenson	Baldwin	88	.....
63	J. H. Roen	Menomonie	92½	4.13
	Total points above 90 and amount pro rata		103	$170.00

Each point above 90 draws $1.65+.

I certify the above and foregoing to be a correct transcript of the scores reported to me by H. K. Loomis, superintendent of exhibits, and that the premiums awarded comply with the stipulations published in the program for the convention.

GEO. W. BURCHARD,
Secretary.

THE IMPORTANCE OF CLEANLINESS IN DAIRYING.

W. L. McLaughlin, Menomonie.

Mr. President, Ladies and Gentlemen: This is the first time in my life that I have ever come before a public audience to speak on any branch of the dairy industry. We have before

us a subject of great importance, Cleanliness in the Dairy. This is the thing that is absolutely needed to make a first class article. Some of us are disappointed at the way that our score cards have come out, but most of know why our scores are low.

We may be very ready to lay it all onto the patrons. They are back on their farms. We mustn't forget that the dirty buttermaker is sometimes to blame, too. I am a buttermaker myself; I know something about it. I have done lots of things I ought not to do. In the first place, you take in the milk at the creamery. You run it through the skim milk pump and handle it and it comes out with an odor or a taint, and you are after the farmer. His butter is off a half or three-quarters of a cent, and nobody knows where the trouble is. The maker lays it onto the farmer's cans. He must have an excuse; it won't do for him to say that it is his fault. It comes to the man that scores the butter. He says it has a feverish flavor, an odor from one thing or another, but he hardly ever mentions that skim milk pump that the buttermaker doesn't half clean.

To begin with feeding the cattle: You see, any food that you give a cow has a certain tendency to give the milk a certain flavor, and that milk comes to the creamery in a certain condition, and it is bound to get into the butter; there is no separator on earth that will take the taint out of milk, no matter what a slick salesman may tell you. To make good butter, we have to begin at the foundation. The buttermaker who starts in at a creamery to make butter should reserve the right to reject any and all milk that is not in the right condition to make a first class article. He should know himself whether it is in that condition before he rejects it; and the fact is that there are a great many of us don't know when the milk is right. If the milk is not right, the proper way is to reject it and immediately go and see the owner of the milk. I wouldn't send it home and tell the man to keep his milk. I would send him a note and go to see him, go to his barns, around his stables, to his milk house, and find what is the trouble. If you do that in a pleasant way with a man, and he sees you are acting for his interest, he will not feel hard against you. But if you send

his milk home and tell him it is rotten, he will quit right off. None of us like to be told we are dirty. When you get there, the first thing you will probably see that makes trouble is in milking the cows. You can go into the average farmer's barn today in Dunn county, and you won't find anywhere in the barn anything with which to wipe off the cow's udder before milking, and many milkers do not think of such a thing; and besides that they will wet their hands with the milk before commencing. And who can get that nasty stuff out of the milk when it is once in there? And it is bound to hurt the butter. In four or five years it will count up considerable on the price of the butter.

Another thing: they feed frozen vegetables and different things that injure the milk. It is the buttermaker's place to find that out and go out and stop those people from doing it. It is as much his duty for him to see that the man takes care of the milk as for him to churn the cream, and if he has the interest of the people at heart, he will work for them the same as for himself. But you say the average buttermaker hasn't time to go to the barns and round the places of these farmers. Well, he ought to have, he must have, to do his duty.

The next thing is: after the milk is milked and before it goes to the factory, many men will cool it off and after they get it cool, as they think, they set it in the kitchen, and leave the cover about half off the can, because somebody has told them not to put it down tight, and there they will cook cabbage and all sorts of things that are bound to get into that milk. They may be perfectly clean; they have washed the can. That milk comes to the factory and it is cold, and the buttermaker can hardly detect that odor, but by the time the butter gets onto the market, it is plain enough; "kitchen flavor" is the name they have for it, and that is where it comes from.

Another thing is in washing the cans. Generally they take the skim milk home, and when it is 105 in the shade, they will set the cans out in the sun, and let them stand there until some calf gets hungry and wants some milk, and they take some of it out and leave the rest of it there. When they get ready to

milk the cows, they will dump the rest out, and put in a little hot water, and give it a few shakes, and it goes to the barn and of course that sour smell sticks to the can, and it is impossible for the new milk to come to the factory in condition to make a first class article. The proper thing to do with that can is to empty it at once when it comes from the factory—there are lots of barrels in the country—empty the can and scald it, and then turn the can upside down, hanging on stakes; then it will have a chance to ventilate, and that is the only right way to ventilate a can and keep it in good shape.

The next thing that comes after that, is bringing milk to the factory. You should never mix warm and cool milk together, and it is frequently done. You mix the warm morning's milk with the cold night's milk, then it is brought to the factory and separated, and then take the skim milk home and go through the same old process, and they wonder why their butter doesn't score.

The next thing I want to say is that a buttermaker ought to have everything about the creamery, the walls and everything, so clean that he should set an example for his patrons to follow. If you come to the creamery door, and you see that the walls and everything are in such condition that it wouldn't be proper to mention it in public, you say, "My barn is just as clean as that creamery," and you won't care. The creamery man must show example to others, if he wants to be able to do anything. You never can teach persons by telling them one thing and doing another. I can remember my father telling us boys that if we chewed tobacco, he would shut us up for three days and nights with nothing to eat, and just as soon as he said that he reached up and took a big chew himself. I thought that was pretty hard, so I took a chew, and it made me so sick that I didn't get over it fo pretty near three days and nights, and I have never taken any since.

It is the same way with the patrons of the creamery. They must see that your creamery is neat and you are clean yourself in appearance.

The next thing is neglecting the churn in the creamery. You

will find lots of buttermakers are neat and clean with everything on the outside, everything shines on the outside, but you want to look once in a while on the inside. You will find very few creameries today with connections with the steam pipes, and that is where there is a lot of tainted butter. There is where the milk gets the odor. Never mind the pipes on the outside—nothing touches them; but look after the inside of the pipes where the milk goes through. I was out in western Minnesota one time, and went into a creamery where they had been having trouble; they couldn't get the top price; but after hunting around we found that some way or other stuff had got into a hole at the skim milk tank, it had decayed there, and it was in such a position that when there was no milk in it, you couldn't see anything, but as soon as you pumped the milk in, it crowded it down, and this stuff came up through this hole and into the milk. We looked for a long time before we could find the cause of that taint. In order to make a first class article, you have to have your eyes open on your tanks, as well as the farmers' tanks. You have got to watch all the time, and that is the trouble with most of the creameries: the makers are not particular enough about keeping everything in first class shape, especially underneath.

I went out in the western part of Minnesota one time, and worked in a man's place while he was gone for a month. When I went in there, I told him it looked pretty dirty. He said: "Well, you better clean it up a little; I have been helping the farmers thresh, and haven't paid very good attention to it." I looked around for some "gold dust," and there wasn't any. He said, "You can get it across at the store." I went and got some and cleaned out the creamery in pretty good shape, and after I had been there a month and come away, they docked me $2.75 for that gold dust, because the other man had never cleaned out with gold dust. I moved things out of that creamery that wouldn't be fit to mention here. Where was the dairy inspector? I never saw one. I have been making butter sixteen years and I never have seen but one. Why don't they come around? I suppose they will say that nobody has made a complaint. No

buttermaker will make a complaint about his own creamery. The dairy inspector to do his duty should have closed some creameries I know about. I wrote to the dairy inspector and asked if it was right to use preservaline in butter. He answered that it was not, and he would prosecute any one whom he found doing it; but I know there is preservaline being used and the butter shipped out of the state, and nobody is stopping it.

Another thing. Those hand separators no doubt are a good thing in a certain way, but in making a first class article of butter, a man can do a good deal better to have the milk brought to him, so he can test it before it is separated. After it has been separated by the hand separator and cooled down, it is almost impossible to tell whether it is all right or not. Then, again, the agents tell them that they can get along and skim their milk and bring it only once or twice a week to the creamery, and that is a bad thing. The buttermaker cannot make good butter, and so, in my judgment, the hand separators are detrimental to making a first class article of butter. In Iowa where they use the Cooley system, they do not get the top price for the butter. That will affect the score every time.

Another thing. When the butter does bring a good price, the separators claim the credit; they don't give it to the farmer. In my opinion, if he doesn't take care of his milk, it doesn't make any difference what separator he uses.

I thank you for your kind attention to me, and I will sit down.

DISCUSSION.

The President: I have attempted at some Farmers' Institutes to talk on the care of milk and milk utensils, but Mr. McLaughlin can beat me at it, and I am sure he can answer questions. Go at him, particularly on this subject of visiting the farm. I never knew but one buttermaker that did that,—just as quick as he got through his work, every day, he jumped onto

his wheel, and in the course of a little while he visited every patron; he dropped into their stables when they didn't know he was coming. I was with him one time when a man said: "You catched me when I wasn't ready for company, but I'll do better the next time." That is the way to do it.

Mr. McCready: Have you ever used the curd test?

Mr. McLaughlin: No, I haven't.

Mr. McCready: This last two years, as inspector, I have used the curd test in quite a number of factories, and I find that it is possible to detect poor milk in that way when it is not possible to detect it in any other way. The curd test is just making cheese on a small scale; that is, you take each patron's milk, probably a pint of it, and warm the milk up to 98, add five or ten drops of rennet and keep it at that temperature, and as soon as the curd becomes firm, break it up, separate the whey from the cheese, and you have in reality a small cheese made from each patron's milk, and you can tell what the result would be if it were made up all together. If you find that there is a bad flavor, the texture is not right, or anything the matter with any one, you can locate the trouble as you cannot do in the milk. Last summer I went to the factory of a fellow by the name of Mike Sullivan. I believe he was Irish. He had been sending milk to the factory, and we couldn't detect anything wrong in the milk, but we could notice it on the curd. I made curd tests of each lot of milk that came into the factory, and found Mike Sullivan's was off. I spoke to him the next morning, and asked him how many cows he had. He said, nine. I asked him to put into a bottle a sample of each cow's milk, and bring it back to me. I saw the fellow was in earnest when he said he wanted to help the cheesemaker out, so the next day he brought the samples of milk, and I made a curd test, and that showed that one cow's milk had that peculiar flavor that we had noticed on the big curd, made from all the milk. So the milk of that one cow affected the product of probably 300. I went with him to the farm to find out what was the trouble, and the first thing I noticed was this: He had a cow that was very fond of sour whey, such as he took home and emptied into the

barrel. She would drink two or three gallons of it. The barrel was taken away from the cow and the trouble ceased. Now, a thing of that kind it is only possible to find out with a Wisconsin curd test.

A Member: Can you detect poor cream with it?

Mr. McCready: I don't see why not. Still, the rennet might have some effect on the cream, though I don't think it would, because there is too much butter fat and not enough of the casein. I think the fermentation test would be pretty near the same for cream.

A Member: The gentleman has told us how not to take care of milk. Please tell us how to take care of it in the proper shape.

Mr. McLaughlin: I am not a professor at all. I am only talking through my practical knowledge. I never was inside of a Dairy school, or worked in a machine shop. I am just a common buttermaker, but I have worked at it sixteen years, and according to my experience, the proper way to do with the milk, immediately after you milk, is to get it out of the barn as soon as possible and cool it, put it into a tub of water, or into a tank, in the summer; and in the winter, leave it in the snow. When it is perfectly cool, put it somewhere where it will not freeze, but not in the kitchen where you are cooking; leave the can cover up, and stir it,—that is the main thing—stir it thoroughly from the bottom. The quicker you cool the milk, the better. Another thing: in my experience, milk will taint quicker after it is cold than before; as long as the milk is 85 degrees it will not take the taint half as quickly as if it is down to 55. The time you want to be particular is after it is cooled, to keep it from all kinds of taints. Another thing: the milk should be cooled in the morning before it goes to the factory, if possible; but, above all, the main thing is to keep the cans clean; scald them out as soon as you get home. Don't wait till the next morning; take a brush and use washing powder. I think it ought to be that when cans come to my factory, and I hold them up so I can see the inside, if there is the least little bit of a speck, it makes no difference how sweet the

can is, the milk should not go into the vat. A first class man doesn't have to guarantee his butter, and if he does it, without having a contract by which he can regulate things, he is doing something he shouldn't do. I was raised on a farm in Minnesota, and we used to feed our cows beets and turnips, but always immediately after we milked in the morning, and that was the proper time, and we never had any trouble with our milk being tainted with those things. But above all, keep the cans perfectly clean, and cool the milk as quickly as possible, and keep your milk pails out of the barn. Then the can must be ventilated before the milk is put into it; this is just as important as the washing.

A Member: Wouldn't it be just as well to have a bench as those stakes you speak of, and when you get your cans thoroughly scalded and cleaned, lay them on the side?

Mr. McLaughlin: Yes, I think so, but where I was raised we put them upside down. We rinsed them out in cold water and turned them over and let them drain. Another thing: there is nothing worse for cans than dishwater after you have washed the dishes. It is worse than leaving them alone. Butter makers all know that dishwater flavor.

A Member: How would it be if you have something like the Cooley can and the deep tank with ice, and as fast as you milk, strain it into the Cooley can and put on your cover, and dump it into the ice water?

Mr. McLaughlin: I don't like the idea as well as stirring it. There is no chance for the animal heat to escape.

The Member: Excuse me, I think there is more chance for the animal heat to be taken out that way than any other.

Mr. McLaughlin: I don't understand the Cooley system at all.

The Member: The cold water has a tendency to draw all the animal heat out of the milk and into the water.

Mr. McLaughlin: I have seen them take a common can and shove it into cold water. That won't do.

Mr. McCready: If you should take care of your milk that way, putting it in ice water or in cold springs without airing

it, it would never do for the cheese factory, as the curd test will show if you try. It will take more pounds to make a pound of cheese if the milk is cared for in that way than any other way I know of, because you have not liberated the animal heat from the milk.

The Member: I have taken care of my milk that way for quite a number of years. I try to get all the odor out of it before it gets into the can.

Mr. McCready: But you cool the milk without aerating it.

Secy. Burchard: The Cooley system is not used in cheese-making.

Mr. McLaughlin: I think it is just as necessary to cool as to aerate it.

Prof. Smith: Mr. McCready is right in regard to making cheese, that putting the milk into cold ice water and shutting it up drives the heat into the center of the can, and the taint with it, and the consequence is that he would have a gassy curd every time. Now, if your milk was perfectly clean, if there wasn't any of the bad bacteria, the thorough cooling, even if it wasn't very much stirred, you would get good results in making butter, because in separating you take all of the casein out, you have all your cream left, and you don't have exactly the same thing to contend with that you do in making cheese; but the ideal way in taking care of milk would be to have an aerator, have the milk drop through the air so that the gases are taken out of it, onto a cold surface, in a thin sheet, and in that way you have got rid of the gas; you have taken the heat out and put the milk in shape where it will keep good, because you have stopped the growth of any bad bacteria. The bacteria do not grow in cold milk, and consequently when you take your milk to the creamery in a cold condition, all of those things are dormant, and if the milk is clean, you have the very best condition for making good butter or cheese.

We have the same conditions in New York, many of them on farms, that Mr. McLaughlin spoke of, and there is one that he did not speak of,—although I dare say you have that, too—and that is the strainer, which is one of the very bad things

in the hands of a farmer who does not take care of it. Very often the strainer will stand all day, catching everything that comes along, and when you strain the milk through, it washes a whole lot of these things into the milk and starts it on the road to destruction at once. It takes steam to kill these bacteria that are lodged in many of the utensils, waiting for the warm milk to wake them up. The can should be rinsed with cold water first and then washed with warm water and washed thoroughly, and then rinsed with boiling hot water, hot enough to kill all the germs. Then it is fit to put the milk into.

Mr. McCready: Do you recommend your patrons to use an aerator?

Mr. McLaughlin: Yes.

Mr. McCready: I believe that is a good thing. I knew one creamery man that was trying to do all the good he could for his patrons, and he bought one for each man on the promise that he would use it.

A Member: I kept milk seventeen days sweet by the Cooley process; on the eighteenth day it began to be bitter.

Mr. Wittke: What is the benefit of an aerator, the exposing of the milk to the air or the cooling of it?

Mr. McCready: The exposing of it to the air. The aerator as a rule is not very much of a cooler unless it has a cold water or ice attachment, although some claim that it does cool the milk. I have not yet found an aerator that can be used in everyday farm milking that cools the milk at the same time it aerates it. It liberates the animal heat.

Mr. Everett: I have had a good deal of experience with milk aerators and with coolers, and especially with one that is combined. I don't care to advertise anybody in particular, but I do know that the Champion Milk Aerator and Cooler will do it all right.

The Chairman: So will the Star cooler.

Mr. Everett: Mr. Gurler bought eighty of those Champion aerators, and gave them to the patrons of his two creameries, and thought it was a money-making proposition for himself to do that. It costs somewhere between three and four dollars—

I don't know the price. It has a cold water chamber, which is hollow; the milk is poured into the top, and dribbles down in a small stream; the water may be ice water or well water. It is aerated first before it strikes the cooler. It takes out the heat and takes out odors from the milk; but it must be set in a place where the air is pure, not near hog pens or the barn yard or places of that kind. That aerator and cooler is a practical one, and will cool down the milk to within five degrees of the temperature of the water inside.

Mr. Favill: I want to know if it is a settled fact that the milk from a cow that has had proper food is of a character that is not fit to use until it has gone through some such process? It so, it would seem as though the Creator had made a mistake in the manufacture of the cow and should be instructed to make a better one. How much aeration does the milk get that the calf is taking?—and the calf seems to thrive on it.

The Chairman: The calf makes cheese of it, too.

Mr. Favill: And good cheese.

Mr. Everett: You forget that the calf gets the milk before it becomes contaminated by the air.

The Chairman: I would like to have Mr. Smith untangle this thing.

Mr. Smith: It is supposed to be true that the milk from a healthy cow is perfectly good food, although we have found in very careful examinations made by Mr. Harding, the bacteriologist at the Station, that there will always some bacteria work up into the end of the teat, and even after taking off the first stream, there are always some left, and they are always working to make trouble, breaking up the substance of the milk.

Mr. Favill: Where do the bacteria come from?

Mr. Smith: This room is full of them, not necessarily the bad kind. You may take as healthy new milk as can be secured, and if you try to make cheese of it at once you can't do it. You haven't got the development of the right conditions in that milk to make cheese; you have got to change the character of the milk, brought about by the development of lactic acid spores in the milk. The same thing is true in making but-

ter; we cannot make butter of perfectly sweet milk. The oxidation of the milk changes the character of it, and gives us the flavor that we want in our product. Now, when we air milk, in the first place there are certain gases in the milk as it comes from the cow that work for the destruction of the milk. The aerating of it gets them out. The cooling of it is simply to stop the growth of the bacteria, the bacteria of the wrong kind that get into it. When you get a temperature that is below 60 degrees, those little germs do not grow, and we put it down there in order to stop the work of those germs; and in those two ways we put it in shape that it is in good condition to give to the buttermaker, and he can go on and ripen his cream, adding his starter, a culture that he has made under right conditions, and develop just what he wants. The same thing is true of the cheesemaker, although the cheesemaker does not want as much cooling but he does want a certain amount of cooling, so that those little plants will not develop bad flavors and overcome the flavor that he wants to develop by adding his culture.

Mrs. Howie: I wonder, Mr. President, if you remember a talk you and I had three years ago with Prof. Smith of the Michigan Experiment Station, when he told us that if we sterilized our hands and sterilized the cow's udder and milked into a jar and covered it instantly tight, there would be no odor get into the jar. We didn't believe it then, but he believed it.

The Chairman: Do you believe it now?

Mrs. Howie: I don't know; I never tried it.

The Chairman: I will come to your house, and we will try it.

Mrs. Howie: All right.

Prof. Smith: Last fall at the Pan-American Exposition one exhibitor there had the reputation of making very fine butter. When the score came, he was not satisfied. His butter had been judged a short time before at the county fair, by a New York expert, he said, and he gave him a score of 98, and now he only got 95. I said to him: "Of course, I can't tell you what is the trouble. It has been judged by three men,

and they are all of them earnest, good judges of butter, and that is the result of their judgment. Are the conditions the same as they were when you made the other butter?" "Why," he said, "they are better now." Well, I asked him how, and he said: "Why, my cows were feeding in the clover—after feed; before they were on old pasture." Now, that told the whole story: his cows had been eating too much clover; it had produced a feverish condition, so that he got a feverish flavor in that butter. There was a case, you see, that the milk was not all right from the cow, and there are many times that conditions differ.

Mr. McKerrow: I think a word of warning ought to be dropped right here about the aerator. I have no doubt but that Mr. Everett's aerator is all right when handled right, but I have been told by people who have used some of these aerators that it was more trouble to wash them and keep them clean than all the other vessels used in handling their milk. If that is true, before you get an aerator, be careful about it; a dipper is a good deal more easily washed.

A POULTRY TALK.

C. A. Smith.

I want to briefly emphasize three truths in the proper care of our poultry. I will talk along the line of laying stock, or how to handle fowls so that we may secure eggs in winter, because I believe that if there are any two things that we may group together as being unprofitable, they are peddling ice in the winter time and eggs in the summer time. I want to talk about three things: the right kind of stock, the right kind of housing, and the right kind of food.

For the right kind of stock, I would say in the first place, use pure-bred stock by all means. I am surprised at the conditions on the average farm, where they have registered and

pedigreed hogs and horses and cows, but they have all kinds of chickens. Imagine a dairyman trying to have a successful dairy under these conditions, mixing up Jerseys and Ayrshires and Holsteins in one common herd, and allowing them to cross at will, and then coming to you after they have been jumbling them up for eight or ten years, and saying to you: "I can't make dairying pay." You wouldn't expect to make it pay, and yet these are the conditions that we find on the average farmer's place every day. The cow can stand this treatment far better than the hen, because we treat the cow as an individual, while we treat our flock of poultry as a unit and have no means of knowing their separate wants. A pure-bred flock is alike in certain general characteristics.

It is a well known fact that in order to produce eggs successfully from a flock we must have a hen in the right condition, not too fat nor too lean, and you cannot keep the individuals of your flock if there are no two fowls alike in it. I would not advise every person to buy a pure-bred flock out and out, but certainly you should have a pure-bred male at the head of your flock. If you do not, your poultry will very soon drop to the realms of scrubdom again. Too much emphasis cannot be laid on the age of the laying flock. It has been demonstrated scientifically by the Vermont Experiment Station that the net profit from a pen of early hatched pullets is a great deal more than from aged hens. If we can't get the early hatched pullets, then our dependence must be upon early hatched hens from the previous year. Never keep a hen on the farm over two years of age. On some farms that I know of I have seen hens that I felt a very strong suspicion that Noah must have let them out of his flock when the ark stranded on Mount Ararat.

After we have obtained the right kind of stock, let us see that our hens are housed properly. There used to be a time when we thought the hens could roost in the treetops, and they do in some places yet. You cannot expect to make a profit out of them under those conditions; we must have a proper house. I don't care what kind of house it is, providing it is comfortable, and there is one very important thing, and that

is the scratching shed. You may have your house about 16 by 10, and divide it in two, because I do not believe in keeping more than twenty-five hens together. You will get a great deal better results if you only keep twelve. This is the bedroom of our poultry. Now, a hen does not need as much ventilation as a cow, and you mustn't freeze her to death; they never need the air that other live stock do. I have seen several put ventilators in their poultry houses, but I believe it is a mistake. Our poultry bedroom must be tight, or as near so as possible.

I like a southern exposure, but don't make the south front all glass, because it radiates the heat when we need it, and it makes it too hot when we don't need it. At each end of this poultry house I like to have a scratching shed, and I would make that larger than the sleeping quarters, about five square feet for each individual hen is a pretty good rule to go by, but many people put a hundred hens in a house that is not big enough for a dozen. They must have plenty of room to scratch and get plenty of exercise. I build this as a lean-to. On the south side I make a canvas door, and have that hinged at the top, so I can raise it up and let in the sunlight, when I want to, and in the cold winter weather I can keep that down so the snow can't get in. A hen will stand a good deal of air, but not a draught; she will get swelled head, or something else the matter with her. In the daytime, while your hens are working in the scratching shed, air out the house. People often say to me that they cannot keep a poultry house from getting damp. The whole trouble is that they do not ventilate; but the ventilation should be done when the hens are out of their sleeping room, when the sun shines; and it should be done every day, even if it is twenty degrees below zero. I don't care what kind of house you build, but to get eggs from hens in the winter time, you must imitate natural conditions, and those are, first, the right kind of food and abundant exercise. I have this scratching pen covered about a foot deep with litter, for purposes that I will afterwards name.

Now, about the right kind of food for a hen. Remember that the hen like the dairy cow is giving us one of nature's best foods;

the egg stands with milk as being almost perfect food, a well balanced ration. We hear a good deal about balanced rations for the dairy cow. I believe in well balanced rations for our hens, and you can never balance the rations by letting them run on the feeding floors where you feed your hogs, or throwing your corn crib open, and letting your hens gorge themselves with corn. I like in the morning to feed a mash. For this, I tak about a quart of clover chaff, or chopped clover, —second crop preferred, so as to get the seeds and the heads; it is the leafy part, not the stem part that we want, and if you have as good a wife as I have, she will allow you the use of the kettle and you can steam it over night, and in the morning it will be very nice and succulent, which the hens will like. Now, then, I take equal parts of ground corn, gran and ground oats, equal parts by measure, and mix with the clover, and it makes a nice mash. If you feed your hens three meals in one, they will go to bed and you will get no more work out of them that day, nor any eggs; so don't give them too much. In the evening, I give them a good feed of meal. If I had to depend on one thing to feed my hens, it would be oats.

Now, besides feeding the grain food, I hang up an occasional cabbage or mangel. My hens have one good meal, and that is the evening meal; but they must be kept working all day long. The secret of winter eggs is proper hens and proper food, given in such a way that the natural conditions may be imitated. The first thing that we want for winter eggs is green cut bone; use about one ounce to each hen three times a week. Skim milk is an excellent food for our hens. I would rather convert it into curd, though, than to feed it in its original condition, and feed it in connection with my morning mash. The hen wants her food fairly well concentrated so that she may handle it. She cannot handle enough skim milk to give as good results as if it is converted into the form of a curd.

Now, I cannot emphasize too much the importance of having grit before our fowls at all times. Don't make a mistake with the kind of gravel. I have a sample here of what we call mica granite crystal grit, and it is the best product I can find, a great

deal better than gravel. I use broken glass and broken crockery, pounding it up fine.

I think that if we follow the same general business principles in connection with the care of our poultry as we do in the care of our dairy cows that we will see good results, for I am satisfied that a farmer can make no more profitable investment than in buying and taking care of nice, thoroughbred, standard poultry. Thanking you for your attention, I will close.

DISCUSSION.

A Member: What particular fowls do you consider valuable?

Mr. Smith: If I were to tell you that I believe there is only one fowl in existence, my friend over here would pipe up and tell you not to pay any attention to me, that I don't know what I am talking about. I would say some of the practical breeds, the American breeds; my preference is White Wyandotte, a short rose comb, with practically non-freezing head. She will stand rough treatment.

A Member: What is the matter with oyster shells?

Mr. Smith: I believe that too much stress has been placed on oyster shells. The only purpose for which they can be used is to form eggshells, and there is more available lime in one quart of clover than in all the oyster shells that a hen can eat in a week. Still it is a good thing once in a while.

Secy. Burchard: Don't they act as grit?

Mr. Smith: No; oyster shells are altogether too soft for grit.

A Lady: What do you think of the different kinds of condimental foods that are so highly recommended?

Mr. Smith: Well, I will tell you. When I am feeling real well, I don't like to see somebody fix up a dose for me and say, "Here, you better take this, for fear you are going to be sick." I like to use some judgment in the care of my poultry, the same as I do in the care of my own health. Don't feed

your fowls any more of these foods than you can help, red pepper, etc. They do more injury than good. Once in a while you might give it. When a hen is going through the crisis of moulting, she needs lots of care then. I believe in judicious management and care, rather than these tonics and foods. Of course the man likes to sell them, because he charges about forty times what they are worth.

Prof. Henry: I want to endorse what the speaker has said in regard to so-called condimental foods. The farmers this year will pay out a great many dollars, and I believe seventy per cent of it is practically wasted. If you want to make up a condiment to feed your chickens, make it yourself. If you will look in the Farmers' Institute Bulletin, you will find a condiment that will cost you about three cents a pound. Our agricultural papers are advertising these things extensively, because there is lots of money in it. Give your hens and all the animals on your place good food; and if they are sick, give them something that they need, but don't keep trying something on them that costs a great big price. There is a man in Minneapolis who is said to be worth $300,000 that he has made out of condimental food.

A Member: I believe that is good, sound doctrine.

Mr. Smith: I have one sure remedy for all the ills of poultry. When a hen gets quite sick, so I don't think she will get better, I always keep a good, sharp hatchet and a block, and put her out of the way. We can't afford to take chances with sick poultry, except they are very valuable specimens.

A Lady: You said nothing in your talk about water.

Mr. Smith: Well, I took it for granted that they would be given fresh water at least once a day in the winter time, good, clean water, and twice a day in the summer time, with three times for our young chicks, and the vessels we use scalded out at least twice a week.

A Member: I have found that where you grind your corn, cob and all, and use it with oats, it is a good thing for the hens.

Mr. Smith: I would sooner have the corn ground alone, but I don't know what harm it would do.

Ex-Gov. Hoard: The hen will leave the cob.

Mr. Smith: Not if it is ground fine.

Mr. McKerrow: She will, if she can.

A Member: What about roasting corn for the hens?

Mr. Smith: If it is real good corn, I would like to eat it myself; but I know what you refer to, that is warming it up in the winter time. It is a good plan, not only to roast corn, but to burn it once in a while and give them some charcoal, but I would sooner feed them the corn whole and give them the charcoal.

The committee on Resolutions made its report in the following language, which was was adopted.

Resolved, That the sincere thanks of this association are tendered to the citizens of Menomonie for their generous efforts to make this, the 30th annual convention of the Wisconsin Dairymen's Association, a most notable success. We appreciate most deeply the public spirit and loyalty to the interests of dairying that they have so grandly shown.

Resolved, That the thanks of the association are gratefully tendered to its officers for their devotion and able efforts during the past year to increase dairy knowledge and prosperity in Wisconsin.

Resolved, That we tender our thanks and appreciation of the progressive spirit shown by the railroads of the state in the liberal rates they have accorded to the members attending this convention.

Resolved, That the dairy farmers of Wisconsin view with sincere satisfaction the action of the House of Representatives in the passage of the Oleomargarine law, and we tender our thanks to all of our members of Congress and to Senators Spooner and Quarles for their loyal attitude on this question.

Resolved, That the dairymen of Wisconsin endorse fully the splendid efforts put forth by State Superintendent Harvey to advance the cause of agricultural education in the common schools of state, and we record our hearty endorsement of the proposed amendment to the State Constitution, whereby the office of the State Superintendent shall be placed on a footing consistent with the future dignity and development of our commonwealth.

Resolved, That we urge upon the dairy farmers of Wisconsin that they send their sons to the Short Course and Dairy School of our State

Agricultural College. The dairying of the twentieth century will require all the scientific as well as practical knowledge our young men can acquire, if the future success of our state in this industry is kept to the forefront.

WHEREAS, There is now pending in Congress H. R. 8735, known as the Grosvenor Mining bill, providing for education in mining, road-making, irrigation and forestry, the funds for such instruction to come from the income from the sale of public lands.

Resolved, That the Wisconsin State Dairymen's Association approves of said bill in its purpose of increasing our knowledge in the important branches specified and it urges upon our representatives in Congress to support the measure in all legitimate ways.

Resolved, That the Secretary of this Association is hereby directed to forward a copy of these resolutions to each of our representatives in the Senate and the House of Representatives.

Resolved, That the members of this association have learned with great personal sorrow of the death of their long time friend and co-worker, Fred C. Curtis, of Columbia County, and they cannot adjourn without placing upon their records a testimonial of their esteem for him as a man, and their appreciation of his great zeal and a cheerful labor in the interest of Wisconsin dairying.

Convention adjourned till 2 P. M.

AFTERNOON SESSION.

Convention met at 2 P. M.
The President, C. P. Goodrich, in the chair.

THE FARM A SAVINGS BANK.

Geo. McKerrow, Madison.

Mr. President, Ladies and Gentlemen: This question is a broad one, and I cannot expect to touch on all sides of it.

If you will go with me through the farming districts of Wisconsin, or of any other of the states of this Union, when we get into a district where the farm shows that it is a savings bank, standing on a good, sound foundation, where the farm home is

of the right class, well kept, the buildings are good and the fences are of the right kind and the crops growing in the field show that there is fertility in the soil, then you and I can both be certain that in that savings bank, attention is being paid to keeping the foundaton of the bank right, that something is being deposited in that soil as well as being drawn out.

We must remember one thing, and that is, that the portion of soil that we get by purchase and call our own, is in reality not our own, because we later will hand it down to posterity. The state is interested in the one hundred and sixty acres that we call ours; the community is interested in it; the generations of those yet unborn have rights in it. The good Lord has so planned it, and while we run this bank as long as we live, we must turn it over to somebody else later on, and we should aim to turn it over in just as good condition as we find it. If we do not, we are thieves and robbers.

Thus we should give a great deal of thought to keeping the acres that we till in condition not only to feed us in youth and strength, but to feed us in old age, and to feed our children after us. To do this, we must follow some line of live stock husbandry. I have spoken of the districts where we see good and well kept farms, and upon investigation you will always find that in these districts live stock has been a leader, and so when we go into the poor, debilitated districts, with poor buildings and homes, we can make up our minds that the live stock have been neglected.

Now, you have been discussing one phase of the live stock here for three days, and no doubt it has been time well employed. You have had a good meeting with the Dunn county farmers, and my friends Goodrich and Hoard and Favill and all the rest to talk to you. Of all the industries in which we can engage in the state of Wisconsin, none should have a higher place than that of dairy husbandry. There is no better place to exert intelligence and carefully directed labor and to get good results, both in dollars to buy the necessaries of life, and in deposits on the farm that will later pay good dividends, better than our banks are paying today. If you handle the dairy in-

telligently, the products of the farm, such as can be produced by these animals, you will not only get the returns in butter and cheese, in skim milk, in pork and veal, but you will get a return of 75 per cent of these good values in the fertility that goes back into the soil of your farm, which you can draw upon later.

Now, we are told by the scientist (and we have to depend a great deal on him for some of the facts that we deal with nowadays), that of all of the elements that are used up in the growing plant, the principal ones that are easily exhausted in available form from our soils, are nitrogen, phosphoric acid and potash. When we go east, we find the eastern farmer talking continually about commercial fertilizers. When I pick up the bulletins from the eastern and southern stations, three out of four of them are filled with the question of commercial fertilizers. Those eastern farmers are paying 12 cents a pound for nitrogen, 4½ to 5 or 6 for phosphoric acid, and 4 or 5 for potash. Ah, but you may say, with our rich soils of northern Wisconsin we don't have to buy fertilizers, therefore, what is the use of talking to us about the prices of nitrogen and phosphoric acid and potash? True, but if we keep on cropping our land with wheat, oats, barley, timothy hay, and selling off these very elements by the bagful and the ton, the day will soon be here when we too will have to buy these ingredients and return them to the soil before we can grow crops that will pay for handling, and then the profits will be cut down, because the commercial fertilizers will swallow up the profits. Therefore, let us ever keep it before our minds that one of the principal savings that we can put into the bank of the farm is the fertilization value of the food stuffs that we consume upon the farm, and let us grow such crops as will not only be of value in feeding our animals to make them produce the best, but will also be of that kind that will leave our soils richer. And it so happens, in the wise provision of nature, that those crops that are the best for our dairy cows and other animals are the crops that are the best for the soil, and if we only educate ourselves along the line of right feeding and right fertilizing, we will be

enabled to put deposits in this soil continually, to be drawn on later.

I have said that we should aim to be ready for the rainy days in life and for the dry ones in farming. The chemist tells us that when he takes a certain sample of soil, and exhausts all the vegetable matter from it and pours water into certain quantity, it will hold so much water; when he takes the same quantity of the same class of soil, and puts 25 per cent. of vegetable matter or humus—rotten vegetable matter in it—with that, it will hold twice as much water as the same soil without the humus. Now, we all want water in the dry season, the plants all want water, they cry out for water. If you can hold 25 per cent more water in your soil, by having it well filled with rotten vegetation, then that ought to be one of the facts that will suggest to the farmer the wisdom of growing crops that will put a good deal of humus in the soil; to feed his animals so that when he takes the fertilizing elements out of his barn out into the field, he will not only be putting in nitrogen and phosphoric acid into the soil, but this vegetable matter also. Then, besides that, that quantity more of water and this vegetable matter have a quality of decomposing or rotting, and at the same time that it is doing that, it is breaking down the mineral matters in the soil, some of which are useful in building up plant growth. Therefore, we ought to see to it that we are depositing, or putting humus into the soil in some form continually.

Now, if we buy commercial fertilizers in the form of nitrogen and phosphoric acid and potash, as it is mixed by the man who prepares these fertilizers, or as we mix it ourselves, they are good, they are in a very available form, as a rule, but they add none of this humus to the soil. They help in a dry season, but they do not help half as much as the same fertility put in with a certain amount of humus that carries it into the soil, because they do not hold the moisture.

Now, we have a chart here on the wall, such as we use at our Farmers' Institutes. It is probably nothing new to many

of you for I know many of you attend the Farmers' Institutes, but we will call your attention to it for a moment.

We have already mentioned the three principal elements used in plant growth, and we have spoken about their prices, which vary, these being the minimum, you might say, of the prices of these elements at this time. In this chart we have some light on the food stuffs that we grow upon our farms, and also some of the things that we sell from our farms.

Starting here with corn stalks, in the first place you will notice it says up here, "Pounds of Fertilizing Ingredients per ton, in each of these articles. The first column of figures represents the fertility value, figured out on the basis of these prices per pound. A ton of corn stalks, according to those prices, has in it 21 pounds of nitrogen, 6 pounds of phosphoric acid, 28 pounds of potash. The respective prices make this ton of corn stalks for fertility purposes worth $4.05. In other words, if you feed these corn stalks to your dairy cows, you will get a return of $4.05 to put back into your soil, provided you handle this product without loss. Now, I judge by the chart that I see over here that my friend Goodrich talked from, that there are a few herds of dairy cows there that put 100 per cent back into the soil, or ought to have done it, because I see in one case there was no profit, even a little loss, but still I don't believe it is really true that the 100 per cent went back to the farm. It ought to go somewhere.

Ex-Gov. Hoard: He made a profit to a certain extent by selling the stuff he raised on the farm to the cow, but he made no secondary profit from the cow.

Mr. McKerrow: Yes; the man who fed his cows at a gain of only three cents per head, we might say wasn't out as much as the man who sold his feed on the open market. I am ready to say that he was 75 per cent better off, though he worked very, very cheap. I don't want to do it that cheap. But I am talking now about the comparison with the kind of farmer that sells everything off the farm by the bagful and the pail, so I hope you won't criticise these fellows too much that made no profit, or even lost a few cents per cow, for they are better off

than your grain and hay farmers who don't come to this dairy convention. Yes, they are 75 per cent better off, according to my way of figuring, because they have deposited something in the savings bank of the farm. I know Goodrich slashed these fellows yesterday, and I am inclined to ease up on them today.

Mr. Goodrich: They need it.

Mr. McKerrow: Yes, they need both sides of it. Now, timothy hay shows a value of $4.31; when fed, $3.23; clover, $7.26, and when fed, a value of $5.45. Now, you see a ton of clover hay when sold from your farm carries off a great deal more fertilizing value than does your ton of corn stalks, or your ton of timothy hay. But don't make that an excuse for raising timothy instead of clover, because a ton of timothy hay takes off less fertility. The clover plant is a very shrewd plant, and gets a considerable part, we believe, of that high priced nitrogen, of which you see it has a very large amount—41 pounds—out of the air; that goes into the soil and comes in contact with bacteria,—the kind we want, the good kind, not the kind that sours the milk. They work for us, when we provide a proper home for them to live in. They are like all tenants; if you give a hired man a good, comfortable home and treat him right, as a rule, he does pretty well for you. So the bacteria get into the little nodules on the clover root, if you give that clover plant a fair chance, so it makes a good house for him; he gets in there and lives and works well for you, and helps to add to your savings in the farm bank. Now, for every ton of clover hay that you produce on your field, you can rest assured that there is another ton being left in the form of roots down in your soil that will furnish this humus we have already spoken about, and also furnish as it rots a large amount of the nitrogen and some of the phosphoric acid and a good deal of the potash that has been brought up from down below by the long clover roots.

Right here, let me say alfalfa does not appear on this chart, but alfalfa is richer in high priced nitrogen even than the clover, and has the same way of getting it from the air, and has a bigger, deeper root than your biggest Mammoth clover, and is working harder for you than the clover plant, if you can

get the alfalfa to do well. I am getting to be a little bit of an alfalfa crank. Some five years ago I began to grow it on our farms in Waukesha county, where the subsoil is just the opposite of an ideal alfalfa subsoil, very hard, and yet we have had enough satisfaction out of growing alfalfa for five years, in a small way, that we are going to keep right on. Last summer, in the excessively dry weather of July, August and September, it was the only real good green food that we had to feed our stock, the only thing that grew. I am pleased to dig down by the side of some of those big roots, and see what a monstrous growth they are making in that hard subsoil, and even if I have to plow it up again next spring, on account of being winter killed, it has deposited enough in that savings bank of ours to pay for all the trouble I have been to.

So, when you feed clover, it is rich in the return of value to your soil. Corn has a value—not so high. Oats has a value; wheat has a value, and when you sell these things off, you are selling that value forever; you have drawn your check upon your savings bank; it has been honored, but the next time you draw, you will have to draw a smaller check, because the balance is getting small. I think some of the wisdom of the good Lord is shown in His dealings with the farm; we can only draw when we have a balance in the bank. The balance of nitrogen, phosphoric acid and potash, silica, lime, etc., is kept by Nature rather small, we might say. The chemist's analysis of our soil tells us that in every foot of Wisconsin's soil there are many dollars' worth of these elements, but we can't draw out a thousand dollars or two thousand dollars in any crops that we know of in one year, or two or three, or five or ten, and there we see something of the wisdom of the Creator. He knew whom He was dealing with. He knew that if He allowed this treasure to be withdrawn at one draft, that we grasping Yankees would draw it all out at one draft, and spend it, and be ready for the poor-house pretty soon. And so, these elements only become available and we can only make our checks for a certain amount. If we have skill enough to keep on depositing, and to keep up the working forces, to keep the

humus in the land and the mineral matter breaking down, so that these food elements for the plants are becoming available, and may be dissolved in water and taken into the plant in the form of drink (because the plant doesn't eat, it drinks), then we can get paid for our skill, and make all the larger draft on our fields in the way of crops.

Now, the man who sells these things off his farm is making drafts, and when paid they are practically gone forever. The man who feeds them out to his stock gets back 75 per cent in the way of deposit, and he ought to get back not only the other 25 per cent in feeding value, but he ought to get back 50 per cent besides paying for his labor. The fellow who only made 3 or 10 cents, or even lost a little, on his cow, did better than the fellow who sold the crop off, but he worked too cheap, cheaper than any farmer ought to work, and therefore, he ought to strive to feed his cows better and have better cows to feed, and then he can deposit more in the savings bank; he can deposit more in farm buildings and build up a good farm home, and he can give more to his wife to get some tasty things to put into the home, and he will be happier when he goes in from a good, hard day's work, and everything will go smoother.

Now, there are some things that we do not sell off from the farm, but we buy. Sometimes we buy wheat bran, and we want to consider that and see if it pays. According to these figures, there is $10.41 of fertility in a ton of wheat bran, and yet I have heard good dairymen say that they couldn't afford to buy wheat bran, it was too high. Mr. Cook, of New York, said that, but he also said that when it goes down again to a reasonable price, he will feed it quite largely for the fertility there is in it, instead of buying commercial fertilizers. You see it is rich in these elements. We must think of these things when we are buying feeds for our stock. Peas are very rich in fertilizing value; so is linseed meal—it is worth $15.78 in fertility, or when fed, $11.84. Mr. Smith, who talked to you this morning, has said that he considered linseed meal as good as many of the condimental foods, and really better, and I am here to second that proposition. It will often pay you to pay

$30 a ton for old process linseed meal, just for the healthful effect that it has upon your live stock, and that is especially true if you have no ensilage and no roots, or such feeds as alfalfa and clover; and the fertility value is, as you see, very great.

Now, here are some things that we do not feed to the stock, but we sell: Cheese, $12.18 a ton; butter, 42 cents; beef, $9.49½. You sell a ton of butter at 20 cents a pound; that makes $400. Four hundred dollars is a nice sum to put into your savings bank to help pay for the new barn or the new house, or some furniture to put in the house. How will you get that $400 in some other way? For instance, how will you get it in selling barley? Barley is worth, we will say, about a cent a pound, $20 a ton; 20 tons of barley represent, to put into your bank, $400, while you take out of another window of your bank a fertility value of $4.77 a ton, a little less than $100 fertility value sold off your farm; whereas if you had put that into butter and sold your $400 worth of butter, you would have taken only 42 cents out of one window of your bank, and put $400 into the other. In one case you take $100 out of one window to put $400 into the other, and in the other you take 42 cents out of one window to put $400 into the other. We farmers should look at this thing in a common-sense way from an economical standpoint. We should study these things from the dollars-and-cents side of it, from all sides of it, so that we may be ready for the rainy days of old age, and the dry days of summer.

My good wife says that since I have been out with the Farmers' Institutes she never gets a chance to get in a word edgewise, and she advises me to stop sometimes and give the people a chance to talk back. So I will stop now and give the people a chance to talk back.

Prof. Henry: I am profoundly impressed with the fact that this is the fourth day of this convention, and yet here in the afternoon of this fourth day this room is practically filled with people, many of them being farmers, who have come many,

many miles to attend this fourth day's session. I consider this afternoon session a very proper climax of this dairy effort in your midst, and I hope you will go away and think over these things, and do not think that Mr. McKerrow's subject is the least important part of this meeting. It is certainly one of the most important parts.

Now, leaving out the question whether people ought to use tobacco, I wish you would not plant one tobacco plant in Dunn county next year, and I say that as the Professor of Agriculture at your leading institution; I say it as a man who has watched this thing in Connecticut and elsewhere for long years, and I say it with great feeling and great earnestness. Don't grow tobacco, citizens of Dunn county, and don't let the members of your county board do it, for you will certainly regret it. Tobacco growers put all the fertility on one field, and risk everything on that. Their cornfields are starved, their fences run down, the garden is neglected. That is the way it is going in the southern part of the state; and so I say to you farmers who are thinking of putting in a field of tobacco this spring, don't do it. Buy another heifer, and keep up your good work in the dairy. I am proud of the work that has been done here, and President Goodrich never did a better deed in his life than the preparation of that chart. Keep on with your good work; raise those figures from $15 or $16 and make them $22 or $23 next year, and let the tobacco alone. Another thing. Follow this meeting up with other meetings in your county; talk these things over, and then you will be in position when your county board talks about raising tobacco on the county farm, to say to them: "Gentlemen, we won't have it, we don't want it."

Mr. Cochran: When I first came to Dunn county, wheat was the only thing we grew that we could get cash for, and some years we couldn't get cash for that, but we had to borrow money to pay our taxes. Well that went on for eight or ten years, and instead of getting a dollar and fifty cents, cash, I was getting sixty cents, and I soon found that I must get something to put humus into my land. I didn't know it by that

name, and I didn't know that humus came from Germany; whatever it is called, we have to have it in the land, and there are certain plants that help to put it there. There are certain flowers, geraniums, calcarias, and others that the gardener knows what to do with, the roots feed and keep the ground in the proper mechanical condition. You can go into the woods next spring anywhere and rake the leaves one side and get down to this humus, and you will find it full of little, tiny bits of things that are sucking the water out of the land and carrying it up near the surface. We don't all know how to talk scientifically about these things, but we know we must have humus—we can tell more than we know. Well, as I say, we quit raising wheat and then we said: "I must have some cattle, I must have some sheep and plant some corn, and have ten or a dozen breeding sows and help the farm in that way." We all had to do that, or will have to. But I didn't follow my friend Goodrich's advice and get Jersey calves, I got Shorthorns. At that time there was $2,500 on my farm, and it made me scratch like blazes paying the interest, but I got it all paid up; the cows and the sheep and the hogs have lifted the mortgage, they have put me up good buildings, and they helped to start the boys and girls. I didn't do it all myself; my old woman did some of it, but I have got as good a foundation on my farm as anybody in Dunn county.

TREASURER'S REPORT.

Mr. President and Members of the Association: The following itemized report is made showing the source from which all monies paid into the treasurer's hands were received and the disbursements paid on orders from the secretary which I hold as vouchers:

RECEIPTS.

1901.			
Feb. 26.	In hands of treasurer	$1,044 55	
	Memberships	95 00	
Apr. 11.	From state treasurer	1,000 00	
Nov. 12.	From state treasurer	1,000 00	
			$3,139 55

DISBURSEMENTS.

Feb.	26.	H. K. Lomis, hotel bills at Mondovi	$70 26
		H. D. Griswold, exp. attending conv. at Mondovi	8 25
		A. O. Heald, exp. attending conv. at Mondovi	16 25
		W. A. Henry, exp. attending conv. at Mondovi	12 30
		F. C. Curtis, exp. attending conv. at Mondovi	11 48
		Geo. McKerrow, exp. attending conv. at Mondovi	9 45
		C. P. Goodrich, exp. attending conv. at Mondovi	12 10
		E. L. Aderhold, exp. attending conv. at Mondovi	23 90
		W. T. Bradley, exp. attending conv. at Mondovi	7 65
		E. H. Farrington, exp. attending conv. at Mondovi	13 20
		H. K. Loomis, exp. attending conv. at Mondovi	16 95
		Stephen Favill, exp. attending conv. at Mondovi	10 50
		John Van Owerkirk, exp. attending conv. at Mondovi	19 95
	28.	Premiums	156 72
Mar.	2.	Mrs. Adda Howie, exp. attending Mondovi conv	16 00
		D. C. Woolverton, exp. attending Mondovi conv	15 00
	8.	A. J. Philips, exp. attending Mondovi conv	8 26
		DeWitt Goodrich, exp. attending Mondovi conv	13 10
		DeWitt Goodrich, instructor	60 50
Apr.	9.	DeWitt Goodrich, instructor	82 00
	29.	Mrs. R. Howard Kelly, reporter	163 00
	29.	Chas. Thorp, exp. attending conv. at Mondovi	11 00
May	13.	DeWitt Goodrich, instructor	77 20
	27.	DeWitt Goodrich, instructor	70 00
June	5.	E. L. Aderhold, instructor	105 00
		John McCready, instructor	105 00
July	24.	E. L. Aderhold, instructor	100 00
Aug.	5.	John McCready, instructor	215 00
		E. L. Aderhold, instructor	85 00
Sept.	10.	E. L. Aderhold, instructor	90 00
		John McCready, instructor	130 00
Oct.	8.	E. L. Aderhold, instructor	93 00
		John McCready, instructor	100 00
Nov.	6.	E. L. Aderhold, instructor	111 00
		John McCready, instructor	125 00
Dec.	21.	John McCready, instructor	30 00
	29.	E. L. Aderhold, instructor	96 00
1902.			
Feb.	22.	C. P. Goodrich, taking cow census	50 00
		W. D. Hoard, printing	32 55
		Geo. W. Burchard, exp., secretary's office	68 44
		Geo W. Burchard, salary as secretary	250 00
		H. K. Loomis, postage and revenue stamps	3 76
		Balance in hands of treasurer	504 78
			$3,139 55

H. K. LOOMIS,
Treasurer.

The Auditing committee reported as follows:

REPORT OF AUDITING COMMITTEE.

Your committee appointed to examine the accounts of the Secretary and Treasurer of the Wisconsin Dairymen's Association are pleased to report that they have carefully gone over the accounts, including bills, warrants, and vouchers for same, and find that they agree and are correct.

C. H. EVERETT,
H. C. TAYLOR,
STEPHEN FAVILL,
Committee.

QUESTION BOX.

The Chairman: In our question box, we find five questions. I have asked two or three experts if they wouldn't answer them, and they said no, so I will have to answer them myself.

Question No. 1. In cutting 40 acres of clover, with one mower, how early would you begin?

Answer. I would begin when it was almost in full blossom, not quite, and then I would get it cut in two weeks.

Question No. 2. How long would you let the average clover lie in good weather before cocking?

Answer. I would cock it up the same day it was mowed, unless I mowed it the night before, but it had not dried any.

Question No. 3. How long would you leave it in the cock in good weather before putting it in the barn?

Answer. About three days.

Question No. 4. Would you open it out before putting it in?

Answer. I would, this that I cut first, when it is nearly in full blossom.

Question No. 5. After cutting one crop for hay and one for

seed, would it be very much better for the land to plow it under?

Answer. Yes.

Secy. Burchard: I would like to have Prof. Henry rise and answer three questions.

Prof. Henry: Ask them first, and I will see about it.

Secy. Burchard: Will eating corn smut kill cows?

Prof. Henry: So far as we know, it will not. There may be rare exceptions where it will. It has been fed in large quantities without killing them. I don't think you need worry about it.

Secy. Burchard: Is whey of any value on the farm as a food?

Prof. Henry: Yes. As food, your whey is worth about half as much as skim milk for the pigs, and skim milk is worth half as much a hundred pounds as corn is worth a bushel.

Secy. Burchard: Are shredded corn stalks good food for cows? Will they take the place of hay?

Prof. Henry: They will take the place of timothy hay, but not clover. They are good food for cows, but remember, they are rich in carbo-hydrates, and poor in protein, and when you feed them, you should feed also oats, bran and alfalfa.

Mr. Cockran: Do you think corn stalks tied in a bunch and run through the cutting machine in good condition are as valuable as timothy hay?

Prof. Henry: Pretty near. You can't afford to grow a ton or a ton and a half of timothy hay when you can grow large crops of fodder corn with stalks and husk and ears all on the same land?

Prof. Smith: How much difference would you think there was in the value of those corn stalks, dried and shredded and fed in that way, as compared with that same corn put into a silo, without the ear?

Prof. Henry: The difference between corn silage and corn forage is what you are asking for. I don't want to talk on those things in a few words.

Prof. Smith: We will take the corn stalks as the farmer

usually handles them, as they stand out in the field, and that same corn put at the right stage into the silo.

Prof. Henry: The difference between corn forage in the silo and corn forage in the shock is from 5 to 25 per cent in favor of the silage directly, and possibly more than that in its continued effect. The effect of dry food is to dry the animal up and make flesh, and put the animal not in the best condition. We have succulents in silage. In the fall of the year your fodder hasn't lost much, but towards the spring it has lost a great deal as the winds dry it out. You all know shocked corn is practically useless. There is a great deal of woody fibre, and it is overripe corn. In Nebraska and Kansas, the farmers have been turning their cattle out in the field after stripping the ears off the corn. The farmers who cut and shock their corn and feed that corn are not troubled with what the papers call "corn stalk" disease. It only attacks cattle where they go into the fields and eat the old stalks and the ears that have been left in the fields.

Prof. Smith: I have come here to your meeting from New York, and I have been very much interested. You have had a good meeting. Now, the question is, whether you are going to get the most benefit out of this meeting. I have noticed in going around in institute work among the farmers that in those sections where they have some farm organizations, where the farmers come together and discuss these different topics, not only in Farmers' Institutes and meetings of this kind, but meetings of their own, that those farmers make a very much better success of farming. In the state of New York we have a very large Grange interest, the Grange has done wonders for a great many of our farmers, has helped them upon their farms. In some sections they have the farmers' clubs; in some counties they have them meeting monthly in different parts of the county, and they are building up a deep interest in farming along better lines, and they are better men from having those organizations. Now, you people here, who are almost entirely agricultural, ought to have some organizations growing out of this meeting that you could take up these topics that we have

been talking about, and follow them up, and you would find them wonderfully helpful. The business men in your town who are interested in the advancement of agriculture will certainly help you.

Ex-Gov. Hoard: I think the plan of the simple Farmers' Club is the one that brings the best results.

The Chairman: Mr. Wittke, the buttermaker and secretary of the Rusk creamery, whose butter scored up pretty near the highest here, 94¼, wishes to give some statistics of the work done in that creamery.

Mr. Wittke: I have a few figures here to show an outline of the amount of business transacted at our creamery in the past year. The creamery interest is only in its infancy in this part of the state, but with the work that is being done and the way it is being helped along, it will soon be one of the biggest industries in this part of the state. The amount of milk received at our factory was 5,265,615 pounds; butter fat, 210,860; total pounds of butter, 246,803; total cash received, after paying freight and commissions, $48,858.56. Our factory is not run as some co-operative creameries are; we simply charge for each pound two cents. When the factory was first started, it was four cents. This making amounts to $4,936.06, which leaves a balance paid patrons for butter fat of $43,922.50.

Ex-Gov. Hoard: About how wide an area is the milk received from?

Mr. Wittke: Our territory is somewhat broken. Some of our patrons, I presume, are six miles away. We have two cheese factories at a distance of about four and a half miles from us.

Question: Are there any farm separators used and the cream sent to you?

Mr. Wittke: There are no hand separators used in that territory. There was one last summer: one patron separated the cream from his evening milk and delivered it with the morning's milk.

Prof. Henry: Do any of the farmers come and ask you to make tests of their milk, so they can see what their individual cows are doing?

Mr. Wittke: I have done work of this kind off and on, and would do more, only I haven't much time. I have to do most everything in connection with the factory, and it keeps me quite busy.

Ex-Gov. Hoard: Do any of the farmers buy the Babcock test themselves and learn to test their cows?

Mr. Wittke: I think there are several of them in use. I think that a couple of those who make such a good showing on that chart are making Babcock tests. The work that President Goodrich has done for our county, particularly for the patrons of our creamery, is of untold value, if they will study those figures there carefully. I notice one patron, who keeps quite a number of cows. I knew he would make a good showing from what I saw when the information was gathered. I saw him yesterday, and he informed me that while he had done quite well, he intends to do a good deal better another year.

Prof. Henry: Is that a pretty fair table? Can the farmers believe it, or can they say that Mr. Goodrich fixed it up to suit himself?

Mr. Wittke: I think it was done as accurately as could be under the circumstances. Of course to get at the cost of keeping, there is a good deal of estimation that had to be brought in. The other figures were taken from the books, the accounts at the creamery, and those are nearly accurate. It took a great deal of work on the part of Mr. Goodrich to get those figures in the shape they are.

Ex-Gov. Hoard: The farmers did not keep books.

Mr. Wittke: Hardly.

Ex-Gov. Hoard: What do you think the practical effect would be if a report like that was published at the end of the year? Suppose you made up a report just like that, only adding every man's name, so that every man could know just exactly what his neighbor was doing. What would be the effect on your creamery?

Mr. Wittke: I think it would have a wonderful effect.

Ex-Gov. Hoard: Would it raise such a muss you couldn't stand it?

Mr. Wittke: Probably would for a while, but we wouldn't have many No. 20's.

Ex-Gov. Hoard: You think that a good searchlight like that would not raise a disturbance?

Mr. Wittke: It would set them to thinking.

Ex-Gov. Hoard: That is the value of publicity.

Prof. Henry: Do you think a co-operative creamery would do better?

Mr. Wittke: Well, there is a whole lot of room in this direction to improve by working together with the manager or maker at the factory.

Ex-Gov. Hoard: I think you would find it of much value in buying your supplies, feed, or anything of that kind, to take advantage of co-operation.

Mr. Wittke: Mr. Ross helps that along very much. We buy our feed by the carload.

Prof. Henry: Keep on with that idea. Farmers are beginning to co-operate in many different parts of the state. Many sell through syndicates, as they call them, but undoubtedly you can reduce your expenses and perhaps you will find it pay to start a co-operative laundry or bakery. If the farmers will start a co-operative laundry or bakery at the Rusk creamery, I will subscribe $100 toward the experiment. Let me know any time you want to try it; I have got $100 waiting for you, if you want to start the experiment.

A Member: Wouldn't you just as soon give us the names of Nos. 9 and 23? They ought not to be ashamed to be made known.

President Goodrich: I thought it would be better not to give the names, even of those who do better than the others. I don't want to start up any trouble or jealous feeling.

I told every man that the names would not be given, because I wanted to get at the facts as closely as I could. You can guess pretty nearly on many of them, and each man pretty nearly knows his own number and will tell you if he wants to.

Now, Members of this Association, we are about to go to our homes. I have served two years as President, and I have tried

my best. Now that I am going to retire, I want to say to you that if you will permit me, I want to keep on working with you, and it is my prayer that I will be able to die in the harness, working for the dairymen of Wisconsin.

Now, I want to thank you for the courtesies that I have received, and I think you have done exceedingly well by me; and now, I say good-bye to you, God bless you. I hope you will keep on improving in the dairy business, and that you will do so well with your cows that the tobacco plants can't even sprout here.

A member offered a vote of thanks to the members and officers of this association from abroad.

Seconded and carried.

President Goodrich: This meeting will stand adjourned *sine die*.

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