



LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

Thirty-second annual report of the Wisconsin Dairymen's Association : held at Platteville, Wis., February 10, 11 and 12, 1904. Report of the proceedings, annual address of the president, and interesti...

Wisconsin Dairymen's Association

Madison, Wis.: Democrat Printing Co., State Printer, 1904

<https://digital.library.wisc.edu/1711.dl/3LKBEHFMM2PCB9A>

Based on date of publication, this material is presumed to be in the public domain.

For information on re-use, see

<http://digital.library.wisc.edu/1711.dl/Copyright>

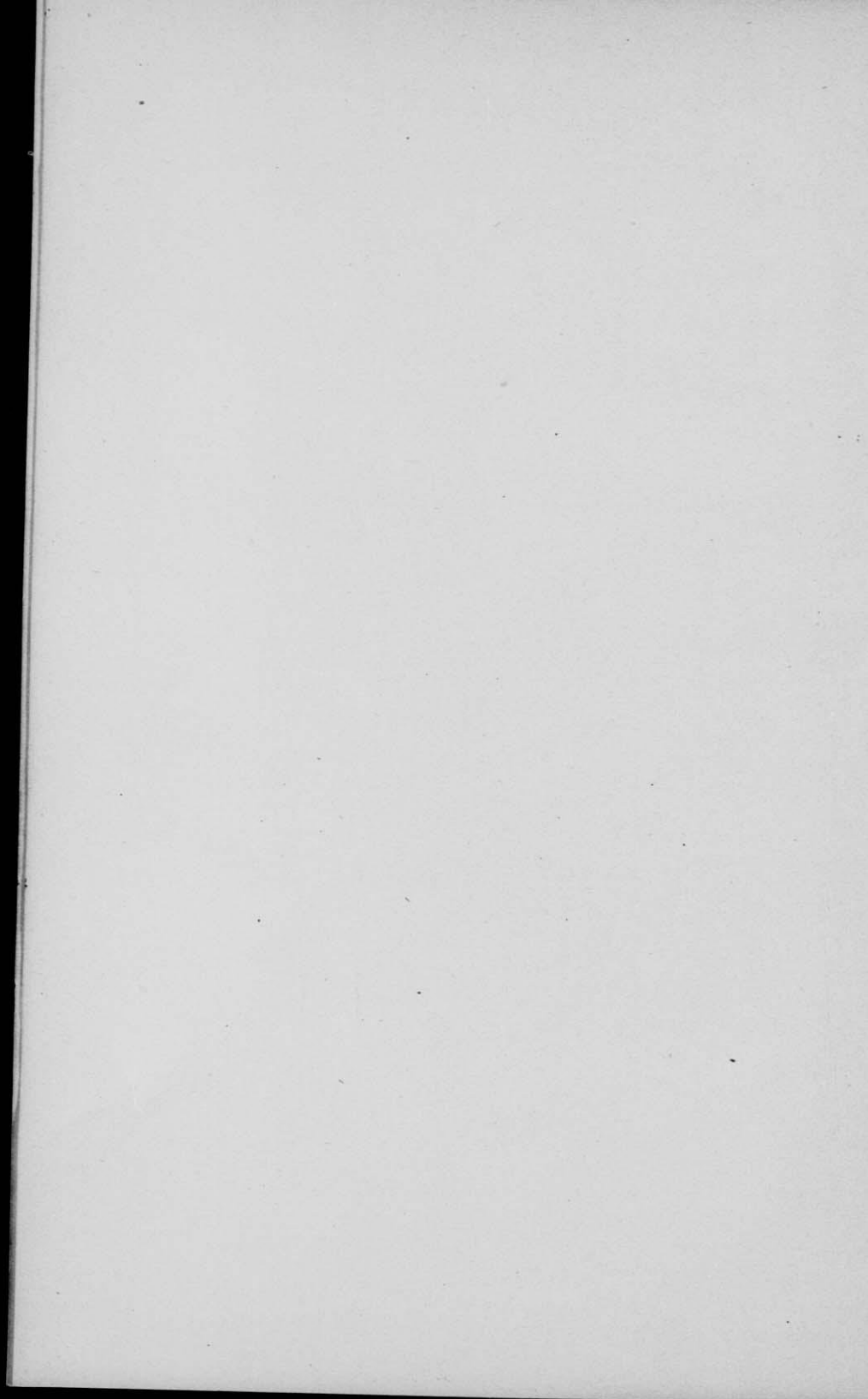
The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

RBW7
DIS
1904

Library
of the
University of Wisconsin

STEENBOCK MEMORIAL LIBRARY



THIRTY-SECOND ANNUAL REPORT

OF THE

WISCONSIN

Dairymen's Association

HELD AT

Platteville, Wis., February 10, 11 and 12, 1904.

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

COMPILED BY

GEO. W. BURCHARD, Secretary.

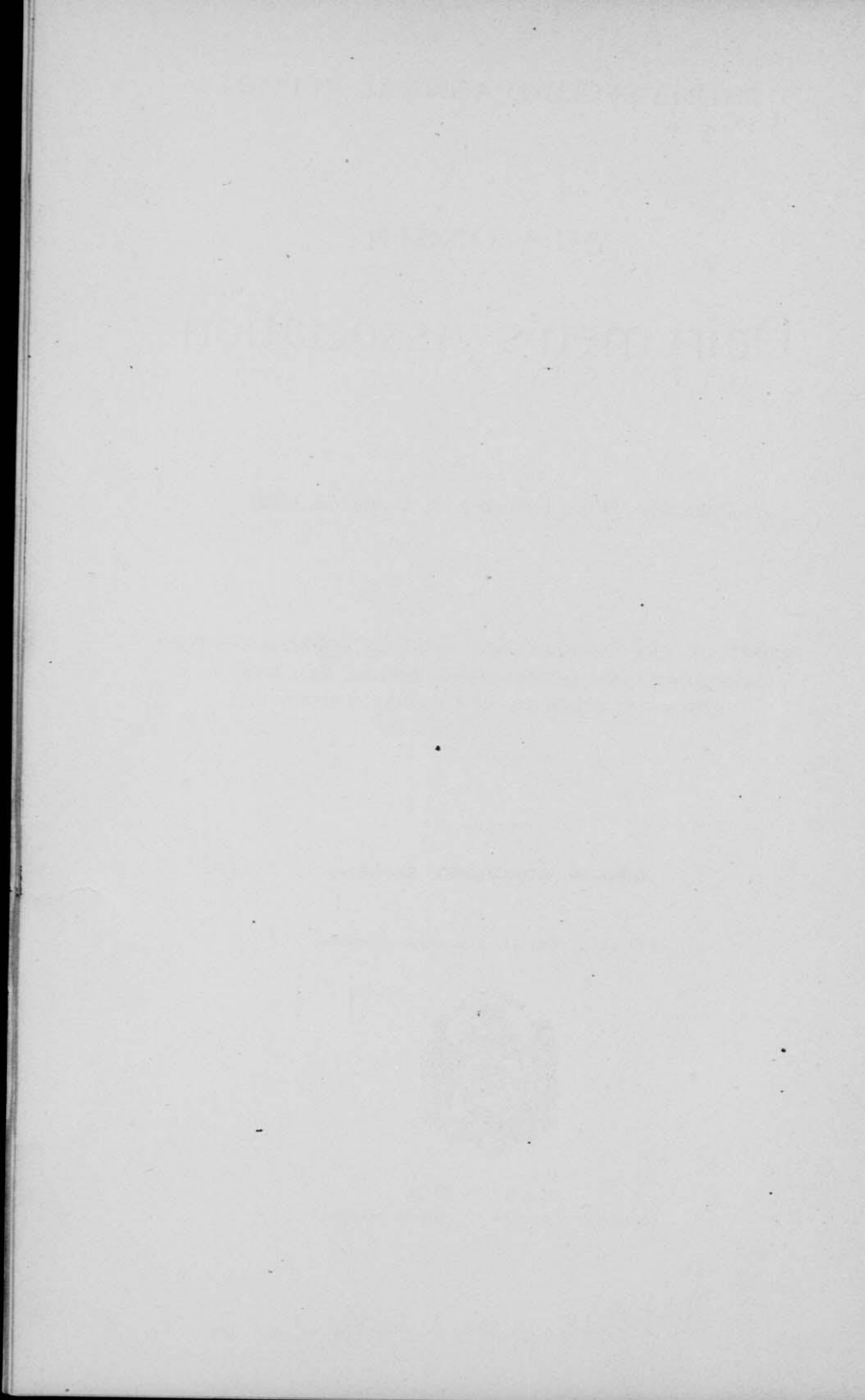
MRS. A. L. KELLY, Stenographic Reporter.



MADISON, WIS.

DEMOCRAT PRINTING CO., STATE PRINTER.

1904.



83626
FEB 10 1905

LETTER OF TRANSMITTAL.

WISCONSIN DAIRYMEN'S ASSOCIATION,
Secretary's Office,

FORT ATKINSON, May 20, 1904.

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 thirty-second 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 Platteville.

Very respectfully,

GEO. W. BURCHARD,
Secretary.

OFFICERS, 1904.

PRESIDENT,

CHARLES L. HILL,

ROSENDALE, FOND DU LAC 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 1891-3.

HON. C. H. EVERETT, RACINE, RACINE COUNTY,
President 1894-5.

HON. H. C. TAYLOR, ORFORDVILLE, ROCK COUNTY,
President 1898-9.

HON. C. P. GOODRICH, FORT ATKINSON, WIS.,
President 1900-01.

HON. J. Q. EMERY, ALBION, WIS.,
President 1902-3.

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. Z. G. SIMMONS, KENOSHA COUNTY,
President 1879.

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

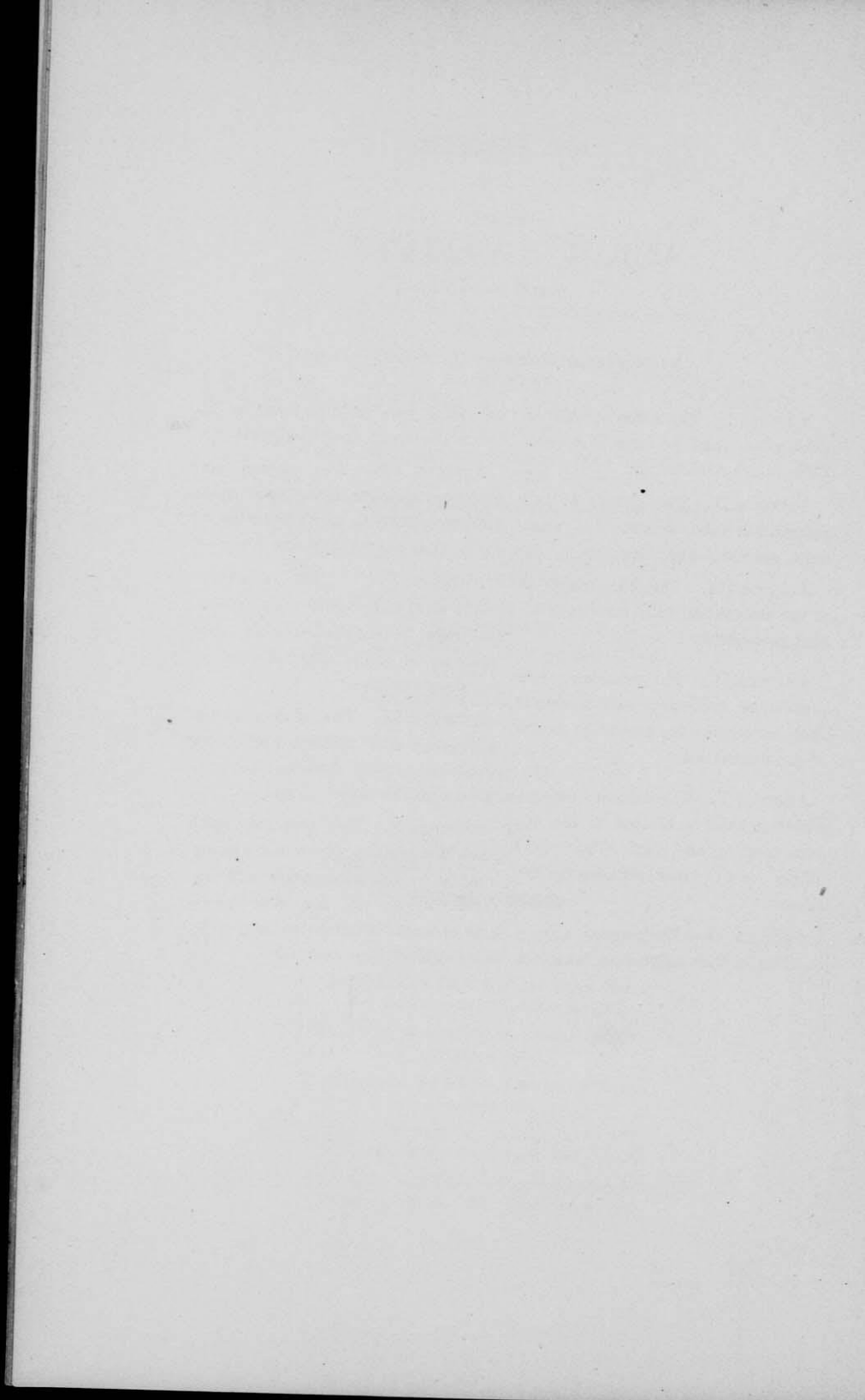
held each year, at such place as the executive board shall designate.

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.



TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Dairymen's Association

AT THEIR

THIRTY-SECOND ANNUAL CONVENTION

Held in Platteville, Wisconsin, February 10, 11, 12, 1904.

President Emery in the chair.

The Chairman: Ladies and Gentlemen, Members of the Association: The time has come when this meeting shall come to order. I take pleasure in introducing the mayor of Platteville, Mr. Knapp.

ADDRESS OF WELCOME.

Mayor Knapp.

Mr. President, Gentlemen of the Convention:—When I was told that I was to give the welcoming address to this convention, without stopping much to think, I accepted. But, as soon as I began to reflect as to what I could say I was scared.

I was like the man who, while breaking a yoke of steers that he held by a rope, having occasion to use both his hands in letting down a pair of bars, fastened the rope around one of his legs. That instant something frightened the steers, and the unfortunate farmer was tripped up and snaked off feet first on a wild excursion, a mile or so over rough ground, so long as the rope lasted, and left in a very lamentable condition, indeed. His neighbors ran to him and gathered him up and laid him together, and waited around for him to come to, which, when he did, one of them inquired of him how he came to do such a thing as hitch a rope around his leg under such circumstances.

"Well," said he, "we hadn't gone five rods 'fore I see my mistake."

But, gentlemen of the convention, it gives me the greatest pleasure to appear before you today and in behalf of the city extend to you its courtesies.

This city of lead and zinc, nestled in the southwest corner of the state, has hitherto made little pretensions in the line of entertaining conventions. The fact is, conventions, as a rule, have ignored us.

And so we feel proud when so noted an organization as the State Dairymen's Association recognizes us by coming here to hold their annual convention.

Gentlemen of the convention, we recognize that you represent one of the greatest industries of the state. We recognize that the industry is gaining in importance each year. We know that Wisconsin is one of the leading states in this industry, due to a great extent to the efforts of the members of the State Dairymen's Association, and that to keep abreast of the times, it is necessary for *all* to become thoroughly posted as to the best methods of carrying it on.

Recognizing that you will do us good by your presence, we extend to you most heartily the privileges of the city.

You may go when you please and do as you please, but, as we have very efficient police officers, who have a way of picking up stragglers and entertaining them for the night, the city has

had some badges prepared which will pass you wherever you wish to go.

And now, gentlemen, I know you do not care to listen to me, but have come here to listen to men who can tell you things you ought to know, and will know when this convention is over.

And so again allow me on behalf of the city to welcome you most heartily on the occasion of this your 32nd annual convention.

May the meeting prove to be to our mutual benefit and enjoyment.

RESPONSES TO ADDRESS OF WELCOME.

C. H. Everett of Racine, Wis.

Mr. President: Mr. Mayor, Ladies and Gentlemen: It gives us pleasure to be with you this morning. It is a gratification for us to come to Platteville, down in Grant county, with this Association; we believe that you are in need of us; we believe that we can do good in this community, else we would not be here. We do not come among you as teachers in any sense of the word. We are not professors of agriculture or dairying; most of us are farmers, or have been, have milked cows for a livelihood, and we bring to you the experience of a good many years upon the farm. We also hope to gain some knowledge for ourselves from this convention and take it away with us to other parts of the state.

The dairymen's convention is organized for the betterment of dairying in Wisconsin, and to lift up the dairymen individually and collectively. Wisconsin is a dairy state, perhaps better adapted to dairying than any other single industry. Our climate is of the best; our grasses are excellent and the water is first class. All that we lack in order to be successful in the dairy industry is the right kind of a dairy cow, properly cared for, properly fed and housed, and the milk properly cared for.

Dairying is a science that requires a great deal of study, a good deal of energy and exactness; a man must have a purpose in life to be successful with the dairy cow. She is a machine, so to speak, that manufactures the products of the farm into milk, butter and cheese, and she pays for the feed and her care according to the skill and knowledge that is put into her surroundings. There are a great many good dairymen in this state and in this county, and there are a great many poor ones. We have thousands of good cows, and thousands and thousands of poor ones. Many of the cows in this state are not paying for the feed that they consume annually, and many of our dairymen do not know which are the good cows and which are the poor ones. Many of our farmers are not conducting dairying along business lines, they are not business men, in the true sense of the word, so far as dairying is concerned. They raise feed upon the farm, own the farm, pay taxes and interest upon their investment, which represents a certain amount of capital, and yet they put this feed through a promiscuous lot of cows, having no knowledge of the individual capacity of the cows in the herd, and this is not the right way to carry on business.

A great many things are going to be told to you in this meeting that will be of value to you in the future. We have with us some of the most successful dairymen, not only in this state, but of this country; men who have become prosperous through the dairy cow; men who have started with nothing and have become what you might call wealthy, at least well-to-do, and they have made all their money in dairying. What one man can do, others ought to be able to do. We are going to hear from these men through this three-days' convention, and I want you to pay particular attention to what they say; I want you to become intensely interested in these men. You will find that they are honest, sincere, open, frank fellows who have no axe to grind and seek no office of any kind. They get no pay for coming to you here, and it will be wise for you to get up close to them, because they are good men to be with. They will help you, they will be glad to do it, if you will put yourself in the proper mood.

Now, let us get together at this convention; let us get acquainted quickly and feel that we are brothers, and are here to help each other, and not to criticise anybody. Don't go out of this room saying that these fellows are book farmers, or they have had a fortune left them, or that they are anything else but good, honest farmers, for they are not. Come in here and tell us your experience, what you know about the dairy cow and what you practice upon your farm.

Some of the things told you at this convention may not be entirely applicable to you under your conditions of soil and climate. So let us know what you want to find out. These are subjects of vital importance to all of us, and let us get out of this convention what we can take home and put into practice upon our own farms.

We feel grateful to the mayor for the hearty welcome that has been extended to us. Many of us know Platteville; have been here on numerous occasions, and we are not surprised that we receive a cordial reception. You are good people, we are glad to be with you and to enjoy your hospitality. Thank you.

RESPONSE BY C. P. GOODRICH.

Mr. President, Ladies and Gentlemen: The Lord only knows why I am called upon to respond to this address of welcome, but anyhow I am glad to be in Platteville.

It is a fact that in every part of the country where they are engaged in dairying and have been for a good many years, we find the most prosperous communities. There are less mortgages on the farms and men are less in debt. I have been in position to know something of these things, for the reason that besides the management of my farm, I am interested in manufacturing in Fort Atkinson, and we can tell where the prosperous people are, as every manufacturer knows. Some years ago we had a large trade in the state of Iowa; they were largely en-

gaged in dairying; there were 1,600,000 dairy cows in Iowa, eight or ten years ago, and Iowa produced more butter than any other state in the Union. Our manufactured goods went to Iowa and the cash came back promptly. Within the last few years they have dropped off very much in dairying; they have changed their dairy cows to beef cows or dual-purpose cows and have quit milking to a large extent, and all the calves run with the cows. For two or three years past the beef industry has gone back on them, and now what is the consequence? Only day before yesterday I was looking over the books in our office, and we found that Iowa men were not paying up as promptly as formerly; they are asking for more time and buying less goods. There are a few spots in Iowa where they have stuck right to the dairy business. I found last summer a few of those places where the inhabitants are Scandinavians—most of them Danes. In one community of Danes I was in they have stuck to the dairy cow, and they are just as prosperous as they have been in years past, and I am fully convinced that in any place, where they stick right by the dairy cow they will keep more prosperous than in other places where they depend upon other lines of industry. Now, that is what this Dairymen's Association is trying to impress on the minds of the people.

We will find that there are lots of things we want to talk about here, and there is one thing I want to talk about, and that is, that all dairymen, as well as other farmers, should know what their goods cost them. There is no other branch of business which they pretend to carry on successfully without knowing exactly what the goods cost. What would you think of a merchant that went on year after year selling goods without knowing what they cost him? How long would he survive? What would you think of a manufacturer that did not know what his goods cost him? We would all agree that he must know. Now, why shouldn't the farmer know just as well? And yet I ask, Is there a man here that can tell me what one hundred pounds of milk has cost him in the year past? If you don't know, you are not a good business man; and you ought to be. It must be the very best business in the world that will stand such slack

work. "Oh, but," the farmer says, "there are so many things about it I can't tell what it costs me." I say you can. If you are selling milk, you can tell what each one hundred pounds of milk cost you and you can do it more easily than we can tell in our factory what a buggy costs us. There are not so many different men at work at it; but don't you suppose we know what a buggy costs us? Assuredly, we do. There are a good many different sets of men working at it, but we know all right just what it costs. We know what is the value of the machinery that is used in its manufacture, and the foreman of each department is required to give the exact cost of the part made in his department. I saw just the other day the man in charge of the iron part of the buggies weighing every bit of the iron that went into a buggy. He even counted the screws and was weighing them right down, and so we know to a cent what each buggy costs, and when we sell you a buggy for \$75, as true as you live, it never cost us quite that, and if it did cost us that, and more, too, we wouldn't make another buggy, we would stop right short.

We cannot fix a positive price at which to sell our goods, any more than a farmer can fix the price; the law of supply and demand regulates that, but we can regulate the cost of production. That is our end of it; and that is just what the dairyman must do. He must know what it costs him and then figure the best he can to reduce that cost. Now, how are we going to do that? First of all, by having better cows; then study to give them the proper kind of food that will produce milk at a less cost; reduce the work by having more convenient barns, etc. I can remember how I figured some years ago the cost of producing a pound of butter,—that is what I was doing on my farm,—and one year it figured up to sixteen cents a pound during the whole year,—paying for the labor, the food and charging the cows for what was raised on the farm just what I could have sold it for, and what I bought in the market at just what I paid for it, and paying for the labor what it cost me, with the board. You may think that was quite a job, to find out all those things, but it was not; it was really easy to find out the

cost of the labor, because I could hold my watch on the boys while they were working, and there was just as much fun in that as working myself. It cost me sixteen cents a pound. I was getting a good price in those days, thirty-two cents a pound, and so there was a nice margin, but still I was not satisfied, I wanted to make more, I wanted to have it cost me less, and so I put up a silo and then I figured the cost just in the same way, and the next year the cows produced a pound of butter for only twelve cents. Now, that is just an illustration of how we should figure all these things. I believe arithmetic is the best study in the world for the farmer; or anybody else for that matter.

Secretary G. W. Burchard: I expected that the Association would get a good welcome from Platteville, and I expect to see these seats all filled at later sessions. So far as I am representing the Association, I think I can say that the Association is mighty glad to be here. It has been my wish for a good many years that we might hold one of our conventions in the southwestern part of the state. For thirty-one years, ever since it was born, this Association has held an annual meeting; it has been in almost every quarter of the state, but never so far southwest as this, probably because it seems to some of us like the "jumping-off" place. It appears that the dairy interest is looking up in this part of the state, and so we were glad to come down here and investigate for ourselves and to tell you, as best we can, how other parts of the state are doing and where the dairy cow is the most in evidence, for in that part of the state is where we generally see more prosperity. It is evident that in this part of the state some men owning farms have struck it rich and that will often set their neighbors crazy, so to speak; they will neglect business and get off onto other interests, but you go into the dairy business, into Dane county, or Jefferson county, where there is a dairy cow for every man, woman and child in the county, and you will find that there is more money on deposit in our banks by the farmers than there is in any other part of the state; you will find that farm lands are selling for a great deal more money. Now, I am not going to tell you why

in full, but it is because of these very facts that I was anxious to come to Platteville, and I hope that this room will be well filled with the representative farmers of this vicinity.

Mr. Everett called to the chair.

PRESIDENT'S ADDRESS,

Before Wisconsin Dairymen's Association, Platteville, Wis.,
Feb. 10, 1904.

J. Q. Emery.

A little epic poem by Samuel Foss is suggestive of a few thoughts that I desire to express on this occasion. It is entitled

THE CALF-PATH.

One day through the primeval wood
A calf walked home, as good calves should.
But made a trail all bent askew,
A crooked trail, as all calves do.
Since then two hundred years have fled,
And, I infer, the calf is dead.
But still he left behind his trail,
And thereby hangs my moral tale.
The trail was taken up next day
By a lone dog that passed that way;
And then a wise bell-wether sheep
Pursued the trail o'er vale and steep,
And drew the flock behind him, too,
As good bell-wethers always do.
And from that day, o'er hill and glade,
Through those old woods a path was made,

And many men wound in and out,
And dodged and turned and bent about,
And uttered words of righteous wrath,
Because 'twas such a crooked path;
But still they followed—do not laugh—
The first migrations of that calf,
And through this winding wood-way stalked
Because he wobbled when he walked.
This forest path became a lane,
That bent and turned and turned again;
This crooked lane became a road,
Where many a poor horse, with his load,
Toiled on beneath the burning sun,
And traveled some three miles in one.
And thus a century and a half
They trod the footsteps of that calf.
The years passed on in swiftness fleet,
The road became a village street,
And this, before men were aware,
A city's crowded thoroughfare,
And soon the central street was this
Of a renowned metropolis.
And men two centuries and a half
Trod in the footsteps of that calf.
Each day a hundred thousand rout
Followed the zigzag calf about;
And o'er his crooked journey went
The traffic of a continent.
A hundred thousand men were led
By one calf near three centuries dead.
They followed still his crooked way,
And lost one hundred years a day;
For thus such reverence is lent
To well-established precedent.

A moral lesson this might teach,
Were I ordained and called to preach.
For men are prone to go it blind
Along the calf-paths of the mind.
And work away from sun to sun
To do what other men have done.
They follow in the beaten track,
And out and in, and forth and back,
And still their devious course pursue,
To keep the path that others do.

Of Wisconsin farming in the early '70's it might well be said that

"Many men wound in and out,
And dodged and turned and bent about,
And uttered words of righteous wrath,
Because 'twas such a crooked path."

The continued raising of wheat had well-nigh robbed the soil of its fertility. The chintz bugs were running riot over the wheat fields, made scant in yield by following the processes then in vogue.

In 1872 a few pioneer thinkers became convinced that Wisconsin farmers were following a "maze of calf-paths" in their thinking and practices. They believed that some of the calf-paths in the minds of Wisconsin farmers should be obliterated and new paths opened as a condition for successful achievement. They met in the city of Watertown, February 15, 1872, and organized this, the Wisconsin Dairymen's Association, determined to do something to make the crooked paths straight.

They, with others recruited along the tide of years, constitute the "Old Guard," who have always been found on the firing line at the front of the battle against ignorance and for dairy advancement. They have been ready at all times to take their places in the advanced skirmish line or on the most advanced picket posts. They have been their own commanders. They swore allegiance to their own reason and their own intelligence

and they have been true to their oath. All through these years they have been looking forward and not backward for the Golden Age and have been putting to rout the enemies of dairy progress. They led away from the old calf-paths of making cheese and butter exclusively on the farms and conceived and erected cheese factories and creameries where they manufactured the choicest of dairy products and gained for these products the highest awards in the world's competitive contests.

They waved the magic wand of their influence over railway officials, and in response refrigerator cars were placed at dairy centers to be loaded with Wisconsin cheese and butter, to be borne to the best dairy markets of the continent, or to the seaboard and thence to the great dairy markets of the old world, there by their merits to command the highest prices.

In their need and extremity they called for some easy and accurate means for measuring the butter fat content of milk and cream and right royally did Dr. Babcock respond with the test that bears and must immortalize his name.

To aid them in striking out new paths, they conceived and demanded a dairy school, and in response the first dairy school on this continent and the best dairy school in the world became a reality.

They aided in bringing into existence great institutions that have made discoveries and inventions which have revolutionized the thought and practice of the dairy world and that have been adding to and continually increasing their own productive powers.

Their thoughts and experiences chronicled in the dairy press, to which their own necessities and their own genius gave birth, have led the march of dairy progress across the continent and have influenced for good the dairy thought of the world.

These are some of the new paths that have been struck out; but notwithstanding these and many other brilliant achievements, there still remain many "crooked trails" in Wisconsin dairy thought and practice.

It is evidence that dairymen are not out of the "maze of calf-paths" in their thinking and practice; who do not recognize that the foundation of large success in dairying is a herd of cows of

distinctive dairy type, bred and developed through long periods of time to the one distinctive purpose of producing dairy products; who do not recognize that this herd must, by unremitting attention and perseverance be improved each year through the use of a dairy sire of the best obtainable breeding and individuality; who do not recognize that the individuality of each cow must be learned through diligent observation and study, and her needs of a balanced and palatable and liberal and wholesome ration supplied; who do not recognize as a means of realizing high profits, the necessity of reducing the cost of production of milk or cream to the lowest possible degree by intelligent, persistent, unremitting efforts; who do not recognize that there is a great consuming public that demands and has abundant means to pay for clean, choice dairy products, obtained from milk delivered in clean cans, that was drawn by clean men from clean, healthy cows, kept in clean and sanitary barns.

Dairymen are following "wabbling trails," who do not recognize the necessity of laying the foundation of profit in dairying by conserving the fertility of the soil and by using 20th century methods of tillage, thereby producing the largest possible crops of the most suitable character to meet the needs of their dairy herd; and who fail to provide their herds with warm, comfortable, well-lighted and well-ventilated barns, furnished with modern stalls, by means of which cows may be kept clean and comfortable and by the use of which it is made possible to keep the milk clean from the outset, instead of relying upon the fruitless and hopeless notion that milk once made filthy by the droppings from filthy cows can ever again be made clean by any known method; for, paraphrasing the old theological maxim, "Once in grace, always in grace," it may be said of milk that "once filthy, it is always filthy." Especially should it be remembered here that "one keep-clean is worth many make-cleans."

Dairymen who will from year to year keep cows, feed them, milk them and deliver that milk regularly to the creamery or cheese factory without knowing just what they are delivering in quantity and quality and demanding payment by the Babcock test, and refusing to be deprived of their just dues by ac-

cepting any "pooling by the hundred weight" or "pound for ten" folly; who will consent to the enormous loss of feeding value in their skimmed-milk by allowing the tanks and pipes at the creamery to become and remain filthy instead of being kept clean, and by not having the skimmed-milk pasteurized by use of the waste steam, and who will year in and year out haul their milk over the most wretched roads.

"Following in the beaten track,
And out and in, and forth and back,
And still their devious course pursue,
To keep the path that others do."

Manufacturers of cheese who will continue to use their noses instead of the Wisconsin curd test to determine taints in the milk offered for delivery; who will continue to use the hot iron test instead of the alkali test to determine proper acidity, and who will not provide modern means for the curing of cheese but will allow the abundant new knowledge and discoveries that have been brought to light to remain unused for the want of a progressive spirit and of progressive methods indicate thereby that they still

"Follow the zigzag calf about."

There is evidence of "wabbling paths" in the thinking and practices of the manufacturers of creamery butter, when they will allow their factories, tanks, pipes and implements to become filthy and thus injure the quality and correspondingly reduce the price of their butter, and who will neglect to use 20th century knowledge and inventions and methods to determine the quality of the milk and cream when delivered and to educate their patrons to the necessity of delivering milk of only the right quality.

The creamery and cheese factory proprietors and their patrons who continue to allow butter and cheese to be made in factories other than those that are "free from sanitary defects, and possessed of well constructed and readily cleaned rooms, pure water, good drainage, clean utensils and surroundings, are surely following

"A trail all bent askew."

It is evident that notwithstanding the many zigzag paths in dairy thought and practice that have been obliterated and the many direct paths to success that have been struck out through the efforts of this Association for thirty-one years, there yet remains a large opportunity for progress by means of wise and progressive leadership and effort, and that this Association, therefore, still has a mission.

In none of the dairy lines can it be truthfully said that we have reached perfection. So it remains true today that in all branches of the industry, renewed efforts are required to make the "crooked paths" straight.

The past year has not been without the accomplishment of something in the way of progress. The number of traveling instructors that this Association has been able to employ has been larger than ever before. It is believed, too, that their effectiveness in the work has been increased by the enactment of a law by the last legislature, which authorizes the state dairy and food commissioner to appoint them as his expert agents, thus clothing each in their visits to creameries and cheese factories with as much legal authority as the commissioner himself would have in such visitation. In addition, by a law passed by the last legislature, there has been added to the dairy and food commission, an assistant chemist and two inspectors, one of whom is an expert creamery inspector. In effect, this arrangement practically increases the number of cheese factory and creamery inspectors in the dairy and food commission by the number of instructors employed by this Association, and so establishes and secures co-operative effort. In the future the inspectors from the dairy and food commission, in the performance of their official duty, will be charged not to be content with "paying the tithe of merely the mint, anise and cummin" of gathering samples of milk and testing them for butter fat and prosecuting the luckless patron that may be found guilty; but they will be instructed not to omit the weightier matters of the law relative to clean factories and creameries, clean cans, clean implements, clean pipes and tanks, clean milk, clean men, good drainage and sanitary conditions and surroundings and accurate testing for butter fat; and if these conditions be found un-

suitable and unlawful, then to cause the offending factoryman to bear the penalties of violated law equally with the patron who delivers milk below the legal standard of 3 per cent. Moreover, they will be charged with the duty of giving instruction wherever needed, to the end that to every factory or creamery visited there shall be given some impetus to betterment, some uplifting influence in the way of progress.

The two experts in the dairy and food commission, one for the cheese factories and the other for the creameries, with the three employed by this Association, will constitute a force of five competent, energetic and tactful men, who will devote their time to improving the quality of dairy products, three of them among the more than 1,800 cheese factories, and two of them among the more than 1,200 creameries of the state. This establishes co-operation between this Association and the dairy and food commission and should give added effectiveness to their efforts.

While this increased number of inspectors and instructors shows progress, that progress is not sufficient. A force of more than twice that number would be much too small. With the interruptions that must inevitably occur, one man cannot inspect more than five creameries or cheese factories a week and do the work with the thoroughness with which it should be done. This requires that the inspection should begin in the morning with the delivery of the milk, as it is conceded by all that unless the quality of the milk delivered is of the right kind, the quality of the product must suffer. It is possible that among Swiss cheese factories, where milk is delivered morning and evening, and the factories are close together and the number of patrons of each is comparatively small, two factories a day, or ten to twelve factories a week can be properly inspected. I believe that not to exceed 250 creameries or cheese factories can be properly inspected by one man in a year. At that rate it would require twelve men to inspect once a year the 3,000 cheese factories and creameries in this state. But once a year is not often enough to inspect them. Twice a year is not sufficient; yet to inspect them twice a year would require not less than twenty-four competent, energetic inspectors. How to pro-

vide the requisite inspection of Wisconsin cheese factories and creameries is, in my judgment, a highly important problem now pressing for solution. This matter is alike important to producers and to the general public.

It may be profitable for us to take a glance at the work of some of our neighbors along this line.

The province of Ontario has 1,000 cheese factories. Sixteen traveling cheese instructors are employed. They find this number insufficient and unsatisfactory and wish to increase it. Each of these instructors gets from \$700 to \$1,000 for the season. There the traveling cheese instructor watches a group of from 20 to 30 factories. Some of these he visits but once in a season, others as often as once a month, the number of visits depending upon the necessities of the factories. He gives counsel, sees that the factory is kept clean, and by reporting to the proprietors or the farm owners is able to weed out the poor cheese-makers and encourage and stimulate the worthy ones. He has no absolute power, his work being strictly advisory.

The province of Quebec has about 50 of these traveling instructors. Here the dairymen are largely of French descent and the cheese factories are smaller than those of the province of Ontario and relatively more numerous. Here a different plan is followed from that of Ontario. The cheese factories are allowed to form syndicates so-called, that is, twenty to thirty factories near together are allowed to form an association for hiring a traveling cheese instructor. If they hire one approved by the government, the government will pay toward his salary up to the limit of \$250, but not more, and not more than half his salary in any event. The instructors receive from \$600 to \$800 for the season. The difference between the government allowance and the total amount of the salary is met by the factories themselves.

Thus it will be seen that the provincial government of Quebec pays out more than \$12,500 annually for these traveling instructors, while the patrons of the factories themselves must pay at least \$20,000.

Are there not suggestions here that Wisconsin can make use of to her great profit? Wisconsin is a great dairy state. She

has the largest number of creameries and cheese factories of any state in the Union. In total volume of dairy products she ranks second. But can Wisconsin hold her prestige as a dairy state by supineness? Improvement in quality and uniformity is needed. If this Association, the Wisconsin Cheese-Makers' Association, the Wisconsin Butter Makers' Association, the Dairy School, the State Dairy Commission and the state dairy and agricultural press could unite and co-operate in an effort to increase greatly the number of traveling instructors in cheese making and butter making on some such plan as that of the province of Quebec, could not a progressive movement be thus inaugurated and success achieved? Can we not strike out a new path along this line?

The Wisconsin Dairy School continues to be a pilot among the schools of its class and to exercise its moulding and inspiring influence upon all the young men who with its present capacity can be received for instruction.

Our Agricultural Experiment Station, in its work of original research, continues to contribute to the dairy world new knowledge in abundance, which our dairymen appear to be too slow in turning to practical and money-making uses.

Our dairy press continues to be a light placed, not under a bushel, but on a candle-stick, where it giveth light unto all the dairy world.

The dairy cow, the gentle, gifted dairy queen, continues her sovereign sway over our purposes, our hopes and our business destiny. To each intelligent and kindly act on our part in her behalf she responds most bountifully. Let us not cease to woo her by our most bewitching, considerate and intelligent care and attention to yield to us abundantly of her golden riches.

In conclusion, let me say that that person must indeed be in a maze of calf-paths in his thinking who fails to realize that the business of modern dairying calls forth in multitudinous ways those intellectual activities in the tillage of the soil, the selection, breeding, feeding and rearing of the dairy herd, the manufacturing and marketing of the dairy products that develop a strong, intellectual manhood, and that any large success in the very nature of the case calls into constant activity

those kind, considerate, attentive, unselfish, benevolent acts that cultivate and strengthen the moral nature; and that the successful doing of all these things brings into activity man's will powers and thus tends to the evolution of a high type of manhood which should be the ultimate end of human effort.

The Chairman: It has been the custom in the past, and especially when we have had such an able President's address, for the chair to appoint a committee on the President's address, I will appoint as such committee: C. L. Hill of Rosendale, C. P. Goodrich of Ft. Atkinson, and Mr. Thurston of Chicago.

Mr. Goodrich: As we have a little time to spare, I propose to read something suggested by the President's address. There was a law passed last winter defining unsanitary milk and fixing a penalty for delivering it at the creamery or cheese factory or to any milk dealer. Section 1 says that "milk which shall be drawn from cows or kept in barns or stables which are not well lighted or ventilated, or that are filthy from an accumulation of animal refuse or from any other cause, or from cows which are themselves in a filthy condition, and milk in or from cans or other utensils that are not kept in a clean and sanitary condition, or milk to which has been added any unclean or any unsanitary foreign substance, is hereby declared to be unclean or unsanitary milk." Now, have you ever known of any such milk being delivered to creameries from barns that were not well lighted or well ventilated, or from cows that were not clean? I have heard them tell about the aristocratic cows that have been seen in Wisconsin. What do you mean by "aristocratic?" Why, they are stuck up. Did you ever look at cans in which milk was carried to the factory? I have. I have taken my thumb and scraped around on the edges or just above where the top of the milk comes. I don't know what it was that I scraped off, but it was something that looked kind of yellow or green. Do you suppose there is a creamery in the state of Wisconsin where some man does not violate that law? I haven't seen one. The law is all right, but

how can we enforce it? And it isn't good for anything unless we can enforce it. We can't enforce it unless we have somebody whose duty it is made to go and see what is done on the farm and in the creamery. You can't rely on the creamery man doing it. He may keep his factory clean, but he takes in milk that is not good, because he wants to get all the milk he can; he gets paid for making it up by the quantity. The farmers all know that such milk goes into the factory, and I have often heard more than one say, "What is the use of my taking a lot of pains to have good, clean milk, and take it to the creamery to be dumped in with the milk that these other fellows bring?" I know of a case in Fort Atkinson where the man had been making butter, and he made good butter and kept things clean. His conditions changed, and he went to patronizing the factory, and I could see almost right away that he did not keep his stables so clean, he let his cans set right back of the cows, and he dumped in the milk without straining. I asked him if he didn't strain his milk, and he said, "No, what is the use of straining my milk? There is lots of it at the factory that is worse than mine and it won't do any good." We have got to have somebody empowered, somebody with legal force behind them, able to enforce the law, and I believe that the state of Wisconsin could well afford to pay \$25,000 to have this law properly enforced. What do you suppose would happen if all the milk that goes to the cheese factories and the creameries and is sent into the cities, was good, clean, sanitary milk? Why, the demand for dairy products would be increased at a wonderful rate. I have stopped at hotels in the state of Wisconsin where the butter was pretty poor, and I noticed nobody ate it. In our family we like cheese, and if we get a piece that my grandchildren decide is not good, they won't eat it, while if they get some real good cheese, it goes mighty quick. I believe the demand for dairy products would increase at a wonderful rate, if we could only put good articles before the consumer in every case, and of course that would increase the price. We all know that Canada exports ten times as much cheese as the whole United States, and yet gets two cents a pound more for it. I have heard peo-

ple say that they had some sort of a pull with the British government, but that isn't so, it is because the cheese is better; and why is it better? Because of the great number of inspectors, fifty in one province and sixteen in another, and they go to the farmers' places besides going to the cheese factories. They go to cheese factory first and they examine the milk; they test it with the curd test, and they find out that from certain farms there is bad milk brought. Then they go to those farms and find out what the reason is, and that farmer is prohibited from taking his milk to that cheese factory or any other cheese factory until he reforms his methods. You know the Borden Milk Condensing factory are paying on an average this winter \$1.45 a hundred for milk, and that is 50 per cent more than the patrons are getting at the creameries. Why is it? It is because they get clean milk every time. I have traveled through the districts where the milk is supplied for those condensing factories, and I can tell their barns, I can tell their cattle, I can tell their wagons and the men that are doing that business, because they are clean. The wagons are kept bright and clean and are covered up to keep the dust out; the cans are all bright, clean ones, no rusty cans. The milk is taken right away from a clean stable and is cooled and is held until delivered in a building by itself. They have men that go and inspect the premises and in the contract that they make it is provided just what they shall do; these men shall have supervision of their barns and they go there to see that everything is all right. Now, in this state, with enough inspectors, and the power to enforce this law, it will be worth millions of dollars to the state of Wisconsin. I hope that we can formulate some sort of a plan that we can place before the next legislature and have a law passed that will provide for inspectors. As your president has said, fifteen of them could only visit the cheese factories and creameries once a year, and that is not enough. We ought to have thirty of them in the state of Wisconsin. Then we could have clean cheese, clean butter, clean milk, and I am very sure we would get a very great deal more for it, and it would please our customers a great deal better.

The Chairman: It is too bad that we are obliged to enact

laws to compel men to become prosperous, but such is the case. It seems that we have some unpatriotic citizens, men who are without shame, men who will take filthy milk to a creamery and dump it in with their neighbor's clean milk. It seems to be necessary to do something to compel such men to become better citizens, to be honest with themselves as well as with others. It is for us, the farmers of Wisconsin, to solve this problem; it is our duty to ask the state to provide means to protect us against this class of men, and we should go before the legislature and ask them to enact a law providing this state with a sufficient number of inspectors. We should see that our representative from each district in the state is charged with that duty when he is elected. Let us stand by our dairy interests; they are of more importance to the prosperity of our state and our people than all other interests in the state. The biggest problem we have to contend with is how to reach the patrons. There will be lots of farmers in this section of the state who will not have interest enough, nor the courage, to come out to these meetings and listen to the truth, and they are the kind of men it is hard to get hold of.

Recess to 1:30 P. M.

AFTERNOON SESSION.

Convention met at 1:30 P. M.

The President in the chair.

The Chairman: The Association is fortunate in having with us this afternoon and through our various sessions, a lady who has three claims to our interest and consideration: first, on her own account, and, particularly, on account of her great skill as an artist with the violin; and, second, she is the daughter of the Treasurer of this Association for many years; and, third, she is the granddaughter of the veteran dairyman, whose name is known everywhere in the United States, Hiram Smith. Miss Katherine Loomis will play for us several times, accompanied by Miss Boyer.

A LESSON IN FERTILITY: THE IMPORTANCE OF
FEEDING MILLING BY-PRODUCTS IN
WISCONSIN.

Prof. W. A. Henry, Madison.

The subject which I desire to bring to your attention at this time is one of deepest interest to every farmer in Wisconsin no matter what branch of the vocation he follows. Further than that, it is of state and national interest. The individual farmer should be anxious to at least maintain and, if possible, to increase the fertility of the soil on his farm. He should regard himself as a steward who has entrusted to him for a certain period the care of a piece of mother earth. It is his duty as steward to carefully and wisely manage this little spot and to leave it a better place for occupancy by man than it was when he found it. For one to look upon a farm as a place where he can survive in some manner and where he can get as much from the fields as possible, giving nothing in return, is to place ones self in the position of a bandit or robber. If a community is made up of this sort of robbers then that community is on a downward road, and poverty and bad citizenship are surely results. If communities generally hold this view and are favorable to soil robbery, then the county and state in which they are located become sufferers.

Every crop grown on the land takes to itself from the soil certain ingredients which come under the term "fertility." The farmers should know what these are and their value. First of all comes nitrogen. A large portion of the air surrounding the earth is made up of nitrogen, but unfortunately this nitrogen of the air is of no use directly to plants, for though bathing their leaves and passing into the soil to their roots, nevertheless it usually is useless because it is in an uncombined form. A plant may suffer or die from want of nitrogen although nitrogen be all about it, much as a fish may die for want of air when taken from the water. The little air which water normally contains

is sufficient to supply the fish with all needed air and the fish's gills are arranged to take up and utilize the air in water. When the fish is thrown on the land its gills dry up and the air cannot penetrate them; the blood is poisoned for want of air and the fish dies. Strange that it should die where there is so much air, yet such is the case. Strange, too, that plants cannot get the free nitrogen of the air, yet this is likewise true. The nitrogen which plants as a rule can use must be in organized form. It must be combined with some other elementary substances. Then under certain conditions the plant roots take hold of this combined nitrogen, send it in the sap currents about the plant and build it up into its tissues. Now, when the farmer or gardener feels the need of nitrogen for his lands and searches for it in the market he is obliged to pay a goodly sum for it. So precious is nitrogen in combined form that when we seek it as a fertilizer for our field or garden crops we are forced to pay about 15 cents per pound for that which is in best combination and not less than 12 cents per pound for that which is in only fairly useful form. In the rainless districts of Chili and Peru are great beds of what is known as Chili saltpeter or nitrate of soda. This material is secured in enormous quantities, leached and purified and sent by the ship load to all parts of the world. Another source of nitrogen is the waste products of the slaughter houses, such as dried blood, the ground up parts of dried fish and the bones of animals, all of which furnish large quantities of nitrogen. Still another source of nitrogen is the various seeds and grains which contain small proportions of nitrogen but more particularly such by-products as wheat bran, gluten feed, linseed oil meal and cotton-seed meal.

The next constituent of fertilizers to be considered is phosphoric acid. The bones of farm animals contain a large amount of phosphorus. This they must get from the food supplied them, hence phosphorus is an important constituent, although in small amount, in feeding stuffs. The grains we grow are partly produced to furnish phosphorus. They get this from the soil. The soil being drawn upon for phosphorus may become depleted by constant cropping of the lands of that constituent as well as others, hence to fertilize our fields we seek

phosphorus. In the form sold in the market, phosphorus is worth about 7 cents per pound for fertilizing purposes. Phosphoric acid in commercial form is found in certain mineral rocks, in bones and in feeding stuffs.

The next constituent, and the last one that we need consider seriously at this time, is potash. This mineral constituent, like phosphoric acid, is found in all forms of vegetation as well as in the animal body. When a tree is burned ashes remain; if we leach these ashes we get a bitter, biting lye. This lye is made up quite largely of potash. We often use it for making soap. Potash is also found in the earth in a few locations somewhat as is salt although the quantities are limited. Potash is a constituent of the animal body and an important aid in digestion. Potash is worth in the market for fertilizing purposes about 4 cents per pound.

All of our farmers have heard of commercial fertilizers, although only a small portion of those in Wisconsin have purchased them and used them on their farms. Not so in the eastern states. From Maine to Louisiana, all along the Atlantic and Gulf seaboard, and inland as far as Michigan, Indiana, Missouri and Arkansas, enormous quantities of fertilizers are purchased annually by the farmers, gardeners and orchardists. In the eastern states a potato grower will sometimes pay from \$30 to \$50 for commercial fertilizers with which to fertilize a single acre of land planted to potatoes. In New York, West Virginia and many other states a farmer will spend from three to six dollars for the fertilizers to go on one acre of land which he sows to wheat. In the southern states a planter will use from three to five or more dollars worth of fertilizers with each acre of cotton he plants. Now, the potato grower, the wheat grower and the cotton planter may or may not get a crop—that depends upon many circumstances—but in any event he has paid out a goodly sum of money for these fertilizers. He reasons that he must do so because his land has become so poor that if he does not apply this fertilizer he will not get a crop under any circumstances, that is, a profitable one. The farmers and gardeners of New Jersey pay out about two million dollars every year for commercial fertilizers. The farmers of Georgia

pay out as much as eight million dollars per year for this same purpose. I am sure Wisconsin farmers would feel greatly handicapped if, in addition to their other expenses, they were forced to spend such great sums of money for fertilizers. All of this would be in addition to other ordinary farm expenses, such as the purchase price of land, expense for tools, teams, labor, seed, etc.

Now, feeding stuffs contain these fertilizer constituents, the amount varying greatly with the different feeds, but there is always some present. Hay and straw contain less fertilizing constituents than the by-products of mills and manufactures. In the following table I have shown the fertilizing constituents in a few of our common Wisconsin feeding stuffs:

Table showing fertilizing constituents in 1,000 pounds of common feeding stuffs.

Feeding stuffs.	Nitrogen.	Phosphoric acid.	Potash.
Wheat straw.....	Lbs. 5.9	Lbs. 1.2	Lbs. 5.1
Timothy hay.....	12.6	5.3	9.0
Clover hay.....	20.7	3.8	22.0
Corn.....	18.2	7.0	4.0
Wheat.....	23.6	7.9	5.0
Wheat bran.....	26.7	28.9	16.1
Oil meal, O.P.....	54.3	16.6	13.7

This table might be greatly extended but it is sufficient to illustrate my purpose. We see from this table that 1,000 pounds, or half a ton, of wheat straw contains 5.9 or about 6 pounds of nitrogen; it contains only 1.2 pounds of phosphoric acid and a little over 5 pounds of potash. By placing the value of 15 cents on the nitrogen, 7 cents on the phosphoric acid and 5 cents on the potash, we can determine the fertilizing value of half a ton of wheat straw. Doubling it we get the fertilizing value of a ton. This system we can follow for each of the feeds named, and for others as well. It will be seen by the table that Indian corn contains a good deal more nitrogen than

wheat straw and that wheat bran is a good deal richer than corn, and oil meal, O. P., still far richer. Corn contains a great deal more phosphoric acid than wheat straw and wheat bran nearly four times as much as corn. Clover hay is rich in potash, while corn is relatively poor. A careful study should be made of this table by a thoughtful farmer. By it we learn what fertility a given weight of any of these materials takes from our fields. Our fields contain a certain fixed quantity of these and other constituents. These under discussion are the only ones we need consider, for when they are ample the other plant constituents are present as a rule in such abundance that we need not take thought of their supply.

The farmer who sells straw, hay, corn, etc., takes from his fields the amount of fertility indicated by the table for each thousand weight, or half ton, of products grown and disposed of. If this process of growing crops and selling them off the farm continues long enough without putting anything back, the fields become depleted of their fertility. Moreover, by cultivating the fields the soil leaches some of its nitrogen downward and this escapes in the drainage water. Thus there are two sources for the loss of nitrogen, while the second does not hold to any extent for the phosphoric acid and potash.

When we talk about our fields being worn out and run down, we mean that the available fertilizing constituents are reduced so that the roots of the crops cannot get at them as they should. Part of the fertility in any given soil is immediately available. This corresponds to cash which we may have in the bank ready to draw at a moment's notice. Another part of the soil fertility is locked up in the soil particles and is only slowly available. This may be represented by long-time securities which an investor holds. Often he cannot turn these securities and get cash for them although they may represent real value. When we talk about a Wisconsin farm being run down we mean more properly that its available fertility assets are low. Its slow assets in fertility may be abundant but the roots of its growing crop cannot get at them.

We all know that once Wisconsin grew great crops of wheat. Then the soil had an abundance of quick assets, and the wheat

plants, which are hungry, heavy feeders, seized on the available fertility and placed it in straw and grain, which the farmer harvested and took them from the field. He generally burnt the straw and sold the grain. We know that wheat farming depleted the fertility of our state. The same process is now going on in the Red River country of Minnesota and Dakota and other wheat districts to the northwest of us. Farmers in the Red River country at first could get a large crop of grain every year if crop conditions were favorable. After a time they found the yield running down and have now reached the stage of summer-fallowing part of their lands. They say they are again getting just as good crops as ever but after a time even summer-fallowing will fail them. They have been drawing heavily on the available fertility of their soils. The quick assets in this are steadily running down. No man can draw money out of a bank indefinitely without putting some back.

Let us now turn to the second part of my subject. When we feed straw, clover hay, corn, or bran to our live stock, these animals take out much of the starchy material, some of the nitrogen and some of the other fertilizing elements, namely, phosphoric acid and potash. These materials are kept in the body as fat, muscle or bone or utilized for heat and energy production. When a bushel of corn is fed to a pig, for example, the starchy matter may go to make fat in the body or to keep it warm and to furnish energy. The nitrogen in the corn may go to furnish fat, heat and energy, or it may be built up into muscle or lean meat. The bones of the pig are built up of the nitrogen, the phosphoric acid and a little potash. There is lime, too, in the bones, but most feeds supply this abundantly and most soils have an abundance of lime, so we need not consider that constituent. Most evidently these materials all come from the feed which is given the animal, and the feed represents the crops from the field. The soil, therefore, is the primary source of all our farm animals and animal products. To build up our animals we deplete the fields of fertility.

But the animals do not take out all the fertility in a given feeding stuff. They utilize the starch which is not fertility, and the oil and woody materials of the feed which likewise are

not fertility, but they draw on the nitrogen and mineral matters only in a limited way. The parts of these which do not stay in the animal pass off in the solid and liquid excrements. Here is a table showing what animals retain and what passes away from them:

Per cent of nitrogen and ash voided as excrement or secured as animal produce with various farm animals.

	NITROGEN.				ASH.	
	Obtained as carcass or milk.	Voided as solid excrement.	Voided as liquid excrement.	In total excrement.	Obtained as live weight or milk.	Voided in excrement and perspired.
Fattening ox ...	3.9	22.6	73.5	96.1	2.3	97.7
Fattening sheep..	4.3	16.7	79.0	95.7	3.8	96.2
Fattening pig.....	14.7	22.0	63.3	85.3	4.0	96.0
Milch cow	24.5	18.1	57.4	75.5	10.3	89.7

The above is an important table and should be carefully studied. From it we learn that the fattening ox keeps for his body use only 3.9 pounds of nitrogen out of 100 supplied him in the food. The sheep keeps a little more, the pig a good deal more, and the cow 24.5 pounds, or about one-quarter. The cow takes up the most nitrogen from the food given her because she is a most economical manufacturer. She works up more of her food materials into valuable products. In this case the nitrogen goes to form the cheese part of the milk. The steer uses the nitrogen to make red meat in its body and since the body of the fattening steer is largely developed at the time he is fattened, there is not much muscle or red meat built up during the fattening period. From this table we learn that if we wish to get the richest manure as to nitrogen we can have it by feeding steers, in which case we will get back in the manure about 96 per cent of all the nitrogen we supply the steer in the feed. If we feed dairy cows and sell the milk we have disposed of about one-quarter of the nitrogen given the cow in her feed and have three-quarters of the nitrogen left in the voidings.

Next let us notice where the fertilizing constituents of the nitrogen pass off. With the steer over 22 per cent passes away in the solid excrement or dung, while 73.5 per cent passes away as liquid. The liquid part of the manure has been in the animal's body proper. It is all soluble and so represents the best form of plant food. It is practically immediately available for the plant roots. Think then of the farmer who will bore auger holes in the bottom of the manure drop in his stable so as to get rid of the annoying urine of the cows. What extravagance and wastefulness!

The ash shown in the table contains the phosphoric acid and potash constituents. We learn that when a fattening ox is fed 100 pounds of ash material, all but 2.3 pounds in each 100 goes off in the excrement. The ox, as we see, keeps only a small part in his body. The milch cow keeps in her own body or gives off in her milk, mainly the latter, 10 per cent of the ash materials fed her. This ash material goes to form an important constituent of the milk. Every hundred pounds of milk contain about three-quarters of a pound of ash. That is, if we should dry a hundred pounds of milk until it became solid and then burnt up this solid material, there would remain about three-quarters of a pound of ashes. In these ashes are the phosphoric acid and potash of the feeds. But the cow only keeps out about 10 pounds of ash material for every hundred pounds given her in her food supply, and about 90 pounds pass off in solid and liquid excrement. The phosphoric acid nearly all appears in the solid excrement or dung, while the potash nearly all escapes through the urine.

We next come to the third part of our subject—the importance of using feeding stuffs to keep up the fertility of the farm. The farmer who raises grain, hay, etc., and feeds these to his animals and sells only the carcasses of his animals or milk, and puts the manure back on the land, keeps a large proportion of all the fertility he has taken out of his soil on his farm and returns it to his fields. By stock farming then we reduce the fertility of our fields very slowly,—so slowly, indeed, that we do not notice that they are growing poorer. The importance

of this subject to a state like Wisconsin cannot be over-estimated. If our farmers were to give up animal husbandry and all go to growing grain, hay and straw for their sole sources of income, in one generation we would impoverish this state until the value of agricultural property would shrink tens, if not hundreds, of millions of dollars. If the process were kept up long enough our agricultural people, and with them our city population, would be practically ruined.

Evidently from all this the less grain, hay and straw we sell and the more we feed, other things being favorable, the more thrifty and successful will be our farming. By this process we dispose of only a small amount of fertility and return most of it to our fields.

But there is another factor of great importance to Wisconsin, the fourth in this lecture. To the northwest of us lie the great wheat fields of America. In this region the farmers are rapidly sapping the soil of its fertility and shipping it away in wheat and by burning the straw stacks. We in Wisconsin must let these people, if they will, go on working out the destruction of the soil, the richness of which they boast so much about. Now this wheat, carrying with it so much fertility, comes to the mills of Minneapolis and other cities near by and is manufactured into flour for shipment to all parts of the world, with bran and middlings as by-products. Fortunately a large part of the fertility of the wheat grain goes into the bran and middlings, as our first table plainly shows. The fertility in a wheat grain is placed for the most part in the germ and near the outside of the grain, close to the layers of the wheat skin which constitutes most of the bran and middlings. Thus the fertility of the wheat crop goes largely with the by-products when flour is made. In the manufacture of oil from flax seed the oil has no value as a fertilizer, but the residue, called oil meal, is high in fertilizing value, as our table shows. The fertility which the flax grain takes out of the soil is therefore left largely in the oil meal. As we know, flax is also grown largely in Minnesota and Dakota. We then have in Wisconsin two enormous sources of soil fertility close at hand. If our soils

were very poor, we might be forced to buy bran or oil meal or both to sow directly on our land, to furnish them fertility, but we have already learned from the second table the vitally important fact that we can feed these materials to our live stock and get back a large portion of all the fertility in the solid and liquid voidings of our animals.

This brings me to the kernel of this address: Wisconsin farmers should be heavy feeders of bran, middlings and oil meal produced not far away to the northwest. By the use of these feeds we accomplish two things. We nourish our animals and produce butter, cheese, milk, meat, wool, etc. We are manufacturers of these products. Then we have left as a by-product in our manufacturing process an enormous amount of the most valuable fertility, consisting of nitrogen, phosphoric acid and potash held by the bran and oil meal which we feed to our stock. Every car load of bran contains over a hundred dollars worth of fertility according to market prices. I do not say that a Wisconsin farmer can buy a car load of bran and scatter it over his fields and get back that value, but I do say that on the impoverished farms and gardens of the east and the plantations of the south men are paying out over fifty million dollars a year for commercial fertilizers in order to secure these plant constituents. I further say that should the farmer in Wisconsin undertake to grow grain year after year and to sell the grain, straw and hay from his farm, that his lands will become so reduced that he or his successor at some time must go into the market as a buyer of fertility at the price named, in order to bring his farm back to something like profitable conditions. The Wisconsin Agricultural College and the Wisconsin State Dairymen's Association are preaching the feeding of bran, middlings and oil meal from the mills of the northwest all the time. The farmers who practice the feeding of these materials know that their farms are growing richer so that enormous crops of corn can be raised; that so rich is the land in many cases that the oats fall because the straw is too rank. Now, where this is happening it is because we are shipping fertility from other regions to Wisconsin. That is just as it should be.

So long as our neighbors are practicing a suicidal policy, let us take advantage of what they are doing and secure the possible benefits to our own farms. This means in the end hundreds of millions of dollars worth of fertility added to Wisconsin soils and taken, fortunately for us, from other regions; but if they will continue to grow wheat and flax and impoverish their soil thereby, let us make the most of the situation.

DISCUSSION.

Ex-Gov. Hoard: We stable our cattle here about two hundred days in the year, a little more some years. Have you ever made any experiments as to how much nitrogen an average dairy cow weighing a thousand pounds throws off in two hundred days?

Prof. Henry: I could get that for you. You have got to go back to the feed and figure how much nitrogen you have given her in the feed, and take three-quarters of it.

Ex-Gov. Hoard: It runs, as near as I can get hold of it, from twelve to fourteen dollars, and there isn't one farmer in Grant county in five hundred, or in any other county in this state, that makes any provisions to save that urine.

Prof. Henry: And some farmers even bore auger holes in the manure drop to let it dribble away. They might better have a hole in their pocket book and let their money dribble out.

Ex-Gov. Hoard: I think your figures indicate that for fertilizing purposes a ton of corn stubble is worth about four dollars. Now, a practical question is, Does it pay to cut corn stubble and haul it to the farm and haul it out in the manure? Doesn't it pay better to leave it right in the field?

Prof. Henry: If you leave your corn stalks in the field, you leave the fertility right there, but you leave it in a form that it is not a quick asset. The stalk has built that material into itself, and it is not immediately available. If you take those corn stalks to your barn and cut them up and put them

through your animal, they are where you can put them right back, and since the animal has only taken out a small part, you better haul the stalks to the barn and put them through your cows and have them made ready for the plant and then put them back.

Cotton-seed meal is put on the farms, hundreds of thousands of tons by those poor devils of farmers—oh, how poor they are, they won't even keep a cow to produce milk for their own table, and yet they will go and buy cotton-seed meal and sprinkle it along the rows and borrow money to pay for it. A man down in South Carolina fed a cow cotton-seed meal and milked her, and kept the manure made from a certain amount of meal and put that on one piece of cotton. Then he sprinkled the same amount of meal on another piece so that in one case it went through the cow, and in the other case it was put on direct, and they got more pounds of cotton in the case where it had gone through the cow than where they put it on direct, simply because it was more available. You have all heard the word "guano," which means bird manure. That fellow down south began to talk too about "cowano."

The Chairman: You propose that we shall learn not only to feed our animals, but to feed our plants.

Prof. Henry: Farmers, don't raise something just for the sake of plowing it under next year. Put it through the animal.

Ex-Gov. Hoard: It always pains me exceedingly to travel around in this portion of Wisconsin. I don't take any comfort at all, though I do once in awhile wander off down here, but I go back just as quick as I can and go off down into Illinois to see these great fields of corn stalks standing there, and I know it is wrong. But I might just as well whistle up the wind as to talk to a Grant county farmer on that proposition. He knows a confounded sight better, and I can't convince him, but I want to draw a comparison now, odorous as it may be. Go into Jefferson county, Wisconsin, and see if you can find an instance of that kind—but you can't. With 36,000 people and 40,000 cows; with an annual increment from agriculture

amounting to over \$5,000,000; with land selling last year, every acre that was sold, on an average of about \$100 an acre.

Prof. Henry: And it is not as good land as this down here?

Ex-Gov. Hoard: No, it doesn't begin to be. This is out of the glacial drift, and a large portion of the land in Jefferson county is sandy and gravelly. Grant county land is a king to it, but the Grant county men have been for years and years confining their thought and their judgment to beef and pork, and I tell you when a man acts from the standpoint of beef and pork, he is going to constantly study to do just as little work as he possibly can. But when a man comes abreast of the proposition, when he associates with the cow, the cow is a great deal like the wife, she will hook him out or scold him out or get him out some way, and the man can't be half as lazy with a cow and a wife as he would without either. I wish I could take the Grant county farmers to the right about bodily, and set them down in Jefferson county and see them figure out the proposition of dollars per acre. I want to get this thing down where it will stick, if I can—it doesn't make a bit of difference if you get ever so mad at me, because I have borne the wrath of this state once and I can stand anything. I want to get it down where it will prod. Think of a cow throwing off \$13 worth of nitrogen in two hundred days—and in that particular I want to say to you that my own Jefferson county people, many of them, are only beginning to wake up to that, are just as remiss as they are anywhere else.

Now, I buy land plaster and pay \$9 a ton for it, and I sprinkle those gutters twice a day with land plaster for the purpose of absorbing, taking up, that nitrogen and holding it till it goes out every day onto the field. Men say to me, "Hoard, can you afford to do it, can you afford to pay \$9 a ton?" Well, it will amount to \$18 or \$20 a ton when I have saved up the fertilizer. We cannot afford to farm any longer in this country with this total indifference as to where our interests are. That same indifference has taken fifteen hundred million dollars out of New York state in the price of her farming land. That is what careless farming has done for New York. The other day

in New York I was offered a farm for \$2,200 that once sold for \$7,500, and I saw any number of farms through there that I remember forty years ago selling for \$100 and \$110 an acre, which I can buy today for \$25 and \$30; buildings galore, magnificent markets all around them, and what is the matter? Farming with no thought, no idea of the future or any remembrance that there is a God in Israel who will avenge his people. Now, these things apply to Wisconsin farmers just exactly as well as anywhere else, and I am glad that the Professor has called for a class of old farmers up at Madison this year. If there is anybody on earth that needs to repent in sackcloth and ashes, it is us old fellows.

Prof. Henry: I have probably about two hundred men in my class up there and none of them under twenty-five.

Ex-Gov. Hoard: I thank God that this awakening of thought on this question has come, and I can see it before I close my eyes finally. I thank God that I can see that the spirit has taken hold of the people of this state and is advancing ideas of agriculture and that it has come to be true that the older men are getting interested.

Prof. Henry: I did not make one point strong enough. If a man had a farm within fifty miles of New York, he would expect to get some advantages from his proximity to New York. If you lived in California, you would expect to get some advantages owing to the proximity to the Pacific ocean. Now, Wisconsin is doubly blessed from her location in several particulars, with our great rivers of transportation, our great lakes and our proximity to the wheat fields. As long as our friends out West are going to sell that bran in such quantities, it is the part of Wisdom for us to reach out and get all of that bran we can and put it onto our fields. I know a young man, who some years ago put an arrangement across the Chippewa river so that he caught the slabs that were drifting away, and he kept at it and picked up that stuff and he had an income of nine dollars a day from the waste pieces going down from the sawmills. Now, look at the stuff that is coming from the mills of Minneapolis, pouring by railroad trains across Wisconsin to feed the

cows and fertilize the land in Michigan and all over the East. We are nearer those mills than those people. Let us dump the fertility of the Red River country upon the soil of Wisconsin. We have a chance that no people in this world have. I am trying to help you farmers. You go to a lawyer if you need one and put your case in his hands, and he studies it and tells you the difficulties that he finds. Now, I can't go down into Grant county or a good many other counties of the state, but I want to leave this thought burning in your minds. Next year the farmers of Dakota will grow thirty millions of bushels of wheat and thirty-six pounds out of every 1000 is fertility. It is for us to reach out and get this gold mine of fertility and pour it over the Wisconsin soil, and as the Red River country grows poorer, as it is bound to do, Wisconsin will grow richer and richer until our farmers are the richest in the Union.

Ex-Gov. Hoard: There were four hundred carloads of bran unloaded in Jefferson county in one year.

Prof. Henry: I was talking with one of the rich men of central Illinois, a long-headed business man. He says, "Our corn lands are dropping. We have learned how to get bigger crops, but they are going back; you can work the machine harder every year, but you can wear it out faster. We are doing better work, better cultivating and every other kind of work, but it is draining the soil of its quick assets and you will see that land in a few years producing less and less." That is for the men who raise corn to consider. Of course, when you begin to feed it, you can raise those big crops, because you are taking off a little fertility and putting back a great deal.

ADDRESS.

Ex-Gov. W. D. Hoard, Fort Atkinson.

Mr. President, this whole dairy field has such a tremendously wide range that I will talk on just one thing, and that is the construction and ventilation of dairy barns. I have not been confined to any subject, and I think I can do as much good, may be, in that particular field as any other.

All over the United States, east of the Rocky mountains, the present year there is a widespread complaint of loss in the quality of butter. It comes from some of the best creameries; in fact, it is general. What do you think is the cause of it? Down here at West Salem they think they have traced it to the use of soft corn for feed. I doubt it somewhat, and I want to say that in my judgment it is due to the extreme severity of the winter and the exceedingly unhealthful conditions of the barns and stables. Stock buyers in my section tell me that they never have seen as foul smelling stables in their lives as they have seen this winter. It has been a long, protracted winter of low temperature.

The dairy farmer has studied far enough on the proposition to learn this much, that he must keep his stable up to a certain degree of warmth, or the cows will not secrete milk. He knows that much, and so he shuts the stable up. The only way he can warm the stable is by the heat of the animals' bodies; in order to warm the stable to the proper degree, which must be from 55 to 60, he shuts it up tight. The result of that is that those cows in that stable, throwing off about eight pounds of water every twenty-four hours, in their breath, throwing off all that foul air and the gases engendered in their breath, with all the excrement and urine in the stable, become fairly saturated with the vileness of the stable. Now, do you think that the milk which they secrete can be of a flavor that will make fine butter? We are finding today in connection with the Hoard creameries, we are finding it in various places all over the Union in

the market and the constant complaint from the cutting down of prices—the West Salem creamery had to cut down the price of two shipments of their butter fifty per cent. Now, I may be wrong, but in my judgment a large proportion of this loss comes from bad ventilation.

In ordinary winters the cattle are out more. This winter it has been impossible to let them stay out more than a little while, because if we did it told on the milk receipts. Now, what should we do? As my observation goes, with reference to the average farmer, not one in a hundred has any idea of two important things in a stable, and they are light and ventilation.

A farmer by the name of Schmidt living but a few miles from Fort Atkinson lost twenty-nine cows out of thirty-two by tuberculosis. Mr. Tratt told me he never saw so vile a stable in his life. That man introduced one tuberculous cow into the lot, shut up the stable tight, and inside of six months lost twenty-nine out of thirty-two. It was like a hot house, the seeds of the disease rapidly developed, and this was the result. Now, if you had talked to that man, you could not have affected him at all by speech, but the sad story that ruined this man finally showed where his contempt for science had led him. If somebody had read the facts to him, he would very likely have said, "Oh, that is some of your book-farming." All over this land, my good friends, the farmer is poisoned to death today with his prejudices concerning what he calls book-farming. Suppose the lawyer should have a contempt for book law, or the doctor for book medicine or the engineer for book physics, where would those men get to at last in striving to understand the truth?

Now, here we are dealing with the most profound and, at the same time, the most important, facts of our existence, and all over this state you can see—riding down on the cars even today with my face to the window I saw not one single cow stable with sufficient light in it. Now, what is the matter? Why should the farmer do these things, why shouldn't he put plenty of light in his stable?

I built a cow barn a few years ago, and stuck in the windows just as close as I could, every three feet, clear around on three

sides of it. My neighbor said to me, "What do you put in so many windows for?" I said in reply, "There is no disinfectant in God's world so powerful to cleanse a stable as sunlight, and it does not cost me much." Then I put in the King system of ventilation. It cost me \$350 to build the barn and put in this system of ventilation. Now, what is the result? Shut that barn up tight at night and step down into it in the morning with its fifty animals in it, and you can scarcely smell the odor of a cow stable in it. The air is changed in that barn every hour, the thermometer stands steadily at about 55. The cows—their eyes are bright, their coats look nice and good, the air in that stable is just as sweet and clean as though it was in a June pasture.

And is there any difficulty about this? No. But my neighbor said, "Why, Hoard, you can't afford to spend \$350 for air." "Well," I said to him, "what does a cow live on? It lives on food and drink and air, and you take away the air and she will die the quickest, won't she? You can poison her; if some man comes along and puts arsenic into her food you would prosecute him, wouldn't you? If some man came along and put strychnine into her drink, you would prosecute him, wouldn't you? But you will sit right down and deliberately poison her with foul air." Now, then, a cow needs just as pure air in her stable as you do in your house. Do you know of any rule on earth whereby a cow does not need as pure air as a man? And it is a simple proposition—this ventilation question.

Now, how much did that ventilation cost me? I said I paid \$350 extra, and my neighbor said I couldn't afford it, and I took this way of reasoning with him: The interest at 6 per cent is \$21. That is what this ventilation cost me virtually, \$21 a year. If I didn't have the money myself I could borrow it from a neighbor and \$21 would get the money. So that the annual expense of furnishing the pure air to that stable, 142 feet long and 36 feet wide, is \$21 a year, and I would say to my neighbors, "Look these cows over. That amounts to but little over 40 cents an animal. Now, would you keep cows two hundred or more days in the stable and deny them the use of

40 cents to furnish pure air to them?" Now, I get back, in my estimation, my friends, ten times forty cents, in increasing the efficiency of those cows. I don't think that I ever made an investment on my farm that paid a higher interest than that ventilation system. All this winter long, the stable held steadily, never has dropped below 50, from that to 55. We can't go to the expense of artificially warming our stables; we must keep them heated by the animals' bodies, but in the King system you retain the heat that is thrown off and you introduce fresh air constantly and take out the foul air. The fresh air is pouring in all the time, the foul air is pouring out all the time, and your stable is kept at an equable temperature and your cows are healthy and happy.

Mr. Everett: The Grant county farmer doesn't need to spend \$350 to ventilate his barn as well as yours, does he?

Ex-Gov. Hoard: No, I think not. There are few barns 142 by 36, but what I want to get into the minds of these, my friends, is that there is a cash value to this proposition. The farmers about me have scolded me for putting in that ventilation system, but there is nothing about my premises that I think is making more money for me than just that. I step into my barn nearly every day and I look these cattle over and see how contented and happy they are, and I say to myself, and to the cows, "Oh, I wish your sister cows over this state could have an opportunity to enjoy such a condition of things as you have;" and if the dairymen of his state would get down to the bed rock of this proposition and think and study on the economic value of good air, as well as good food, how much it would help us.

Now, on this proposition of feeding. A neighbor was buying bran and paying \$15 a ton. He could buy gluten meal for \$23; the bran contained 16 per cent protein; the gluten meal contained 27 per cent. Now, which of the two would have been the cheaper? In the one case he paid \$1.25 for his protein, and in the other he paid less than a dollar for his protein per one hundred pounds. Then I saw him grinding up oats, oats worth 35 cents a bushel, over \$20 a ton, and oats only about 8 or

9 per cent protein. That man preferred to feed those oats when he could have sold the oats and bought the gluten. Now, it is the lack of this commercial quality, this business sense, which we must make up before we can exercise and dispose of our fortunes as we ought.

I find everywhere that the difficulty with my brother farmer is that he will not think, he will not figure, he will not stop to look into this proposition and go down to the bottom of it.

The forty-six German agriculturalists who visited this state last summer spent a half day at my place. I questioned them very closely as to what they thought about this country, and this is what they said: "You have a great country, but you lack in the education of your common people on agriculture." Now, what does the German government do? Every boy that goes to a common school is taught those things; you cannot find a German peasant in the country that is not given that kind of information in his little parish school, and the result of it is that when that boy comes to man's estate he understands the meaning of such terms as protein, carbohydrates, nitrogen, phosphoric acid, nutritive ratio and all the rest of them. That is the reason that the German comes here and displaces the American, and the country blossoms like a garden under his hand. He was taught as a child the meaning of these things that shall work for his salvation when he comes to be a farmer, and if he finds them anywhere in the literature of his profession, he knows what they mean.

So I say, we need to cast our prejudices to one side; we need to begin to study like students; we are up against propositions that require intelligence, and we cannot take ignorance into the ring and make any kind of a fight with it.

Therefore, I feel that on this question of ventilation and the construction of barns, particularly in dairy districts, the necessity to the farmer is vital, as has been shown by the experience of many of them this winter in the reduced prices received for butter. The moment you injure the flavor of butter, that moment down goes the price, and way down in New York is the final answer to a little foolishness up here in Wisconsin. I

could talk to you all through the convention, but I won't; but I do want to urge upon the Grant county farmer the better construction of his stables, more attention to the ventilation, their cleanliness, the saving of the elements of fertility, and all these things that will give you finally a better reward for your labor.

DISCUSSION.

Mr. Everett: How are those stables ventilated?

Ex-Gov. Hoard: The King system of ventilation was constructed on this principle. All previous systems of ventilation have proved inefficient when they introduce the fresh air. They open the windows and open the doors and the heat simply departed from the stable. Now, the King system takes the cold air in from the outside down near the sill and up between the studding and it enters the barn even with the ceiling. The barn must be constructed—sealed very tight, and sealed on the sides. Mine is constructed with three or four dead air chambers. The cold air enters at the outside with an open register raised up even with the studding and comes into the barn. The warm air is up against the ceiling, being light it rises. Now, then, the foul air is taken out by a great central shaft. My barn is in the form of an "L" and this shaft sets about in the center at the joining of the two "Ls" and on the outside. Even with the floor is a twenty-one by twenty-four-inch register on that side, and that is kept open; and up, even with the ceiling, are two more large registers for the purpose of taking off the warm air if it is too warm, but those are kept shut most of the time. This shaft rises clear above the ridge of the barn, is lined with galvanized iron and kept perfectly tight. It is three feet square for fifty head of cattle. The cold air is constantly running out.

A Member: Why would not the fresh cold air that you bring in go out through those foul air registers, being heavier?

Ex-Gov. Hoard: Because it comes up close to the ceiling

where the warm air is. All hay chutes, all silo chutes are shut off, the barn is kept closed, but the air changes in that barn every hour. You see that provision here is to introduce the fresh air and not let the heat off. Foul air is about fifteen per cent heavier than fresh air and needs a powerful draft to pull it out of the shafts, so there must be considerable suction to take this foul air out. This is of simple construction. All it needs is that the barn shall be constructed with a view to that end; it must be sealed and constructed with these ducts and the outgo here in the central shaft and you have the whole question in a nutshell. If every farmer in this state would purchase Professor King's *Physics of Agriculture*, where he handles almost every physical proposition on the farm in the way of trench building, ventilation and all those things, and study that book, it would be to him a gold mine of judgment.

Mr. Cleary: Such a barn as you have described yours to be was recently built in this vicinity. on the farm of Albert E. Russell, about ten miles north of here.

Secretary Burchard: One of the best ways to warm a stable is to put in this ventilating system. The Governor talks about his stable standing at 55 and 60, and one reason is that this system draws off the cold air which is at the bottom and lets the warm air come down. When you build a house, if you put in a fireplace or any other arrangement which will draw the cold air off from the floor and let it go out, the warm air being just up above will come down, otherwise it will stay there.

Prof. Henry: One other thing. When you have a hay chute coming down to the ceiling of your barn and you think you are going to ventilate your barn by opening the hay chute, you simply let out all the hot air in your barn and it is as cold as ever.

Mr. Everett: It should be explained that this ventilating shaft must come down close to the floor and take the cold air out. This flue is a chimney that draws the air from the floor. The air comes in between the studs near the ground outside and passes up above. He has his chimney starting near the floor and that carries the foul air out.

Mr. Fox: Isn't it quite probable that the difficulty in that butter arises from the condition of the milk after it leaves the barn? Many of the barns have too much ventilation and in many places the milk is taken to the creamery about once a week. I think almost any manager of a creamery knows something of the condition of milk in the winter time. It is kept in cans, and at each milking poured in and mixed. It seems to me that what we need is more intelligence in these things and there should be a farmer's school for our boys. We send our boys to school and the teachers want to make lawyers or teachers, professional men out of them, and they are educated away from the farm and into the crowded professions. It is all right for them to get an education, but they don't get it in the right direction.

Prof. Henry: The state of Wisconsin makes an offer that it will pay \$4,000 a year for a county agricultural school if the county will put up the school and pay \$2,000.

Mr. Fox: Let us centralize the schools. It makes a party dead sick to see the show schools in the cities.

The Chairman: I have been specially interested in this presentation of the subject of ventilation for our cow barns. For a good many years I have been a teacher in Wisconsin, and we have been pleading for ventilation in the school buildings of the state for the boys and girls, and I think when we get interested in having our stables ventilated, we will get better ventilation for our boys and girls. The system that has been proposed for the cow barn has been in use in our schools for many years. It is very simple, based on simple principles.

Last summer when the German Agricultural Commission was inspecting the Dairy School, as they passed through the buildings with the Governor, they expressed great surprise and gratification at what was being accomplished there. It will do us all good to spend a day or a term in the Dairy School of Wisconsin—I believe, the best in the world.

But the next best thing is to spending a day there ourselves is to hear from an intelligent young man who, although he was already running a creamery, realized that he needed more

knowledge, and skill, that he needed to get into the current of progress to fit himself for what was to come. He has been there, and he will tell us how it struck him from the standpoint of the student.

A DAY AT THE DAIRY SCHOOL.

Clarence T. Bragg, Bloomer, Wis.

Before we commence to discuss the Dairy School, I would like to say a few words about the students who attend the school. They come, not only from all parts of Wisconsin, but from all over the United States and even from other countries. The class I was in had men from all over—Canada, Washington, Oregon, California, Maine, Pennsylvania, Minnesota, Nebraska and a number of other states. They represent nearly all nationalities and ages, varying from twenty to sixty years. Their experience varies from a few months to several years. Some have worked in creameries, some in cheese factories, some in both, others have worked in sanitary milk plants and some had been making butter on the large western ranches.

The instruction given at the Dairy School is divided into two courses, a winter term and a summer term. Before being admitted to the winter course, the student should have at least six months' practical experience in a creamery or cheese factory, but no previous experience is necessary to gain admission to the summer course.

The expenses of the average student are about one hundred dollars for the term. Board, room and washing will vary from four to five dollars per week. Eight dollars will buy all the necessary books. Some students will get through and not spend over seventy-five dollars. Others will spend about two hundred dollars. My expenses, including car fare, Christmas vacation, clothes, and in fact everything I spent in the three months amounted to one hundred twenty dollars.

My home is in Chippewa county, about two hundred miles north of Madison, and I will give you a little of my own experience in entering the Dairy School. On Tuesday morning, November 3, I was up at 3:30, made a churning of butter and at 10 o'clock started to drive eleven miles to Chippewa Falls; reached there at noon but had to wait until 9 in the evening for my train. I arrived in Madison at 4 the next morning and having a prejudice against hotels that are near depots, as they are usually high priced, I walked several blocks and finally paid a dollar for two hours' rest and breakfast, but it was a good investment, as at the breakfast table I sized my neighbor up as being a butter maker, which proved to be true. We agreed to try our luck together and accordingly started out to find the Dairy School. By following the crowd we found the main hall of the university, where we were told to go to the agricultural hall to register. Now ordinarily these halls are in plain view, all being on hills and only a few rods apart, but there was a heavy fog that morning and we walked around about three-quarters of an hour before we succeeded in finding that big building. When we finally reached the school we found the students' registering room; the secretary of the Y. M. C. A. was there, busy furnishing addresses where the boys could get board and rooms. We were fortunate enough to secure a room about a block from the hall, but our boarding place was farther away. Our landlady was very ambitious, trying to feed fourteen at a table that was meant for six. So after a week of eating cold left-overs, we changed. We found an excellent place, just across the street from our room, where we remained until the end of the term.

One of the wise rules is that the students are all obliged to wear white suits while at work in the dairy building. This insures cleanliness and it is quite a pleasing sight to see them all looking neat and clean, and enables one to feel that they would like to eat the product made by these boys.

CREAMERY BUTTER MAKING INSTRUCTION.

As we enter the Hiram Smith Hall the first door is labeled "office;" this is mostly for the instructors, but here are kept the reference books which the students are at liberty to use. We next go to the milk-receiving room. Here we find students weighing, sampling and inspecting the different lots of milk. They have quite interesting discussions among themselves when a lot of milk is received having some odor that does not belong there; and if the patrons could hear the remarks that are made when there appears to be dirt in the last milk that comes out of the can they would either be more careful or, as is frequently the case, get angry. Then we go to the main room. Here on one side are the numerous makes of separators: the U. S., the Reid, the Alpha, the Simplex, and Tubular. The work done by each machine is carefully watched by a detail of students, each student having some particular work about the machine. Every day during the run tests are made, certain students noting the speed of the bowl, some the temperature of the milk, and others the weight and test of the cream and skim milk. In this way each student has a chance to learn from practical experience just what each machine will do.

The cream from the separators runs over coolers. I will mention one of these, the "Star." The cream flows into a perforated, concave metal trough; drips down over pipes, through which artificially cooled brine is pumped, and is then emptied into either an open cream vat, the Farrington ripener or the Boyd ripener. Some of the cream is taken to the pasteurizing room.

The students at work on the ripeners take the temperature and acidity of the cream at frequent intervals; these are also cooled with brine that is cooled by the ice machine. The Haughdahl starter can is also in use and considerable interest is manifested in it by the students, some of them coming here more for the starter work than any other one thing, as the butter maker who does not understand the proper handling of starters is getting to be a back number.

When we come to churning, the box churn and Mason worker, the Simplex and the Victor combined churn and workers are used. The cream is churned, the butter washed, salted, worked and packed by the students under the supervision of an instructor. Some of this butter is packed in tubs and jars but a great deal of it is put up in one-pound prints. Three styles of printers are used for this purpose: the Lafayette 1 lb., the Lusted 25 lb., and the Clauss 90 lb.

In the afternoon the class is given instruction in the scoring of butter. This feature is an education in itself, enabling the student to learn how to distinguish between the different flavors and what causes them, whether the body is weak, salty, loose or has other defects, whether the color is even, or streaked and mottled, and if it is salted too low or too high.

CHEESE MAKING INSTRUCTION.

In the cheese room are five small vats and one large vat that is fitted with an automatic agitator. Each vat is attended by a detail of students. Here they are taught how to use the different rennet tests, Harris, Monrad, and Marschall, and the making of cheddar cheese. In this room is the entrance to the underground tunnel leading to the foreign cheese room, the press rooms, and the curing rooms.

In the curing room we see that the cheese are all numbered, and here we find a number of different varieties: Cheddars, Flats, Daisies, Young Americas, Swiss, Brick, Limburger and Edam.

The foreign cheese room is fitted with all the necessary appliances, including a large Swiss copper kettle. This work is in charge of Mr. Marty, a native of Switzerland, and an expert on Swiss cheese. The Swiss being a sweet curd cheese, the whey from it is run through a separator and made into whey butter, 1 pound of butter being obtained from every 100 pounds of whey, and we have this winter made whey butter of excellent quality.

In the American Cheddar cheese room the first four weeks

are devoted to the making of skim-milk cheese. This reduces the loss, as at the start many mistakes are made,—such as using too much color, heating too high, etc. But the rest of the term full cream cheese are made with very satisfactory results.

On the second floor of the building are the farm dairy rooms; here are about 20 hand separators of different makes and sizes and other appliances for making butter by hand. The lockers and baths for the dairy students are also on this floor.

MILK TESTING INSTRUCTION.

The laboratory and old lecture room are on the third floor. Our class was so large this winter that we were crowded out of this room into one of the new ones in Agricultural Hall. The instructor this winter was Mr. J. G. Moore, President of the Wisconsin Butter Makers' Association. The laboratory instruction gives students opportunities to experiment along these lines, testing cream by both weight and measure; how to use the Farrington and Mann's acid test; to determine the accuracy of the glassware used in testing; and use of the lactometer to determine if milk has been skimmed or watered. Every morning the laboratory class meets the instructor in the lecture room and many interesting discussions are held, as the instructor has a habit of calling on the students to tell the class their experience and their opinions, and sometimes they do not all think alike. Afternoons this section of the class is taught how to propagate and care for the different commercial starters.

The pasteurizing room, which Mr. Myers has charge of, is fitted with both the Farrington and Pott's pasteurizers, star bottle filler, milk cooler, sterilizing oven and bottle washer. The students taking this course get about two weeks in this department.

Just north of the Hiram Smith Hall is the machine shop, a two-story brick building. Here are the ice machine, gasoline and steam engines, shafting, pulleys, separators, pumps, injectors and valves, all of which the students have to work with.

The engines must be taken all apart and put together again,

the same with the pumps, injectors and separators. Shafting must be torn down and reset in line, hangers reset, pulleys shifted, and separators and jacks set in line.

Upstairs they are taught pipe-fitting, soldering and belt-lacing. In pipe-fitting they learn how to measure, cut, thread and connect pipes, make noiseless water heaters, expansion bends, etc.

In belt-lacing the single, double, single hinge and double hinge are taught.

Every morning at 8 o'clock and at 4 each afternoon some one of the professors gives a lecture. In this way the students are given the advanced ideas pertaining to the work.

One thing that is of great interest to both students and visitors is the class pictures. Each year a larger picture is necessary, as the class keeps increasing in size, the last one having 155 students. These pictures are hung in the hall of the Dairy Building.

Some of the students organized two Bible study classes, one of which met in my room every Sunday afternoon, and gave us many pleasant and profitable hours during the term.

The students and instructors organized a literary and debating society. These meetings were held every Friday evening in the Agricultural Hall. Anything of benefit to the class was brought up and voted upon. There were always music, recitations, songs and speeches, but the main feature of the evening was the debate. Some of the subjects debated on were: Resolved, That the horse is more beneficial to all concerned than the cow. The negative won.

That the gathered cream factory is preferable to the whole milk. Negative won.

That the special purpose cow is more profitable to the farmer than the dual purpose. Affirmative won.

That the creamery is more profitable than the cheese factory. Negative won.

Adjourned to 7:30 P. M.

EVENING SESSION.

The Convention met at 7:30 P. M., February 10, 1904.

The President in the chair. There was vocal and instrumental music and an address on Home-Making by Mrs. Adda F. Howie, of Elm Grove, Wis., as follows:

Violin solo, Miss Loomis.

Song, Miss Crow.

Ladies' Quartette.

Address, Mrs. Howie.

Piano solo, Miss Boyer.

Vocal solo, Mrs. Banfield.

Normal School band.

Adjourned to next day.

SECOND DAY.

Thursday, February 11, 1904.

The convention met at 10 o'clock A. M.

The President in the chair.

The following committees were appointed by the Chair:

On Resolutions: Messrs. C. H. Everett, W. D. Hoard, J. G. Moore.

On Finance: Messrs. C. L. Hill, U. S. Baer, Fred Krog.

On Nomination of Officers: Messrs. C. P. Goodrich, C. H. Everett and Mrs. Adda F. Howie.

On Exhibits: Messrs. H. G. Noyes, J. R. Danks, Clarence T. Bragg.

A DAIRYMAN'S FIRST DUTY.

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

Sometime ago when consulting Superintendent McKerrow concerning the Institute speakers of our corps being called to other states, he remarked that occasionally he liked to have his workers avail themselves of such an opportunity to bring back knowledge that might be helpful to the people of Wisconsin. Since then, while doing work outside our boundaries, I have watched eagerly for any stray bits of wisdom that might be useful in our own state. A few weeks ago I enjoyed the honor and pleasure of attending a meeting similar to this in the city of St. Thomas, Canada. And while I gave careful attention to all scientific methods advocated for the betterment of dairying during the course of the regular program, the most pleasing impression was received when, at the close of the day's work the audience and workers together arose and, amid the waving of tiny flags, sang to the air of our own America, "God save our gracious King." As I stood lost in admiration of those strong, earnest and intellectual faces I felt as never before my own insignificance—I, an American woman, who had ever been taught to regard a Republic as the most desirable form of government. And now I saw before me what I had never seen in my own land,—the loyal benediction offered up after a day's labor in a heart-felt devotion to king and country. And while the dairy interests of our state have reached the gratifying figures of \$55,000,000, there is yet a subject of more vital import even to the dairymen of this state, and that is a fostering of loyalty and respect to a country where greed and self-aggrandizement is fast blotting out the finer qualities of many a noble nature; where shrewd cunning is too often regarded in the light of profound business knowledge, and where the sentiments of loyalty and honor are seemingly manifest only in the pages of by-gone history. For, without a stable government, the live-stock or any other interests will be based on so insecure

a foundation that few will have the courage or ambition to put forth their best efforts in providing for the uncertainties of a clouded future.

No claims of the mother country were ever more oppressive or exasperating than the unjust, selfish demands of the trusts and monopolies of today; no manacles of bondage so cruelly galling as the edicts of the labor organizations that dictate alike to employer and employe.

Where is our boasted freedom? And what constitutes our cherished liberty? Were all the heroic lives laid down at Bunker Hill and Gettysburg sacrificed for naught? The women of our land are debarred the privilege of voting, and I very much doubt if many would care to exercise the right were they permitted to do so. But every woman may justly demand the right to be proud of the country in which she lives. And in the name of many mothers, wives and sweethearts, I ask you, men of influence and power, to see to it that, regardless of party or platform men of sufficient courage and character be chosen to grapple with the greatest and most humiliating danger that has yet threatened our Republic.

See to it that an appropriation at once be made, sufficiently large, to place conspicuously in every public room or building in our state the symbol of the freedom that we are supposed to enjoy and respect. Perhaps the very influence of the stars and stripes, mingled with our state motto, would serve to inspire the officials with a dignity and sentiment that would hold them above corruption. I would ask the members of this Association to use their best efforts to inculcate throughout the land a heart-felt loyalty of a steady, sturdy growth, rather than the mushroom quality that quickly springs into prominence when some slowly-developed evil at last culminates in a crisis; a business integrity that shall be rated above sordid profit; a sincerity of purpose that will be held in higher esteem than the mineral wealth or the over-flowing oil wells of our land; a standard of moral honor that must command the respect and confidence of the entire world.

Then, and not until then, in all truth may our country be called, "The land of the free and the home of the brave."

WHAT FORAGE SHALL THE DAIRY FARMER RAISE?

C. H. Everett, Racine.

Mr. President, Ladies and Gentlemen: I want to present this subject in as brief a way as possible. I want, however, that it shall be thoroughly discussed, because I believe it has much to do with successful and profitable milk production. We have been studying the question of food a good many years. We have been talking a great deal in our Farmers' Institutes, in our dairy conventions and in the agricultural and dairy press about protein, carbo-hydrates, etc., and saying much about protein in concentrated form, about raising protein on the farm and about buying it in the markets. We have, however, said more about the concentrated food proteins, oil meal, bran, cotton seed meal, etc., than we have about the protein in the roughage or in the forage, and it seems to me it is time for us to consider that subject more than we have been doing.

We have been talking much about protein, its importance, how to produce it on the farm, in what form it is most economically purchased, etc. Having in mind all the time protein in concentrated form, as in bran, oil meal, gluten feed, cotton seed meal, etc., and have given but slight heed to the kind and character of forage supplied.

We have been satisfied with forage of indifferent quality and have looked to the grain supply as the main item of economical production. Farmers should not give less heed to the kinds and character of grain foods, but they must look more closely into the merits of good forage as one of the prime essentials of good, cheap milk.

The market is full of good protein foods and much grain food of this character may be and is produced upon the farm. Good forage, however, is not purchasable in the market. The dairyman must grow it, and what to grow, how to grow, cure

and preserve good forage for dairy cows is one of the biggest food supply problems confronting milk producers today.

Protein is the most expensive element of the cow's ration. She must have about $2\frac{1}{2}$ pounds of it daily. Half of this amount may be provided in the forage. Hence the importance of producing forage leguminous in character, capable of supplying part of this expensive protein.

The dairyman must take into consideration several factors in providing forage for his cows. He should consider the adaptability of the various crops to the soil and climate and to the use of cows. He must of necessity grow a good deal of corn and clover and should so manage by rotation and otherwise that maximum yields will be the rule rather than the exception.

Forage plants consist of two families: the grasses and the legumes. June grass, red top timothy, corn and the cereal grains, are types of the former; and the clover, alfalfa, vetches, peas, etc., of the latter. Few plants outside of the ones mentioned contribute to the supply of good forage, and of these, corn and the clovers, singly and in combination, are best adapted to Wisconsin conditions.

The legumes are most valuable of the two families, not only because their proportion of protein is high as compared with any other forage crop, but because they materially increase the nitrogen supply of the farm from sources outside the soil. Alfalfa and the clovers are most highly prized for these reasons.

Good forage must be easily digested and in a palatable form. It is that portion of food capable of being digested that gives value to forage. The age or period of growth at which a forage crop is harvested is an important factor in this relation and may affect the quantity harvested, the composition of the crop and the palatableness of the fodder.

The quality of any feed influences its value for any purpose. This is none the less true of roughage than of grain or concentrated feeds. If the bran and oat and pea meal is good it should be fed in connection with roughage of good quality, otherwise the value of the grain will be lessened. It is folly to endeavor to enhance the value of the coarse feed through the

grain allowance. This, however, is the result when poor forage is given and it, of course, means expensive feeding.

Pasture grass, silage, soiling crops, roots, etc., may properly be considered as forage and are preferable for part of the ration to all dry matter. Clover hay, oat and pea hay, corn fodder, sorghum, straw, millet, timothy, etc., are the nonsucculent coarse foods and used chiefly for winter feeding.

Timothy is not good forage for dairy cows and not a profitable crop for the Wisconsin farmer to grow. Early cut, nicely cured corn fodder is valuable as affording variety and is relished by the cows. Millet and sorghum add variety and are good for soiling purposes. For winter feeding there is nothing that will equal corn silage and clover hay. Good silage and clover hay make a combination that is succulent, palatable and fairly well balanced, and for cheapness it can not be excelled. A good silo and plenty of clover solves the problem of winter forage for Wisconsin dairymen.

Of the clovers, alfalfa, where it can be grown (and that is probably anywhere in this state), is undoubtedly the most valuable as a source of protein. It is the greatest yielder of all legumes, and has a higher protein content. It is also the best soiling crop known. It should not be grown, however, to the exclusion of the medium red clover, as it is not nearly so well adapted to rotation.

The clovers should be cut for hay early.

The dairyman must provide suitable forage in abundance if he expects to succeed in the profitable production of milk. He must give as much attention, yes more, to this phase of the food supply question than to the grain or concentrates that enter into the ration.

It should be remembered that the cow is a ruminant and that her digestion will suffer and assimilation will be imperfect if there is failure to maintain some just proportion between the concentrated or grain feeds and the roughage which she consumes. Without doubt much better results will be obtained from the concentrates, which is the expensive portion of the ration, by a judicious mixing with suitable roughage.

(Continuing). I might say something about the early cutting of forage crops and curing them, and if somebody else does not say it, perhaps I will later.

A Member: Tell us something about alfalfa.

Mr. Everett: I am glad you asked that question, because we have here an authority on alfalfa, and I took particular pains to bring over that authority from the hotel. Governor Hoard is raising alfalfa on his farm in large quantities. I have visited the Governor's farm, I have seen the alfalfa growing, I have seen it being harvested there and being cured, by his process of curing alfalfa, which should be the process of curing clover hay of all kinds, and therefore I know personally how successfully it is being grown on the Governor's farm, and other farms in the vicinity of Ft. Atkinson. What kind of soil is that alfalfa growing in, Governor Hoard?

Ex-Gov. Hoard: I have got a little way along in the study diate neighborhood within a mile of Fort Atkinson alfalfa is grown on sand. Mr. Goodrich reminds me that this alfalfa grown on this very sandy hill was seeded in the spring of 1901, and you will remember what a terrible drought we had that year. I seeded a number of acres that year and I do not know of a single spear of clover that lasted in that summer. I believe it killed your corn down here, didn't it?

Mr. —: It was not as bad here as the rest of the state; it never is. This clay sub-soil twenty feet below saves us.

Ex-Gov. Hoard: I have got a little way along in the study of alfalfa, and I am quite well encouraged. I don't know how quick my feet will be jerked out from under me, I am trying to walk as humbly before the Lord as possible, because after all said and done, He is the boss farmer, and He takes away your breath sometimes in a way that astonishes us, if you ever get too conceited. But I am convinced pretty thoroughly of the feasibility of growing alfalfa in Wisconsin almost anywhere.

A Member: In this part of the state?

Ex-Gov. Hoard: Why, I have a heavier clay than you have.

I have grown alfalfa underlaid with blue clay with water table twenty feet below.

Dr. Peters: Is your soil acid here?

A Member: No.

Dr. Peters: Then you can grow alfalfa.

Mr. Goodrich: A man told me of a place where they were tunneling under a mountain and the roots of the alfalfa came clear down into the tunnel.

Ex-Gov. Hoard: I struck an old fellow once at Breckenridge, Colorado, and I said, "I should think you would have tremendous floods when the snows go off in the spring of the year." The old fellow said, "Yes, yes, we have them, I have known it here when you had to cross every damned stream lengthwise." That is where Goodrich's alfalfa story comes in.

But the power of penetration in that alfalfa root fills me with amazement. I have dug down myself and found an alfalfa root three years old and have not got to the end of it after sixteen feet.

My first attempt in studying alfalfa was on rather a low piece of ground, a village lot, owned by my son, underlaid with heavy blue clay, black soil. During these long years of drought the water table receded and receded until it was about twenty feet before you would strike water if you dug a well. There were three lots in one piece, and digging the foundation for the cellar, plowing and scraping it out down into the very stiff clay, I was greatly instructed in studying those alfalfa roots. They have gone down there with great persistence and vigor, and there seems to be no limit to the deep rooting power of alfalfa after the first season. Up to about six or seven years ago, it was the received opinion in Wisconsin that we could not grow alfalfa; even Prof. Henry advised me very strongly to be very careful about my ideas and how I expressed them on the matter. So I concluded I would study this thing from a Wisconsin standpoint, because I made up my mind that the difficulty was that people were accepting the judgment born of other states and not of this state, and we had no experience here; we

needed experience, for that is the final test, so I went to work experimenting with it and I studied it four or five years on a piece of land on a farm that was occupied by a man by the name of Levi Gilbert. About thirty years ago he sowed alfalfa, a string of it, along a fence, and what held me fast was the fact that those roots of alfalfa were living there yet, and I said to myself, it can't be true that alfalfa won't live here when these roots have survived. Something needs to be known. What is it? So I went to work and finally I did evolve a line of doctrine that is adapted, I think, to Wisconsin conditions, in the main, and when we know how to handle it in Wisconsin, that is pretty much the whole question. You must remember we have very heavy freezes here, and you must remember that it is a delicate plant the first year of its growth; it is a tremendously strong plant the second year, it changes right over. It is tougher, hardier than red clover by a long sight after the first year.

Now, you can seed red clover in the spring of the year by going out in March and sowing red clover upon wheat or rye when the ground cracks open, you know, with the frost in the spring, and closes up again between the freezing nights and thawing days, you can sow red clover on that ground and have a catch. You can no more do that with alfalfa than if you sow it in the ocean. Alfalfa demands a seed bed, just as good, if not better, than any grain you sow, and that is one point. Now, keep that in your mind. I wasted eight bushels of alfalfa seed. I took a field of rye, about sixteen acres, in the spring of the year, put on a heavy harrow, and harrowed it three times till I tore the rye all to pieces, sowed on alfalfa and saw never fifty stalks, but I got the biggest crop of rye I ever did see—I learned something about rye, anyway, but I didn't get any alfalfa, and I wasted about fifty or sixty dollars worth of seed. You can get my experience a good deal cheaper.

The first step in growing alfalfa is to select the right kind of a field for it; if possible, select a field that has a good slope so that the water runs off it in the spring of the year. Don't

be so mighty particular about what kind of soil it is, if it is rich enough to get a good start. Plow the land well, disc it twice, both ways, harrow it two or three times, and then harrow it again. Then roll it, and if possible, have one of these corrugated rollers made with gas pipe—the best roller on earth, and the only roller that will prevent the wind from blowing the soil off after it is rolled, leaving little ridges between. Then harrow it again. Then sow good seed. You will have to be very careful about that, seed is very high this spring, and there is a tremendous call for it. Sow thirty pounds of seed to the acre. Don't hold a cent up to your eye so you can't see a ten-dollar gold eagle behind it. Don't try to save a little money on that seed, but sow thirty pounds to the acre.

If you want to secure a little return for that ground the first year, my advice would be, sow barley and cut the barley for hay just as quick as it heads out, although I don't advise that very strongly. If you sow it, sow about a bushel. I shall sow fifteen acres of alfalfa and I shall sow about a bushel of barley to the acre, but the great point is to get that alfalfa plant to make as deep a root the first summer as you possibly can. Don't be fooled by the statement going the rounds that it is a good thing to cut it three or four times the first summer in order to kill the weeds. The same process that would kill the weeds, will surely kill the alfalfa, and you want to get deep roots the first summer, fifteen inches to two feet, and have all the leaves you possibly can. The best system, I think, is to sow the alfalfa alone, go without any return for the first year; put on, if you can possibly, about thirty bushels of lime to the acre. It is a greedy thing for lime. You have got a soil here that is chock full of limestone, but it is not quickly adaptable; it will pay you to put on thirty bushels of lime to the acre, right on the limestone. It will also pay you a great big return to put about fifty bushels of carbonate of potash, wood ashes, to the acre, and if you can't get that, send down to Armour or Swift & Company and get muriate of potash, and put on about two hundred pounds to the acre. It is greedy of potash. That is one reason why it thrives way out West on the alkali soil.

Now, then, you have your alfalfa sown. Let it alone, let the weeds come up, and frolic, and have a good time, and go to seed, and remember all the time that next year you will cut it three times and that is death to the weeds. Nothing can live, hardly anything, in the form of weeds on an alfalfa field, after the second or third year, except alfalfa, and except white clover and blue grass. That is one of the reasons why I want the alfalfa thick, to keep those out. I wouldn't cut it a particle, but if I have got a nurse crop and have to cut it, I would set my reaper or mower just as high as I can. The next year you cut it three times, but you must leave a good, heavy crop in this country to go into the winter with. You are up against a proposition in Wisconsin that is different from all the experience West.

A Member: If you left a large crop of it, would not the moles get away with it, as they are doing with the red clover? They are thick.

Another Member: It is the meadow mole.

Another Member: No, it is the field mouse.

Ex-Gov. Hoard: Oh, the field mouse won't hurt you. But I have had no difficulty with that at all. Now, you are up to the next step. Next spring, you will see the value of leaving this heavy growth, every crown will come out thick and early. It will hold the snow all winter. I have had a pretty costly experience. I had a beautiful eight-acre field of alfalfa across the road from the house. I had cut three crops, a year ago last summer, about six tons to the acre, worth \$10 a ton in the market right there. My foreman hated to see that fourth crop wasted and I was away from home. I had reasoned that that fourth crop must be maintained. I had no experience, but I studied the plant biologically, and I had said to myself that the fourth crop must be held on the ground. When I came home, I found he had cut about five acres of the eight, cutting around on the outside of the square, and when I got there, to my consternation, there was only about three acres left in the center. I stopped him, and I said, "August, you have destroyed this alfalfa." "Oh, no, it will grow."

That was about the 20th or 21st of September. I said, "No, it won't grow, it is a gone case in my opinion, but you and I will know more next spring than we do now. Stop right here."

The spring came, and on that plat around the outside, you could go onto it and pull two thirds of the crowns right out, rotted. During the winter, that was bare of snow, the square chunk in the center was retained, and when the early spring came, every one of those roots in the center, began to throw out their shoots, while those around the outside were sickly, feeble, weak. So you see what it cost me to learn that. I broke up that plat around the outside of it and reseeded it, and I learned a great deal in breaking it up. Last spring was pretty wet, you remember, and all our soil plowed shiny—you know what that means, with heavy clay—except that alfalfa piece, and that plowed like an ash heap. The mechanical effect of the alfalfa on the soil was a great revelation to me. It took three horses, good big, 1,500 pound horses, to break it, and you could hear it break for twenty rods—it sounded like going through hazel brush—and when plowed, the roots were as thick as my finger and standing up straight. I sowed with it a bushel of oats to the acre, foolishly. The oats came on with such a growth as I never saw; everybody that went past the field, commented upon it and down went the oats as flat as if you had rolled them, and killed the alfalfa. I tell you, I have learned a heap about alfalfa. My mistakes are just as valuable to me as my successes, only I don't want quite so many mistakes as successes; I want the balance on the other side. I could talk to you, I suppose, on this alfalfa question for half a day, but the chairman says I must let up.

Recess till 2 o'clock.

AFTERNOON SESSION.

Convention met at 2 P. M.

The President in the chair.

THE FARMER'S COW.

C. P. Goodrich, Ft. Atkinson.

The farmer wants the cow that will return to him the greatest value of product for a given value of food and labor expended on her. The returns may be in milk, a calf or beef, all combined, or in one or two of these products, to the exclusion of the others. Sentiment finds no place in the farmer's mind in connection with keeping cows. It is profit he is after, and nothing else.

THE FAMILY COW.

In this, the farmer's cow differs, somewhat, from the family cow. The family cow is a single one, owned by some one living in a small town. Besides furnishing rich milk and cream nearly the whole year round, she is the pet of the family. The wife and girls, and even the boys, have an affection for her and pet her. She is fed from the hand dainty morsels consisting of crusts of bread, and the girls will even slyly slip off with a piece of cake for "Bossie." This cow *may* not be a very profitable one, but the family all love her and value her highly.

The farmer, if he is wise, will not buy a cow that has been a family cow in town for any considerable length of time. When the farmer gets her to his farm, she will be homesick, will miss the petting and dainty morsels and mourn for months for the "family" from which she has been separated. She

may be, naturally, one of the best of cows, but under these new conditions with the farmer, she will prove a failure. I have, in a few instances, bought such town cows that were splendid cows while in town. When they were brought to the farm, they would not go with the rest of the cows, but would go to the side of the pasture nearest to their old home and stand there and bellow to get back. This lasted all summer and in consequence, they did not pay for the food they ate.

THE BREEDER'S COW.

The breeder of thoroughbred cows, has a different standard from the farmer. His standard is certain "breed characteristics," which may, or may not, indicate that she is a profitable producer. These are fads which the farmer wants nothing to do with, for they will be likely to hinder, rather than help, him in building up a profitable herd.

A few years ago, the Jersey breeders had a "breed characteristic" that they were all working for; and that was "Solid color and black points." While they were working for these, they were losing sight, in many cases to my personal knowledge, of the main thing, profitable production, for which a farmer keeps cows. But, happily, the danger that was threatening the Jersey breed, was averted by the World's Fair at Chicago, which gave prizes for the most profitable production. Some broken colored cows were found to be among the greatest producers and, therefore, of the most value, according to the farmer's standard.

The Holstein breeders have a fad just as senseless. Their cows must be black and white. If a cow should chance to be all black, or all white, or red and white, she is no good as a Holstein, no matter how large a producer she may be.

The breeders of the Dutch-belted cows have a fad. Theirs must have a band of pure white around the middle of the cow, covering about one third of her surface, while her front third and rear third must be pure black. It is not admissible to have any white spots mixed with the black, or any black with

the white. To such an extent has this fad controlled the breeding of these cows, that the all important matter of profitable production has been lost sight of, and the results were seen at the Pan American dairy test. The Dutch-belted were clear at the bottom of the list in the order of net profit.

The farmer, in order to get the best farmer's cow, should have nothing to do with these fads, but should go on the idea that "handsome is, that handsome does," and test his cows in regard to production and shut his eyes as to their looks.

MY OWN EXPERIENCE.

I think it will be well to relate some of my own experience. Many years ago, I began keeping cows for the purpose of making profit from them. I believed then, that the best cow was the one that would give a large quantity of milk, raise a good steer that could profitably be made into beef, and that could herself be readily fattened when no longer profitable for giving milk. I believed that the ultimate end of all cows should be beef.

I began to keep accurate account of the cost of everything produced on the farm, and especially the cost of feeding milk cows and the returns I got from them. I also, figured as closely as I could the cost of raising and fattening a steer, and also the cost of fattening a cow which I had been milking. As a result of my close figuring and careful calculations, I came to the following conclusions: 1st, That a cow could not do two things with the same feed, that is, she could not, at the same time, make milk and beef both of the same feed. 2d, That the cow which, being well fed through a long milking period, would turn all of her food, except the food of support, into milk, would not, when dry, profitably turn her food into meat. 3d, I found, or thought I found, that the food which was turned into milk, brought me twice as much money as the same value of food turned into beef.

When I had things figured down to this point, I said, let those men out West where land is cheap and corn is cheap,

and the men who will not milk cows, make the beef with cattle adapted to the work and they may make some profit at it; but as for me, I want to make a greater profit on the products of my farm, so I will have the cows that bend their whole energies to turning food into milk. From this on, I went into improving my cows as best I could, in milk giving qualities, abandoning the idea of making any beef at all.

I obtained a sire of a special-purpose dairy breed, and commenced to grade up from the cows I then had. I took considerable pains to find out which of my cows were the best producers and disposed of a few of the poorest for what I could get.

I raised the heifer calves from my best cows. When they, in turn, came to be cows, they were sorted out and the best kept. I was making improvement fast. But I had a setback. The old passion for the general purpose cow overpowered me, and I got a beefy bull from what was said to be an excellent milking family. My book shows that the use of him two years decreased the yearly amount of butter considerably.

I then saw what I thought was a mistake and got another sire of the same dairy breed I had before used. After that I made steady improvement, each generation being better than the preceding one, till after a few years, I thought I had about as profitable a herd of farmer's cows as anybody had.

Certain it is, that they paid for many years, at least two dollars for each dollar's worth of feed they ate, besides paying for the work of milking and caring for them.

I am afraid some of you may think that I overdrew it a little when I said that I found that the food that was turned into milk, brought twice as much as that turned into beef. But please consider a few facts. A good herd of dairy cows will produce an average of 300 pounds of butter in a year, which, if made up at the creamery, would return, at 20 cents a pound, \$60.00, and the skim milk would more than pay for milking. In all the various "cow censuses" I have taken, I have found herds that have done more than that, and on \$30.00 worth of feed. Now, it is a pretty good beef animal that can

put on 600 pounds in a year on \$30.00 worth of feed, and at 5 cents a pound that would be only \$30.00. If you say that some steers have been made to put on 900 pounds in a year, then I will say that some cows have been made to produce more than 600 pounds of butter in a year, and here the comparison is no better for the beef animal.

(Explaining, Mr. Goodrich said: I had written so far. I went to sharpen my pencil and while I was doing that, I fell into a soliloquy, I said to myself, "Old man, you are sawing away on that same old string of the special-purpose dairy cow. You have been sawing away on it for years and years, and what good are you doing?" Then I said to myself, "Don't you know that there are a lot of men who have a better opportunity to experiment than you have, and know more than you do, who insist that the best cow for the farmer is the double, or dual, or general purpose cow?" Well, do you know that little soliloquy staggered me just for the time. As some of these dairymen might say, I backslid for a few moments, and I got my pencil sharpened, and commenced to write right on the other side of the question, and this is what I wrote:)

MAY BE WRONG AFTER ALL.

I thought that through my experience I had arrived at correct conclusions, but I may be mistaken and off in my reckoning. In fact it seems that I, and those who think with me, must be wrong, for a great many very intelligent men, and some agricultural professors, insist that the best farmer's cow, is the dual-purpose cow, that will make both butter and beef profitably. These highly educated men, who are paid high salaries to make experiments and work out important problems for the farmers, say that it is possible to so improve cows in the direction of making meat that they will be very profitable in that direction and at the same time, it will not detract to any great extent from their ability to give milk.

If this is so—and we dare not dispute it, the authority from

which it comes is too high—then we who have insisted that the special purpose dairy cow was the most profitable cow for the farmer who produces milk, are all wrong. We are old fogies. Now I don't propose to go with that crowd and trail along at the tail end of the procession. I mean to be as near to the front as I can get. I am going to accept the teachings of these men, for the time being, who tell us a cow can do two different things, and that improving her ability to do one of the two things, does not detract from her capacity for doing the other thing.

THE FUTURE FARMER'S COW.

I propose to go further, and say that the farmer's cow of the future, will be one that can do profitably *more* than two things. In addition to making meat and milk, the cow might be a work animal. In fact, there are some countries where cows are worked in the yoke the same as oxen are.

I am acquainted with a man who came from some place in Austria. He says that in the district where he lived, it was the common practice to do farm work with cows. He says his father owned a small farm, and all the team he had was a pair of large, fine cows. In fact, they were the only cows he had. He *says* these cows were great milkers, their calves excellent for making meat, and besides they could draw a plough or wagon at a good rate.

He used to haul his garden truck to the city market with these cows, and sometimes some of the small children would go along. A bundle of hay would be put on top of the load with which to feed the cows at noon, and when the children were hungry, sufficient milk was drawn from the team to appease their hunger. It needs no argument to prove that such cows, which we will call tri-purpose cows, must be far more profitable for the farmer, than single purpose or dual purpose cows, as long as we are assured that the ability to do one thing does not necessarily interfere with the ability to do other things.

BELIEVE IN PROGRESS.

Now, I am going to try to be progressive, and am not going to be satisfied with even the tri-purpose cow. Possibly, there are other uses to which the cow can be put, that will be valuable to the farmer, besides the ones I have mentioned. I suggest that she may be used to draw the farmer's carriage with his wife and daughters to town to do their visiting and trading. Don't start and look incredulous at this statement, but listen while I state some facts.

A great many years ago, in the 16th century, when the Spaniards made settlements in the southern part of this continent, they brought some cattle with them. Some of these cattle escaped and run at large over the vast plains. They became the wild cattle of the south-west, and were numerous. They had to contend with wild and savage beast and only the fleetest of foot or the fiercest fighters could escape from, or successfully contend with, their enemies.

Thus it came about that after centuries, the working of the law of the "survival of the fittest" produced a race of cattle which were wonderfully fleet, with long and sharp horns with which to defend themselves against their enemies.

In time the Mexican with his lasso caught some of these wild cattle and they were re-domesticated and their descendants are still found in Mexico and Texas. They yet have the fleetness that was developed during their wild state and still have the wide spreading horns.

A few years ago a man trained a Texas steer to drive in harness to a sulky on a race track. He entered him at a Texas county fair in a race and although he was in with fast horses, he won the race and took first money.

Now these facts have suggested to my mind that speed and ability to draw a buggy in good style might be added to the other useful functions of the cow and not interfere with her usefulness in other directions. Then we will have not only the dual-purpose and tri-purpose but the double dual-purpose cows.

Then the farmer's cow will be one that will give a fair mess of milk, raise a steer that will make beef profitably and will herself fatten readily when dry, will be able and well broken to do farm work; and in addition to these things, will be one of which the young man of the family will be proud, on the Fourth of July or other gala days, to rig up with a shining harness and hitch to a fine carriage and take out his best girl for a ride through the country at a spanking pace with the stars and stripes streaming from the end of each of the 7-foot-spreading horns and, when they come into town, it will literally be with "colors flying." When in town, if it should be necessary for this couple to practice economy, when they needed refreshments, the steed could be milked and they could be refreshed without cost.

When I got to that point, I stopped to sharpen my pencil again, and while sharpening, I lost the thread of my thought and was not able to pick it up again, but I do say and insist that I have been logical anyway, if nothing else. Thank you.

DISCUSSION.

A Member: Hasn't the Wisconsin Experiment Station demonstrated that a double-purpose cow is a successful experiment?

Mr. Goodrich: I didn't say to the contrary in this paper.

The Member: We have been wasting money supporting their experiments, according to your argument.

Mr. Goodrich: I haven't anything to say about it. I have given you my experience; then I have given you the other side of the question and followed it out on to its logical conclusion. The cow can do even more things than I have said. She can raise a buffalo robe on her back. There is no telling what the possibilities of the cow are, as long as improving her in one direction does not interfere with her ability to do other things.

A Member: Does the dual-purpose cow belong to any particular breed?

Mr. Goodrich: I don't think she does. I don't believe that the special purpose dairy cow belongs to any particular breed; I know she doesn't. As fine dairy cows as I ever saw I saw in the Shorthorn breed; their ancestors had been registered Shorthorns a great many years. What I call a dairy cow is one that will bend all her energies to turning food into milk. She is of the dairy type, the dairy form, and she is a good dairy cow individually, no matter what breed she belongs to.

A. Member: What about her calf?

Mr. Goodrich: That is another question. If her ancestors for a great many generations on both sides, sire as well as dam, are good dairy animals, then if she is properly mated her calf would stand a good chance to be a good dairy cow, if—there is a great lot of ifs in it—if it is brought up right. You can spoil it easy enough.

The Chairman: Do you recommend this last cow to the farmer?

Mr. Goodrich: At the time I wrote that paper—I talk just as I think at the time, and I write just as I think—just at that moment, I would, probably; but I have backslid again and got over onto the other side.

The following report of the Secretary was submitted and adopted.

SECRETARY'S REPORT.

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

Gentlemen:—I have the honor to submit the following report:

The total expenses incurred during the past year amount to \$3,749.63, which is \$190 in excess of the amount expended during the preceding year. These expenditures may be classified as follows:

	1903	1902
Convention expenses	\$372 65	\$523 36
Convention premiums	199 10	200 00
Cow census	60 00	50 00
Cheese Instructor E. L. Aderhold	908 00	820 00
Cheese Instructor J. G. McCready	895 00	713 00
Creamery Instructor J. G. Moore	877 50	802 50
Miscellaneous	3 40	50 74
Secretary, salary	250 00	250 00
Expenses of Secretary's office	155 58	119 08
(Postage \$67.90, Stationery \$13.32, Freight and Express \$5.15, Stenographer \$50.00, Traveling \$11.55, Badges \$6.25, Telegrams and Drayage \$1.41.)		
Printing	28 40	30 95
	\$3,749 63	\$3,559 63

Of the above the items for Secretary's salary, office expenses and printing have not been paid, as they are subject to the approval of the Executive Board before orders are drawn.

To meet these items, which amount to \$433.98, pay the expenses incident to the convention of 1904, and carry on the work of the Association through the current year, we have something less than \$800 in the hands of our Treasurer, and an available balance of \$3,000 in the state treasury besides what may be realized from memberships, which may be estimated at \$200. It follows that in our plans for the coming year the expenditures cannot exceed \$3,500.00.

It gives me much pleasure to report that a very commendable beginning was made last year in the systematic inspection of Swiss Cheese Factories and instruction of the makers and patrons of that branch of the dairy industry. Upon the recommendation of the Southern Wisconsin Cheese Makers' Association Mr. Fred Marty, who had spent some time at our State Dairy School, was appointed Swiss Cheese Instructor, and his reports through the summer show the abounding need for modern methods of care and cleanliness at both factories and farms. Mr. Marty has apparently had the courage of his convictions and education, and very considerable improvement has been made.

The expenditures for the benefit of the Swiss Cheese Industry during the past year amounted to \$926.70, of which \$790 was paid as salary to the instructor, \$8.55 for his incidental expenses and \$128.15 to Mr. Luchsinger for expenses of the Swiss Cheese Association.

I do not consider it necessary to comment on the work of the Association, or its instructors, during the past year, except to say that on the whole it has been as satisfactory and efficient as could be expected, considering the limited means at our disposal. But it must be admitted that if Wisconsin is to maintain her rank for quality of dairy products there must be much more field work done by inspectors and instructors. And especially must efforts be put forth to reach the patrons who supply milk to creameries and cheese factories, for it is to them, quite as much as to the makers, we must look, for the production of high quality in our dairy products. Not only are our inspectors and instructors too few in number, but sufficient provision is not made for meeting their necessary traveling expenses. When I observe what other states and the Dominion and Provinces of Canada are doing and compare that with the little Wisconsin is doing, or can do with the meager appropriations made by our Legislature, I am much discouraged and sorely tempted to abandon all personal connection with the work and responsibility for the results.

The dairy industry and the dairy possibilities of Wisconsin ought to be fitly represented at the Louisiana Purchase Exposition in St. Louis this summer, and it remains for our Executive Board to determine to what extent the Association shall cooperate in such an undertaking.

Thanking the Association, its officers and Executive Board for their continued confidence and co-operation, I remain its obedient servant,

GEO. W. BURCHARD,
Secretary.

NEEDS OF THE SOUTHWESTERN WISCONSIN
CHEESE INDUSTRY.

U. S. Baer, Madison.

Mr. President, Ladies and Gentlemen of the Convention:—
This is not a job of my seeking. I have seen too much of this world to go looking for trouble. Long ago I quit putting chips on my shoulders as bluff games. But as a member of this great Association, I dare not refuse to try to perform any duty which your respected and honored Secretary places upon me—that is why I appear before you.

Less than a generation ago the southern and southwestern portion of this state was given over to an industry, which in its glittering prospects of wealth, lured the venturesome spirit from all portions of the globe, and the click of the drill, the boom of the blast, and the hustling activity of a mining town all told of the feverish industry that permeated the time. Fortunes were made and unmade in an incredibly short length of time, by a lucky or unlucky strike, as the case might be. But the years have slipped by and the ever-changing hand of destiny has transformed the scene. Instead of the jigs, smelters and refineries, we have the factories and farms, the cheese vats and the churns, which are producing the revenues of this country, and the Babcock test, instead of the assay, determines the wealth of the products.

Yet a little while, with the same devastation of the magnificent forests of Wisconsin, and our lumber kings will be no more, and left behind all through the northern and central portion of Wisconsin will be a pathway strewn with a range of stumps, left bleaching in the summer sun; to be transformed into meadow and pasture lands teeming with flocks and herds. A landscape to be dotted with creameries and cheese factories and from abandoned lumber camps and former timber districts are to abound prosperous farms and homes, with the advantages

of education and lectures and social life, such as you now enjoy, fitting the people for the highest offices of American citizenship.

Southwestern Wisconsin embraces what is, probably, some of the very finest farming country found in this state. In climate and physical features this section, as a whole, is well calculated for dairying. The people are intelligent, industrious and hospitable. Routine is the greatest calamity of the cheese industry of Southwestern Wisconsin—that is in the care given the milk by the patrons, and the prevailing tendency among our cheese makers to seek or desire some arbitrary rules upon which to act in preparing their material for the chemical changes it is to undergo in the cheese vat. Cheesemakers do not seem to study the whys and wherefores of the different grades of milk which they receive in order that they may produce the very best results.

The first duty the patrons have to fulfill, if they wish the factory they supply to make good goods, that shall sell at high prices, is to supply nothing but pure, clean milk in its normal state. This is an indispensable point—one that no patron should forget, since it is the principal foundation on which we must reckon if it is desired that our cheese products should be of the best quality.

In Green and adjoining counties the number of patrons who do not even strain their milk before carting it to the factory, is astonishing. I have recently been told that unstrained milk weighs heavier than strained milk. I knew of course, that it did, for earth, animal droppings and all other matter that do not make butter or cheese, represent a good weight. It is useless to think of making the best cheese from bad milk—whether bad from filth, from aeration in impure air, or from want of cooling. No business requires greater attention to cleanliness than that of producing milk for cheese making purposes.

Even if the maker possesses great knowledge; even if he pass all his time in dairying, he will never succeed in making first class cheese of milk in bad condition. Makers should take the pains to show the patron, that when he delivers tainted or sour

milk to the factory, it means a direct loss of dollars and cents to him and his neighbors associated with him. I would earnestly draw the attention of all patrons of cheese factories to the importance of taking proper care of their milk. By neglecting this they assume a moral responsibility, besides often risking the loss of the maker's good name and the reputation of the factory by being an obstacle to the perfecting of the business.

The cheesemakers of Southwestern Wisconsin understand the philosophy of cheesemaking, and as a whole take great pride in their profession. They have made themselves so proficient in their chosen calling that they have cultivated a fault that is proving disastrous to the best interests of the industry. They are too slack with the patron. They calculate on handling any amount of tainted milk, and rely on their skill in making decent cheese of it at the expense of quality and quantity. Now I have brought face to face two persons—the maker and the patron who are banded together and responsible to a greater or less degree for the furnishing of bad milk to the factory. I will name a third—the most guilty of all, the proprietor. It is he who renders possible this state of affairs; it is he who runs the risk of injuring his factory by his dread of losing a patron; a patron, too, who is robbing him and all those associated with him in the factory work. His logic is that if he blames him, he, the patron, will go to the next factory.

Last season a certain factory proprietor requested of me that I use every precaution not to offend any of his patrons; admitting that some were removing a portion of the fat from the milk before delivering same to the factory; stating further that he would rather be robbed himself than let his neighbor be robbed. How kind! if charity were the real motive of our factory owner; but, on the contrary it was greed, a wish to crush and ruin his neighbor even though it would involve his own ruin.

With reference to the cheesemakers of Southwestern Wisconsin with whom I have had the pleasure of meeting in past seasons, I wish to say that with very few exceptions, our intercourse has been to me of the most satisfactory character. The greater part of them are of a progressive nature and seem to

realize the fact that their business is one in which any circumstance tending to throw any additional light upon their work is not to be disregarded. However, we occasionally encounter that maker who has (unfortunately for him) reached the top round of the ladder. That is, he gives you to understand that what he does not know about the business is not of sufficient importance to admit of a discussion.

I came one day to a factory which in its surroundings gave the impression that the swine had been making the pools of whey and slop water underneath the factory floors, sort of headquarters for some time. Filth had accumulated everywhere. The maker immediately began to complain of his milk supply, saying that his patrons did not keep their cans clean and that the milk was very seldom delivered in first class condition. He gave me to understand that he had made cheese for nearly 14 years and had learned how to make fine cheese from very bad milk, but could not accomplish this feat with the rotten stuff such as he had been getting all the spring.

In order that a maker of this stamp may rightly demand of his patrons that they bring their milk to him in good condition, he must first preach by example. He must show that his factory is well kept in every sense. He must take more care of his personal appearance. Wash his face oftener, also his hands and arms. Clean his finger nails otherwise than in stirring cheese curds. Change his work clothes, which were disgustingly filthy. Then he must begin scouring and scalding at his reception porch, not forgetting the weigh can and scales; in fact every thing that comes in contact with milk or curd must be thoroughly washed and dressed down with salt or lye. His factory doors, windows, walls, ceilings and floors must be put in spotless condition. Then he must look after the outside. Cleanse out the drain that carries off the water used for washing. Clean up the whey tank inside and out. Shut up his neighbor's hogs. Learn to be cleanly, orderly, active, quiet and civil. Until he does possess these qualifications he has no right to ask his patrons to clean up or supply him with good milk. He cannot expect to have sufficient influence on his patrons to

persuade them that they should bring their milk in better condition than they usually do, unless he himself practices thorough cleanliness. I know of nothing more inconsistent than for a cheesemaker to scold and berate his patrons for having dirty milk cans, and untidy surroundings when the weigh can and floors of his own factory are not perfectly clean. The cheesemaker himself should be a living example of cleanliness in all his surroundings.

Nothing is more detrimental to the making of uniformly fine cheese than untidy cheese factories. Not only that which is outwardly apparent must be kept tidy, but every corner must be kept so too, or the flavor of the cheese will tell tales of neglected corners that the eye does not perceive.

If the proprietors have good buildings, well fitted up, and the makers keep these establishments neat and in first class order, then I assert that the cheesemaker has a just right to exact from every patron milk of good quality in every respect, and to refuse positively any that is not so. By acting differently they are unfair to those patrons who, attentive to their duty, bring only good milk; for these are made to suffer loss by the careless deeds of others. Milk is either good or bad; if it is good, accept it and credit the patron with full weight; if it is bad, refuse it and do not practice the method that some makers follow by accepting more or less damaged milk on condition of deducting a certain percentage from its weight.

I have made use of this circumstance, not for the purpose of venting any ill will towards any one, but to show forth the narrow minded meanness of those who have acquired that habit of shifting the responsibility onto others. They seem to be incapable of appreciating the noble, praiseworthy motive to raise if possible the industry to a higher plane of excellence, not for selfish purposes, but for the general good of the community.

Southwestern Wisconsin needs larger and better equipped factories, better curing facilities, better methods of caring for and distributing the whey, better sewerage systems.

Small factories, or rather, the opposition factories, which exist in this district, are doing incalculable mischief. It

strikes me that the farmers ought to see how injurious it must be to them to have their goods made up in unsuitably constructed factories, or by makers who keep nothing about the place tidy and in good order.

If the curing room temperatures are allowed to go above 60 degrees F. the flavor and texture of the cheese are injured accordingly; and the shrinkage is excessively high. Cheese cured in the average factory curing room as it now exists, result in what is known to the trade, as "heated cheese" and lack the mild, delicate flavor and smooth, silky or creamy texture of those cured at suitable or lower temperatures.

The system of filling the whey into a barrel for each patron, while it may prevent quarrelling as to the division, causes much smell in the ground where the barrels stand, and one large tank kept clean would be a great improvement. The practice of returning whey to the farm in the same cans in which the milk is delivered, makes it absolutely necessary that the whey tanks should be kept in as cleanly a condition as is the cheese vat or cheese kettle. The whey tank should be lined or made of galvanized iron in order that it may be kept clean and sanitary. It should be constructed above ground at considerable distance from the factory, equipped with sewer connections so that it can be drained and washed out daily. To do away with a breeding place for flies and to prevent rain, dirt and dust from entering the whey, a good tight cover should be provided. Make this cover in halves on hinges fastened to a center piece so that each side can be opened towards the center of the tank. A skin milk weigher or check pump, will facilitate an equal division of the whey and tend to keep the surroundings clean and free from the mud hole so often found in front of the tank. The whey should be scalded to keep it sweet, and the tank scrubbed and steamed daily. The ground surrounding the tanks ought to be paved in such a way that the drip if there be any, will pass off into the sewer.

In constructing a cheese factory, we must continually bear in mind that whatever we build, must be built so that it can be kept in a sanitary condition. The first essential, is to find

some way of disposing of the factory sewerage in a cheap and effective manner. This can easily be done, in any location where the solid rock does not come to the surface, by means of a septic tank and filter bed to purify the factory sewage.

Let us, all together, put our shoulder to the wheel. Let patron, maker and proprietor join their efforts for the purpose of expelling the causes that contribute the injury to the good quality of our cheese, to that end, that our Wisconsin cheese will merit the reputation it should have—"The very finest cheese in the world."

DISCUSSION.

Mr. Luchsinger: I assume that what Mr. Baer has said in his statement, would apply not only to Southwestern Wisconsin, but to factories in every part of the state.

Mr. Baer: Granted.

Mr. Luchsinger: It would hardly be fair for the impression to go abroad that all of the defective factories are in Southwestern Wisconsin. I am quite aware that what Mr. Baer has said in his paper, is true as regards a great many manufacturers in Southwestern Wisconsin, and perhaps it is as true in respect to factories in other parts of Wisconsin. The fact is, that until a year or two ago, Southwestern Wisconsin had no system of inspection, and I think that the inspection of factories tends to bring about a cure for these evils that Mr. Baer has treated of in his paper. I think that when an inspector is fearless, knows his business, and goes from factory to factory and impartially points out the defects in the factory and shows the people, both proprietors, cheesemakers and patrons wherein they make mistakes, he, and perhaps he alone, can cure those evils. The cheesemaker, in a majority of cases, is afraid of the proprietor, afraid he will lose his job, or will get the ill will of the patrons. The proprietors do not want to invest any more money than they can help in their factor-

ies, and they are not liable to talk about it. The patrons, of course, will not say much about it, but the right kind of an inspector can deal with all these parties without fear or favor, and show wherein they are at fault, and as I understand it, now he has the authority of the state to back him up; he has the power to condemn a cheese factory that is not sanitary, that is unclean or improperly built. I think I can say that there is not a better dairy country,—at least in America, than Southwestern Wisconsin. It is high, rolling. Its brooks and streams contain the best water that can possibly be for watering stock; its grasses are splendid, and take it all in all, I don't know that I ever have heard of a better dairy country than Southwestern Wisconsin.

The Swiss cheese business originated in Green county, in a small way. The people were poor; they invested just as little money as they possibly could in their factories, built them cheap, and, as a consequence, they are now in a measure, unfit for their purposes, and unsanitary, hard to keep clean. I have been in other parts of Southwestern Wisconsin to which this industry has extended, and I believe that the people outside of that poor district, are to be very much commended for the improvements they have shown in building their factories. I believe there is improvement going on all around. They are building now as though they believed that this industry had come to stay, and I am confident that it has. As long as grass will grow in this section of Wisconsin, this will be the flower of the dairy section of America. Nature intended it to be so, and whatever nature has intended, that will stand.

I just want to touch on one more thing. Mr. Baer says, that in a majority of the factories, the milk is brought to the factories unstrained. Now, at first thought, that would seem to be rather an uncleanly practice, but I understand that the reason for that practice, is that if the milk is not allowed to be strained at home, brought to the factory unstrained, that the cheese-maker or the person receiving the milk can thereby better detect the impurities of the milk and he is in a better position to send that milk back. The practice is that every man's milk

is poured into the receiving can separately, and then put into the vat or kettle before another man's milk is allowed to be delivered. I do not say that is the best plan, but that I understand is the reason for the practice.

Mr. Baer: In reply to Mr. Luchsinger, I want to suggest the use of the Babcock milk test and the Farrington alkali tests to determine the quality of these milks, rather than the strainer cloth. It strikes me these impurities ought to be removed from the milk immediately after milking, the sooner the better, as they certainly do not add anything to the quality of the milk by remaining in there for an hour or longer.

Mr. L. S. Hardin: I would like to ask Mr. Baer how the cheese factorymen feel about the cold storage plan, from a commercial standpoint.

Mr. Baer: I think it is being put into commercial use; that is, our American cheese in Wisconsin is now but a week or ten days old, at the time of dipping and paraffining and shipping to cold storage points. It is placed in cold storage and held there by the dealer, the man who buys—he does the curing now. The cheese are merely held in the curing room long enough to form a perfect rind and then dipped in paraffine. That is becoming quite popular, especially with our small packages. We make a great many different styles of fancy print cheese.

A Member: Do you know what temperature that cold storage would be?

Mr. Baer: About 40 degrees Fahr.

Mr. Everett: I received a letter a few days ago from a dairyman at Mount Horeb, stating that the directors of the Swiss cheese factory prohibited the feeding of wheat bran and shorts to cows, claiming that it influenced the per cent of butter fat in milk, and otherwise influenced the milk for the production of Swiss cheese. I have been preaching for years, and practicing as long, the feeding of bran and shorts. I replied to the letter according to my belief and my practice. Now, I want to ask either Mr. Luchsinger or Mr. Baer, who are conversant with the manufacture of Swiss cheese, if there

is any reason why bran and shorts should not be fed to cows for the production of Swiss cheese.

Mr. Luchsinger: I know of no reason, unless they are mouldy or in bad condition, and if any Swiss cheese factory has prohibited their use, I should simply say they are ignorant.

Mr. Baer: Following up what Mr. Luchsinger said, I think that the work of the traveling instructors sent out by this Association, is reaching a great many of the farmers. They are holding evening meetings, inviting their families to join in. They take the Babcock milk test and the curd test into these meetings, and show the farmers and patrons how to test milk, how to show the different qualities of the milk delivered at the factory, and in this manner, they are getting the farmers and their families interested in this great problem of producing pure milk for cheese. I think that work is being carried on in the best possible manner by the instructors sent out by this Association.

The Chairman: Is the alkali test used in that way?

Mr. Baer: Not in those evening meetings, as the curd test determines, to a considerable extent, the degree of acidity or sourness of the milk. The alkali test is more to show the degree of sourness; that is used in the whey room.

A Member: Where milk is kept over night before being carried to the cheese factory, what method would you recommend for caring for it?

Mr. Baer: I should certainly strain it, immediately after milking, into a clean can, letting it pass over some form of an aerator, where it would be exposed to clean, pure atmosphere, away from the barns and hog houses, manure piles or anything that will contaminate the milk. I should cool it in that manner. Then it should be set into a tank of cold water, and stirred for an hour or two, to prevent the fat rising on the surface, so as to be sure that the maker can get an accurate sample the next morning. The introduction of the Babcock test into the cheese factories has had a tendency to encourage farmers to take better care of the milk.

A Member: Does the use of rape and silage as a food injure the quality of milk for cheese purposes?

Mr. Baer: Silage, when properly fed, does not. We have been unable to feed rape to milch cows, and secure the cheese flavor free from rape. We have fed it before, and after, and at the time, of milking, and in different quantities and different stages of maturity, but we have not been able to eliminate the rape flavor.

Mr. Noyes: Men who buy cheese have to meet that trouble every fall, cheese that is manufactured from milk with a rape flavor. In my factories, I do not allow a bit of milk sent to the factory from cows fed on rape. There is not a cheese maker that I know of in Wisconsin who can make cheese from rape milk and have it good. Some of the worst cheese I saw last summer was made in October, where the cows were fed rape in every instance, and we had a sweet, bad flavor, bitter, holey cheese, and if it did not develop at the time it was delivered and bought, it developed after that; especially if they were kept in warm rooms, that flavor came out, and it is the worst one we have to deal with. I do not think any cheese factory in Wisconsin should allow it to be done at all, and for the simple reason, that you cannot educate a man to feed it right. If we could give a small amount of rape just after milking, not turn them in on the rape pasture, we might possibly get along with a small amount of it, but as soon as you give your patrons that privilege, they abuse it, and we can't handle the milk at all. We have too much of this kind of cheese; it is hurting Wisconsin cheese to-day, and we want a better article. When we strike September and October cheese, we ought to have the best cheese in the season to go onto our markets the next spring, but we cannot get it with milk from rape, and I wish that every cheese factory and every dairyman would cut it out entirely.

The Chairman: Would you cut it out from the creameries too?

Mr. Noyes: Well, I think it should be largely, but you can

handle it better in the creamery than you can in the cheese factory.

Mr. Luchsinger: Can't the buyer regulate that by refusing to buy the cheese, or pay less for it?

Mr. Noyes: We have done that largely at Richland Center. I can show you some that was sold for five cents a pound, and it will speak for itself. I want to ask Mr. Baer with reference to lining whey tanks with galvanized iron. Can you handle galvanized iron? Will the average cheese maker keep it in good shape?

Mr. Baer: I think not. I think that the wooden tanks lined with galvanized iron are not proving a success. But a good galvanized tank, we have been using a couple of them the last ten years, and we have never had to solder but one hole yet. Of course, they have been kept cleaner than the average cheese maker would keep them. There are days, as we all know, in a cheese factory when it is almost, and sometimes quite, impossible to get out and scrub the tank thoroughly. However, if it is done every other day and carefully rinsed out, the tanks will be kept in a very cleanly condition. It is the acid that eats out the galvanized iron.

Mr. Noyes: That is it. In an ordinary cheese factory, in a short time the acid will cut off the galvanizing and make it rusty.

Mr. Baer: It should be above ground and cleaned out thoroughly and rinsed every day. Of course, you must remember I suggested the scalding of the whey every day, to keep it sweet.

WISCONSIN SWISS CHEESE INDUSTRY.

Fred Marty, Browntown.

When your worthy Secretary informed me that my name had been placed on the program, with, Wisconsin Swiss Cheese Industry, as the subject, I wondered why such an important subject had been assigned to me. I dare say that this subject, or the actual meaning of it, has become an important factor in our dairy industry of this state.

For long years, this branch of cheese has been blooming. Our cheese found market everywhere; no distance is too far for transportation. The land on which our cheese is made, is rolling, small valleys, bluffs, hills, timber, good water, fitted in every way, and only, for dairying.

There was a time, not so many years ago, when our district was considered worthless; in the years when the wheat began to fail,—not only due to the so-called chinch bug, but our land failed,—it began to suffer for nourishment. Crops after crops were taken off, nothing brought back on the land to uphold the fields. Rolling as the land is, the continued plowing up, the soil was washed down, and I dare say, had not the immigrants brought with them that noble art of cheesemaking, we could, to-day, compare our noble field with a rocky, mountain creek bed.

But, my dear friends, let us go and take a look over our district. To-day what do we find? Instead of the former, large convenient houses, large barns,—you would wonder where the feed was taken from to support the number of cattle each farmer has. Go and look on the hills, to-day, and take a view of the crops when standing. Go and ask a farmer, to-day, how much he wants for an acre, and I am sure you will only ask him once.

The method of manufacturing Swiss cheese was brought across from Switzerland by the immigrants, in 1845. Little of the Swiss cheese was made at first; only enough for their

own use. Finally some Swiss cheese was made, fair in size, and brought to market by the farmer himself; and so it has kept on increasing, from year to year, that, up to date in Wisconsin, we manufacture 20,000,000 pounds or \$2,000,000 worth of foreign cheese.

But yet little attention was paid by the state to our branch of cheese manufacturing, until four years ago, when the Southern Wisconsin Cheese Makers' Association was organized. The help of the state, has helped the Swiss cheese industry wonderfully, in many ways, and many new improvements which we have to-day were brought about by the generous efforts made by our worthy President of the Southern Wisconsin Cheese Makers' Association. We have, to-day, the opportunity to receive theoretical lectures, given by the different professors at the Dairy School, in which our cheese makers are far behind, with the exception of a few who have attended the Dairy School in Switzerland; we also get practical instruction in three different kinds of foreign cheese. We also have to-day a traveling cheese instructor, whose duty you all are aware of, and I think by the aid of an instructor, a more uniform quality of cheese can be obtained; a more uniform system in manufacturing will only do this; in which our cheese makers differ so much in their ideas, and we know of factories, who used to be troubled for a half a season in making cheese; this all can be stopped, as shown last summer at different places, in a few days' work; and in the last but most important of all, is the authority which is given to the instructor by the Dairy and Food Commissioner, to uphold the sanitary condition of the cheese factories.

The Association also took action on freight rates, on more just rates on the dairy products of that section of the state. All the Association asks, is a sufficient reduction on freight rates to be equal to the rates now in action or force in the neighboring states, from points similar distant to the Chicago market, which would enable the shippers on this side of the state to compete with the shippers on the other side. A reduction from 33 cents to 28 cents a hundred, has already

been enabled by this Association. This rate was granted to Monroe and points west, but Albany, Monticello and New Glarus were left out, and are yet required to pay the 33 cent rate.

The aim of the Association is to improve the cheese industry in all respects, and is making generous efforts to improve the conditions of our poorly constructed cheese factories, of which there is no reason why we can't afford to invest more money. Since our whole prosperity is due to the dairying, and is here to stay, no reason why it shouldn't, since we import, yearly, 75,000 to 80,000 cwt. of Swiss cheese, which we can just as well manufacture here, under better, modern constructed, factories. Let us compare the state of Wisconsin with Switzerland, which is scarcely half as large in size as Wisconsin,—where 36 per cent of the whole milk is made into sixteen different kinds of cheese, which is valued to \$48,000,000 a year, saying nothing of the other 64 per cent, of which some of the milk is consumed in condense factories, raising of high breeds of cattle and consumed direct into the cities; the whole milk is taken from 739,562 cows. We import, however, a fine grade of Swiss cheese from Switzerland, which is made by a skillful operator. But let us remember that a cheese factory in Switzerland is always one of the finest buildings in town; when you want to find the cheese factory, keep your eye on the best looking building and you have found the factory. If we were to price some of the factories, which have been erected in late years, we would find that the price would be all the way from \$10,000 to \$15,000. If this has been conceded, let me take you into our district and look up some of our Wisconsin cheese factories. Now, first I want to say that we are compelled to change the rule that we use in Switzerland to find a cheese factory; if we wouldn't we would never find a cheese factory. We are now going right to the heart of our cheese industry; here we come to a large convenient house, little further we come to a large barn, say 100 x 30 feet, our stranger begins to open his eyes, he'll begin to compare the buildings with the surrounding land, then, wondering what has built all of this;

meantime, we notice a man, working desperately in separating a few boards from an old fence, we go over to him and, as expected, find him to be the proprietor, we then fall into a lively conversation; the farmer explaining particularly of how much they can make on their cows upon averaging over a dollar per hundred for their milk, we then ask him what was made out of the milk, he quickly mentioned cheese, so we ask him to show us the factory. He said, just where I was going, I am gathering a few boards to repair the factory floor as I think it needs some fixing. It is therefore as a rule the poorest building we find to be the cheese-factory. However, we now have some exceptions, but as a rule the new building or factories which are built, are yet in too close a touch with the old style. However with aid of our Association we trust to overcome this in the future. I take it as my duty to urge every young man who intends to become a cheese maker to attend the State Dairy school, since there is no branch of manufacturing where theory and practical knowledge are so much dependent on one another as in dairying, cheese and butter making, therefore, I again say, young men especially, accept the opportunities offered to you by the State Dairy school, appear in larger number—40 and 50 strong and better arrangement will be made in our divisions at the Dairy school, which not only will be a benefit to you, but to the whole Swiss cheese industry of Wisconsin.

DISCUSSION.

A Member: Can you make just as good Swiss cheese in this country as you can in Switzerland, and if not, why?

Mr. Marty: We are manufacturing a fine grade of cheese here, and I think the only reason why we can't do quite as well is the poorly constructed buildings. We have sections where we can obtain an elegant, an ideal Swiss cheese, in Green county, and there is no reason why we could not manufacture a Swiss cheese fitted for the world's market.

Mr. Baer: Is it not a fact that a large part of the so-called imported Swiss cheese that is sold in Wisconsin is made right in Green county?

Mr. Marty: We have had experience where that was done. There was a case happened in Ohio; there was a cheese bought that was to be tested and compared with some imported cheese, and when the cheesemaker unwrapped the package, he found it was a cheese that he had manufactured at his own factory, his own brand, brought in there as imported.

A Member: Do you make Limburger cheese in Green county?

Mr. Marty: Oh, yes.

A Member: And is that Swiss cheese?

Mr. Marty: It is a different manufacture altogether. It is classed in with foreign cheese.

A Member: You have to devote the factory to one kind of cheese, don't you? You can't make different kinds in the same factory?

Mr. Marty: Oh, yes, although we prefer, when the conditions are the same, upland, more dry, when we manufacture the Swiss cheese. In a different locality, low bottom marsh lands, we manufacture the brick and Limburger cheese.

Mr. Goodrich: Do you use the Babcock test as a basis for dividing the money between the patrons?

Mr. Marty: I am very sorry to say that is something that has not been adopted in Green county or in the foreign cheese industry. I think it should be, I can see no reason why it should not.

Sec'y Burchard: State what resolution was passed by the Swiss Cheese Convention last week on that subject.

Mr. Marty: There were a couple of papers read at the convention, showing the different results obtained in regard to payment on the different per cents of milk, the actual worth of the milk, and there was a resolution passed as to whether it would not be a good plan to pay on the Babcock test, and the resolution was accepted at the Swiss Cheese Convention.

Ex-Gov. Hoard: Is there a similar waste of butter fat in the manufacture of Swiss cheese that there is in cheddar?

Mr. Marty: Yes; we find as a rule that our loss, if I may call it loss, which goes into the whey is as high as one per cent of fat as an average. That is brought in by the so-called whey butter.

Ex-Gov. Hoard: You make up for it there?

Mr. Marty: Yes. We find that we obtain a very fine quality of cheese from the higher per cent milk in the fall. The flavor is richer, the texture is finer, and we have the same results in regard to the fermentation and the curing process, although it seems that we cannot accept but such a certain per cent of fat in the curd. We find that if the milk is richer, that our loss is also higher in the whey.

Ex-Gov. Hoard: That is due to your process.

Mr. Marty: It may be due to the fine breaking up of the curd particles and the continual stirring, also the high temperature we give our curd.

Ex-Gov. Hoard: What temperature do you give your curd in cooking?

Mr. Marty: It varies all the way from 125 to 130, Fahr.

Ex-Gov. Hoard: And what is the temperature in cheddar cheese?

Mr. Baer: 98 to 102 or 104, about 100 is the temperature used in manufacturing American cheese.

Mr. Luchsinger: In appearance and flavor, just as good cheese can be made in the proper locations in Wisconsin as in Switzerland. As a rule, when you get off the high, dry lands anywhere, even in Switzerland, you cannot make a good article of Swiss cheese. You can make Limburger or brick cheese. Limburger is the product of the low country, Holland is very low. A year ago, a cheese maker from Mount Horeb received the gold medal for Swiss cheese at the Cheesemakers' Association, and it was an elegant cheese. The same man got the gold medal for brick cheese. It is not only Green county, it is all the southwestern part of Wisconsin in the limestone region that is actually producing this fine quality of cheese.

The President: We are honored this afternoon by having with us a representative of the Department of Agriculture of the United States Government, the dairy veteran, Major Alvord, who will now address us.

ADDRESS.

WHEY BUTTER.

Major Alvord, Washington, D. C.

Mr. President, correspondence with the Department at Washington and articles that have appeared lately in the public press, have indicated that the impression has gone abroad in this state that there was some opposition to the manufacture of whey butter, or that the government or government officers intended to interfere with the manufacture of whey butter by special taxation or otherwise, and it seemed to me that this was a fit and desirable opportunity to say a word on this subject.

There is but one law upon the statute books of the United States which relates to butter, and that law was largely an accident, and rather exceptional in that respect. Generally, these laws of this class result from long continued agitation and special effort, but in connection with the latest legislation on the subject of oleomargarine, and in the course of formulating that legislation, committees of Congress, of their own motion, as you may say, because of information which came to them while they were perfecting the oleo legislation, saw fit to include in the oleo bill three or four sections relating to butter, and among those sections certain classes or kinds of butter, if found anywhere in the United States, may be specially taxed—must be specially taxed, and the manufacturers of those particular kinds or grades of butter are subjected to license fees and certain restrictions in their business.

The two kinds or classes of butter defined in this bill, and therefore the only kinds or grades of butter about which there is any United States law, are called adulterated and renovated butter. It was intended in framing the bill that these two classes of butter should occupy just about the same relation to the law that colored oleo and uncolored oleo now do; that is, the adulterated butter as defined should be manufactured only under quite a high license and be taxed ten cents a pound the same as oleomargarine, colored to imitate butter; and that renovated butter should be manufactured under a much less license for the manufacture and taxed a quarter of a cent a pound, the same as uncolored oleomargarine. It is hardly necessary that I should go into an explanation of these different classes of butter, but I wish to call attention only to the definition of adulterated butter, and that being rather a long one, I abbreviate it, giving the essential part, in connection with which I wish to speak this afternoon.

Adulterated butter is here defined to mean a grade of butter, in the manufacture of which any process is used with the intent or the effect of causing the absorption of abnormal quantities of water, milk or cream. That is but a part of the definition, but to shorten that still more, it means what it says; in other words, that any butter made in such a way as to hold an abnormal quantity of moisture coming from water, milk or cream, is to be determined under the United States law to be adulterated butter. Now, the question with the law officers of the government was at once raised as to what an abnormal quantity of water was in butter. This the administrative officers of the government had to determine and risk having the courts sustain their actions. It is one of those cases where the administrative officer has to go a little into the sphere of legislation in his decision, the law must be more definite than these two words; there must be a limit set for the quantity of water. Hence, for various reasons the government officials charged with the execution of this law and the Secretary of the Treasury and the Secretary of Agriculture are jointly under the law charged with the

execution of these provisions relating to adulterated butter and renovated butter, and these officers decided that sixteen per cent of water, should anything more than 16 per cent of water be found, it should be regarded as an abnormal quantity. I may say that Great Britain has lately adopted 16 per cent as the maximum of water in butter. Germany has done the same; your own neighboring state of Minnesota has passed a law fixing 16 per cent as the maximum amount of water in butter, beyond which it is to be considered adulterated, and in a recent decision by the Secretary of Agriculture regarding food standards, which is not exactly law, but would become so if the proposed Pure Food Law, which has passed one branch of Congress already, should pass the other and be approved, would make even less than 16 per cent an abnormal quantity of water in butter generally, because, with a standard of $82\frac{1}{2}$ per cent fat, there is not room for more than $14\frac{1}{2}$ per cent of water in salted butter. So that 16 per cent is not an unreasonable standard, and this has been the standard used by the officers of the Treasury Department and the officers of the Department of Agriculture during the last year and a half or more in the administration of this law. Any butter found made in such a way as to carry 16 per cent or more of water, or moisture, is deemed to be adulterated butter, and therefore, if such butter is found in the market anywhere, which has not been made under a government license and does not pay a government tax, it is held to be a fraud upon the revenue, a violation of the law, and the butter is seized as contraband; at least is subject to seizure by the government for failure to pay the required tax upon it. This applies to butter made in every way and any time and anywhere, if the water, as described, is excessive. But, of course, it is discretionary with the officers of the government as to when and how far they shall prosecute apparent violations of this law, and while I do not pretend to speak authoritatively at all for the officers of the Treasury Department, I am at liberty to say that the revenue officers and the dairy inspectors under the Department of Agriculture who work under the general super-

vision of my office, work together in these matters, and it has been agreed between the Treasury Department and the Department of Agriculture that where the dairy inspectors find any matters in the course of their travels that seem to be requiring the attention of the revenue officers, it is reported to the nearest revenue agent, and then the revenue officers act. In that way nearly all the cases of action under this law, so far as seizing butter because it contains too much water is concerned, have resulted from reports made by dairy inspectors of goods which they have found, and it is a fact that during the last eighteen months every conceivable kind of butter made in the United States has been seized at different places in the country because it contained too much water, ladle butter, country butter, creamery butter. I have in mind one case of butter made in a respectable creamery in the state of Wisconsin, because it repeatedly contained more than 16 per cent of water.

But this law has not been applied and there is no prospect of it being applied to whey butter any more than any other butter. It simply means that whey butter ought to be made under the same general conditions and requirements with other butter; that whey butter should not carry too much water; and if it does, there is danger of its makers getting into trouble just exactly the same as creamery butter or farm butter or renovated or ladle butter, any kind of butter, but, as I say, it is discretionary with the government officers as to how they shall administer this law, and there is no intention to impose upon anybody or to try to punish anybody for an accidental error and no action has ever been taken where a single lot of butter was found, although it might carry a great deal too much water—we have found single cases in the market of butter with 18 or 20 per cent or more water, but upon investigation, ascertaining that this was the result of ignorance, no action has been taken upon it at all; but, where we find coming into the market regularly or continuously, periodically, time after time, from the same source, butter which carries more than 16 per cent of water, it is evident that those parties must know something about what they are do-

ing, and they are the ones who are then notified that if this continues, trouble will arise; and it is insisted that the standard shall be respected and that parties shall not, certainly knowingly, put onto the market butter with more than 16 per cent of water in it, unless they choose to come under the terms of adulteration and take the consequences which that decision would carry.

Please understand, therefore, that there is no law, that there is no ruling, and that, so far as I am aware, there is no intention on the part of the government, or any officer of the government, to discriminate unfavorably against the makers of whey butter, or against whey butter as such. If anything has been done or said upon this subject, the intention certainly was simply to notify the makers of this class of butter of the law, and to caution them that in making whey butter, they must look out to keep within the standard of water which is required in the case of all other kinds and grades of butter, and that is the whole story. The object manifestly is, that if a person buys a pound of butter, no matter where made, or under what name it shall be, he shall have a reasonable assurance that it contains a fair proportion of fat, 80 per cent or more, and 16 per cent of water or less. This is the purpose of the law. I have endeavored to describe what the intention, the spirit, has been of its enforcement, and this is all there is of it. All butter makers should see to it that their butter contains 80 per cent or more of fat, and if it contains less than that and runs 16 per cent or more of water, then there is no discretion on the part of the government as to how it shall be classified, if anybody asks for its official classification; because, if made in any such way, by churning or by working, for example, at too high a temperature, or by insufficient working, or in any such way as to result in its holding too much water when it goes to market, namely 16 per cent or more, then the law says that that is adulterated butter, and if adulterated butter it is subject, under the law of the United States, to a tax of ten cents a pound, and the owner is required to take out a license and do his business under govern-

ment surveillance and supervision. This is all I desire to say, though I will be very glad to answer any questions that may be asked on this subject.

DISCUSSION.

Mr. Luchsinger: Then, as I understand it, all that any one making any kind of butter need do, is to use ordinary care in making and working his butter to be safe as against any penalty of the law?

Major Alvord: That is all, sir.

Mr. Luchsinger: In this part of the state, this question has caused considerable thought for the last six months. A great many cheese makers have understood it to mean that the production of whey butter would be prohibited entirely unless they paid a tax of ten cents per pound. I think that with good care, whey butter may be made to contain just as little moisture as any other kind of butter, but there is this feature about whey butter, a great deal of it is sent to market unsalted, for cooking purposes, and it is my impression, that it would require a little more careful working when it is unsalted than when salted, the salt helps to extract the water.

Major Alvord: That is undoubtedly correct. We always find the highest per cent of water in fresh butter. The less salt butter contains, the surer you may be that it will run a high per cent of water, if tested for that purpose. The question is asked over here whether in shipping whey butter to market, it is necessary to mark it "whey butter?" I said a moment ago that there was but one law upon the statute books in relation to butter. That is true, but there is another law which includes butter among other things, and that is what is known as the Sherman law, passed by the last Congress. That simply provides that in marking food products to send out of your state, you shall not put marks on them which lie. There is no need of marking anything on your butter or cheese,

but if you do mark it and send it out of your state, there shall be no mark upon it which is not the truth. For instance, those shipping from Iowa or Michigan must not mark their cheese Wisconsin cheese, and in the same way Wisconsin cheese makers ought not to mark their cheese as being made in Michigan.

A Member: Do they ever mark Wisconsin cheese New York cheese?

Major Alvord: It has been alleged that it has been done, but I never saw it. New York helped to make the Sherman law also.

Mr. Luchsinger: No one need be imposed upon in purchasing whey butter. If he knows what dairy butter is, and what creamery butter is, he cannot be cheated by any shipment of whey butter, because it has a distinctive flavor and somewhat of a different texture.

A LOCAL COW CENSUS AND ITS LESSONS.

In the absence of Mr. H. C. Taylor, of Orfordville, who was assigned to this subject, C. P. Goodrich, of Fort Atkinson, was called upon.

Mr. C. P. Goodrich: Mr. Taylor came here to take what we call a cow census, but he did not complete it. I have some of his figures, and that is all. However, I will do the best I can and I will tell you first what a cow census is, because I have taken several of them. The object of it is to find out what kind of cows, what kind of feed, what kind of barns and what kind of treatment will enable the farmer who owns cows to make the most money, and it is done in this way, at least this is the way I went at it. I had some blanks printed showing a number of questions with spaces left for the answers, then I went to a man, an owner of cows, and asked him, "What is the average number of cows that you have kept this

past year, I do not mean just the cows that you were milking, but the cows that you were feeding, because you have to feed them the whole year?" That was the first question, and it sometimes takes quite a little while to get an answer to it, but I finally got the answer, the number of cows given, including all heifers who have had their first calf.

The next question to get at, is the cost of feed. I have to commence on this subject by asking "What amount, and kind, of grain did you feed your cows last winter?" and it would be about two hundred days. Well, they do the best they can to tell me, and I do the best I can to find out by figuring the number of measures or basketfuls or however they got at it, and I get pretty near to it. Now, then, I say, "You charge your cows just so much for certain kinds of feed at the market price whether you have raised it yourself or whether you buy it, because you can sell it for that price." Then after I have all that I can find out from the farmer, I go to the creamery and I find out there how much milk has been delivered from each patron, how much butter is made and how much money it brought. I have tabulated all that, and I want to read to you just a few figures from this little table that Mr. Taylor constructed along the same lines.

Cost of feed and income in 23 herds belonging to patrons of creameries near Platteville, Wis., for one year ending November 1, 1903.

No. of patron.	No. of cows.	Kind of Cows.	Cost of feed per cow.	Return for butter fat per cow.	Pounds of milk per cow.	Cost to produce 100 lbs. of milk.		Value of butter fat for \$1.00 worth of feed.	Net profit or loss in butter fat per cow over cost of food.
						Cts.	Cts.		
1	10	3 Grade Jerseys, 1 Holstein, 6 common	\$28 00	\$35 11	4014.	69	87	\$1 27	\$7 11
2	16	1 Grade Jersey, 2 Holstein, 13 G. S. Horns	31 80	32 51	3557.	87	100	1 02	71
3	35	Durham and Jersey	24 00	29 84	4000.	60	74+	1 24	5 84
4	32	Common and Grade Durham	28 00	28 82	3918.	71	71+	1 03	82
5	10	Common	28 75	33 28	4540.	63	70	1 12	4 51
6	11	Grade Shorthorn	29 00	31 00	4100.	70	75	1 07	2 00
7	14	Common	29 00	32 00	4080.	70	78	1 10	3 00
8	12	Common	24 00	17 46	2761.	97	63	73	-6 54
9	15	Grade Durham	26 00	23 75	3332.	78	71	91	-2 25
10	8	Grade Jersey	30 00	41 00	4441.	67	92	1 36	11 00
11	18	Grade Shorthorn	27 50	19 40	2477.	111	78	70	-8 10
12	10	3 Grade Jerseys, 2, Grade Holsteins, Dairy type, Common cow	32 20	40 70	5070.	63	80	1 26	8 50
13	8	Common	27 00	29 50	3700.	73	79	1 09	2 50
14	12	Grade Durham, Dairy type	29 50	34 64	4306.	68	80	1 17	5 14
15	6	4 High Grade Jerseys, 2 Common	30 00	38 62	4944.	40	78	1 03	18 62
16	20	High Grade Shorthorn	33 00	34 56	4153.	79	83	1 04	1 56
17	14	High Grade Jerseys	37 50	55 57	5549.	69	100	1 58	18 07
18	10	Grade Shorthorn, beef type	34 60	35 33	4030.	86	87	1 02	73
19	8	2 pure bred Durhams, rest high Grs	36 00	26 10	3484.	103	75	72+	-9 90
20	6	Grade Durhams	27 00	34 71	4180.	65	83	1 27	7 71
21	22	Jersey cows	39 00	66 68	6000.	65	166	1 71	27 68
22	11	Guernsey and Jerseys	32 27	54 51	private dairy butter sold	43	85	1 68	22 24
23	5	Jersey Grade	26 55	53 93	6229.	43	85	2 32	25 38

Here is No. 1, ten cows, consisting of three grade Jerseys, one Holstein and six common cows. The cost of feed was \$28 for each cow; returns for butter per cow, \$35.11; pounds of milk per cow, 4,014; cost to produce 100 pounds of milk, 69 cents; price, 100 pounds of milk, 87 cents. Value of butter fat for one dollar's worth of food, \$1.25. Net profits per cow, \$7.11. That is the way he has arranged it. He goes along, No. 2, sixteen cows, one grade Jersey, two Holsteins, thirteen grade Shorthorns; cost of keeping, \$31.80; returns for butter fat, \$32.51, and that man made a profit of 71 cents per cow.

I will not read all of these. Some of them made a profit and some made a loss. For instance, No. 11; that herd made

a loss of \$8.10 for each cow, that is, the butter fat failed to pay for the keep of the cow into \$8.10.

Now, I cannot preach from that text, because I am not acquainted with all the facts, but I have taken a good many cow censuses, and I have some of my own figures right here. I took a cow census in Jefferson county, right around near Fort Atkinson, among the patrons of Hoard's creamery, one hundred of them. I knew almost all of their cows, I knew the men, and I want to show you some of the things I found out. The first man I went to, I will call Herman. He had sixteen cows. When I asked Herman how many cows he kept, the average number, he knew exactly, sixteen. I said to him, "I don't know whether it is any use to ask you what it has cost to feed those cows. I do not find many men that know exactly." "Well," he says "I think we can tell, come in the house." We went in the house, and he showed me his book, and he said, "There is everything they have had to eat, I know, because I have bought everything and paid cash for everything, except some marsh pasture." That man lives on a little island in a marsh, has just enough hard ground for his house and his buildings, so he had paid for everything, and when I came to talk with him, I found he was a splendid student of feeding, he knew how to feed a balanced ration, and to put the proper elements into it, and to do it at the least cost. He says, "I don't feed heavy, I am feeding with a view to selling the feed for the highest price, and not to make the greatest record per cow or even the greatest net profit per cow." Now, this is the way he did. The cost of his feed was \$26, and I charged his cows \$5 apiece for running on that marsh, and I would want to be paid about \$5, if I were a cow, to run on that marsh. He got from the creamery, \$54.16; the average amount of milk was 4,920 pounds, the average amount of butter, 286 pounds, and the net profit per cow was, \$28.16. Now, you can see how well he had sold his feed. He bought it and paid cash for it and for every dollar that he paid out for that feed, he got \$2.08. I think Herman was doing a pretty good business.

Then I went to another man, who goes by the name of John. He had twelve grade Jerseys. The food that he gave his cows was worth \$30, and he got back \$28.81, \$1.19 less than the food was worth; for every dollar in feed he got 96 cents. Wasn't John doing a profitable business? Now, I will tell you what was the difference between those men. Herman reads, he studies, he has the feeding tables all in his head. He knows the percentage all through, of the protein, the carbohydrates and fat in the different kinds of feed. I asked John about his feeding. He fed a good deal of corn meal. Now, corn meal is almighty good stuff to feed in connection with the proper things, but he fed it with timothy hay, and he fed them pretty high. You understand that I was not out arguing with anybody, I was hunting information. I asked John if he bought any feed, and John says, "No, that is no way to do. Feed what you raise on the farm. Some of you fellows, you pay out all you get for feed. No, sir, I don't do that, I feed what I raise on my farm." Now, I said to him, "John, suppose that you should take your corn, and oats that you put with it, and when you go down to the Fort to get it ground, instead of getting it ground and taking it back, suppose you sold it, and took the money that you got for it and the money that you would pay for grinding, and bought some other kind of feed and took it home, and it would make your cows produce a good deal more—hold on, John, I don't say that it will, but suppose it would, would you think that would be a good piece of business to do?" He says, "No, I wouldn't do any such thing, I feed what I raise." Now, what is the use of arguing with such a man as that? Whether he got anything out of it or not, he was bound to feed what he raised. I asked him if he read anything, but he said no, he had no time to read. I asked him if he weighed the milk of his cows, and knew what they were giving, but he said he had no time, got to work all the time. That was the answer to every question, and it is true, he is working, he has to work awfully hard to get back 96 cents for a dollar.

I will give you one other man in that particular census, and this is Nick. He had fifteen head that paid him \$31 each, which gave him \$2.07 for every dollar; he made \$31.41 net profit, and this is what Nick fed. He fed clover hay and brewer's grains, and a little oil meal, and a little gluten feed, and some ground corn. He had used good sense; he fed higher and he had more net profit than most of the others, though he had not sold his feed quite so high.

I took another census, up in Fond du Lac county, and I will give you a few pointers from that. There were forty-eight patrons of a certain creamery. Among those there were six who fed ensilage and forty-two who did not. This question of feeding is important in reaching gross returns. For those who fed ensilage, the average was \$52.52 per cow; the forty-two who did not feed ensilage, averaged \$34 per cow. I did not pick out these men, but went right along the road and took every man. I went out after facts, and it would have made no difference if it had knocked out all my ideas that I had before. Now, then, the net profit of the ensilage men, averaged \$21.02 per cow, and I charged \$2.50 a ton for the ensilage, because I thought it was worth that, I considered it had cost that. The profit of the ensilage men was 500 per cent more than that of those who did not have ensilage. Now, do you suppose, for a minute, that it was entirely because those six men fed ensilage, that they made all that difference? Of course it was not. This is what made the difference; it is the most progressive men who are building silos; they are the men that get the biggest returns for their labor and outlay. I might put it even a little stronger, and I will, and say, that the ensilage men—excuse me, gentlemen, I must say it, because it is true—they *know* more than the men who do not build silos, and that is the gospel truth. If you could measure the brain, the intelligence, of those ensilage men as against those who do not build silos, I tell you they would average a great deal larger, as true as you live, for the man who obstinately opposes the building of silos in the face of all the facts

that have been brought out in the last few years, must have an almighty small brain.

I hear somebody over here remarking that probably the men who made the most money in these cases, did it because they have the right breed of cows. When you come to look over Mr. Taylor's figures, you will see how that works out, but I want to tell you that while I think a good deal of the breed, there isn't so much in the breed as a great many people think; it is having a dairy cow that is properly fed and cared for; she is the kind that pays the best. Now, after I had taken that census over in the vicinity of Fort Atkinson, covering one hundred herds, I wanted to get all the lessons I could out of it. I certainly got the silo lesson out of it, and I wanted to see what there was in this breed question. I will say that in figuring on these herds, where the Jersey blood predominated, I called those Jerseys, where the Holstein blood predominated, I called those Holsteins, and so on. Now, there were twenty-eight herds of Jerseys, 466 cows, and the average amount of butter was 244.7 pounds. The average of money for one dollar's worth of food, was \$1.62. The net profit for the cow above the cost of food, was \$17.58—that is a Jersey, doing a pretty fairly profitable business.

Now, here are the Holsteins. There were nineteen herds, 450 cows. Average amount of milk, 6,080 pounds; average pounds of butter, 255, considerable more than the Jerseys, you see. The amount of money for one dollar's worth of feed, \$1.54, and the profit per cow, \$16.99, which is 59 cents less than the Jerseys.

Then here are the Guernseys. Eleven herds of Guernseys, 185 cows; milk, 5,141 pounds; butter, 255½; for each dollar's worth of feed, \$1.60; net profit per cow, \$17.92.

Now, you see there are those three breeds, and they ran along practically alike.

Now, here is another kind that I call the mixed dairy, where they had Jerseys, and Guernseys, and Holsteins and all the good things together, and one would say they ought to have come out well. Some men up that way, several years ago,

wanted to improve their stock and they got a Jersey sire, but when they came to see the calves, they didn't like the little bits of things, and they changed over onto Holsteins, and then they got tired of that, the milk wasn't of good enough quality, although there was lots of it, and they found out that the Guernseys put in a lot of color, and they adopted the Guernsey blood so as to make the milk more yellow; so they had the richness of the Jersey, the quantity of the Holstein and the beautiful color of the Guernsey, and what more could you want? Now, let's see how they came out. There were nineteen herds of them, 346 cows; pounds of milk, 4,455; pounds of butter, 208½. What is the matter, they are way down below what the others were? Now, I will tell you what was the matter, as I think. It was because the men who owned those herds did not have an intense love for any particular kind of an animal; they did not take good care of them, and the man that doesn't really love the kind of cows he has, and isn't going to take the very best of care of them, isn't going to get much out of them. The profit per cow in these mixed dairies, was \$12.14.

Now, there are a few dairy Shorthorns in that test. There is just one herd of registered Shorthorns in the county of Jefferson, and they made 240.8 pounds of butter; almost as much as the Jerseys. The net profit was \$14.70. Now, then, there is once in a while a general-purpose or dual-purpose or double-dual-purpose cow over there.

A Member: Won't the difference in the value of the Shorthorn calf raise the average?

Mr. Goodrich: That is for you to figure. The dairy Shorthorn calf isn't any better than the Holstein calf, if it is a dairy animal. Now, we come to the G. P. S. H., that is the General-Purpose Shorthorns, and there were four herds, 54 cows, and the net profit was about \$8.02, about ten or eleven dollars per cow less than the special dairy cow. Now, if they get enough more for the calf to make that up, that is all right.

A Member: And how about the extra amount of skim milk?

Mr. Goodrich: There is no doubt but what the skim milk is worth more than the skim milk from a cow that gives a less amount. Six thousand pounds of Holstein skim milk is, no doubt, worth more than 5,000 pounds of Jersey skim milk, but 100 pounds of Jersey skim milk has got more solids in it, and, therefore, more food value than 100 pounds of 3 per cent Holstein milk, that is, the skim milk, and it is solids that make the feeding value.

A Member: Has a Holstein cow never taken the prize for total solids?

Mr. Goodrich: Not that I know of, I don't know. Of course all I did was to take the results from the factory, at least, I went no further. I asked each patron what, in his opinion, was the value of his skim milk, and I did that down in Indiana this year in taking a cow census, and their figures ran all the way from ten cents a hundred to forty cents. One man said it wasn't worth anything; one man thought it was worth as much as forty cents. I asked him if he thought he could get that out of it by feeding it, and he said, "Yes, I know I can, since I have a separator and separate it on the farm." I asked him how he could get that out of it, and he said, "By feeding it to just such pigs as you see out there, and to just such calves as you see out there, and there is no way on earth that I can raise such hogs as those without skim milk." And when I looked at the hogs, I believed it was true. I know he could sell those hogs at a high price.

A Member: Have you any statistics to show the comparison between breeds in localities where there are condensing factories?

Mr. Goodrich: No, I have not. I have been in condensing factories and I know they pay a good deal more for milk because they take it all the average price. This winter it is \$1.45 a hundred at the Borden factories, but I don't know about the breeds. I do know this, I have talked with them and read their contracts, showing that they cannot get off onto the condensing factories poor milk. A man who has a great

lot of cows giving milk, only testing 3 per cent, cannot work that off onto them. They test the milk, and if it goes down to 3.4 they say to him, "You have got to produce richer milk than that." He says, "Well, that is as it comes from the cow." And they answer, "Well, get some cows, and put into your herd that give richer milk;" and when you go and look at their herds, you will see Shorthorns, and a lot of Holsteins, and three or four or five little Jerseys mixed up with them to make the milk richer.

Ex-Gov. Hoard: This Association digs down to the farm end of this proposition. This Association was organized in 1872, and it has staid right by that proposition. We are dealing all the time with the man that produces the milk, and I tell you, we have got to have lots of dealing. The Wisconsin buttermakers have swarmed off and formed their Association, and we say God bless them; and the cheese boys the same way, but the old parent society stays by the declaration of faith in the man that makes the milk, and we want to see the Wisconsin dairy farmers make the most money, show the largest degree of ambition and pride and spirit, and show the greatest progress and prosperity of any state in the nation. Now, how will we do that? By spreading information and thought—agitation. Agitation. Why, you may have the best cream on earth, and if you don't churn it you will get no butter, will you, and that is agitation, isn't it? And so in these results. Now, should not we, cleanly, intelligent, bright-minded dairy farmers, accept the lessons of intelligence on this question and proceed to use this great potent force called "Breeding" to develop our cows so that they will produce us more money at the pail? Now, there is a very great delusion among our people in the matter of breeds. I want to say to you that the men who adhere to the best bred dairy cattle of the four dairy breeds, make a great deal the most money, and have made it all the while. We see to-day where beef has gone, and yet the dairy industry holds steady. Eighty millions of people are calling for more and more milk. Just

think of it. Milk is being shipped into New York City, four hundred miles. Great areas of territory that used to produce butter and cheese, are to-day occupied in producing milk for these great cities. Now, these things are significant, if we are wise unto our own salvation. The breeding of dairy cows is more profitable to-day, than the breeding of steers. I can make a good deal more money on a fine two-year old heifer than I can on a steer of the same age, because I can raise that heifer at nearly one half the cost. I am not obliged to put a lot of costly food into her in order to make her ready for market. All I have to do, is to breed her, see that she has an excellent parentage behind her. Then I handle her rightly so that she will develop towards a good cow.

Now, the value of skim milk has been touched upon here. I want to give you one little personal experience of my own. I sold seven grade Guernsey calves for \$170; they were three eighths and seven eighths. Now, I will give you an interesting bit of figures about those calves.

They consumed a dollar's worth of oats; \$1.50 worth of alfalfa hay; 50 cents worth of blood meal (dried blood)—and I would not be without that if I was rearing calves or pigs. I allowed \$3.00 for the calf when ten days old, what the calf-buyers would pay me. That made the cost about \$6.00, and they sold for \$24.30 apiece, and it leaves \$18.30 for the 3,500 pounds of skim milk, and if I reckoned it right, that is $52\frac{1}{3}$ cents per hundred. But mind you, they were good calves. The same man that bought those calves came into the neighborhood and bought others of the same age for ten to twelve dollars.

Mr. Fralich: That same man gave me \$75 for two, and they were grades.

Ex-Gov. Hoard: Well, you did better than I did. Now, those calves were reared in the light of the best intelligence I could get concerning bovine babies. Remember, this little calf is a baby. Every human mother knows that a baby must be kept dry and clean, or it will sicken, even if it is a strong,

vigorous baby; and yet how do men rear calves to-day, average Wisconsin farmers? Just go into the calf stable and see. These calves of mine were kept dry and they were disinfected, their quarters two or three times every week, so they should be absolutely healthy, and they were a strong, vigorous, beautiful lot of young animals. There is no difficulty in selling all the heifers that I can raise. There are men who come in there and buy as high as two carloads, in our neighborhood, of young heifers, grade Guernseys, Jerseys and Holsteins, and take them to Idaho and Montana. All we had to do was to put a little advertisement in the paper and let people know that we had such animals for sale. There is a big demand all the time for fine young heifers, and even grades. Now, on registered Guernseys, my skim milk was worth over a dollar a hundred. On pigs at the prices last year, it was worth about 30 to 35 cents. You see, I have a separator on the farm, and the skim milk is fed warm and sweet and the animals are handled as they should be. Now, with the aid of alfalfa and a little blood meal and sanitary quarters and care, I can get good handsome money out of my intelligence, if I exercise it, and I just mentioned these things to show that there is an opportunity for every man to use good thought and good brains in this business, and a magnificent chance when we do. But down in the muck, where every man is trying to make himself a little more mucky than he was, I tell you there is no money in that kind of mucky business. There is no money in this low grade kind of dairy thought; there is no profit in it; there is no hope in it; there is nothing for the wife and the children, nor for the husband. But there is a splendid reward if a man will come up to these higher grades of intelligence, and use it upon this great modern mother, the foster mother of the race, of human children, to-day; there is a splendid opportunity for the reward of intelligence here, and in this kind of farming.

Adjourned till 9 o'clock A. M. next day.

FRIDAY MORNING, 9 A. M.

The convention met at 9 o'clock, Friday morning.
The President in the chair.

WISCONSIN CREAMERIES: THEIR NEEDS AND
DUTIES.

James G. Moore, Albion.

Mr. President, Ladies and Gentlemen: Another important thing needed in the creamery business in Wisconsin, is better buildings. The creamery business ought to be sufficiently stable by this time, to allow those in the business to house it in better buildings than it has been done heretofore. Too many of the creameries and cheese factories also, are old and dilapidated, lacking paint inside and out, and betraying a deplorable lack of business foresight in selecting a site that will allow of good drainage, in the construction of the building, so that it will be lasting, and in the placing of machinery, so that the greatest amount of work can be done with the least amount of labor.

Should a merchant or firm in the city, find that his present quarters are inadequate, for the most economical handling of his business, he is not at all backward in expending large sums to bring it to the highest standard of efficiency. Experience has proven him wise in doing so; but the average creamery owner is afraid to do so, even if he could see the necessity for it, because of the fact that too many patrons of creameries, when they see a factory owner laying out money for an up-to-date equipment, that will enable him to do business more economically or even building a better house in which to live, at once become suspicious that they are being robbed,

and do not hesitate to say that their money is paying for the improvements. This ought not to be. The creamery man, like all other men in business, is entitled to a fair profit on his investment. Again, the creamery owner is afraid to invest in permanent improvements, because the patrons are liable to leave without warning, and thus render his investment worthless. If their test is down they at once jump at the conclusion that they are being wronged; whereas if they would make more of a study of the dairy business, they would be able to find a reason for the test dropping so.

Neither patron or creamery man should lose sight of the fact that their interests are mutual and would be strengthened by closer co-operation. It has been said that their relations are as the relation of mother and child; the mother can exist without the child,—not so the child, and as the mother's life is rounded out, and made fuller by the child's existence, so is the patron helped by the existence of a successful creamery or cheese factory.

The outside unsanitary condition of a creamery is oftentimes due more to neglect to provide means for drainage than absolute lack of drainage. A creamery building should be built above the level of the surrounding ground, somewhat, in order to allow for proper grading so that the water may run away from the building, instead of remaining in the hollows formed by the pawing of horses and the chuck of wagon wheels. Some sort of stone flagging or cement pavement should be laid where the milk is loaded, and unloaded, that could be flushed with water so that there need be nothing to offend the eye or nose. The floor should have a sufficient slope to allow milk or water spilled thereon to flow away, and thus keep the floor clean and dry, adding to the appearance of the factory and making it more healthful for the maker.

The floors in creameries are usually of wood, but a cement or sawed stone one is much to be preferred, not only because it is easier to keep them clean, but in the long run it is much cheaper and more sanitary. Too much of the machinery in creameries

is impaired and in the case of wooden utensils, decay hastened by the fact that no means of ventilation are provided. It is not unusual to go into creameries in the winter, and find the walls and ceilings covered with moisture and the building as full of steam, as though the boiler was blowing off.

The problem of ventilation does not seem an easy one to solve, as some of the latest and best built creameries in Minnesota have been rendered almost unfit to work in because of the lack of it. And what is of more importance, the buttermaker's health suffers, as well as the building and machinery.

We need a better system of refrigeration than is commonly found in most creameries—not but that a competent carpenter ought to be able to build one, that would serve the purpose and be economical of ice, if provided with proper plans, but in too many cases it is a lack of knowledge of the principles of refrigeration that causes the trouble, and I believe if better refrigeration were furnished our creameries, the annual loss on mouldy butter tubs would be avoided.

Before starting a creamery an architect should be employed to plan the building and arrange the machinery, instead of allowing any one who is willing to work, to boss the job and rear a monument, as long as it lasts, to his incompetency. This is just as applicable to the laying of cement floors as it is to building the creamery.

It used to be, and to some extent now is, that any one who has passed a season of six or eight months in a creamery, feels competent to take charge of a plant. A good butter maker needs to know *more* than can be learned in that length of time, and a course at the Dairy School, supplemented by a short course in Agriculture, is none too much to ask.

We need better educated buttermakers—men who not only know their side of the business of making butter, caring for machinery and keeping accounts, but men who can advise with the patron in regard to the best methods of breeding and feeding, and the raising of crops, necessary for the economical production of milk.

In order to attract the class of young men who have the energy and ability to become leaders in their communities, the buttermaking business will have to hold out higher inducements, in the way of higher wages for the skilled workman, than has usually been the case heretofore. When the patron sees the buttermaker knock off work early in the afternoon, he thinks it is a soft snap to run a creamery; but he forgets the early hours; the Sundays and holidays that we put in; also the fact that for the buttermaker the income stops when he does, and not, as with the patron, have something growing into money while he sleeps or takes a day off.

It should be the duty of the creamery to keep its patrons in touch with the latest methods of handling cows in order to produce the largest net revenue per cow. A patron whose cows net from \$60 to \$80 per head is a much more satisfactory man to deal with, than the one whose cows only bring \$30 per head.

It should take the initiative, in securing for the community the advantage of a farmers' institute, and get them in touch with the State and National Agricultural departments by having their names put on the mailing lists and in getting up clubs for some reputable farm or dairy paper.

In the buying of supplies, the patrons should be induced to co-operate—salt, coal, binding twine, washing powder, milk cans, mill feeds, and other things can be secured at wholesale, and the money that is lying in the bank, belonging to the patron, could be used to pay for these on delivery. The more the patron can be induced to rely on the creamery along these lines, just so much more will the success of the creamery be—whether co-operative or individual.

More effort should be made by the creamery to get its patrons to test their individual cows; as many farmers are keeping cows that do not pay for their feed.

The farmers of the state of Iowa, received a trifle over nineteen dollars per cow, according to the census reports, and it cost them to keep their cows on an average of \$25.00 entailing a loss of seven million of dollars. It costs more to keep cows in Wis-

consin, estimated I believe at thirty dollars, and too many of our patrons are only getting from thirty to thirty-five dollars per cow.

It is the duty of every creamery and every patron to do something for the support of the National Dairy Union, that has done, and is doing, so much to keep oleomargarine from coming into competition with butter.

Just because we have a law to compel oleomargarine to be sold for what it is, is no sign that we have no further need of an organization like the National Dairy Union, because the statutes will not execute themselves, and unless we are ready at all times to take the offensive, the oleo dealers with their great wealth may do us an injury that would be hard to recover from. In this case, as in everything else, eternal vigilance is not only the price of liberty, but the price we must pay if we succeed.

DISCUSSION.

Mr. L. S. Hardin: I heard down in Chicago, two or three years ago, that the finest grades of butter have become smaller in quantity in proportion to the other grades. They said then it had got down to ten per cent: now, I believe they measure it about eight per cent. Supposing that is true, will Mr. Moore tell us what he thinks is the cause of it?

Mr. Moore: One of the reasons is that the standard for butter is becoming higher all the time, and there are so many butter makers who rely on what they think they know and don't care to learn any more. They don't read dairy papers or any papers devoted to their particular line of business; they don't go to the dairy school, they don't belong to an association like this as they ought to do, and come in contact with other makers and keep track of the improvements that are going on. They lie back and the business is getting ahead of them. If we do not move ahead, we retrograde; there is no such thing as stand-

ing still. In my opinion that is one of the main features of this lack of high grade goods in the market. Another reason is that there are too many of our creameries becoming old and dilapidated, and it is hard to make good goods in them. Another reason is, competition has become so strong that the farmers have become independent about their milk, they know they can always get somebody to take it and too many butter makers feel obliged to take in poor milk, because they are receiving only just about enough to live on and the loss of one or two patrons is more than they can stand. The inspectors connected with the Dairy and Food Commission and the instructors working under this Association have been able to do a great work along this line, although you can readily see that with 1,200 creameries in the state one man cannot possibly get around. They couldn't do it in half a dozen years. We ought to have men enough to go around to the creameries at least once a month and there ought to be some amendments to our laws which would let the few that are working, work to better advantage.

A Member: Isn't it true that the average butter of Wisconsin will score five points or more higher than it would eight or ten years ago?

Mr. Moore: Possibly. The amount of butter, however, and the number of creameries, has largely increased, and in that way we have a greater proportion of poor butter.

Sec'y Burchard: What is your observation in regard to the butter shown in the Chicago market being the highest class of butter?

Mr. Moore: I think that a considerable quantity of our first class butter does not go near the Chicago market nor the other large markets. For instance, the creamery where I live, for five years we have sold our butter to one of the largest butter buyers in the United States, and the butter does not go near the market, and that is true of a number of the best creameries. It is not to the best advantage of the best creameries to sell their butter on commission; they prefer to sell directly.

Mr. Hardin: The same news comes from New York and

from Chicago, but the receipts on the Chicago Board are just as high this year as they were two years ago, and higher. The trade is increasing all the time and the proportion of fine extras is decreasing all the time. Why don't you put your fine butter makers to work and send out more good butter?

Sec'y Burchard: We do.

Mr. Goodrich: We haven't educated the patron on the farm.

Ex-Gov. Hoard: There is a very peculiar and mysterious drift in this question of cheese factories and creameries, especially the cheese factory. In any new community, for the first two years a cheese factory will make from one and a half to two and a half pounds more cheese to the one hundred pounds of milk than it will in five years from that time. That has been shown to be true everywhere. The milk is better and richer at first than it is afterwards. Now, who, do you think, is to blame for that? The man who is cutting down the quality of butter in the state of Wisconsin is the man that makes the milk. All of our schools to-day are devoted to the education of the butter maker, and the farmer is way back there in the muck and governing himself by considerations that are absolutely indefensible. As Mr. Moore says, as the creameries increase with the attendant competition, the demoralization of the patron increases also. He says, if you don't like my milk, I will take it to the next fellow, and so he debauches the creamery. He doesn't say, as he ought to, if my milk isn't right, tell me what is the matter. No, sir, he takes a very different position, and says his milk is as good as any body else's milk.

A Member: Why don't you educate at the other end of the matter?

Ex-Gov. Hoard: Well, I tried to get an agricultural school established in Jefferson county and the Board of Supervisors voted it down; they said the farmers wouldn't have it. The country has got no hope through the old farmers. We must get at the children and the young men and women. The farmer doesn't care for his education. He doesn't care even to make money. You tell him that such a certain procedure will bring

him a very much larger revenue, and you can't reach him. Not fifteen farmers in a hundred to-day are readers of dairy and agricultural literature. We have taken cow censuses all over the United States, in Iowa, Wisconsin, New York, Pennsylvania and in those communities every patron was asked what he read and it is perfectly astounding that men with such great interests on their hands, such momentous interests, their fortune in the balance, those men will persist in administering this business from the standpoint of the direst ignorance, rolling their ignorance under their tongues like a sweet morsel and saying, "Thank God for this blessing." Don't think I am worrying about you so much; you are here and you come here voluntarily, but I heard a group of farmers down the street talking, and one of them says, "Are you going up to that meeting?" "No, I ain't going up to that meeting. I know more about dairying and cows than them fellows can tell." Now, that grade of judgment, that low grade of ambition and spirit, is what is taking the soul out of the dairy business to-day in Wisconsin and everywhere else.

Mr. Fox: I believe that the farmer does care about making money. He knows it is made honestly by hard work, but they have learned to be a little suspicious, and with some occasion, too. You can reach the farmer through his children, I think, better than in any other way. The schools are not adapted to farmers' needs; his children get a smattering of education and they have to go to town to get more. What we want are the rural schools. We need to consolidate our rural schools and have in them a class of teachers who understand the business.

Sec'y Burchard: The question before the house is, why is it that there is a decrease in the high grades of butter in Chicago, what might be called double-extra butter. I think there is another reason beyond what Mr. Moore has given, although what he has said is altogether true. I appeal to Mr. Loomis to say if it is not true that cheese has been quoted in the Sheboygan County Board well above the Chicago and New York prices many times.

Mr. Loomis: It seems to me that that is the only way to sell cheese,—on the call board. I think we have got three quarters of a cent and perhaps a cent more for our cheese there than we would have received if it had not been for the boards of trade, and I do not see why butter makers cannot arrange the same thing where they have their creameries near enough together. There were some people at the Cheesemakers' Convention who objected to the Board of Trade, but one of them admitted that they were selling their cheese on the prices established by the Fond du Lac Board at the same time that he was objecting to it and refusing to help support it.

Sec'y Burchard: I call your attention to another significant fact. It is well understood in the creameries of the state of Minnesota that they can get from one to one and a half to two cents above the highest New York quotation. That butter does not go to Chicago nor to New York nor Philadelphia. It is distributed around to the smaller markets by these concerns that buy it. A great many of our creameries are making butter which they ship direct to the consumer. I will not say there is not a great deal of poor butter made. We all know there is plenty, but I believe the general average is improving, I undertake to say that the percentage of high class goods is not decreasing.

Mr. Hardin: We all know that when a man makes fine butter on the farm, he is a fool to send it to the commission man. The poor butter must be sent there to be sold. But we are not talking about the double-extra butter, we are talking now simply of the great mass of butter that is to be taken care of by the market; that butter now shows a decrease in the ratio of the good to the bad and it has been going down for two or three years. It is a very serious subject. If we are going to educate our young men to stay upon the farm and educate people to work in factories, we want to see some results from it, we want to see this average going up and not down, and we don't want to be carried away by the fact that two or three men in a community make more than anybody else. They have always

done that. I have sold butter for the last twenty years at from ten to fifteen cents above the highest quotations of your best extras, but I never considered that was anything very smart. I should think I was very foolish if I sent it in to have it sold at these low rates, but we want to talk about this great solid mass of butter that comes into the market at the rate of ten or twelve thousand tubs a week, that is what we all depend on. Down South we don't get a bit of first class butter. We never get it unless we come up here and make a special contract which has nothing in the world to do with the quotations. We are talking about the butter that drifts through the market and we want to know why that butter is not improving all the time. I think my friend Governor Hoard is right in preaching a crusade on this subject. Somebody has got to be stirred up and somebody has got to do the stirring. For my part, I don't mind being abused for these things, I like it, because it shows you are interested in us. It is the man who sits down, never gets stirred up by anything; he doesn't care enough; he has no emotion in him,—he is the hopeless man. I say we want to come out and find out just what we are doing and very likely do something different.

A Member: I have had a little cheese sold on the Board of Trade and it seems to me there isn't much in it, particularly in this part of the country. There will be four or five boxes come in and they will run the market up a little above what it is worth and the cheesemaker will contract to make the cheese first quality to be sold on the Board of Trade. Then the inspector goes out, he has paid a quarter or an eighth of a cent more than the cheese is worth and he gets even on the matter and beats the cheesemaker and that is the reason that the cheese maker objects to going on the Board of Trade. Now, I have a word or two to say in regard to the farmer's honesty in delivering milk. I believe that they are as honest as the buyers, the men that buy the cheese. Look at the Elgin creamery country, what they have done all through that country. There are two sides to this question.

Ex-Gov. Hoard: I want to ask the gentleman the plain, simple question. Can you make fine goods out of bad milk?

The Member: No, sir.

Ex-Gov. Hoard: Very well, there is the whole proposition. It is not a question of some dishonest cheese buyer or some dishonest farmer. It is a question of the intelligence that makes fine milk, so you can make fine goods out of it. All this complaint about the increase in the amount of poor butter goes right back to that proposition of the competition between the creameries. The competition for milk is greater than the competition for excellence; and every creamery, every butter maker and every cheese maker is up against a proposition to save that patron even if he has to take bad milk and spoils the whole batch. Now, can we organize any kind of a crusade that will reach out and take hold of the farmer and show him that it is for his own money interest to make fine milk.

Mr. Loomis: I want to say for the benefit of this gentleman over here that if your Board of Trade is properly organized there is no reason for your selling to that man, a second time at least. In our board of trade we have a rule that if for any reason a seller does not wish to sell to any particular man, he doesn't need to. The man that takes advantage of one of our factorymen, does not get the cheese again.

A Member: We are talking of establishing a board in Mineral Point to sell cheese in that neighborhood. I think the cheese should be inspected and weighed in the factory.

Mr. Loomis: We have a rule in our Board of Trade that if a seller demands it, the cheese shall be inspected and weighed before it leaves the county.

The Member: It seems to me also that the inspector should be a disinterested man, not a member of the firm buying, who should check the numbers and weights at the depot and when it leaves the depot it should be final, with no after-claps.

The Chairman: I call upon Mr. Goodrich to close this subject.

Mr. Goodrich: The answer to this question, how to stop the

decrease in the quality of butter is that we must have better milk. That milk must come from the farm. Now, you may talk, you may preach all you are a mind to, and there will be one or two filthy farmers that bring filthy milk that will contaminate the milk of the whole creamery. Preaching won't help it; it has to be done by force of law. Somebody has got to be armed with authority who can go to the farmer and say, "You must not bring this milk to any creamery or cheese factory under the penalty of the provisions of the law." It will take an army of at least thirty to do the work that is necessary to be done in this state. When we have inspection as good as it is in Canada or in Denmark, then we shall have butter that will grade up a great deal higher than it does now, and we will increase the demand for it a great deal, which of course will increase the price, and this filthy farmer that has to be compelled to do a right thing and a good thing, will make money himself, but he won't even make money till he is compelled to.

The Chairman: That same inspection needs to go right along into the cheese and butter factories and that filthy maker needs to come under the law in just the same way.

Mr. Moore: We have a great many patrons of cheese factories and creameries in this state who are foreign born. Now, there are a great many of these people from the old country who have had great respect for the law in their country, which they seem to lose when they come over here. There are lots of folks in this state as well as elsewhere who want to see the law enforced against the other fellow, but they want to have it kept away from themselves.

**BACTERIA AND MILK SUPPLIES FOR CITY AND
FACTORY USE.**

Dr. H. L. Russell, Madison.

Mr. President, Ladies and Gentlemen: There are some problems which are so old that they seem almost over and I presume that the subject which has been presented by the Chairman may appear to some of you as one of those, but this question of the care of milk practically for city use is one of fundamental importance. It would seem that when the Secretary set this topic down on the program for discussion that he ought to have selected a man who was a milk producer, and therefore could talk intelligently and practically upon how that milk should be cared for and whether it was to be consumed in the raw form as milk, or whether in the factory in the form of dairy products as butter and cheese. He has, however, selected for the leader in this discussion, one who has not had a particle of experience, so that what I have to say will be, of course, not in the form of set rules as to the handling of these products in order to secure the best results, but will be with reference to the underlying principles necessary for a person to know in order to formulate for himself those rules.

Within recent years, science has worked out an enormous advance in agricultural processes. The application of chemical principles, of physical principles, of the principles of biology, have been recognized as the means of making the most important advances in agricultural practice. Within a comparatively recent time there has been introduced into the consideration of all these questions, whether we consider them from a purely practical point of view or from a more scientific point of view, the relation which bacteria hold to many of these processes. Ten years ago, no one would have thought of asking any one to speak in regard to the relation of bacteria to dairy processes. Now, it is of common occurrence for you to find an address

upon a topic of that sort, or to pick up one of the agricultural papers and find articles in regard to the relations of bacteria to milk, to the fertility of soil, to diseases in animals and many other problems of a similar character.

Investigations which have been made along this line have shown that the problem, for instance, of caring for milk is purely a bacteriological problem. If we could secure milk in the same form in which it is made by the animal and in the same condition, we would be relieved of the consideration of many of these troubles which confront us as factory operators or cheese factorymen or creamery men, or with reference to the handling of milk for direct consumption.

Now, milk is so admirably adapted for the growth and development of these lower forms of life that the moment it is drawn from the animal—no, even before, it becomes subject to contamination in very many ways, so that by the time the milk reaches the consumer, in place of being a sterile fluid, it contains hundreds of thousands, and frequently millions, of organisms in every teaspoonful of it.

Now, I have examined milk from factory sources and have frequently found as high as five or ten and sometimes twenty-five million organisms in a single teaspoonful of the fluid.

The Governor asks me how I count them. That is a long story. The kind of substance we employ for the cultivation of these organisms is a food substance which we use on our tables, namely, gelatine. We sterilize it, kill out all the organisms. We take a small quantity of this sterilized gelatine in which, as I say, the pre-existing organisms have been killed out, and hold that in warm water until the gelatine becomes fluid. To that is added a very small fraction of a drop of milk, or any other substance which we wish to examine. For instance, we will take one cubic centimeter, about one-third of a teaspoonful. We ordinarily take about ninety-nine cubic centimeters of sterilized water and the one cubic centimeter of milk. Now, if we take one tenth of a cubic centimeter of that diluted milk, we will have one thousandth of the original volume with which we

started. That is then added to this liquid gelatine and the whole poured out into a little glass plate which is covered over with another glass plate. This solidifies, just the same as it does in the house when you make up your gelatine and set it outside to cool, and where there are any organisms in this original drop of milk, they are caught and held in this solidified gelatine and there they are under favorable conditions for their growth. They have abundant food supply; they have the proper degree of temperature; they have the proper amount of moisture; they have the necessary oxygen, and in fact, all the conditions necessary for their sprouting and development. Therefore, each one of these organisms, after its own kind, immediately starts out to reproduce itself. Remember we are dealing with organisms that are so infinitely small that one hundred and fifty of them all set side by side would not equal in thickness more than a single sheet of paper. These organisms have the power of reproduction without any compeer in the living world. One of these organisms will multiply into two in half an hour and they into four, the four into sixteen and so on, and so in the course of twenty-four hours the rate of increase in each one of these individual cells goes on so rapidly that you have the formation of a physical mass, as it were the children of the original germ planted in this gelatine. Now, we count these in so-called patches or colonies; we do not count the individual organisms, because they are way beyond the limits even of your strongest microscope, but we count the colonies.

Let us suppose that our one thousandth of a cubic centimeter of milk contained fifty germs, each one of which would multiply after its own kind; therefore, you will have fifty little spots around on this gelatine plate, and by counting off the portion which is in one spot or colony, it is very easy to compute the number of organisms which are present in that drop. Of course a great deal depends upon the accuracy with which this work is done, and it takes considerable time—it takes perhaps two or three days for us to determine the number of organisms present, even when it is done in this relatively simple manner.

In this way an examination of milk shows that when milk is consumed on our tables, or made up into factory products it is infinitely rich in germ life, frequently containing millions of organisms for every teaspoonful of it. Now, the question arises how have those organisms gotten in there. In the first place, it is on account of the suitability of milk as a medium for the growth of germ life. It is an exceedingly curious fact, but nevertheless true, that we have in milk a medium which is designed by nature to serve as nourishment for the highest form of life known, namely, mammals, including man. And at the same time it is one of the most admirable mediums for the development of these small organisms. In milk, these organisms multiply with an astonishing rapidity.

The great bulk of these organisms are relatively harmless. They are concerned with the mere souring changes. There are though, many other organisms of an undesirable character, being organisms which produce undesirable fermentations. The Swiss cheese industry for instance, loses tens of thousands of dollars every year through the presence of these gassy fermentations, every one of which is to be ascribed to the development and growth of bacteria which break up the milk sugar and produce undesirable gases.

There are others which produce milk of aropy character, and all of these are brought about through the influence of certain specific organisms which have gained an ascendancy over the normal milk and have brought about the production of this abnormal fermentation. Not only are these abnormal fermenting organisms carried in milk, but many of the disease organisms are often carried in milk. For instance, tuberculosis is produced by an organism in the milk; also typhoid fever; cholera; the germs of diseases of this class are often found in milk under conditions suitable for their growth.

A few weeks ago, in the city of Racine, we had an epidemic of typhoid fever which was traced to a contaminated milk supply where a milkman had a case of typhoid fever in his own family; the milk supply became infected in some way from this

patient and it caused an outburst of typhoid which is epidemic in that city.

Now, how can we care for the milk so as to reduce the chances of increase of these undesirable organisms? We have got to go back to first principles in order to understand it. Some one has said that the education of the child should begin before he is born, meaning by that that the environment in which a child is brought into this world has a great deal to do with regard to the kind of an education which that child is going to receive; meaning, that if you place the child in poor surroundings, as they are found, for instance, in tenement districts in the city, the chances are that the education of the child will not lead him upward and onward, but will lead him forward and downward.

Now the same problem confronts us with regard to the care of milk. In caring for milk, whether for the factory or for city use, we have to go back to a study of the conditions and the surroundings in which that milk is to come into the world; we have to begin with the stables, and with the utensils into which that milk is drawn. It is a question which more concerns the milk producer than the factory operator. Some one here has referred to filthy conditions in the factory, but I tell you, ladies and gentlemen, that the contamination of milk occurs on the farm rather than in the factory, and it depends upon how the milk producer produces and handles his milk, whether it will be suitable or unsuitable for the manufacture of dairy products. Gov. Hoard was right when he said that this question is behind the question of whether we shall produce the highest or the poorest grade of dairy products.

Now, I want to give you a few ways in which the milk is infected with these organisms. You may say that this perhaps is very good, but it is not applicable to your conditions. If we are trying to produce a milk supply which is just as low as possible in germ contents, you may say that that is all very well for the milk supply, but it is not practical for factory operation. The quality of butter or cheese depends on the quality of the milk itself and just as far as we can carry back these precau-

tionary measures, these methods of cleanliness, these methods of control which will lead to the exclusion of the bacteria or the control of their growth, just so far will we improve the quality of our product. Some one has said, "Why not have a standard other than a butter fat standard?" and I say, Amen, and until our laws recognize the sanitary condition of our milk supplies we have not done what we ought to do. It is all very well to have a legal enactment, but unless a person can understand the reason of these things, he does not understand the necessity for them, and that we have got to do by education. We are trying to show the farmer by the Wisconsin curd test the reason why his milk spoils all the factory operator can do. You can take a person and point out to him that his milk is bad, or that his milk is good, and no reasonable man, when evidence is produced before his very eyes that his milk is bad, can go behind that. He must appreciate the importance of those things. That work can be best done by having factory inspectors go throughout the state who are able to point out the actual conditions that are bringing bad milk to the factory. They are doing it as far as they can, and they are improving the conditions by it.

Now, a few words as to how milk becomes infected with these organisms. We have got to start out with the surroundings in which the milk is drawn; the condition of the stables is of the very greatest importance. I wish I could have used the lantern and thrown upon the screen the actual evidence of these conditions, as I might do. A good many of these things have to be proven in a scientific manner, but they must be brought home in the best way that we can do it, and the lantern slides are sometimes very effective.

Now, in regard to the surroundings. The condition of the stables is of importance. Why? For two things, because just to the extent to which we have dirt and vileness in our stables, just to that extent do we put the milk under unfavorable conditions, not only so far as the germ life itself may be deposited in the milk, but the direct absorption of odors from those surroundings. Now, the taints which we find in milk are produced

in two ways,—either through the direct absorption of some pre-existing taint or odor, or through the introduction of living organisms which are rapidly multiplied and by reason of their multiplication they are able to produce these taints. You see those two kinds of taints are different. You take, for instance, a stable which is saturated with vile odors in the winter time, where the barn has been shut up in order to keep it warm, and you have a vile stench which comes from the accumulation of stale urine and all of the characteristic stable odors; you expose your milk even for a period of fifteen or twenty minutes under those conditions and it will result in direct absorption of odors which will confer upon the milk a vile scent. I have demonstrated this experimentally where substances like oil of wintergreen or oil of cinnamon have been used, and noted the contraction of the odor and that it is much more quickly taken in warm milk than in cold milk. Milk is an exceedingly sensitive agent toward the contraction of all strong scented odors or substances of that class, and it will absorb them much more rapidly in a warm condition than in a cold condition. I have taken samples of milk, warm and cold, and placed them in a confined area exposed to wintergreen or cinnamon and within fifteen or twenty minutes you could detect the peculiar odor of those substances in that milk; so you can see how an atmosphere which is already surcharged with bad odors will affect milk. The cowey odor which you get in milk is directly attributable to this direct absorption of these pre-existing odors in that way. A great deal can be done by cleanliness in this matter. I went into a barn lately to make a tuberculin test. It was necessary to get a pair of rubber boots in order to get around the barn; the manure was over a foot deep; the flanks of the animals were so covered with manure that it was impossible to see the hair on the hinder parts of the animals, but still the milk from fifty or sixty of those cows was drawn and taken to the city as part of the city's milk supply. In the winter there were millions of spores in that milk. As I say, a great deal can be done with reference to improving that condition. It

takes time, of course; cleanliness, in order to reduce the bacteriological contents of milk will always require energy and labor; it is a problem which we have got to face in order to retard these undesirable changes.

Now, if it is necessary for us to take care in regard to the surroundings and the stable, it is equally so with reference to the animal herself. The coat of the animal under those conditions is simply teeming with germ life, and every time she moves there are particles of those which are dislodged and find their way into the open milk pail. I have found them dislodged from the coat of an apparently clean animal at the rate of one to two hundred thousand organisms per minute. On the coating of that animal you have the most ideal conditions for the retention of these dust particles; that hairy coat is teeming with dust and dirt. You can show that by taking some of these hairs and laying them on one of these sterilized plates and you will see there colonies of bacteria growing in large numbers. I have made experiments showing as high as one or two hundred bacteria on a single hair. Every time the animal moves, every time the milker moves against the body of the animal, there is a constant shower of these organisms falling into the milk pail and contaminating the milk supply. A great deal can be done toward diminishing the bacterial content of milk from this source. The custom, for instance, of moistening the udder of the animal is being used regularly in a large number of our more sanitary dairies. This in itself results in a great diminution of germ life in the milk, just as we find that the air in the winter contains less organisms than in the summer and that the air over large bodies of water is relatively free from germ life in comparison with that which is found over the land, so we find that the moistening of the udder will prevent the dislodgement of the germ contents of the animal's hair and diminish the contamination from this source.

Another way is to reduce the area of exposure. The ordinary milk pail offers the ideal conditions for the dropping of the organisms from the coat of the animal; you reduce that ex-

posure to a small opening and you reduce very much the danger of infection in this way.

You may think that when the milk is strained and these particles of hair or physical dirt are removed, that you have excluded the bacteria because you have removed the physical dirt, but such is not the case. These bacteria are so small that they will wash through any strainer you may use, and so, while you may remove the physical dirt, that which is so big that it will not go through the strainer, still these organisms are simply washed through the strainer into the milk supply. Of course, a good many are taken out, a great deal of filthiness is taken out, but that which is of infinitely more consequence is left,—the living germs which accompany that milk,—they go through. The presence of hair or of dirt, does not really make any difference in the milk, it is the organism which the dirt contains which brings on the changes we wish to avoid, but wherever dirt finds its way into the milk, you get bacteriological life with it, and the effect of those organisms is not excluded by straining the milk.

DISCUSSION.

Mr. Marty: I found this last year in using the Wisconsin curd test, that I did not get the gaseous condition, but I got a soft, slimy, mushy curd, with a bad taint. What is the cause of that?

Dr. Russell: The cause of that kind of fermentation is an abnormal change produced in the milk through the presence of bacteria which will cause this slimy condition, but may not cause the formation of gas. In the curd test, you get two conditions,—one, where you have the presence of gassy bacteria, and the other where you have these other conditions, so that when you take the cover off from the curd test and apply your nose, you can tell in a moment that these taint-

producing bacteria are there, by the character of the odor. In all probability, the organism producing that, is one of these sweet curdling fermentations which causes a sort of a mushy curd and may not produce the gas in itself.

Mr. Marty: How does milk have to be handled to kill those bacteria in uncleanly milk cans?

Dr. Russell: You cannot kill them under 140 or 150 degrees Fahr. People think if they scald the milk can, rub the interior surface with hot water momentarily, that is sufficient; but it is not sufficient. You can hold your hand in scalding water for a moment, but unless you hold it there it has no great effect. It is necessary to apply this excessive heat for more than a momentary exposure in order to kill off these organisms. So the approved method is to clean your cans as well as you can, and then turn them over a steam jet and keep them there at least two minutes. In the condensing factories they scald out the cans, and even though it is a short term of exposure, I have found that the number of organisms have been reduced, from ordinary methods of cleaning, from hundreds of thousands down to less than one thousand organisms.

Mr. Marty: Can you obtain milk from a cow on which rennet will not act?

Dr. Russell: Well, there is a considerable difference in regard to the way in which rennet will act. If the lime salts are deficient in milk, that will not permit the rennet to act. I never saw but one sample of that class. You will find sometimes a sample of milk where the rennet will not act because there the lime salts are thrown down by the action of heat.

Mr. Marty: I found two cows last summer where the rennet would not act.

The Chairman: I hope this address will bear its fruit. We might go out and say we do not believe in the law of gravity, but the law of gravity will continue to act. Now, we have heard these truths, these scientific truths which have been ascertained through study and investigation. They are not theories, they are fundamental truths, and they have been

brought to us in such a way that we can understand the conditions under which we, who produce milk on the farm, can produce it under the best circumstances, if we will retain what we have heard and be guided by our own intelligence.

Recess till 2 o'clock.

VETERINARY TOPICS.

THE CARE OF THE UDDER.

Dr. A. T. Peters, Nebraska.

Mr. Chairman, Ladies and Gentlemen: I want to take up this morning, the diseases of the udder. Probably all dairymen know that each year they lose considerable from this source, and for that reason, I have made it quite a study, so as to bring out some method by which we could save a large per cent of these udders that are caked, soon after calving. We find very often a very good cow that has a diseased quarter, the quarter becoming diseased after the first or second calf. The usual methods that are adopted are something like this: They will put on, say a hot fomentation, or a liniment, or some kind of vaseline, and then when the cistern becomes clogged, they will use what is known as a probe, sometimes a darning needle, and with that kind of material, they usually ruin the udder. They will have a large quantity of bloody milk, and then in a little while there is no flow from that quarter at all, and the result is that the cow is spoilt.

Now, the udder is to be considered something like a sponge; it is very porous, full of holes, and for that reason it is a very delicate member and it wants to be treated in that way. I am not a dairyman, but I am told that some milkers have a less gentle touch than others and there is an irritation caused,

and this irritation will produce serious results by clogging up these little tubes; and the result is that the quarter will be gone, if not the entire udder. Now, then, the question is, what to do. You have, probably, tried a great many things, but I have found this the best remedy, and it is something that farmers can do. The Secretary told me yesterday, that the greatest trouble with us veterinarians is, that we try to give the farmers something to do that is hard for them to do. I have here an ordinary milk tube with a little bibb at the end of it. I use a rubber tube something like an ordinary hand bicycle pump. Now, I insert this tube carefully into the quarter that is affected, and I fill it up with air. I do not probe in there with darning needles and other kinds of instruments, but I fill up this spongy organ with air and it is like filling a sponge with water. If the udder is caked, you put in as much air as you can. Then you massage or work with your hand, and work that air all through the quarter, and you will hear the bursting of these little vesicles, these little tubes. You can burst all of them in two or three applications of that kind, and you will generally restore the udder. I have treated several hundred very bad cases, and I know it works all right, and any one of you can easily do it.

Now, where the entire udder, soon after calving, has become caked, we use what is known as the compress. We take a piece of heavy cloth and put it on so that it lifts up the entire udder, and tie it on top. We usually use straw with it, so that we do not chafe the back of the animal. This is to relieve the pressure. You will notice that the udder is very heavy and that the pressure must be relieved before anything else is done. If you want to assist, take several small five or ten pound bags and fill them with bran, keep them hot and apply them to the udder. That is the treatment that we use where there is a very great amount of congestion. Now, those are about the simplest methods of treating diseases of the udder that I can explain—the massage for the diseased quarter, and the compress for the whole udder.

DISCUSSION.

A Member: How do you keep the air in there while you are massaging?

Dr. Peters: Let it exude and then it will fill up again. The udder will retain quite a lot of air, it will come out and you pump it in again and repeat it until you get it all through the body of the udder. Repeat that about every day.

A Member: If all of the quarters are affected, then do you use this same air treatment besides the bandage?

Dr. Peters: Yes. When we have a condition of the udder where right after calving there is severe inflammation, the udder is hard and hot, we milk out the udder and then treat it with air. Fill it with air and massage it thoroughly, and then put on this bandage to relieve the pressure, and along side of it we put on hot applications. If this is in the morning, in the evening we will probably give another application of air and readjust the bandage, and by the next day, you will find a great improvement, and then you will only need to use the air.

Ex-Gov. Hoard: Is there any method of care previous to calving by which you can avoid the difficulty?

Dr. Peters: Yes and no. I have found that this can occur in the very best managed herds. A sudden chill will produce it; a chill that you are not looking for will cause a congestion of these blood vessels.

Ex-Gov. Hoard: You are talking of mammitis.

Dr. Peters: Yes, and for that reason you can avoid it by keeping the animals out of a draft at that time.

Ex-Gov. Hoard: The ordinary stanchion is productive of more injury to the teats and udders of cows confined closely in a stable, than any other cause that I know of. The cow will be lying down and another cow will step over onto her teat or udder.

Mr. Everett: Would you advise milking a cow or a heifer previous to calving, as a preventative of caked udder?

Dr. Peters: I have made some observations at our own station, and I thought that the previous treatment of the udder was beneficial, but to tell you the truth at this time, I have never relied on that. I would, however, suggest that the udder should be massaged before calving.

Ex-Gov. Hoard: You would not want to do it, however, unless it was a very severe case.

A Member: What would you like to use for greasing the udder?

Dr. Peters: You mean while it is affected? Any oil will do. The reason I do not like oils or medicines, is that they are apt to taint the milk if there is only one quarter affected, particularly in the warm days, because it soon becomes rancid. I would advise using carbolized oil. This other method has given us the very best results, this filling the udder with air. You see you are breaking up these little tubes that have been formed into cysts. The inflammation has set in and you are breaking that up, and you are not breaking them up with a knife and causing internal hemorrhages. You are breaking them up, bursting them from inward outward, and then by massaging outside, you are opening them up just like a sponge you fill up with air.

Ex-Gov. Hoard: You are trying to establish circulatory functions of the udder?

Dr. Peters: Yes, without the knife. We have had occasion to use this treatment on a quarter that no one could do anything with for three months. The first time that I inserted the tube, I could only get it in about an inch and a quarter. I kept working at it and it took us about a week before we had it thoroughly inflated. Then, about in twelve days, with the constant working of the quarter, we produced a flow of milk. Of course, in that case, the other three quarters were entirely healthy.

The Chairman: Is there any danger to be feared by the use of the milking tube?

Dr. Peters: I wouldn't want them to use this long one.

We use that for our own purposes. But the average man couldn't do any damage with a tube of this size. It would be well to sterilize it. Our practice is, to throw this tube in boiling water and leave it there about ten minutes, then cool it and use it. We used to use sterilized air, but using it on so many animals, we found that it was all right without sterilizing.

MILK FEVER.—INFECTIOUS GARGET.—TUBERCULOSIS.—
Cow Pox.

A Member: What do you do in case of milk fever?

Dr. Peters: We use a simple treatment. It consists in injecting a solution of iodide of potash in the udder. We also use this air treatment, and then we have used injections of salt solution. That is injected with a quart of water, normal temperature, into the jugular vein, and that gives good results.

Ex-Gov. Hoard: What is the cause of milk fever?

Dr. Peters: I don't know.

A Member: What do you do in a case of severe garget?

Dr. Peters: We use the air entirely.

A Member: Are you not afraid of getting the udder infected?

Dr. Peters: The only way that you can infect the udder is by using a dirty, infectious tube, and that of course you want to avoid. With the many animals that we have used it on, we have never had any bad results.

Dr. Russell: In a case of infectious garget, do you think that would be an efficient remedy?

Dr. Peters: I don't know; we haven't had very much infectious garget, but I would certainly use it, and would then suggest treating the udder by injecting through a milk tube, a disinfectant solution, say permanganate of potash, or a weak solution of carbolic acid. Milk it out again and then use the air thoroughly.

Question: In your treatment of milk fever, how often do you use it, and how much?

Dr. Peters: That depends on the severity of the case. Sometimes we only have to use it once, sometimes more than once. It depends somewhat upon what medicine you have given her. The average man has a prescription. There is always some man in a neighborhood who is ready to prescribe, though it may be nothing more than tincture of asafœtida and aconite and the like, but he would like to have that cow drenched with that dope. Now, here is the danger; animals in that condition cannot use the tongue, and it and the palate are paralyzed. Now, if you go to work and drench that cow with any remedy of that kind, it will not go down to the stomach where you want it to go, but it will all enter into the lungs, it will go right down the windpipe, and if you call a veterinarian later on and he is not very cautious, and he fails to ask you the question as to what you have given the cow, he goes right to work, gives her the simple treatment and in a few hours she is up; but it may not be uncommon to find that cow will die within three or four or five days, not from milk fever but from the results of that drench. There is no way of expelling it from the lungs. I dare say there are men among you who have had cows get up all right in four or five hours, after receiving this simple treatment and you wonder why she died a week afterwards. Now, if you have a cow that comes down with milk fever, don't drench her. If you don't like to call in a man who knows something about these treatments, and prefer to rely on yourself, don't drench her.

Ex-Gov. Hoard: Put them in a comfortable place and let them alone and they will get over it alone sometimes.

A Member: How much iodide of potassium do you use?

Dr. Peters: About fifteen grains and about a quart of water, and if necessary, repeat the treatment three or four hours afterwards, always milking out what is in the udder beforehand and give plenty of air. We have had very good success at the station and other places where we used nothing but air.

A Member: Don't you think you could prevent milk fever by not drawing the udder too clean the first time, not letting the walls of the udder come together when it is in a feverish state?

Dr. Peters: You have got me talking about a disease that I don't know the cause of. You wanted me to come here to tell you what I know. Now, when I don't know, I am willing to tell you, and in this case I don't know the cause. It does seem, however, that when the animal is kept in a good, laxative condition, there is less danger. The best pathologists on this side of the water and on the other side do not agree as to the pathology of this disease, but we have found a treatment and really a treatment that goes against all theories that have ever been suggested as to this disease. The men who have been using this treatment, injecting water and air into the udder, have found that we have the best results where we use a little water and a great quantity of air and massage it well. Sometimes, with not the proper use of the water, there is now and then a case of garget resulting and so for the last two or three years I have had just as good results without the water, or the potassium either.

A Member: Would you put ice on a cow's head that has milk fever?

Dr. Peters: Yes, I think I would if it was handy.

Question: In a case of milk fever, do you give any stimulants to the cow?

Dr. Peters: If the heart is weak, we give a hypodermic injection of strychnine, but we do not undertake to get anything into the stomach. For the last five years we have never given anything unless the owner had already done so beforehand, and then I made doubly sure that it did not go down into the lungs.

Ex-Gov. Hoard: Isn't it a fact that there is a great deal of milk fever in the summer time when the cows are running on grass, and it is from the laxative condition?

Dr. Peters: Yes.

Ex-Gov. Hoard: One reason is that these cows are very apt to lie on the damp ground immediately after calving; they get a chill and that starts this process of congestion.

A Member: I have had some good results in taking a cow off the fresh feed in the summer, taking her in and putting her on dry feed.

Ex-Gov. Hoard: Tell us something about the tuberculin test.

Dr. Peters: I think that every dairyman should use the tuberculin test. I am not acquainted with your law here, but I think it the best thing to do. If a dairyman is not using the tuberculin test, he will sooner or later have bad results and he can never rid his herd from this terrible scourge of tuberculosis. We are testing a great many herds in our state, and we do not pay for any of the animals,—the people are willing to have them destroyed. In a great many instances they send them to the market, subject to inspection. We teach our boys, who are attending the Agricultural College, how to use that test, because in a large measure the average veterinarian has not the time to make this test, and in our state they are merely called in for consultation and to O. K. the test that is made. The people are co-operating with us. They know what has been going on in the Eastern states, and they do not want that same kind of a dose repeated in Nebraska, and so they are testing their herds, and there are a great many who have fine herds and are using what is known as the Bang system. Supposing that they have a very valuable cow that has reacted to the tuberculin test. They see that the cow is in pretty good condition and they don't think she ought to be killed at this time, and yet they know she has tuberculosis, and so she is put in a separate place, away from the others and the minute the calf is born, it is taken away and raised on hand separator milk. This little calf is tested every three months and in that way, they can build up a very fine herd from some of the old standbys, although they have tuberculosis.

Ex-Gov. Hoard: That is based on the theory that *per se* the disease is not hereditary?

Dr. Peters: Yes, it has been thoroughly demonstrated that the disease is not hereditary, though it is absolutely infectious, and if you take the calf away from its dam, you can build up a good herd with impunity. In Canada, some of the best Short-horn and Hereford herds are built up in that way.

Sec'y Burchard: In some parts of Wisconsin, they are troubled with what they call cow-pox pretty badly. Sometimes it is on the whole udder, and it gets so bad it will sometimes drop off, they say, a malignant cow-pox it is said to be. What can we do with that?

Dr. Peters: Well, I would suggest on the outside of the udder to treat externally with a good antiseptic solution. In such a case you want to be very careful of your hands that they do not become infected. I would suggest if there is inflammation of the udder that you put on this bandage I have described, then use an ointment composed of some charcoal and some carbolic acid. Vaseline, lard that has no salt in it, and charcoal and carbolic acid, give good results. Treat it antiseptically, absolutely. This ointment should be washed off with a liberal amount of good soap and hot water and then dried, then the ointment put on again. I was asked to say something about ring worm. There is a little scummy fungus growth that comes on calves. This is an infectious disease for the time being, and the simplest remedy for that is any kind of oil. Just grease well the parts of the eye with it and that stops the fungus growth.

Ex-Gov. Hoard: I use lard. The scabby eye is shed. It begins on the neck and goes back on the body if it is allowed to grow, and sometimes it is very infectious.

A Member: Has a decision been arrived at as to whether tuberculosis is contagious to the human?

Dr. Peters: Yes, it is.

The Member: Has not Dr. Koch said it is not?

Dr. Peters: No; the way he said it, caused a good deal of confusion, and the press has taken it up and made all it could of it. The scientific press and all the experiments taken up in Europe and in our country have proven without a shadow of doubt that Dr. Koch is mistaken. I think I told you that the calf should be immediately separated from its mother and fed with milk from other cows that have not reacted.

Mr. Goodrich: In the Michigan Agricultural College they

have fed such a calf from its mother's milk in a good many cases.

Dr. Peters: The other is much safer.

Question: Is there any way we may know of the existence of the disease without that test?

Dr. Peters: There is a simpler test than that.

Whenever cows cough quite a good deal and there is a splattering on the stalls and walls, look out for it. I have taken little samples of this material and with a microscope have examined it, and to my surprise we have found the tubercle bacilli in that way. In that case we did not need the other test. You could send samples, or a man could go through your whole herd, without putting your animals off their feed.

I am very thankful for the very kind attention you have given me, and can only say to every one of you, should you ever come to Nebraska, we should be glad to show you something in

AFTERNOON SESSION.

Convention met at 2 P. M.

The President in the chair.

The Chairman: We are here for the closing session. The representatives of the Dairy Association came to Platteville last fall, and we were met by the representative gentlemen of the city who were interested in securing this meeting to be held here. We stated to them frankly what was needed, a good hall, lighted, warmed, cared for, a room for exhibits, and we wanted a good attendance; we wanted one evening for the banquet and one evening session, and that it was customary for the Association to exact a guaranty of at least two hundred \$1.00 memberships, but in this particular case we were frank to say that if the committee would give us evidence of an earnest

effort being made to secure a large attendance, we would not exact the two hundred membership guaranty. I am pleased to say that every promise made by that committee has been amply fulfilled. I want to say also that I have had the honor of presiding over a great many gatherings, and never in all my experience have I presided over a body that gave such perfect attention and showed such orderly conduct without any effort on the part of the presiding officer, as has this audience, which has greeted us here from day to day. They have shown intelligent appreciation, and I believe that you will agree with us, that you have had some excellent papers and discussions. The members of the Association who come from abroad, sometimes known as the "Old Guard," are more than satisfied with what Platteville and the surrounding community has done, and we hope that you are reasonably well satisfied with the program which has been provided for you here, and that this community will see beneficial results from this meeting.

CHEAP FEEDS FOR OUR COWS.

Charles L. Hill, Rosendale.

In these days of sharp competition in all lines of business, any man who achieves greatness is either a manufacturer, or a financier.

I take it for granted, that to-day any man who calls himself a dairyman, is a financier, in that he has learned to "water his stock," but are we manufacturers, looking for every way of cheapening production.

I was talking recently with one of the leading dairy authorities of America, and he said that if it had not been for the passage of the anti-oleo bill, that dairy products would, by this time, have been cheaper than ever before, and that prices would continue, even now, to average lower year after year.

I am inclined to disagree with him, but if what he says is true, it certainly behooves us as dairymen to be planning for the drop, and if it does not come, we will be hundreds of dollars ahead.

In talking over this subject of cheap feeds together, I wish it were possible for us all to look at it just as the manufacturer in other lines would look at it.

Do you think if one of the great vehicle factories was short of good spoke lumber, they would say, "We cannot afford to buy any more of this while we have on hand more box lumber than we can use this year; we will use some of this for spokes."

You would say they were crazy, but I say, no more so than some of us farmers, who insist that we must feed what we raise, regardless of its value or suitability.

Or worse yet, when grain is high, to sell it and let the cows go without.

Do not lose interest in what I may have to say, because you think I am going to advise you to buy a lot of high priced feeds, regardless of conditions.

For a number of reasons, it ought to be the rule on every farm to keep no more stock than can be fed a bountiful supply of home grown roughage.

One of the principal reasons for this is, that it is next to impossible to buy good roughage, and then it usually costs more in comparison to its worth than does grain feed.

Still another reason is the cost of handling it.

No dairy farm is fitted for a successful year's work, without an abundant supply of, and large variety of, good roughage; and careful students of dairying are, each year, coming to believe more in the necessity of increasing the supply, quality and palatability of our rough feeds.

Each year's experience makes me more certain that in no other way can we supply the bulk of the roughage so cheaply as by the use of the silo.

We have fed silage every year since 1888, and nearly every

summer, for the past ten years, and I often remark that if we could not have silage, we would want to quit dairying.

A careful record has twice been kept of just what it cost us to produce silage, and I think you will be interested in the figures.

Ten acres:

Plowing: Four days, man and team.

Harrowing: Two and one half days, man and team.

Manuring: Eight days, two men and team.

Planting: Two men one day.

Marking: One day, man and team.

Replanting: One day, one man.

Cultivating:

Roller: One half day, man and team.

Dragging three times: One and one half days, man and team.

Cultivating four times: Six days, man and team.

Total cost of this work: Thirty-four days for man, and twenty-three and one half days for team, at \$1.25 per day for man, and \$1.00

for team,	\$ 66.00
-----------------	----------

Seed corn	3.12
-----------------	------

Putting in silo	42.80
-----------------------	-------

Manure, one hundred seventy-five loads, at 25 cents	43.25
---	-------

\$155.17

This would make the cost of the silage about \$1.00 per ton, where the yield was fifteen tons per acre, but our average yield of settled silage will not be as high as fifteen tons.

On the other hand, I have charged more for manure than most of you would have done.

The prices for labor vary so that no figure can be given that will hold true for any one year.

After a little figuring, you will readily agree that in no other

way can roughage be produced so cheaply, or the corn crop be taken care of so easily.

I want the silage made of corn that is mature enough to be cut for grain.

The past year, we sowed soy beans with our corn, and are very much pleased with the results, and shall try it another year.

We mixed the soy beans with the corn and planted in hills.

Plan your silos large enough to feed twice as much stock as you now have, both summer and winter, for when you find how much stock you can keep on a small area, you will at once keep more cows.

When you have become convinced of the value of silage for winter feeding, you will have learned but half the story, for a dairyman with plenty of silage for summer feeding, will worry but little about drought, and resulting poor pastures.

Although my personal experience thus far is not encouraging, I am convinced that as an aid to cheap production of dairy products, we must have alfalfa hay.

I am sure we can grow it, and will not stop trying till I succeed.

In lieu of this, we ought to have, and can have, plenty of early cut, shade cured clover hay.

Nothing but alfalfa is as good, although peas and oats, cut early for hay, make a very good substitute; but remember that you can get but one crop a year, and it does not leave your land in as good condition as the clover, and affords no pasture.

You see, I have made no place for timothy hay, and there should be no place for it, as ton for ton, it is no better than good corn fodder, and you can raise three times as much per acre of the latter.

In many sections, beet pulp could doubtless be profitably used; and other dairymen insist they must have roots, but you will feel little need of them if you have silage.

For summer feeding, while a complete system of soiling would be profitable, still with the present scarcity, inefficiency and high price of labor, most of us will pasture our cows in summer.

We all ought to prepare for a drought by having on hand plenty of soiling crops to supplement the pasture.

For this purpose, nothing is as cheap as corn silage, but even with this, a succession of other soiling crops will pay well.

Rye, clover, peas and oats, sorghum and corn make a good succession.

Prof. Shaw, in an address on soiling crops, at Madison last week, spoke very highly of rape; and said they were much pleased with it at the Minnesota Station, and by feeding it after milking, were unable to detect any taste in the milk.

On our farm, if the pasture is good, we find little use for any other rough feed except corn silage.

Our own farm is cut up by a stream, so that it is necessary for us to have a permanent pasture, that is largely blue grass and white clover; and to get the best results from such a pasture, we find it wise to top dress it with coarse manure every two or three years.

If our farm was all tillable land, we would then use a piece of land only one or two years for pasture, sowing timothy and orchard grass with our clover, cutting one year for hay, and pasturing the next year.

- Of those grain feeds grown on the farm, those most often fed to cows, are oats, peas, corn and barley.

Corn is so cheaply provided for cow feed in corn silage or corn fodder, that it will never pay to husk, shell, and grind it.

Barley is often raised for feed, but unless the price is low, or the grain dark in color, or light in weight, the cows seldom see any of it.

I have often tried feeding oats as part of my ration, but never find it pays, unless they are worth less ton for ton than bran.

In those sections of the state where peas grow well, they will be found a very profitable feed, unless the price is unusually high.

We find it more profitable to sell our grain, wheat and oats, and buy some of the feeds that are by-products of the mills,

We depend almost entirely on bran, supplemented with O. P. oil meal and gluten feed.

We not only like the bran as feed, but the manure from it is worth nearly twice as much as from oats or barley, and more than twice as much as from corn.

At the prices that maintain this year, old process oil meal is probably the cheapest feed we can buy, but of course, we cannot make this the entire grain ration.

Nearly all winter it has been offered at \$22.00 per ton, delivered anywhere in Wisconsin, in car lots.

Because these are the cheapest feeds we can buy, does not prove they are the cheapest for you.

Local mills, or dealers will often sell rye or buckwheat middlings, malt products, or other by-products far below their value.

Because a feed sells for a low price, is no proof it is cheap.

In my locality, I have known farmers, this winter, to pay \$12.00 per ton for buckwheat hulls, worth no more than straw.

As true producers, we must constantly study our local conditions and prices, and be governed by them in our feeding operations.

We are growing, only when we are able, year by year, to cheapen the cost of production of a pound of butter fat in our dairies.

No other state can equal Wisconsin in its ability to produce and buy cheap feed.

Let us live up to our opportunities.

DISCUSSION.

Mr. Hardy: We have but few silos in this neighborhood, and we want some cheap feed to use until we get to the silo.

Mr. Hill: It will pay you to get right to building your silo, so as to have it for next year, anyway. With that, my own endeavor would be to have corn fodder to feed in some

other way. I would not, under any consideration, for cows or any other kind of ruminants, husk, shell and grind corn to feed. I would by all means have it fed in corn fodder, outside of the consideration of the question of expense.

Secy. Burchard: While I agree most thoroughly with what Mr. Hill has said about the silo, at least for winter feeding, and am thoroughly convinced that any man in Grant county can well afford to spend, during the next summer, the necessary money for raising the corn and building a silo and filling it, yet if he doesn't think that way and wants to have a neighbor or two experiment before he goes at it, the next best thing that I know of, is to grow corn fodder. Now, that does not mean corn stalks, it means corn fodder. They have tried that up in Minnesota, and they are very much pleased with it,—not to the exclusion of the silo, but to fill in perhaps, in addition to the silo. I think Mr. Hill will agree with me, that sometimes it is not advisable to use silage exclusively for roughage; that the animal needs some dry forage with the silo; and to prove that, you can, any of you, go into the best pasture that you ever saw, filled with cattle, and if you drive through there with a load of pretty bad straw, every animal in the pasture will run after that load of straw and be hungry for it. They tell us, moreover, that out in the western country where they sometimes try to pasture alfalfa or clover, that the most sovereign remedy for what would be serious bloats in their animals, is to have a stack of straw or old hay, where the cows can go and help themselves; all of which proves that in connection with silage, you want some dry forage.

Now, to grow this fodder corn, they first plow the land and till it. They cultivate the corn largely before it is planted, they cultivate it again and again and again, and when it is thoroughly cultivated along the latter part of May or the fore part of June, they go on and plant this corn, sowing in drills very thick and not very wide apart. They use their ordinary wheat drill seeders and they shut up one or two shoes, leave open one and plant in drills, leaving but a small space between

the rows. Before the corn is up, they go over it with a drag, cultivating it again. Then, as it is coming up, they drag it again, and pretty soon it gets so high they don't need to do anything more with it, they just let it grow, and it is thick, and it makes a very fine quality of corn forage. It does not ear very much. They cut it and cure it as we would ordinary grain corn, putting it up in shocks in the field to dry it out thoroughly. It is substantially corn hay.

The Chairman: What do you say to amber sugar cane, sorghum?

Sec'y. Burchard: I don't say anything about it, simply I don't know anything about it, and I never had an opportunity to talk with any one who could satisfy me entirely in regard to it. I was talking with Dr. Peters about the poison that comes from sorghum. He was the first man to ascertain just what that poison was; it is prussic acid. and he says it develops, not because it is second growth, but it may develop in the first growth, and it is developed by the plant being stunted by drought or otherwise, and then a little something exudes right on the stalk where the leaf comes out, but he says furthermore, that if you take that sorghum and cut it and let it mature in the windrow, or otherwise, there is really no danger from it. Perhaps sorghum would take the place of corn, but I have some doubt about it. Corn is king with me, and I don't like to yield allegiance to too many sovereigns. I want to ask Mr. Hill why he has not been able to succeed with alfalfa.

Mr. Hill: We haven't tried it but once, and I did not lay it then to the alfalfa, I laid it to myself largely; although I followed out the best advice I could get at the time. I made the mistake of endeavoring to cut a crop of oat hay to keep the weeds down, and I did get a partial stand of alfalfa. I think I had the land thoroughly prepared, but I found when the next season came on, that not only was the alfalfa winter-killed, but the piece was covered with June grass, so there is more June grass than alfalfa, even where the alfalfa lived.

I am going to try it again. We got an excellent stand; it was pretty nearly eighteen inches high, for a long while it was higher than the oats. I think likely, we let it stand too long before the first cutting and still we cut it long before any grain formed.

Mr. Wentworth: Did you sow the seed with the oats or some weeks afterwards?

Mr. Hill: We sowed them at the same time.

Mr. Wentworth: Joseph E. Wing is pretty good authority upon alfalfa, and he directs it should be cut three or four times the first year, and he leaves it upon the ground.

Mr. Hill: I am going to try it this year, and we will mow it two or three times, never mind the weeds, and see what happens. I hate to see the weeds, but we are going to get alfalfa.

Sec'y. Burchard: Was this on ground where you had previously raised clover?

Mr. Hill: Oh, yes.

Mr. Wentworth: Don't you have to inoculate the ground?

Mr. Hill: It has been said so a number of times; but I have been down to Fort Atkinson a dozen times in the last two years, more to see those alfalfa fields than anything else, and I am convinced we can have it all right, and I am going to have it, that is all there is about it. I visited a number of those farms at Fort Atkinson last week, and on the Governor's farm I saw most all the animals eating alfalfa, pigs and cows, horses and everything else. Mr. Telfer has got a little piece of alfalfa and he cuts four big growths off of that; he gets pretty near all his roughage off that little patch.

A Member: Why do you prefer alfalfa to clover?

Mr. Hill: Because it has a greater yield on the same amount of land, and then it is much higher in protein. There is one objection to it, and that is you must let it lay several years in one place.

Sec'y. Burchard: Alfalfa hay contains fifteen per cent more digestible nutriment than common red clover hay, in addition to its being much higher in digestible protein.

Mr. Heany: I tried alfalfa a year ago last spring. I sowed two acres in rich soil, and sowed oats with it. The object of sowing the oats was to have an earlier feed than the alfalfa could afford. During the season, that piece of bottom was flooded and the alfalfa turned sort of yellow, and we concluded that was not the right place to sow alfalfa, and I have prepared another piece of ground on higher soil. Now, I want to ask you, will it pay to put into the silo, corn that yields fifty bushels to the acre?

Mr. Hill: I couldn't answer it any way but, yes, because our corn always yields more than that, and we put it in the silo every year.

A Member: What is the difference between silo and silage?

Mr. Hill: The silo is the building in which the silage is made. Silage is canned corn, cut stalks and all, when it is green, and put in an air-tight building that seals itself.

A Member: If you raise more than fifty bushels to the acre, and you figure the corn at 60 cents a bushel, I wish you would make a comparison between the ensilage and the corn.

Hr. Hill: The larger the yield of corn, the more valuable the silage is, and the fewer acres it takes to fill the silo.

The Chairman: When you have it in the silo, you have it husked, and shelled, and ground, and already for the cow.

Mr. Hill: A gentleman asks what our silos cost. They are old wooden silos, built in 1888, in a bay in the barn, and they cost not to exceed 75 cents per ton capacity. One of them has been relined once with half-inch lumber. It cannot be built for any such price at the present time, and if we built another, it will be built to cost two or three times that, and will last for ages, built of stone or brick,—some material that will not have to be replaced.

Mr. Goodrich: The impression seems to be, that if you put good corn, running fifty or sixty bushels to the acre, in the silo, that that corn is not worth as much as if you husked it and fed it and ground it. Is that the idea? It is worth more than you can get out of it by drying and grinding it, because

it is in a condition to be better digested. A man way up in, well, somewhere in Wisconsin—

Ex-Gov. Hoard: Up in G—.

Mr. Goodrich: Yes, up in G—, built a silo, and he had a big one, and he had a big crop of corn, and when he went to put the big crop of corn in the silo, it took all his corn, and he had ninety hogs to feed. He put it in whole, and husked the corn out and fed his hogs, and he never in his life, made such rapid growth on hogs, never made so much for his corn, as he did when he fed it out of that silo. They can eat more, it was softer, more easily masticated and easier digested. Nobody nowadays, disputes that corn can be put into the silo cheaper than any other way.

I want to say a word about alfalfa. If you are going to cut it for hay, cut it early, that is, as quick as you see some of those little purple blossoms coming out; cut it, and let another crop grow up and cut that early. If you put it off till next week, it will get woody, and you will say it isn't worth much. Cure it just the same as clover, and it will cure just as easy.

Mr. Hill: I want to say another word on this silo question. The cost of putting that ten acres into the silo was \$42.80. We hired that work done and so we know the cost, and I defy any man to handle ten acres of corn and get it ready to feed, shelled and ground, for anywhere near \$42. In those figures I do not figure the cost of the machine nor the rent of the land.

A Member: Did you ever feed this silage to hogs?

Mr. Hill: Not very much. They don't eat it up clean.

The Chairman: I am going to call on Governor Hoard to finish a speech he commenced a few days ago on Alfalfa.

Ex-Gov. Hoard: Gentlemen, when I was cut off in the flower of my youth, day before yesterday, I had a whole lot of stuff laid up against this audience that I wanted to fire at them. I was talking to you about the preparation of the soil and about sowing alfalfa. Now, I want to talk a few minutes upon the nutritive value of alfalfa. I never saw

such a plant. I stand in profound amazement before what that plant can do. I have, for instance, two hundred and fifty, or thereabouts, of buff Plymouth Rock fowls. They are on the alfalfa all the time. Last winter I wintered nine brood sows upon nothing but alfalfa hay. I did it of choice, in order that I might have the finest of pigs, and I got them. For years, I have been dissatisfied with the outcome of my pigs, that is, they didn't seem to be doing well, a good many of them. I kept talking to my foreman, "You are feeding too much corn," because I don't think these mothers should have too much corn, but finally I took the sow by the ear, figuratively speaking, a year ago.

Mr. Goodrich: Didn't you take August by the ear?

Ex-Gov. Hoard: No. August was a pig of another breed. I said, "August, I want you to put these nine sows on alfalfa hay (not give them a spoonful of corn) and their drink," which consisted of water and what little skim milk was left over after feeding all the calves. I went to El Paso, Texas, to stay for the winter, with my wife, and I kept writing to August, asking how the sows were getting along. When I asked him to put the sows upon that feed, the man was thunderstruck, he says, "They will starve to death." I said, "I don't think so, I am told better by men of judgment, in Colorado." After a while he commenced writing me, "I am astonished, the sows are keeping up in splendid condition." Mind you, they had nothing but alfalfa hay forked right over to them, and they ate it as greedily as a horse, and they are eating it this winter, six of them. Those nine sows had seventy-eight pigs, but one lost in the lot, and I never saw so bright, hearty, keen little fellows in my life. I saved seventy-five of the seventy-eight, fattened them and sold them last fall. The mothers gave milk like a cow, and they came along in fine condition. I think it is the most valuable discovery I ever got hold of in handling brood sows. I have fifteen pigs of last October that I am carrying through the winter in order to have something to feed my skim milk to, and those pigs are getting alfalfa hay, and it would do

your soul good to see those fellows when the man throws a couple of forkfuls over to them. They get into it, frisking their tails, and they come out with a mouthful, eating that hay in a manner that would strike you with a great deal of conviction.

Now, alfalfa hay analyzes about eleven per cent protein; bran, twelve; only one point above it; clover, 8.6; timothy, 3. Now, you men all over Wisconsin to-day are thinking that timothy is first class hay. The poorest hay I know of for the dairyman to-day is timothy, except it be marsh grass, and that makes better bedding. Now, timothy is down to 3 per cent of protein. That is the element that makes the red blood in cattle, makes the muscle, makes the casein in the cheese, that element called protein. Do you see now why alfalfa does such splendid work.

You must remember, farmers, that you cannot affect the market end a minute, as a rule. You are a patron of a creamery. Your butter sells just the same as all the rest and you cannot make any difference for yourself in the factory, you are powerless there, but at the farm end you are supreme. You can reduce the cost of making of the milk and every penny that you reduce the cost is a penny added onto the other end. Now, I have made up a ration, having all these things in view, and my ration costs me twelve cents a day. I am a pretty strong feeder; usually I feed my cows about 8 to 10 pounds of a grain ration a day. Now, what do I feed that comes to 12 cents a day—I couldn't find a man about me among the patrons of the creamery that was feeding for less than 16, up to 18 and 20 cents a day. My ration consisted of 35 pounds of good corn ensilage, going 75 baskets to the acre and more, 35 pounds of corn ensilage at \$2.50 a ton; ten pounds of alfalfa hay at \$10 a ton; 4 to 5 pounds of bran at \$15 a ton. That makes a ration of 12 cents, and the cows were earning about 30 to 35 cents a day. Now, you see how I helped myself; instead of feeding 8 or 10 pounds of patent bran, I was feeding only 4 or 5, cutting the cost 50 per cent there, and all the rest of the ration I produced on the farm. Now, the creamery paid me within a few cents of \$70 per cow for the cream of those cows. The cream is sep-

arated on the farm, the skim milk is fed warm and sweet to the calves and pigs twice a day, and the creamery paid me within a very few cents of \$70, call it \$70. The cows cost me \$30.00 to keep them. So that at the farm end of this proposition, things were so worked that my cows were earning me \$40 above the cost of their keep. Besides that I made the skim milk worth to me from \$20 to \$25, so that those cows earned me about \$90 to \$95 per cow. Yet when I talked to my neighbors, some of them being men of little faith, not even as much as a mustard seed, these men will say to me, "Oh, yes, Hoard, you can do this, but I can't." You hear them say, "I can't afford it." There is only one thing such men can afford, and that is poverty,—poverty not of the pocket alone, but of the brain, poverty of the judgment, poverty everywhere. You know if you are down at the bottom of a well, you can see the stars in the daytime, but what else can you see? You come up a little way and you see a little more. You are down in a hollow and your horizon is very limited. Stand up a little higher and you can see farther and farther.

Now, alfalfa is a fine forage plant; in my estimation, the most valuable thing that has ever come to Wisconsin, and it has come to stay, I hope. Give me corn ensilage, corn and alfalfa and I will solve the problem of successful dairy farming and pig raising, and I will beat any man on earth that undertakes to do this business without the two. Everything on the farm eats it. My six horses I feed only a half ration of grain when I feed alfalfa; I cut down from 16 quarts of oats to 8, and they hold up in condition and do their work. Let these things make together for truth and righteousness on the farm. You know I am very fond of quoting the Bible on this proposition, for I have discovered that the Bible and I agree a great deal better when I know more about these things.

A Member: Will alfalfa grow on rich land?

Ex-Gov. Hoard: The richer the land, the better, but there are some things you must look out for. You must not sow it where the water table is within fifteen feet of the surface; that

is, if you meet water in digging a well, you must not sow it where the rock is within that distance; you must not sow it where it will overflow. You better always sow it upon a piece of side hill land where the water will run off rapidly and not form little ice caps in the winter. Pick out just as rich a piece of land as you have got, plow it thoroughly, disc it once each way, harrow two times and then look it over and to be sure you are right, harrow it another time, and thus work up that soil just as fine as you can. Remember that the alfalfa seed is a little larger than clover seed, and will not grow as clover seed grows, but it must have a fine seed bed, as fine as for oats and better indeed. Then sow on about thirty pounds to the acre. Alfalfa seed is worth about 16½ cents a pound. If you do not sow but one acre, sow it right; don't be afraid of your seed. Don't think that it will be wise to sow two acres and put on ten or fifteen pounds of seed. You don't make anything that way. I do hope every farmer here will try it this spring, just an acre or two; do that, that you may get acquainted with the plant and as you familiarize yourself with it, you will know more and more about it, just as every man gets real knowledge from doing a thing himself on his own farm. Remember farms differ, and alfalfa acts differently on farms not a mile apart, but make a trial of it. I can't find home grown seed, so of course I can't buy it. I would advise every man to send down to Armour & Company or Swift & Company and buy about two hundred pounds of muriate of potash and put on your land. It is a wonderful responder to potash. I bought seven or eight hundred bushels of ashes in Fort Atkinson, paid ten cents a bushel for them, and hauled that out onto my alfalfa field. It is very fond of lime, and wood ashes contain a large amount of lime.

A Member: How would it do on soil that has a gravel bed two feet below?

Ex-Gov. Hoard: If it has plenty of good soil above to give it a start, it will grow.

The Member: Is there more than one variety?

Ex-Gov. Hoard: Secretary Wilson sent Prof. Hansen of

Dakota, to Russia, a very cold country, to investigate. He heard they had a variety of alfalfa, the Turkestan, that was very hardy, and he got 2,000 pounds that cost a dollar a pound. He sent me sixteen pounds of that, and I sowed three quarters of an acre, or a little more. That alfalfa is a little lighter in color, but you can hardly tell it from the ordinary alfalfa. I don't know but what it has lived there long enough to get acclimated so that it is more hardy, I can't say. I sowed that on a piece of land where the water table this last year has come to within seven or eight feet of the surface and it begins to sicken. I am learning all the while. It is a good plan to sow it thickly and one reason is that it will form stools if it isn't thick. It should always be cut early, just as quick as the little blue blossoms show, because you will get a great deal better crop the next time.

Now, just a word about curing. It is as difficult a crop to cure as clover would be in June. Go to your merchants and buy A sheeting, forty inches wide, tear off forty inches long, and make a hay cap. Tie a string to each corner, of stout cord; take old horse shoes, cut them in two, punch a hole in each half up near the cut end and tie in that half of the horseshoe to each corner, and that constitutes a weight. Lay them on the stone-boat with the weights all to one side, drive into your field and cap your alfalfa, just the same as you should do with your clover. Cut it and rake it into windrows just as quick as it can possibly be well handled by the rake. Cock it up into about one hundred pound cocks and throw over them these haycaps. You should cure your clover and your alfalfa in the shade, in the cock, and you will make nearly fifty per cent in the value of it. You will avoid losing a lot of leaves of your clover and alfalfa both, and they will be very much finer. Every second day while it stands there in the cock—and my own stood this last summer during three tremendous rain storms, some of it,—every forty-eight hours let the men go into the field, stick their forks into the cocks and pull them to you the width of them onto fresh ground and that will prevent smothering the alfalfa

underneath. When it comes a fair day, throw off these caps, open them out and give them air. You want this clover or alfalfa to go through the first sweat in the cock, and then you are safe.

Now, I want to tell you what it means to be safe. You know that that magnificent \$30,000 barn of Mr. Morgan's down at Beloit burned up last fall, because a lot of stupid hired men put green clover into that barn and by spontaneous combustion, it ignited and burned up. Now, if it passes the first sweat out in the air, there is no combustion in any secondary sweating or heating. You can dump it into the barn when it is quite limp, the leaves all on it. It will heat up just a little, but it will go on and come out all right. I have a thousand of these hay caps, and I would no more think of making fine hay without them than I would think of mowing without a mower or a hay rake. It is part of my hay-making machinery, and they cost me 12 cents apiece. Now, you can have all this information, which I have worked out, very cheap, although it has cost me something to acquire the information. I know of several men who for the lack of these hay caps last year, spoiled two crops of alfalfa and only saved one.

A Member: Would you mow it the first year?

Ex-Gov. Hoard: My judgment is to let it alone. The weeds will come up of course, but never mind. They say mow it two or three times to kill the weeds but there is some risk that you will kill the alfalfa while you are killing the weeds. Down South, in Ohio, where they have a milder climate, it will stand such usage, but it don't seem to stand it in Wisconsin; we must handle alfalfa according to our climate. The second year you commence and cut it, you cut it three times and the fourth crop you let it grow in a heavy growth to go through the winter with and leave it there.

Another important thing, never allow a hoof on alfalfa as long as you live, except what is necessary in hauling it. It is very sensitive at the crown, any pressure hurts it. After the first crop is hauled off of my alfalfa field, I can trace where

every wagon wheel pressed, in the second crop and the third crop. You will see a little track right through the fields where they went. Therefore, horses and cattle are very bad on it.

FEED AND CARE OF THE DAIRY COW.

J. R. Danks, Madison.

Nearly all progressive dairymen realize that the feed and care of the dairy cow is very closely associated with the amount of butter produced, and as the profit or loss on each cow is largely determined by the butter production, it will readily be seen that the subject is an important one, as it largely effects the welfare of all dairymen.

One of the first lessons to be learned in feeding the dairy cow is that in order to get the best results from a herd it is necessary to study the individual peculiarities of each and every cow in the herd, and then try and feed them according to their individual needs. It is simply impossible to get the best results from a herd of cows by feeding them all the same ration.

In formulating a ration for the dairy cow the following factors are very important and should always be taken into consideration, viz.: 1st. The amount of butter she is producing. 2nd. Her condition or live weight. 3rd. Her temperament or tendency. 4th. Her period of lactation. The cost or market price of the various feeds, together with their actual feeding value, will of course always be taken into consideration by the feeder who is anxious to keep the cost of the ration down as low as is consistent with the best results.

Owing to the peculiar characteristics of each individual cow, no definite rules can be laid down in regard to the amount of grain a cow should be fed, even when the production of milk and butter is known. Ten pounds of grain per day would, for some cows, even when recently fresh, be a heavy feed, for the

simple reason, perhaps, that they would not eat more, while others might be fed 15 or 18 lbs. per day and even return a good profit over the cost of the feed.

The appetite of the cow is, however, a very poor guide to follow in determining the amount of grain she should be fed. Rather let the amount of butter that she is producing and her condition of flesh or live weight largely determine this. She should, however, in all cases be fed all the roughage, such as silage, hay, etc., that she will eat.

While in selecting grains for the ration intended for the dairy cow, it is desirable to have a large amount of protein, we must not forget that no matter how much protein a certain feed may contain, if it is not palatable, i. e., if the cows will not eat it readily—the protein is of but little avail.

One of the first things to determine about any food intended for the dairy cow, is its palatability. It makes no difference whether it is a soiling crop, silage or grain, it is absolutely essential that a cow relish her food.

To illustrate this point, the analysis of sorghum will show you that it contains but very little protein, but at the Wisconsin Experiment Station we have gotten better results by feeding sorghum to our dairy herd than any other soiling crop that we have ever raised, and this is largely because the cows relish the sorghum and will eat large quantities of it.

At the Wisconsin Station the average amount of grain fed to the dairy cow is about 8 lbs. per day, this with 40 lbs. of silage and 6 lbs. hay constitutes a day's ration for the average cow, during the winter, though as I have stated this amount varies considerably.

As to the care of the dairy cow, one of the best general rules to observe is to keep the cow as comfortable and contented as possible. If the cow is not comfortable and contented the owner will always be the loser. If the cows are allowed to stand out in the cold during severe weather a certain amount of food will be required to keep the body warm, which had she been

in a warm stable would have been transformed into milk and butter.

In order to succeed as a dairyman a person must be in sympathy with his cattle. He must be a keen observer and thorough with his work even to the smallest detail, and have a love for his stock that will cause him to work from early in the morning until late at night, if need be, in ministering to the wants of his cattle, so that they may be comfortable and contented.

During the winter they should be kept in comfortable stalls in a warm well ventilated stable and let out for a short time on pleasant days for exercise. If it is necessary to turn them out for water, a tank heater should be used to keep the ice from gathering on the trough and the cows should be put back into the stable as soon as possible when the weather is severe or stormy.

During the summer months when the heat and flies annoy the animals it is usually advisable to keep the cows in a darkened stable during the day and feed them soiling crops such as sorghum, green corn, oats and peas, etc. They may be turned out to pasture at night as the flies will bother them but little while it is dark. This is the system followed at Madison with the Station herd and it has been found very satisfactory.

At the time of calving the dairy cow will need special attention. Prior to freshening she should have been put in a box stall, fed a light grain ration, which should be slightly laxative, such as bran and oil meal,—the amount depending on the condition of the cow.

It is usually advisable to feed the cow a light ration only for a few days after calving, taking about a week or ten days time to bring her up to a full feed. Any water which is given the cow to drink, for the first four or five days after freshening, should have been slightly warmed, and pains should always be taken to keep her from draughts or a sudden change of temperature as this is quite likely to bring on milk fever.

If the dairy cows in Wisconsin were given the care and attention which they doubtless deserve, the average yearly butter

production could be easily increased 50 lbs. per cow and as there are over one million dairy cows in the state according to the census report, this at an average price of 20 cts. per pound would mean over ten million dollars additional income for the dairymen of the state, and this at very little more expense on the part of the dairymen.

DISCUSSION.

Ex-Gov. Hoard: You spoke about giving cows a soiling crop, but you said nothing about using ensilage for a soiling crop. What do you think of that?

Mr. Danks: I think I would prefer silage. Probably it would be cheaper than the soiling crop and feeding them in the summer. If you have enough silage to feed through the summer, I would advise that, as being more advantageous and cheaper than the system of soiling.

Ex-Gov. Hoard: Do you use much roots?

Mr. Danks: A few only. We consider that the silage takes the place of roots as a laxative feed. Just after freshening, we prefer to feed them roots for a few days, rather than to put them on silage too quickly, but otherwise we do not think them necessary when we have silage. We always raise some sugar beets and we use those, and when we are running weekly tests or anything of that sort, when we wish to have a cow do specially well, we feed her roots in connection with silage as they generally will do a little better. But they are more expensive to raise and you can't afford to raise them if you have a silo.

A Member: Do you curry your cows?

Mr. Danks: We groom them, yes.

Question: What are the floors?

Mr. Danks: We have in Madison a cement floor. All the stables have cement floors, but where the cows stand we have a board floor on top of the cement. We found that even where they were well bedded, the cows would stiffen up in the winter

in their joints and so we put the boards over the cement and it is warmer, not so slippery. We keep our cows indoors a large part of the time.

A Member: Do you prefer the sugar beet to the mammoth?

Mr. Danks: The cows relish them a little better.

The Member: Would not a dirt floor be better in front of the cow and boards behind?

Mr. Danks: A dirt floor is a good floor, but it is not so sanitary, not so easily kept clean, which you cannot do with a board floor and much less with a dirt floor. It doesn't cost much to put a layer of boards over the cement and the boards can be taken up and the place scraped out. The boards are made of inch pine flooring and they are matched. The whole thing slopes towards the gutter and we do not find it necessary to take up those boards from fall to spring. In the spring we take them up and scrape them and keep them off till fall again.

A Member: How many beets do you consider a good feed for a common cow?

Mr. Danks: If we didn't have silage, perhaps thirty or forty pounds. On our weekly test we have fed as high as a hundred pounds, merely to see what we could make them do; of course this is with ordinary roughage. Beets contain lots of sugar but not much protein, and of course they are rather expensive, and we prefer silage as being cheaper and fully answering the purpose. We figure beets at about twice what silage costs. We have found that our sugar beets contain about 14 per cent of sugar and you have to feed more protein in the grain. The principal virtue of sugar beets lies in the fact that cows relish them, and they will eat them all up, and if you want to make them eat a lot to make a record on, they are good things. But for ordinary work, I don't think the sugar beets are worth as much more according to their cost in comparison with silage. Perhaps for a man who has only three or four cows, it would pay to raise beets rather than put up a silo, unless he had some other stock to feed. If he has any large number of cattle or steers, or anything to eat the silage, it will pay to put up the

silo. Beets will supply succulent feed in the winter when the cows are eating dry feed.

A Member: How many cows will justify a man in building a silo for?

Mr. Danks: I think where there are eighteen to twenty cows he is justified in building a silo. He generally has other stock beside the cows; in fact, I think fifteen cows a man would be justified in building a silo for, because he gets his feed so much cheaper and gets so much more out of it in the winter.

A Member: Couldn't you build a silo out of something cheaper than wood?

Mr. Danks: It may be cheaper at first, but not in the long run. At Madison we have a wooden silo, boarded inside of the studding and outside with boards. Then it is bricked on the inside and plastered with cement. It is an expensive silo, but it is durable. We have used it six years and it doesn't show a crack in the cement and we expect it to stand a long while. That silo is eighteen feet in diameter and thirty-five feet high, holds about a hundred and fifty-five tons. We feed about forty head and generally have silage to last along into June.

Mr. Everett: I think the concrete silo is the coming silo. The two silos built at the **Morgan Farm** were built of solid concrete. They held five hundred tons of ensilage each. One stood on each side of that barn that was burned, and they stand intact to-day. Those silos were built of one part Portland cement, three parts clean, sharp sand and four parts crushed gravel, laid up in plank moulds, held in place by long bolts that are loosened as soon as the cement sets, the plank raised up and again filled. I don't know just what the thickness of the walls of those silos is. The silos are thirty-five feet deep, eight feet in the ground, and they are practically indestructible. I believe they are going to be the coming silo.

A Member: Does silage keep against the wall as well as in the middle?

Mr. Everett: It does in any silo where the air does not get at it. The house built on that farm I built myself and it is of

concrete from cellar to roof. It cost considerable money, but it will stand for generations.

MILK AND HONEY.

N. E. France, Platteville.

The richer the milk, the more and better cream comes to the surface. For the benefit of my county farmers, by repeated effort I was able to bring before you the Cream of all Wisconsin Associations,—namely, the Wisconsin State Dairy Convention. For three days you have had the Cream of dairy experience, and if the valuable instructions here given are applied to our various farms, it will be of untold value. Often have I wished my county dairy farmers could see the beautiful homes, profitable farm stock and milk factories of the speakers you have listened to. Of the many milk factories in Wisconsin I have visited, no one so forcibly impresses the visitor or patron of neatness and pure product as the Hoard creamery of Fort Atkinson. With walls and floor lined with polished white marble, clean machinery, more like parlor furniture, and a number of bright farmers' sons, clad in snow white suits making those beautiful pound prints of butter in a building free from foul odors so often found in Wisconsin factories.

The Governor told you yesterday how to keep pure fresh air in the barn, and the same principle applies in other buildings,—homes or factories. We have heard the instructions, and I dare say we will no longer hold the penny before our eye.

The profitable dairy is dependent first upon the man. If his love, interest, and energy are not for higher dairy standards, with an ideal of perfection before him, I fear his future prosperity. The dairy to some extent is also dependent upon natural sources of support, such as clover. Where the natural growth of white clover is found so abundant as in a large portion of Wisconsin, there will also be found large fields of both

red and alsike clover for hay and pasture. It is the cheapest protein food raised on the farm. Wherever this is found and successful dairying is carried on, is also a profitable location for beekeeping. In going to the National Beekeepers' Convention in Los Angeles last August,—with a full car load of beekeepers from Eastern States,—as we passed through those barren districts, where there was no natural clover growing, only scattering tufts of wild buffalo grass, with an occasional herd of poor stock, and a lonely herdsman on his pony, all compelled to go long distances for both food and water, so often did I hear some one remark,—“What a poor country, not able to support a decent dairy cow, or even a honey bee.” The people in their low, mud lined huts for homes, and half starved stock in the corral,—all told the need of water, fertility, and progress. They seemed to be ages behind progress of my Badger State. After crossing the mountains we soon reached one of the promised lands. A beautiful country, whose irrigated valleys opened before us, with a high grade of strictly dairy cattle, pastured on the richest of all clovers, and with the several hay crops of alfalfa for hay to feed in winter, produced an amount of high test milk hard to find its equal. The people, buildings, business, fruits, and products all showed progress and happiness. It was here I met many beekeepers whose honey harvests were estimated by the car loads. M. H. Mendelson with 1,580 colonies, and in his store house 22,000 lbs. choice white comb honey and 95,000 lbs. as nice extracted all in 60 lb. tin cans; L. E. Mercer, 1,350 colonies and 100,000 lbs.; W. T. Richardson, 900 colonies and 85,000 lbs.; J. F. McIntyre, 800 colonies and 65,000 lbs.

At Redlands I met a former Wisconsin farmer and beekeeper whose 400 colonies had gathered 22,000 lbs. orange bloom honey from his orchard, and so perfect was the mission of his bees in fertilizing the bloom that he had car loads of premium golden fruit.

There were two hundred such California beekeepers at our Convention. I do not advise any Wisconsin farmer to leave this Badger State of plenty,—and best quality,—where failure

seasons are unknown, where natural grasses grow without paying their value to some irrigation corporation, and where there is always a paying market for all farm products,—especially Wisconsin butter, cheese and honey.

Last month, while I was in New York, the state where many of our forefathers lived—and at that time, its fertile soil placed it first in the States for dairy products and honey,—I found the fertility of soil had not been kept up, and the small farms with buildings old and without paint,—there were not those beautiful dairy cows on clover pastures,—and even the greater portion of New York beekeepers were now dependent upon buckwheat for a honey harvest.

Brother Wisconsin farmers and beekeepers,—we are living in God's promised land,—the land referred to in the Bible,—“The land flowing with milk and honey.”

A proof of it has been told you by the practical up-to-date dairymen here assembled, some of whom have produced the greatest profitable dairy cows the world has ever known.

In one year Wisconsin produces 80,000,000 pounds of butter, 60,000,000 pounds of cheese, and about 3,000,000 pounds of honey. If it was all in freight cars coupled into a train it would take 400 cars for butter, 300 for cheese and 133 for the honey, and the train would reach over 5 miles in length. Value of product, \$22,279,742.00. Wisconsin has 1,151 butter factories, 1,540 cheese factories, and 10,535 farms keeping bees.

Is not this a land flowing with milk and honey?

One year's Wisconsin honey harvest if all placed in standard 1 lb. section boxes, $4\frac{1}{4} \times 4\frac{1}{4}$ inches, and placed touching, would form a continuous sweet walk 4 inches wide from Prairie du Chien across the state to Milwaukee, or from La Crosse to Green Bay.

Go with me only a few miles east of here and I will show you a fine barn 40 x 60 costing \$1,280, paid for by sale of one year's honey crop, gathered while the owner was caring for a large herd of dairy cows. Or, go down close to Mr. Goodrich's home and I can point to one of the great banks of that county,

where its first stock holder sold from his 1,400 colonies of bees \$10,000 as one year's profits.

Or stop at Reedsburg and see two dwellings costing respectively \$1,200 and \$2,000 each, built by returns from one year's honey sales, and by an elderly dairy man now nearly 90 years of age.

Wisconsin white clover and basswood honey is of superior quality, sells at highest prices, and I wish to say some are not careful enough in preparing it for market. Section boxes must be cleaned of soil stains, placed in neat, non-drip shipping cases, with every box in that case of same grade.

If extracted honey, it must be fully ripened on the hives before taking off, and at once placed in large receptacles for a short time before drawing into new, clean and neat retail or shipping packages.

The beekeepers of the United States and Canada have found it to their advantage to unite their interests in what is known as the National Beekeepers' Association. It now has nearly 2,000 members,—represented in every State, Canada, Cuba, Honolulu, and British Honduras. In the recent election of officers, 94 per cent of the votes cast for General Manager were for a Wisconsin dairy lad, N. France. This association looks after the welfare of its members, protects and defends its members in their lawful rights, and assists to enforce laws against the adulteration of honey.

I hope some day Wisconsin dairy farmers will see to their benefit in mutual help, and not till then will their power and influence be recognized. Well do I remember Mr. Hiram Smith in this room talking on "Fertility of soil,—the farmer's bank," and as I look around me and see those who followed his teachings,—I see our wealthy retired farmers, whose farms are now worth more than in those days, and whose sons are on the farm turning out the golden harvests.

From the lack of proper ventilation, sunshine, and exercise, our farm stock, especially dairy cows and swine become diseased. Herds of choice stock have to be disposed of to get rid

of tuberculosis and cholera, being fatal and contagious. The state is compelled for general good to keep a state veterinarian to inspect and where necessary, quarantine, and in some cases, order destroyed and buried valuable farm animals. Unfortunately the honey bee is subject to contagious and fatal diseases, the worst of which are known as "black brood," and another as "foul brood." It was imported into Wisconsin some years ago, —and our beekeepers not knowing its nature, the disease has gotten into many counties and into several thousand apiaries.

By the call of the Wisconsin State Beekeepers' Association the Wisconsin legislature at once passed such laws as provided for a State Inspector of Apiaries, to inspect, and where necessary, quarantine, order diseased bees and appliances to at once be treated or burned. Fortunately the disease as now treated, is saving all the hives, live bees, honey and wax, and many other States, seeing the good this office was to this great industry, have enacted similar laws. Last season Wisconsin was able to secure as much strictly first class honey as any State in the Union, and has won several valuable medals at great fairs. I am sorry to say no Wisconsin honey will be shown at the St. Louis Exposition, as the State appropriation has been placed for other exhibits, prominent will be the dairy and its products.

REPORTS OF COMMITTEES.

The reports of the following committees were received and adopted:

ON EXHIBITS.

The committee on Exhibits and Dairy Machinery would respectfully report that as shown by the scores there is on exhibition a very high class of exhibits of both butter and cheese, though from the premiums offered in this department we would

expect a much larger exhibit of both of these products. There is a large exhibit of hand separators, machinery and dairy supplies of all kinds, and much interest was manifested in this line of exhibits.

H. J. Noyes,
J. R. Danks,
C. T. Bragg.

AUDITING COMMITTEE.

Platteville, Wis., Feb'y 12, 1904.

The committee appointed to examine the accounts and vouchers of the Secretary and Treasurer have examined such accounts and find them correct.

Chas L. Hill,
U. S. Baer.

RESOLUTIONS.

Resolutions adopted by the Wisconsin Dairymen's Association, February 12, 1904:

Resolved, That this, the thirty-second annual convention held by the Wisconsin Dairymen's Association, ranks among the best meetings by this body; that the attendance and enthusiasm have been excellent; the convention hall commodious and warm; hotels adequate and to our liking; the Mayor and citizens of Platteville and vicinity kind and courteous; committees having in charge arrangements for the convention and banquet, active, efficient and untiring; that we are appreciative of the foregoing and extend sincere thanks to all engaged in making the convention so successful, and our stay in Platteville pleasant and profitable.

Resolved, That the action of railroad companies in granting reduced rates to those in attendance at this convention is sincerely appreciated and our thanks are hereby tendered for such courtesy and kindly consideration.

Resolved, That the Wisconsin Dairymen's Association desires to express its great satisfaction with the laws enacted by the last state legislature for the purpose of insuring the purity of our milk, butter and cheese, and improving the sanitary condition of all dairies, creameries and cheese factories. It is a step in the right direction of true progress and enlightened practice and our thanks are hereby extended to those members of the legislature who supported these measures.

Resolved, That it is the duty of the dairy farmers of Wisconsin to do all in their power to uphold and support the National Dairy Union as a central power and force in the field for the defense of this great industry from the assaults of the oleomargarine combine. To do this is a matter of plain and patriotic common sense.

Resolved. That we appreciate the splendid services rendered this association by its retiring President. He has ever been active and ambitious in furthering the interests of the association and the dairy interests of the state. He has been kind and impartial at all times and has made for himself a warm place in the hearts of the members of this association. We hereby extend to him our thanks and best wishes for the future.

Resolved, That we most heartily endorse the firm stand taken by the Wisconsin Dairy and Food Commission against the traffic in fraudulent dairy products, and that we commend Commissioner Emery for his active and fearless execution of the law.

WHEREAS there is now pending in Congress a Bill (H. R. 8678) introduced by the Honorable H. C. Adams, of Madison, Wis., providing for an increase in the income of the Agricultural Experiment Stations in the several states; and

WHEREAS, it is now recognized by all intelligent dairymen, as well as by farmers generally and others interested in the improvement of the condition of those tilling the soil, that those Stations have been of immense value in advancing and extending agricultural knowledge among the people; and

WHEREAS the States are now called upon to provide increas-

ingly large sums of money for the erection of buildings, furnishing equipment, compensation of teachers, etc., for instruction of the constantly increasing number of students crowding to the Agricultural Colleges for instruction, thereby causing the Experiment Stations to suffer for lack of adequate income from state sources; and

WHEREAS scientific knowledge, founded upon facts ascertained by carefully conducted experiments and not infrequently at great expense, must precede sound instruction and permanent advancement, especially in agriculture; therefore be it

Resolved by the Wisconsin Dairymen's Association, assembled at Platteville, Wisconsin, this 12th day of February, 1904, in its thirty-second, consecutive, annual convention, that said bill for increasing the income of the state Experiment Stations be and the same is hereby unreservedly approved and its early passage respectfully urged.

Resolved, That the Secretary of this association is hereby directed to send a copy of the foregoing resolution to the President of the Senate and to the Speaker of the House of Representatives and to the Senators and Representatives in Congress from Wisconsin.

The report of the Nominating Committee submitted the following names:

Officers for the Ensuing Year:

For President, Charles L. Hill.

For Secretary, G. W. Burchard.

For Treasurer, H. K. Loomis.

On motion of Mr. Wentworth, duly seconded, the report of the Nominating Committee was adopted and the gentlemen named by them declared to be the duly elected officers of the Association for the ensuing year.

President Emery: Two years ago, at the meeting at Menomonie, I was surprised and very greatly honored to be elected to the position of President of the Wisconsin Dairymen's

Association. On that occasion I stated that I had acted as President of the Wisconsin Teachers' Association and had been honored with some other positions, but I esteemed it a higher honor to be elected to this position, than to the others to which I have referred. One year ago, the Association was kind enough to re-elect me, and I again esteemed the honor. At first I stated that I had neither gold nor silver, but such as I had, would I give unto this Association. I have kept that promise, and now I wish to congratulate the Association on the election of Mr. Hill to the presidency, a young man who has risen to distinction by his force, his energy and the quality of his work, who is second to none as a dairyman in this state. One year ago, the Manual Training School at Menomonie, known as the Stout Manual Training School, (it being one year after we held our Association there), forwarded to the Secretary of this Association this gavel, made of pure mahogany and made by the students in that school. That gavel was sent to the Secretary, and by him presented to the Association for the use of the presiding officer. On receiving this gavel, I stated that to me, it symbolized excellence in quality and progress, and that it was fitting that it should come to an association that stood for excellence in its work, and for progress in all dairy lines, and I now hand this gavel to you, Mr. Hill, as symbolizing the authority of the Association.

Mr. Hill: Ladies and Gentlemen, I cannot say a word, that is all. I stand here feeling as but a boy, as compared with these gentlemen who are sitting here, and when I think that this office has been held by men of revered memory, such as Hiram Smith and Mr. Beach and Mr. Favill, whose face I have missed since coming into this hall, these distinguished men, and then to realize that it should be given to me; I cannot understand why. I can only think of one possible reason, and that is that the older members think that they must be training up some of the younger men of the Association, upon whose shoulders they can cast the duty of this office. I very humbly, indeed, assume its duties, and only hope that with

your aid, I may be able in some small way to assist this Association in its onward progress.

Secretary Burchard being called for said:

Actions speak louder than words, sometimes. I trust that the efforts I have put forth in recent years, to discharge the duties which devolve upon the Secretary of such an Association, has in some measure justified your favor, and it is certainly a matter of profound gratification to me that it has been expressed in this way, here to-day. I thank you very cordially indeed, and that is enough, perhaps to say, except that as best I can, I shall endeavor for the coming year to have the interests of this Association always at heart, which is the same as saying the interests of the dairymen of this state always to the front.

The Secretary read the butter and cheese scores as follows:

Scores of butter and cheese at the Wisconsin Dairymen's Convention, held at Platteville, Wis., February 10-12, 1904.

BUTTER.

Exhibitor's Name and Postoffice Address.	Flavor 45.	Grain 25	Color 15	Salting 10.	Packing 5.	Total 100.
John F. Whitcher, Platteville	42	25	15	10	5	97
R. P. Bjerregaard, New Franken	41½	25	15	10	5	96½
James VanDuser, Hebron	41	25	15	10	5	96
Ole Esker, Bloomer	41	25	15	10	5	96
Albert Erickson, Volga	41	25	15	10	5	96
E. A. Paddock, Elkhorn	41	25	14½	10	5	95½
F. H. Kelling, Jefferson	40½	25	15	10	5	95½
Arthur G. Puerner, Edgerton	40	25	15	10	5	95
C. M. Kates, Custer	40	25	15	10	5	95
W. J. Hyne, Evansville	40	25	15	10	5	95
John E. Boetcher, Waukesha	40	25	15	10	5	95
Walter Judevine, Gratiot	40	25	14	10	5	94
Arnold Graves, Platteville	38	24	15	10	5	92
_____	36	25	14	10	5	90
_____	35	25	15	10	4¾	89¾
_____	36	25	15	7	5	88
_____	34	24	15	9	5	87
_____	33	24	14½	9	5	85½
Average						93¼

CHEESE.

Exhibitor's Name and Postoffice Address.	Flavor 45.	Texture and stock 30	Color 15.	Finish 10.	Total 100.
P. H. Kasper, Nicholson	44½	29	15	10	98½
J. H. Noyes, Muscoda	45	29	15	10	97
.....	37	23	14	8	82
.....	39	26	15	10	90
.....	39	25	15	10	89
Average					91.3

NOTE—The last two entries of cheese were respectively of the varieties known as Limburger and Brick, and the remarks by the judge show that both were new and not sufficiently cured.

The Treasurer presented his report as follows:

TREASURERS' REPORT FOR 1903.

Mr. President and Members of the Association: The following itemized report is made, showing the source from which all moneys paid into the Treasurer's hands were received, and the disbursements paid on orders from the Secretary, which I hold as vouchers.

Receipts.

1903.		
Feb. 15.	Balance in hands of treasurer	\$937 53
	Memberships	233 00
Apr. 29.	Received from State Treasurer	1,000 00
June 22.	Received from State Treasurer	1,000 00
Aug. 29.	Received from State Treasurer	1,000 00
Dec. 4.	Received from State Treasurer	1,000 00
		\$5,170 53

Disbursements.

1903.		
Feb. 15.	Badges	\$35 00
	Euclid N. Cobb, expenses and services	44 00
	Hotel bills, speakers	65 25
	H. B. Gurler, expenses and services...	57 10
	C. P. Goodrich, taking cow census ...	62 90
	T. F. Gallagher, butter judge, expenses	13 35

18.	U. S. Baer, expenses attending Fond du Lac convention	5 86
	John B. McCready, expenses attending Fond du Lac convention	5 93
	H. K. Loomis, expenses attending Fond du Lac convention	4 35
25.	J. Q. Emery, expenses attending Fond du Lac convention	5 99
	P. H. Peacock, expenses attending Fond du Lac convention	6 72
	Stephen Favill, expenses attending Fond du Lac convention	3 95
	W. A. Henry, expenses attending Fond du Lac convention	7 87
	D. W. Howie, expenses attending Fond du Lac convention	3 20
	Premiums	199 10
8.	John Luchsinger	128 15
	H. C. Taylor, expenses attending executive board meeting and expense Fond du Lac convention	11 18
Mar. 3.	James G. Moore, instructor	120 00
Apr. 6.	Mrs. A. L. Kelly, reporter	110 00
	J. G. Moore, instructor	112 50
11.	E. L. Aderhold, instructor	105 00
May 11.	E. L. Aderhold, instructor	130 00
	J. G. Moore, instructor	120 00
June 8.	J. G. Moore, instructor	110 00
	E. L. Aderhold, instructor	115 00
	John B. McCready, instructor	125 00
	Fred Marty, instructor	135 85
July 8.	Fred Marty, instructor	122 00
	John B. McCready, instructor	130 00
	E. L. Aderhold, instructor	118 00
	J. G. Moore, instructor	120 00
Aug. 13.	Fred Marty, instructor	140 70
	John B. McCready, instructor	140 00
	E. L. Aderhold, instructor	109 00
	James G. Moore, instructor	100 00
Sept. 18.	James G. Moore, instructor	90 00
	John B. McCready, instructor	110 00
	E. Aderhold	108 00
	Fred Marty, instructor	125 00
Oct. 7.	J. G. Moore, instructor	90 00
	John B. McCready, instructor	120 00
	E. L. Aderhold, instructor	95 00
	Fred Marty, instructor	125 00
10.	J. G. Moore, instructor	15 00

Nov. 5.	E. L. Aderhold, instructor	103 00
	John B. McCready, instructor	145 00
	Fred Marty, instructor	150 00
Dec. 14.	John B. McCready, instructor	125 00
1904.		
Jan. 19.	E. L. Aderhold, instructor	25 00
Feb. 19.	Geo. W. Burchard, secretary's salary	250 00
	Geo. W. Burchard, sec. office, expense	145 58
	W. D. Hoard, printing	28 40
	H. K. Loomis, postage for 1903	3 04
	Balance in hands of treasurer	494 56

 \$5,170 53

Treasurer Loomis being called on, said:

Public speaking is a little out of my line, but I would like to say I became a citizen of Wisconsin in 1880. In February, 1881, I attended my first Dairymen's Convention at Waukesha. The following year, we met at Elkhorn, in 1883 we met at Sheboygan, and at that time, I was honored by being elected Treasurer of this Association, which I have been elected to each year since. During that time I have made a great many acquaintances which will last as long as I live, not only acquaintances but friends. During that time we have lost some valuable members, Mr. Beach, David Curtis, **Chester Hazen**, W. H. Morrison and Hiram Smith. I can hardly realize that these years have gone. I thank you for the honor you have shown me in re-electing me, and will try to serve you to the best of my ability.

Mr. Emery: Mr. President, we are honored and privileged in having with us this afternoon, a gentleman who took the initiative in this organization in 1872. He is the only one present of the seven men who met in Watertown at that time, and I am sure that this Association does not feel like adjourning without hearing a few words of benediction from Governor Hoard.

Ex-Gov. Hoard: Mr. President, our ex-President is right. It is almost like a dream to undertake to comprehend all the growth, and all the improvement, and all the hope and encour-

agement that has come in these thirty-two years. Why, my good friends, an audience like this, in those days would have taken our breath, taken our reason.

Seven men met in the little city of Watertown, in obedience to a little call that I sent out, to all interested to come to Watertown and form a State Dairymen's Association, back in 1872. All of those men are gone to-day, except H. F. Dousman, H. C. Drake, of Madison, Stephen Favill and myself. Wisconsin was in a very serious state, agriculturally speaking. The farmers had been growing wheat, and wheat, and wheat, and they had got down so, that in our county, for years the average production was only eight bushels per acre, and that was the only cash crop. The farmers were selling out and going west to spoil another country. Do you know, it raised a smile of derision and ridicule when I went out and tried to talk cow, went into the school districts and tried to organize cheese factories. Men seemed to regard me with suspicion, because I ran a little newspaper, and it was pretty hard to convince them that I had any knowledge or judgment, though I was a trained cheese maker in New York, and had carried on a farm with fifty cows from the time I was eighteen years old. Under a man of blessed memory, I had learned the art of cheese making and butter making. I came West in 1857, and there was nothing for my hands to do. It is almost impossible to comprehend what that little meeting meant when we consider this magnificent state, with its over one million cows, and its nearly three thousand cheese factories and creameries, with its marvelous growth and the tremendous influx of money pouring in upon these people, and the building up of the industry, and the intelligence and the mental grasp of its farmers.

Out of this Dairymen's Association, have come nearly all the organized work that we have done in Wisconsin; we started the farm institute, the dairy school, the short course; the Dairymen's Association has taken hold as a body of men, and we have worked together without a word of bickering or a word

of disagreement or one single iota of jealousy between us, from the days of '72 to this present hour; it is a history, the duplicate of which can hardly be found in that of any state. We have been actuated, mainly by the desire to put Wisconsin to the front, to do what we could in a public way, and in a private way, to get into the minds of the farmers of the state, the things that were necessary to know in this line.

Now, we haven't but a few years more to work, we old men, and already the intimations come to me that the end is not far away, but I feel, my friends, as though no brighter heritage could come to me, or any other man, than to have belonged to an association that has been steadfast, and loyal, and patriotic in upbuilding the agriculture of this state. What Wisconsin is to-day, is largely due to the organized efforts of the men who have composed this Association, and I bid you, and every other one connected with it, a hearty Godspeed, knowing that in these things, come largely the growth, and prosperity, and happiness of the people.

In a few well chosen words, Mr. Hendy expressed the gratification of the people of Platteville, with the work done by the Association in its convention, and called for a standing vote as an expression of their thanks, which was given unanimously.

President Hill: On behalf of the State Dairymen's Association, I thank you for this token of appreciation. I am sure I speak for all of those from abroad as well as for myself, when I say that we are proud and happy to have been with you, and it has done us good. We are going to take away with us kindly thoughts of this city; we will go back to our labors on the farm or in the office, with much that will be of help to us.

A motion to adjourn will be in order.

On motion duly seconded, the convention adjourned sine die.

INDEX.

A.

	Page
A Day at the Dairy School, Paper by Clarence Bragg.....	54
Address of Welcome, by Mayor Knapp	9
Adjournment	188
Air Treatment for Caked Udder	142, 144
Air Treatment for Milk Fever	145
Alfalfa, Curing of, for Hay	166
Alfalfa Experience, W. D. Hoard	66, 166
Alfalfa should not be Mowed the First Year.....	167
Alvord, Henry C., Address: Taxation of Whey Butter	101

B.

Babcock, Dr. S. M., Mentioned	20
Babcock Test for Swiss Cheese Factories	99
Bacteria and Milk Supplies for City and Factory Use, Address by Dr. H. L. Russell	131
Bacteria, How they are counted	132
Bacteria, How they get into Milk	135
Baer, U. S., Paper by: Needs of the Cheese Industry in South western Wisconsin	83
Beef and Milk not profitably produced by the same Animal....	74
Boards of Trade	128
Bragg, Clarence, Paper by: A Day at the Dairy School.....	54
Bran and Shorts not objectionable Feeds for Swiss Cheese....	91
Breeds, Relative profits from different	113
Burchard, G. W., Response to Address of Welcome.....	16
Butter, Classification of, for Taxation	102
Butter, containing over 16 per cent of water, deemed adul- terated	103
Butter Scores	183
Barns, Construction and Ventilation of, W. D. Hoard.....	46

C.

	Page
Calf Path, The	17
Cement Floors not good for Cows	171
Cheap Feeds for our Cows, Paper by Charles L. Hill.....	151
Cheddar Cheese, Temperature for Cooking Curd	100
Cheese, Bad Results from feeding Rape	93
Cheese, Cold Storage curing of	91
Cheese, Effect on, of Temperature in curing room	88
Cheese Industry of Southwestern Wisconsin, Needs of, Paper by U. S. Baer	83
Cheese Scores	184
Clover hay, Fertilizing constituents of	34
Commercial Fertilizers, Cost of	33
Committees appointed	27, 60
Concrete Silos	173
Corn, Fertilizing constituents of	34
Corn Fodder, Method of growing	157
Corn silage and Clover hay	65
Cost of Feed and Income in 23 Grant County Herds.....	109
Cost of Producing Silage	153
Cost of Products, Dairymen should know	14
"Cowano"	42
Cow Census and its Lessons	107
Cow pox, Treatment for	149
Cow, The Farmer's, Paper by C. P. Goodrich.....	72
Cows are economical manufacturers	37

D.

Dairy Cow, Feed and Care of the, Paper by J. R. Danks.....	168
Dairyman's First Duty, A, Address by Mrs. Adda F. Howie..	61
Dairy School, A Day at the	54
Danks, J. R., Paper by, Feed and Care of the Dairy Cow.....	168
Drainage from Factories may be both Cheap and Effective....	89
Dual-purpose breeding logically leads to Double dual-purpose breeding	77

E.

Emery, J. Q., President's Annual Address	17
Everett, C. H., Response to Address of Welcome	11
Everett, C. H., Paper by: What Forage shall the Dairy Farmer Raise	63

Index.

191

	Page
Exhibits, Committee on, appointed	60
Exhibits, Committee on, Report of.....	178
Expenditures of the Association	81, 184

F.

Farmer's Cow, The, Paper by C. P. Goodrich.....	72
Feed and Care of the Dairy Cow, Paper by J. R. Danks.....	168
Feed and Income	109
Feed turned into Milk brings twice as much as that turned into Beef	75
Feeding Stuffs, Fertilizing Constituents in.....	34
Fertility, Elements of	31
Fertility in Feeding Stuffs, Amount taken out by various Animals	37
Fertilizing Constituents in Feeding Stuffs	34
Finance, Committee on, appointed	60
Finance Committee, Report of	179
Forage, What kinds shall the Dairy Farmer raise, Paper by C. H. Everett	63
France, N. E., Paper by: Milk and Honey	174

G.

Goodrich, C. P., Response to Address of Welcome	13
Remarks by	27, 107
Paper by, The Farmer's Cow	72

H.

Hardin, L. S., Remarks by	123, 127
Hay Caps	166
Henry, Prof. W. A., Paper by: A Lesson in Fertility.....	31
Hill, Charles L., Paper by: Cheap Feeds for our Cows.....	151
Hoard, W. D., Address, Construction and Ventilation of Dairy Barns	46
Remarks by	41, 43, 51, 66, 116, 187
Honey in Car Lots	175
Howie, Mrs. Adda F., Address: A Dairyman's First Duty....	61

I.

Income and Cost of Feed, Table of	109
Inspectors, More, needed	24

K.

	Page
King System of Ventilation	51
Knapp, Mayor, Address of Welcome	9

L.

Land Plaster in the Stable	43
Loomis, H. K., Treasurer's Report	184
Remarks by	129, 186
Loomis, Miss Katherine, Mentioned	30
Losses from lack of Ventilation	47
Luchsinger, John, Remarks by	89, 100-106

M.

Maker's duty to preach by Example	86
Manure from Steers richest in Nitrogen	37
Marty, Fred, Paper by: Wisconsin Swiss Cheese Industry....	95
Milk Cows the most economical Manufacturers	37
Milk and Honey, Paper by N. E. France	174
Milk Fever, Treatment for	145
Milk, How it becomes infected with Bacteria	135
Moore, James G., Paper by: Wisconsin Creameries, Their Needs and Duties	119

N.

Nitrogen, Amount voided by cow in one year.....	41
Nitrogen, Sources and Uses of	31

O.

Officers, Nomination of, Committee on.....	60
Report of	181
Oil Meal, Fertilizing constituents in	34
Opening Exercises	9

P.

Palatability of first importance in Feed Stuffs	168
Patron's First Duty	84
Peters, Dr. A. T., Address by, on Veterinary Topics.....	141
Phosphoric Acid, Sources and Uses of	32

Index.

193

	Page
Potash, Sources and Uses of	33
President's Annual Address	17
Prosperous Communities	13

R.

Rape will taint Milk	93
Report of Secretary	80
Report of Treasurer	184
Resolutions, Committee on, appointed	60
Resolutions, Committee on, Report of	179
Responses to Address of Welcome	11
Ringworm, Remedy for	149
Roots for Cows	172
Russell, Dr. H. L., Address by: Bacteria and Milk Supplies for City and Factory Uses	131

S.

Secretary's Report	80
Silage and Roots compared	172
Silage, Cost of Producing, itemized	153
Skim milk, Value of	117
Stables, Warming of, by Ventilation	52
Steers make richest Manure	37
Swiss Cheese Industry	90
Swiss Cheese made in Wisconsin equal to that made in Switz- erland	100
Swiss Cheese, Temperature for cooking Curd	100

T.

Taylor, H. C., Mentioned	107
Temperature for cooking Cheese Curds	100
Temperature of Cheese Curing Rooms	88
Timothy Hay, Fertilizing Constituents of	34
Treasurer's Report	184
Tuberculin Test, may save the Herd.....	148

U.

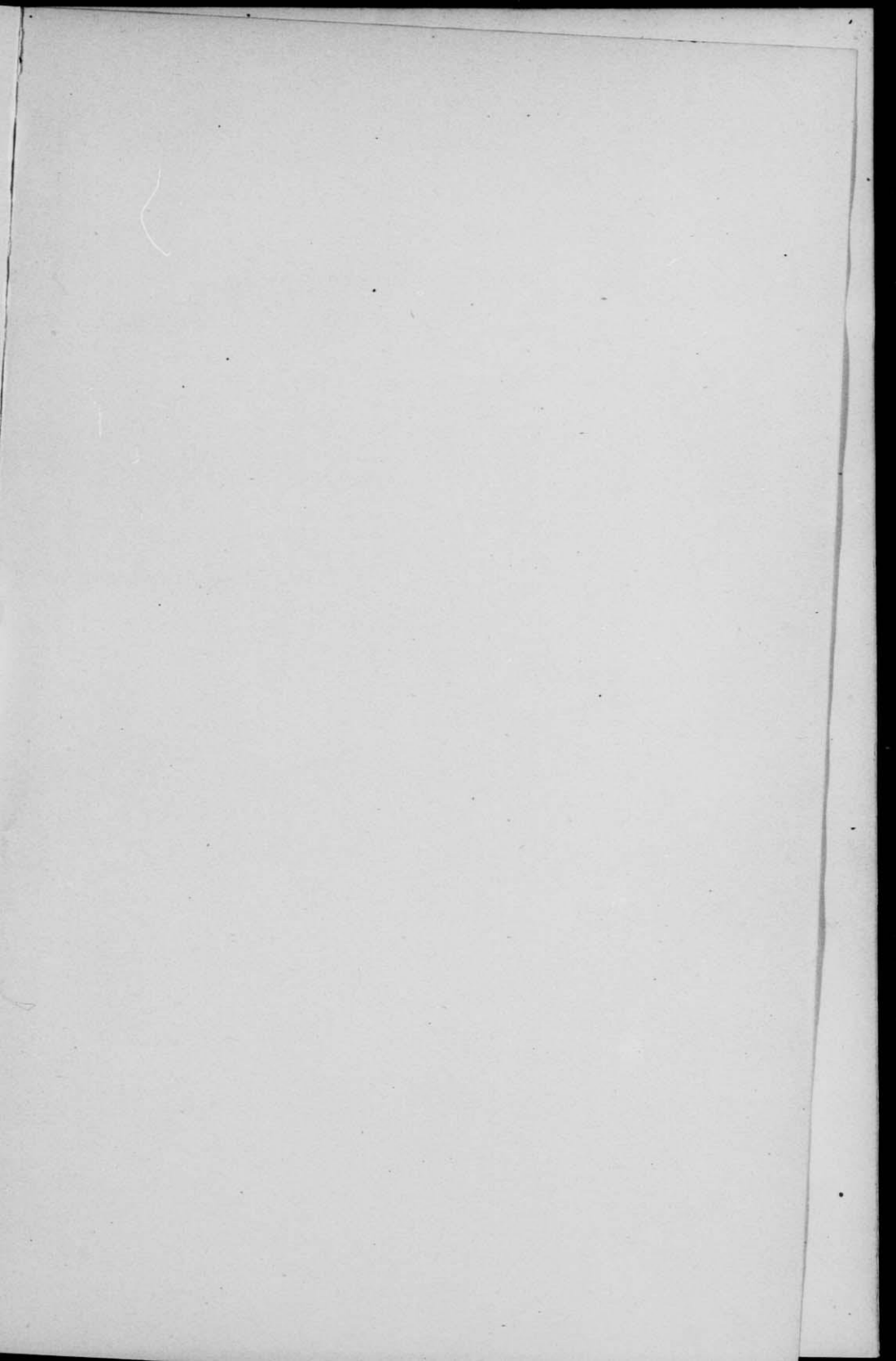
Udder is something like a Sponge	141
Udder, Treatment for caked	142
Urine rich in Nitrogen.....	41

V.

	Page
Ventilation, King System of	51
Ventilation of Barns	46
Veterinary Topics, Address by Dr. A. T. Peters.....	141

W.

Warming Stables by Ventilation	52
Wheat, Fertilizing Constituents of	34
Wheat Bran, Fertilizing Constituents of	34
Wheat Straw, Fertilizing Constituents of	34
Whey Butter, Taxation of	101
Wisconsin Creameries, Their Needs and Duties, Paper by James G. Moore	119
Wisconsin Dairymen's Association organized in 1872.....	19
Wisconsin Swiss Cheese Industry, Paper by Fred Marty.....	95



WISCONSIN
DAIRYMEN'S ASSOC.
ANNUAL REPORT
1904

RBW7
D15
1904

DOCUMENTS
COLLECTION

89044338465



b89044338465a