Thirty-fourth annual report of the Wisconsin Dairymen's Association : held at Waukesha, Wis., January 31, February 1 and 2, 1905. Report of the proceedings, annual address of the president, and intere...

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THIRTY-FOURTH ANNUAL REPORT

OF THE

WISCONSIN

Dairymen's Association

HELD AT

Waukesha, Wis., January 31, February 1 and 2, 1905.

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

COMPILED BY

GEO. W. BURCHARD, Secretary.

MRS. A. L. KELLY, Stenographic Reporter.

MADISON, WIS,
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1906.

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LETTER OF TRANSMITTAL.

WISCONSIN DAIRYMEN'S ASSOCIATION,

Secretary's Office,

FORT ATKINSON, June 13, 1906.

To His Excellency, JAMES O. DAVIDSON,

Governor of the State of Wisconsin.

I have the honor to submit for publication, as provided by law, the thirty-fourth 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 Waukesha.

Very respectfully,

GEO. W. BURCHARD,

Secretary.

OFFICERS, 1906.

PRESIDENT,
W. J. GILLETT,
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 1902-03.

CHARLES. L. NEILL, ROSENDALE, FOND DU LAC COUNTY.,
President 1904-05.

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-FOURTH ANNUAL CONVENTION

Held in Waukesha, January 31, and February 1 and 2, 1906.

President Charles L. Hill in the chair.

The Chairman: The Association will please be in order. Although there are but few here, it is past the time that is set for the proceedings to commence. I am particular in regard to promptness, and I will say to you that hereafter the sessions will commence at the hour set by the program, if the chairs are here. The first number on our program is the address of welcome by his Honor, Mayor Snyder, of this city.

ADDRESS OF WELCOME.

By Mayor M. L. Snyder.

Mr. Chairman, Members of the Wisconsin Dairymen's Association, Ladies and Gentlemen: I deem it a privilege and an

honor and withal a pleasant duty to extend to you a cordial greeting and a hearty welcome to the city of Waukesha.

The selection of this city as the place of meeting of an organization composed of intelligent and advanced workers in a profession so closely allied with what may be termed a higher branch of agriculture is a compliment highly appreciated by all our people.

It cannot be gainsaid that since the development of the dairy interests the farmer has prospered and many thousands have thereby been enabled to pay off their mortgage indebtedness, and to surround themselves with comforts and privileges theretofore unknown. A day's ride about Waukesha county will convince the most skeptical of the truthfulness of this statement, viz.: where the cheese factory and creamery are most numerous there you will see evidences of greater prosperity. The fine, yes, I may say elegant, dwellings, capacious barns and stables with barn-yards containing herds of cows and stock that affords pleasure to look upon.

In the daily press a few days ago I noticed a statement from Vernon county, Wis., to the effect that a dividend of 200% on a capital stock of $3,700 was paid the Viroqua Creamery Asso., a splendid profit indeed.

Your work as an organization commenced thirty-four years ago and from a very small beginning you have now developed 2,000 well equipped and prosperous cheese factories and more than 1,000 creameries, whose products are "fit for a king." I am told that the annual product of the dairy in this state has reached the enormous sum of $50,000,000 and that 1,000,000 cows give the milk, rich with cream, to help make up this great sum. Thus we may indeed say: Among the choicest blessings God gives to man is the pure and wholesome product of the dairy which not only insures prosperity but health and longevity. Especially would this be the case if at all times those engaged in your line of business would do like another branch of agriculture located in this city, whose product "Is not touched by human hands and washed and cleansed by pure Waukesha spring water."

Wisconsin ranks first in the number of cheese and butter factories in the union and took first prize on its cheese at the Centennial Exposition in 1876. At the St. Louis Exposition, Wis-

consin took the lead over all competitors. Truly a record to be proud of and a condition undoubtedly largely due to the interchange of thought and the experiences and lessons gained and profited by at these, your annual conventions.

A word as to our city—The city of Waukesha has now a population of 7,000. Among its industries may be mentioned, The Modern Steel Structural Co., the Waukesha Malleable Iron Works, the Waukesha Canning Co., the Wilbur Co's Factory, the Wisconsin Butter and Cheese Co., and last but not least, the several spring water companies, whose pure and medicinal product is recognized and finds a ready market in every civilized country on earth and insures a return to the owners of many hundred thousand dollars annually. Our schools rank among the best in the state, with an attendance of 1,700 pupils and a corps of teachers whose assiduous work is characterized and rewarded with commendable success. Carroll College also located in one of the beautiful portions of our city affords an opportunity for higher education not excelled any where. Its future stability and success is assured by recent munificent donations, and with the completion of plans well under way, its facilities for the accommodation of students will be greatly enhanced.

The many handsome churches in our city, speak louder than words of the moral and religious tendency of our people. They are presided over by a clergy, intellectually the peer of any in the state. The two national banks located here have deposits of nearly three millions of dollars and taken together with the other banks located in the county, shows their total resources to be $4,500,000. This gives evidence of the financial standing of this community and county, to which I may add the agriculturist contributes a very large percentage. The population of Waukesha county being 34,000 there is a per capita of $135 for every man, woman and child in the county in the banks alone.

Gentlemen, you have met at this annual convention for the purpose of an exchange of mutual felicitations and the gaining of knowledge and the consequent improvement in your profession which the discussions led by able exponents of the dairy interest are sure to produce.

May your stay in this city be fraught with much pleasure. I again extend to you a hearty welcome.

The Chairman: Secretary Burchard will respond.

RESPONSE.

Secretary Burchard: That is what I call a snap. I don't exactly know whether I shall be able to get out of the trap without the loss of a limb, or some minor member. It is not my place to respond to addresses of welcome, Mr. President, that is your business, and you ought to have attended to it yourself. However, (if I have your permission), I can say, for myself and for the Association, that we are mighty glad to be welcomed to Waukesha. We wanted to come, and I don't know what inducements were held out in order to secure the invitation to come, and perhaps it is better that nobody should know. All the same, we are glad to come, and we are very glad to be welcomed with such kindly words as the mayor has seen fit to use.

This is not my first visit to Waukesha, nor my first welcome to Waukesha either, so far as I am individually concerned. More years ago than I care to admit, certainly it was a decade or more, I came to Waukesha. This was before the flood,—I mean, this flood of "spring water" that is not only running all over Waukesha, but all over the country as well. There were a lot of good people here, and they extended to me as a boy a very nice and much appreciated welcome. It was not altogether in bed and board, but they took me to their hearts, they encouraged me, they entertained me with their stories of the earlier days, when the Pottawattomies were the principal inhabitants here, and, what perhaps is more to the purpose, they overlooked many of my boyish pranks and misdoings, and I trust that those who have succeeded those older people, (I mean those people that were here in the early days), will be as kind to the Association as those people were to me; that they will overlook whatever may be amiss in our programme or in our proceedings; that they will treat us with generous hearts; try to believe, at least, that we mean to be fairly good and respectable; that we mean to do about the fair thing, and that we are not here to put on style or pretend that we are wiser than the Waukesha people, but that we have met here to confer with them, that we want to receive as well as to give.

I want to say about this morning's meeting, that starting off a convention is a good deal like starting a train of cars; it goes very slowly at first, but, as a rule, the longer it runs the swifter it goes, and the better; and I shall be indeed very much disappointed if we do not have a good convention. I hope there will be a good attendance this afternoon. This is really going to be the best afternoon of the whole series, that is, we will say it is the best, anyway until it gets to tomorrow, and then we will promise better things. But it is going to be a good afternoon, a very important afternoon for every man who keeps cows, at least for them who keep cows for profit. There is going to be a very interesting meeting this evening, it is a general meeting, we are not going to talk very much about cows, we are going to show to the people of Waukesha, especially to the city people of Waukesha, that farmers have some interests in common with them, that they can consider the same subjects that appeal to the city dweller, that they are interested in and not altogther ignorant concerning them. I would like to have those who are present here this morning, if they are on the streets and elsewhere, say to the people of Waukesha that Mrs. Emery, who is to address us this evening, is a very talented woman. She has had wide experience in educational matters and more recently on the farm. She is a sort of model farmer's wife now, and we would like to show the people of Waukesha what a model farmer's wife can say and do, and how she can appear in public.

Coming back to Waukesha, however, is a sort of serious matter with me. I miss the familiar faces. If it were not for the fact that I hear once in a while the name of Clark Hartwell or Bill Hardy or Dick Gove, I do not know whether I should recognize that this is the Waukesha of my early days. I do see, now and then, a monument of the early days, they look a little out of place now in connection with more modern structures, but they bring up many happy recollections to me of the boys and the girls that used to live in those houses, that were my schoolmates, playmates and associates. And then, when I see that strangers are occupying those residences, when I see in the papers and the advertisements so few names that used to fill the papers, I begin to feel that I am growing to be nearly "the last leaf upon the tree," and I say to myself, "Where are the friends that to me were so dear, Long, long ago, long ago?"

These are perhaps not very appropriate words in which to respond to an address of welcome, but they are the thoughts that come to me, and perhaps it will suffice for me to say that the Association is very glad indeed to be welcomed to Waukesha, and the mayor has our sincere thanks for the kindly words in which that welcome has been expressed.

Vice-President C. P. Goodrich was called to the chair.

PRESIDENT'S ANNUAL ADDRESS.

In looking over the annual reports of this Association, of which I have a set complete since 1883, I am greatly impressed with the unselfish endeavor exerted in all these years by its founders, for the upbuilding of the dairy industry.

In the 34 years that have elapsed since its organization, they have seen the annual production of butter grow from 22 million pounds to 125 million pounds; and the cheese from 3 million pounds to 85 million pounds, and it can almost be said that even now the dairy industry is but in its infancy, for not only in those portions of the state where new territory is being opened up but also in the older portions of the state the interest in dairying is ever on the increase.

It has been universally true I think that wherever this Association has held its meetings there has been a great awakening along dairy lines.

It will be remembered by those who attended the meeting at Wausau last year that on account of the farmers in that new wooded country being so busy hauling forest products that the attendance was not what we had hoped it would be.

But in spite of this the interest in the meetings was well sustained and Mr. Wright has written me three times during the year, telling of some man or men who went home from that meeting with inspiration and enthusiasm that has resulted in new barns, new silos, better dairy stock, cleaner milk and more of it.

The final results of such seed sown is beyond estimation.

Such results must bring to those "who have borne the burden and heat of the day" a feeling of great satisfaction.

The past two or three wet years have caused a little lull in the opening up of our northern timber lands and an increased immigration to the great grain fields of the Northwest, but as former experience has proven, two or three dry years will send these same farmers back to Wisconsin to settle down to dairying. Heat or cold, wet or dry, the old brindle cow continues to be the great wealth producer.

Our meeting this year, here at Waukesha, is in that section of the state where a large part of the milk produced, is used for city consumption, and I hope the influence of this convention will come as a warning, for those sections of the country where this branch of dairying has been followed have not been those that are the most prosperous for a term of years.

This not need be true, and the constant aim should be to maintain the fertility of the soil.

We should profit by the example of some of the eastern states.

In the October issue of "Country Life in America" there is an article entitled, "A state for sale at $10.00 per acre," giving the agricultural experience of New Hampshire where whole communities are abandoned.

Results have proven that these same farms, exhausted as they are, can by dairying, and careful conserving of fertility, be once more restored to their original state of fertility.

About 12 years ago the price of farm lands in New York fell 50% or more, and while a large part of the land in that state is still for sale at these lower prices, those farms that are near town or the trolley lines are coming back in price largely on account of the ready market for dairy products at good prices.

I am pleased that so much of our time at this meeting is to be given up to the discussion of alfalfa and its culture, for I am more certain each year that its culture means much to Wisconsin agriculture.

Prof. Moore in his studies of alfalfa has concluded that Waukesha county is peculiarly adapted to the production of alfalfa, and each year will witness a great increase in its cultivation not only in Waukesha county, but in nearly every part of the state.

It was my privilege in January to visit for three days around Syracuse and Fayetteville in Central New York, and the price

of farm land there now is largely influenced by its ability to grow alfalfa.

Many matters of importance to the dairy industry of this state have come up this past year.

One of these is the enactment of the law requiring cattle brought into this state to be tuberculin tested.

With this testing in charge of our Live Stock Sanitary Board, only good will come from the enforcement of this law.

Another is the National Dairy Show to be held at Chicago, Feb. 15th to 24th, 1906.

While it will be impossible to make this show in many particulars a model one the first year, its success is assured and it will from the very first be a great educator, not only of the dairymen who will visit it but of the city consumers of dairy products.

The report of this Association for 1883 contains a report of the Grand Union Dairy Fair held Dec. 4–9, 1882, and though it was a financial failure on account of cold stormy weather, still I am surprised that being so great a success in other ways, that a like venture should not have been tried again until 23 years had elapsed.

I note that one of the prizes at that show was for "The youngest cow with calf by her side, but no dairy show today would offer such a prize, showing an advance of dairy thought.

I hope a large delegation from Wisconsin will attend the show at Chicago next week.

Still a third thing worthy of note is the official year fat record of the cow Yeksa Sunbeam, owned by Mr. Fred Rietbrock, and kept on his farm at Athens, Wis.

Her record of 857.15 lbs. of fat seems almost incredible, but larger records, as well as growth along all other lines, may be looked for.

No other cow is known to have produced as much fat in a year.

This, following the winning in 1904 of the dairy test at St. Louis by Loretta D., a cow that went from Wisconsin, will do much in bringing Wisconsin pure bred dairy cattle into even greater prominence than they now possess.

Already bulls bred in Wisconsin stand at the head of pure bred herds in nearly every state, if not every state of the union.

The subject of raising cows and heifers for market is on our

program at this meeting, and nearly all the breeders of pure bred dairy cattle will testify to the increasing demand both in this state, and from outside as well, for both cows and heifers.

I have had calls this year from California on the west to the District of Columbia on the east. I bespeak a careful study of this subject.

Since the last meeting of this Association the legislature has passed the law giving the State Dairy and Food Commission a second assistant commissioner, an assistant chemist, and eight additional inspectors, and anyone who has been carefully following the work of this commission this year will not hesitate to say that this work is all that we hoped it would be in its improvement in the quality of the dairy products produced in our state.

I was much impressed by the exhibit made by this commission at our last state fair, and the crowds constantly in attendance showed that the exhibit was of interest and profit to all.

The other new laws relating to the adulteration and sale of food and dairy products will make the commission much more effective.

In closing I want to speak of the bright outlook for Wisconsin dairying.

With the ever increasing market, caused by the growth of St. Paul, Minneapolis, Chicago, Milwaukee and the cities of northern Michigan, and the nearness to the great feed bins of the northwest, dairying is bound to be Wisconsin's leading industry.

In the words of the Norwegian farmer, we must "Just keep a pullin' titts."

"Pullin' Titts."

Aye ban a yust gude farmer for more as saxteen yare,
Aye raise some wheat and corn, and fat some hogs and steer,
Aye watch that farmer business close, for where that money gits,
And Aye find it koming kwichest when you ban a pullin titts.

Dam falla what ban raising grain, and hauling dam to town,
Hay got no money in the pocket, hay ban broke the whole yare round,
Dam falla what ban fatting stock, ban rich and dan ban poore,
Some time day make a plenty money, some time day loosin more.

But dam falla wid da brindle cow, he got bully ting, you bet;
Hay never lose hims whole yare crop, if groun been dry, or ban too wet,
Ven hail ban strikin down the crop, and yust ban raisin fitts,
At night ha call dem brindles in, and yust ban pullin titts.

Hay got dam separator what makes a lot of cream,
Hay got da money coming in yust like a pleasant dream,
Hay got a money in di bank, hay got a money in his mitts,
Hay ban no Rockafellow, hay yust ban a pullin titts.

The Chairman: I believe it has been the custom to appoint a committee on the President's Address. Just what that committee's duty is, I do not know, but I believe to draw up a resolution commenting on the address, or criticising it, or something of that kind. At any rate, I will appoint a committee, and I will appoint A. J. Glover, Mr. O. P. Clinton and Mr. S. E. Gernon.

The President resumes the chair.

The Chairman: We have nothing else on the programme this morning, but I am sure you are not wishing to go home just yet and we have with us a number of Wisconsin's best known dairymen, and men who are not on the programme, and while I am sure they will take part in discussions, you will want to know them better, thus early in the proceedings, and I am going to call for a few words, first from Mr. C. H. Everett of Racine, who is one of the ex-presidents of this Association, and the editor of the Wisconsin Agriculturist, which I doubt not is in many of your homes, and you will be glad to meet and know Mr. Everett.

GENERAL GREETINGS.

Mr. C. H. Everett, Racine, Wis.

Mr. President and Gentlemen of the Convention: I have just this monent entered the hall and I do not know what has been said or done here this morning. I came in time to hear the close of the president's address. I do not know what I am expected to say to you, I do not believe that I can say anything of very great value. I am out of the field of lecturing, I have quit talking and have begun to write within the last few years. However, I have been in this field of dairying for a good many years, personally engaged in it, "just pulling teats," and I found it profitable business; I made a little money dairying, I managed to take care of part of it, enough to keep me out of the poor-house for sometime to come. I don't know why I ever quit the business of dairying. I don't know why any man should ever cease to do business with a good dairy cow. I don't know of any business in the world more profitable, which makes a man more independent, than that of dairying.

I see before me in this room men who have grown gray in the business, men who may be considered well off, rich, who do not owe anybody a dollar and have plenty to take care of them; they do not do much now, they have ceased to work, cows have made them well off. But those men have been good dairymen, they have been students of the dairy cow, and have learned the dairy business from start to finish. They have learned that there is an individuality in the dairy cow, just as there is in men, in dogs, or in trotting horses; just as much difference in the individual ability of dairy cows as there is in the ability of men; and that is where many dairy farmers fail,—in studying the individual cow. We do business with the herd and pay attention to the cows collectively and not individually. It seems to me that it is every dairyman's duty to study each cow in his herd. Every herd in this state has some good cows and some poor ones, and in many of the herds the profit derived from good cows is lost in supporting the poor ones.

I get letters every day asking about the Babcock test, about how to test cows, and about a way of testing cream. I received a letter yesterday from a dairyman of this state asking me what size of a Babcock test he ought to have to test six cows, and if a Babcock test would test both milk and cream, and if he could force the butter maker at the creamery to give him just dues if he had a test of his own. Now, that man was all right in his way, and yet, reading between the lines, you could see he was dissatisfied with the returns from the creamery and he had a fond hope that through the Babcock test he might force the butter maker to recompense him for supposed losses. Now, he was looking at the wrong end of the business. He ought to study his cows, to test them carefully, to test his cream, test his milk also that gives the cream, so that he might be able to say to the butter maker, "My cows test so-and-so, my cream contains such a per cent of fat, I have a Babcock test of my own, I know just exactly what the cows are doing, what my milk and cream test and shall hold you responsible for the test of the cream."

A great many dairymen complain of the market end of their business, they cannot get enough for their cream, do not get the price for the butter that they think adequate to compensate them for their work and labor. Now, we as farmers have but little influence over the market end of the business in which we are engaged. We do not make the price of butter or cream, but we can make the cost price of cream and milk on the farm less by keeping down the cost of feeding the cows, by feeding them more intelligently, giving them better care. If we can cheapen the cost price of one hundred pounds of milk on the farm, we have added to the price we receive for it. That is the way to make more money: Cheapen the cost of production, and with the returns keep better cows, and to do it we must keep better cows. You must raise the individuality of the single cow in the herd—not study them collectively, but test each one, find out how much feed she can consume, and whether you are feeding her the right kind of feed.

Adjourned to 2 P. M.

AFTERNOON SESSION.

The convention met at 2 P. M.

President Hill in the chair.

The Chairman: In introducing to you the first speaker of the afternoon, I want to say that if there is any man in Wisconsin competent to know the ins and outs of dairying on Wisconsin farms, it is Mr. C. P. Goodrich of Fort Atkinson. I can remember the very first Wisconsin Dairymen's Association that I attended. It is longer ago than you think it is, from my looks. It was at Ripon, I think, in 1887, and I remember having Mr. Goodrich pointed out to me as being at that time the man who was from week to week shipping butter to the Chicago market and was getting higher prices than any other dairyman sending butter to that market. Mr. Goodrich continued that dairy farming for many, many years, until he became,—I won't say he became an old man, because he is only a young fellow yet,—until he obtained a well deserved rest and he is now living in Fort Atkinson. He is one whom every dairy farmer in Wisconsin will be glad to listen to, and I am sure you will be glad to listen to Mr. Goodrich. We familiarly call him "Uncle Perry;" we more familiarly call him "Uncle Humus." Possibly when he is through with his address this afternoon and you come to know him better, you will possibly see why we so affectionately call him "Uncle Perry," and even may know why we call him "Uncle Humus."

A WAUKESHA COUNTY COW CENSUS.

C. P. Goodrich, Ft Atkinson.

Once more I appear before the meeting of the Wisconsin Dairymen's Association with the results of a "Cow Census," or an investigation among creamery patrons, hoping that by studying the facts which I have gathered in my work some dairymen may be able to adopt better methods which will make the business more profitable.

FARMERS WANT HIGHER PRICES.

All farmers desire to sell their grain and forage at the highest possible price. They will put forth the greatest exertion to get a little more than the ordinary market gives them.

So great is the desire to do this that some have joined together and formed what they call the "American Society of Equity," through which they hope, by combination, to "control prices." They say all they ask for is "fair prices." But if it were possible to do this impossible thing, there is no telling to what extent the greed of the farmer might raise prices. This society publishes a paper in Indianapolis, Ind., called Up-to-Date Farming. Some of the writers in this paper denounce the agricultural colleges and teachers that are teaching the farmers how to raise bigger crops. They say that the bigger the crops are the farmer raises, the worse he is off, for increased supply depresses prices so that a big crop brings less money than a small one.

THEY BURNED COTTON IN TEXAS.

This idea got such a hold in Texas that, awhile ago, when they had an immense cotton crop, it was advised that planters should destroy a part of their crop so that the balance left would bring more than the whole would if all put on the market.

Some planters actually did burn a portion of their crop with this idea in view.

If these schemes were actually worked out, it is easy to see that somebody would have to suffer. The consumer would have to pay for it. The hardship of high prices for the necessaries of life would be his.

DAIRYMEN CAN MAKE COWS PAY HIGH PRICES.

But the dairyman can raise the prices of his grain and forage and not oppress anybody. He can make the cow pay more. That plan will surely cause no hardship for the consumer and no suffering for the cow, for the cows that produce the most and thus pay the most for their feed are the most happy and contented cows in the land.

INVESTIGATIONS IN WAUKESHA CO., WIS.

My investigations this winter with the dairymen were carried on in this—Waukesha—county among the patrons of the Heimerl Creamery Co., the creamery being located at Wales. I came to Wales last month and visited forty of the patrons of the creamery, which was all who had patronized the creamery continuously for the twelve months immediately preceding the 31st of October last.

I visited the farm of every one of these forty patrons, saw every one of the cows they had at the time, noted their apparent breeding and type—especially the type—looked over their barns and talked with the proprietor. From him I ascertained the average number of cows he had kept the previous year, found out from him as best I could the amount and kinds of feed the cows had had, and estimated the average cost of the feed for a year of the cows of the herd.

The patrons could, most of them, give a pretty fair idea of the amount of grain food their cows had had. Some of them could tell exactly for they had bought it and had kept the account. Some had had it ground and knew how much they had paid for it.

HOW AMOUNT OF COARSE FORAGE WAS ESTIMATED.

But the coarse forage, the farmers could not tell much about what amount their cows had eaten. They had had all they wanted, for it was plenty and not high. I had to estimate the amount of that from some facts I had learned by past experience. For instance, I had learned that a cow that had no other feed than dry forage would consume about 3 per cent of her own weight daily. Therefore, a 1,000 pound cow would eat about 30 pounds a day during the feeding season, or 200 days, making about 3 tons of fairly good hay, or its equivalent in some other forage.

If a cow was fed some grain food, of course, she ate less coarse forage. If she had ten pounds of grain food, she would not eat more than 20 pounds of coarse food, and so on. In this way I estimated the amount of food.

PRICES OF DIFFERENT FEEDS.

I charged the cows in each herd the same price for the same kind of feed, and that was just the market price on the farms. Timothy hay $8 a ton; clover hay $6; marsh hay $5; corn stover $2.50; silage from well eared corn $2.50; ear corn $12; shelled and ground $16; oats ground $21.50; bran $18; middlings $20. Pasture was abundant and excellent, for which I charged a uniform price of $5 a head for the season.

I have arranged all these facts in tabular form, giving the patron's number; number of cows; kinds of cows; cost of feed per cow; returns for butter from creamery per cow; pounds of milk per cow; pounds of butter per cow; average price of butter; average price of milk per 100 pounds; value for butter for one dollar's worth of feed and net profit or loss from butter per cow over cost of feed.

This table will be published in full, but I will not take the time now to read the whole of it—that would be rather tedious—but will make some selections from it, which will serve to illustrate the most important points.

Facts learned by investigating the dairy herds of 40 patrons of the creamery at Wales, Waukesha county, for the year ending October 31, 1905.

Patron's number.	Number of cow.	Kinds of Cows.	Cost of feed per cow.	Returns for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter, cents.	Average price of milk per 100 lbs., cents.	Value of butter for one dollar's worth of feed.	Net profit or loss from butter per cow over cost of feed.
			$	$					$	$
1	18	Shorthorns and Shorthorn grades; not very good dairy type	23.00	29.84	3540	154.2	19.4	83.3	1.29	6.84
2	9	Common stock; fairly good dairy type.	24.50	30.30	3470	157.2	19.3	87.3	1.24	5.80
3	9	Mixed breeding; not good dairy type.	27.50	28.40	3290	147.1	19.3	83.2	1.03	.90
4	23	Mixed breeding; some good dairy type others scrubs	27.25	32.72	3478	166.3	19.7	94.1	1.20	5.47
5	7	4 grade Jerseys; 3 grade Shorthorns; very good dairy type.	35.00	46.56	4752	220.2	21.1	98.0	1.33	11.56
6	25	Mixed breeding; scrubs and poorly cared for	26.00	22.92	2532	117	19.6	90.5	.88	—3.08
7	19	1 Jersey, some Ayrshires, some grade Shorthorns, some common; very good dairy type	28.50	42.37	4555	207.8	20.6	93.0	1.49	13.87

Facts learned by investigating the dairy herds of 40 patrons of the creamery at Wales, Waukesha county, for the year endin / October 31, 1905—Contiuued.

Patron's number.	Number of cow.	KINDS OF COWS.	Cost of feed per cow.	Returns for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter, cents.	Average price of milk per 100 lbs., cents.	Value of butter for one dollar's worth of feed.	Net profit or loss from butter per cow over cost of feed.
8	10	Grade Shorthorns; fairly good dairy type	25.00	33.47	cr'm	164.4	20.4	.....	1.34	8.47
9	10	1 grade Jersey, rest grade Shorthorn and common; good dairy type.	29.00	60.01	6000	282.5	21.3	100.0	2.07	31.01
10	16	One-half grade Shorthorn, balance grade Jerseys; good dairy type	34 00	66.89	5938	314.6	21.2	112.6	1.97	32.89
11	19	Common stock; mixed breeding	26.00	31.23	3585	155.6	20.0	87.1	1.20	5.23
12	16	Common stock; mixed breeding 2 Jerseys; fairly good dairy type	29.50	32.76	3558	160.3	20.4	92.0	1.11	4.26
13	9	Some Jersey, some Shorthorn blood; fairly good dairy type	28.80	37.85	4124	186.7	20.3	90.1	1.39	9.05
14	8	Common stock; fine dairy type	29.50	59.30	6258	287.5	20.6	94.6	2.01	29.80
15	13	Common stock; a little Jersey blood; medium dairy type	33.00	38.23	4059	183	20.9	94.2	1.16	5.23
16	13	Grade Jersey in breeding, but scrubby looking	32.00	27.33	2908	130	21.0	94.0	.85	—4.67
17	21	Common stock; medium dairy type	30.00	35.09	3981	176.5	19.8	87.9	1.17	5.09
18	9	Common stock; very good dairy type	29.50	53.07	5850	256.7	20.7	90.7	1.80	23.57
19	8	Common stock	31.50	50.35	5323	246.3	20.4	94.6	1.60	18.86
20	8	Mixed; would be fair dairy cows if properly fed	28.00	31.37	3868	167	18.8	81.1	1.12	3 37
21	17	Mixed; fairly good dairy type, but rather scrubby	25.00	35.93	3577	177	20.3	100.0	1.44	10.93
22	25	Grade Shorthorns; fairly good dairy type	26.00	39.40	cr'm	189.9	21.8	.....	1.51	13.40
23	12	1 G., 1 G.-H., 1 G.-J.; fine dairy type; balance Shorthorn; very good dairy type	25.00	53.71	cr'm	257.4	20.9	.....	2.15	28.71
24	15	Mostly grade Shorthorns; beefy type; 1 grade Jersey	31.50	37.73	4719	188.6	20.0	80.0	1.19	6.23
25	14	Some Shorthorn, some Jersey and common; good dairy type	37.00	54.50	5414	259	21.0	100.0	1.47	17.50
26	6	1 Grade Jersey, 1 Grade Holstein; balance grade Shorthorns; fair dairy type	31.00	40.70	4879	213.6	18.6	83.4	1.31	9.72
27	14	6 Grade Jerseys, fair dairy type; balance grade Shorthorns, very good	30.80	38.82	4185	191	20.3	92.8	1.26	8.02
28	13	3 high grade Jerseys; balance, common stock	28.00	33.15	cr'm	163.4	20.3	....	1.18	5.15
29	20	Grade Jersey; 1 full blood; good dairy type; 10 heifers with first calf	32.00	56.74	cr'm	281	20.2	.....	1.77	24.74
30	9	Mixed breeding; very good dairy type	32.50	50.65	cr'm	248.1	20.4	.....	1.56	18.15
31	15	3 Brown Swiss; rest mixed, fairly good dairy type	40.00	41.28	3971	193.5	21.3	104	1.03	1.28

Facts learned by investigating the dairy herds of 40 patrons of the creamery at Walee, Waukesha county, for the year ending October 31, 1905—Continued.

Patron's number.	Number of cow.	KINDS OF COWS.	Cost of feed per cow.	Returns for butter from creamery per cow.	Pounds of milk per cow.	Pounds of butter per cow.	Average price of butter, cents.	Average price of milk per 100 lbs., cents.	Value of butter for one dollar's worth of feed.	Net profit or loss from butter per cow over cost of feed.
32	13	10 Jerseys; 3 grade Jerseys; good dairy type	26.00	46.85	cr'm	229.1	20.4	....	1.80	20.85
33	19	Common stock; not very good dairy type	31.00	34.49	3966	174.6	19.8	87	1.11	3.49
34	9	Common stock; small but fairly good dairy type	24.00	41.18	4527	204.5	20.1	90.7	1.71	17.18
35	20	Mixed breeding, rather scrubby looking	39.00	40.11	4243	196.1	20.4	91.8	1.03	1.11
36	14	Grade Shorthorns; fairly good dairy type	38.00	50.69	cr'm	244.4	20.7	.....	1.33	12.69
37	18	Grade Shorthorns, beefy type	31.00	33.63	3648	160 5	20.9	92.1	1.08	2.63
38	11	Common stock; good dairy type	37.00	54.59	5331	243.8	22.4	103	1.48	17.59
39	16	1 grade Jersey; rest grade Shorthorns, dairy type	33.00	57.88	6050	279.7	20.6	95.7	1.77	24.88
40	26	2 Grade Jerseys; 1 Grade Holstein, good type; 3 scrubs	25.00	44.18	4611	221	20	95	1.77	19.18

COWS FED NO GRAIN.

In the vicinity of Wales last year coarse forage was cheap, concentrated food high and pastures good. Under such conditions some dairymen think that it is most profitable to feed no grain in winter; have cows fresh in spring and produce most of their milk on good pasture. This seems quite plausible. Let us see what the facts I have found indicate.

Number one had 18 cows: Short-horns and short-horn grades; not very good dairy type; fresh in spring. Feed was clover hay, a little marsh hay and a little corn stover worth $18.00. No grain; pasture $5.00; making total cost of feed per cow $23.00. Returns from creamery, $29.84; net profit per cow $6.84. Pounds of milk per cow, 3,540; pounds of butter 154.2; price of butter 19.4 cents; price of milk per 100 pounds 83.3 cents. One dollar's worth of feed brought $1.29.

Number 2: had 9 cows; common stock; fairly good dairy type; fresh in spring. Feed was timothy hay and a little corn stover,

worth $19.50; no grain; pasture worth $5.00, making total cost of feed per cow for the year $24.50. Returns from the creamery $30.30, making a profit over cost of feed of $5.80; pounds of milk per cow 3,470; pounds of butter 157.2; price of butter 19.3 cents; price of milk per 100 pounds 87.3 cents. One dollar's worth of feed brought $1.24.

COWS FED GRAIN LIBERALLY.

Now we will compare these two patrons with two others who had about the same grade of stock but who fed high, notwithstanding the high price of grain, and had their cows mostly fresh in the fall.

Number 36 had 14 cows, grade Shorthorns, fairly good dairy type, fresh in early winter and spring. Feed was clover and timothy hay worth $14.00; corn and oats ground and bran 10 pounds a day in winter worth $19.00, and pasture $5.00, making total cost of feed for the year, $38.00. Returns from the creamery, $50.69, making an actual profit of $12.69. This patron had a hand separator and sent cream which produced 244.4 pounds of butter; price of butter, 20.7 cents. One dollar's worth of feed brought $1.33.

Number 38, had 11 cows: common stock; good dairy type; fresh in fall. Feed was timothy hay and corn fodder worth $12.00; ground oats and corn and bran, 12 pounds a day, worth $20.00; pasture $5.00, making a total cost of feed per cow per year $37.00. Returns from creamery $54.59, making an actual profit of $17.59. Pounds of milk per cow 5,331; pounds of butter, 243.8; price of butter 22.4 cents; price of milk per 100 pounds $1.03; one dollar's worth of feed brought $1.48.

It will be seen that number 38 got 3 cents a pound more for his butter than did numbers 1 and 2 and one and a half cents more than did number 36. This is because he produced the most when the price was the highest.

I think this comparison between Nos. 1 and 2 and Nos. 36 and 38 fairly represents the situation. At any rate, you have the facts and you can take your choice.

SMALLEST AND LARGEST RETURNS PER COW.

I next will compare the patron who got the smallest returns per cow with the one who got the largest returns.

No. 6 had 25 cows, mixed breeding, and all rather scrubby looking; fresh in mid-winter and spring. Feed was marsh, timothy and clover hay and corn stover, worth $15.00; an average of about 600 pounds of ground corn and oats per cow during the winter worth $6.00; pasture $5.00, making total cost of feeding $26.00 per cow. The stable was fairly good, but rather filthy.

Returns from creamery per cow $22.90; cost of feeding, $26.00; making an actual loss of $3.08 per cow. Pounds of milk per cow 2,532; pounds of butter 117; price of butter 19.6; price of milk per 100 pounds 90.5 cents; received for one dollar's worth of feed 90 cents.

No. 10 had 16 cows, ½ Shorthorn grades; balance Jersey grades; all good dairy type. One-half were fresh in fall and ½ in mid-winter. They were fed clover hay and shredded corn fodder $11.00 worth per cow; bran and middlings in winter, 15 pounds per day to fresh cows; ½ as much to others, making an average of $18.00 worth per cow; pasture $5.00. Total cost of feeding per cow $34.00.

Returns from creamery $66.89 per cow; profit over cost of feed $32.89. Pounds of milk per cow 5,938; pounds of butter 314.6; price of butter 21.2 cents; price of milk per 100 pounds 112.6 cents. Received for one dollar's worth of feed $1.97. This patron had a good, comfortable, tidy stable, although his cows were fastened with rigid stanchions, as were all others I have so far mentioned. He is a student of his business. He takes dairy papers and studies dairy literature. He sells the products of his farm and the feed he buys at double the price they sell for in the market. He gets more than twice as much for them as number 6 does. Number 6 might do as well, if he would learn to adopt the same methods.

The only criticism I have to make on number 10 is that possibly he feeds some of his cows a little too heavy on concentrated food for the future good of the cow, and possibly—though I am not perfectly sure of it—he might make a greater *per cent* of

profit on his feed—though not quite so big gross returns per cow—by feeding a little less of concentrated food.

POSSIBLY AN EXCEPTION.

Number 9 had 10 cows; 1 grade Jersey; balance grade Shorthorns and common stock; ½ fresh in fall; rest in spring. Cows were fed clover and some timothy hay and corn stover worth $14.00; bran, corn and cob and oats ground nine pounds each to fresh milkers, $10.00; pasture $5.00, making $29.00 per cow.

Returns from creamery, $60.04 per cow. Deducting $29.00 for cost of feed leaves an actual profit of $31.04. Pounds of milk per cow 6,000; pounds of butter 282.5; price of butter 21.3 cents; price of milk per 100 pounds 100 cents. One dollar's worth of feed brought $2.07.

This patron says he does not read dairy literature, but he was a conundrum to me. When taking this census I wrote what I though of the cows when I saw them, and occasionally in the blank of "remarks" I wrote my impressions of the man.

This is what I wrote at the time concerning this patron: "He does not *seem* to believe in progress in dairying; still he has remarkably good cows and must be doing well. I mistrust he talks that way and does not mean it." When I got his returns from the creamery, I felt quite sure I had sized him up about right.

Cows that paid the highest price for feed and those that paid the lowest price.

I will now contrast two patrons, one of which sold the feed his cows ate at a higher price than any other patron, and another who sold the lowest of any, and see if we can find out why one man should sell his oats, corn, hay and pasture for 2½ times as much as another man and both selling to cows.

Number 23 had 12 cows; 9 grade Shorthorns; very good dairy type, 1 full blood Guernsey, 1 grade Holstein, 1 grade Jersey; these three, fine dairy type; ½ fresh in the fall and ½ in spring. They were fed clover and timothy hay and corn fodder worth $7.00. Silage 35 pounds a day per cow, worth $8.00. Three pounds of bran fed on silage worth $5.00, and pasture $5.00, making total cost of feed per year per cow $25.00.

Returns from creamery $53.71, deducting cost of feed leaves $28.71, actual profit over cost of feed. Pounds of butter per cow 257.4; price of butter 20.9 cents. Has hand separator. One dollar's worth of feed brought $2.15.

In my "remarks" I wrote of this patron: "He takes dairy papers and is a student of the business, and I predict that he will succeed better than most men."

Let us contrast number 16 with number 23. Number 16 had 13 cows, grade Jerseys in breeding but scrubs in looks. Fresh in fall. Feed: timothy, clover and marsh hay and corn stover, $12.00; bran and middlings, 8 pounds a day after January 1st, $15.00; pasture $5.00, making total cost of feed $32.00. Returns from creamery, $27.33. Loss on feed, $4.67; pounds of milk per cow 2,908; pounds of butter 130; price of butter 21 cents; price of milk per 100 pounds 94 cents. One dollar's worth in feed brought 85 cents in returns from creamery.

Truly, number 16 worked for small wages and sold the products of his farm very cheap. Much of his failure was caused by not feeding his cows well (which were fresh in the fall) until mid-winter when they were nearly dried up. Then he fed higher, but the flow of milk could not be brought back.

DON'T LOVE DAIRY COWS.

Number 24 had 15 cows; mixed breeding, mostly grade shorthorns of beefy type. Fresh at all times of year. Feed: clover, and timothy hay at $18.50; corn and oats ground and bran, $8.00; pasture $5.00; making total cost of feed $31.50. Returns from creamery $37.73, leaving for profit $6.23. Pounds of milk per cow 4,719; pounds of butter 188.6; price of butter 20 cents; price per 100 pounds of milk 80 cents. One dollar's worth of feed brought $1.19. He does not read dairy literature, and says he has not much love for the dairy cow, but likes the beef cow better. This no doubt accounts for his small profits.

TWO GOOD DAIRY HERDS.

Number 32 had 13 cows; 10 full blood Jerseys; 3 grade Jerseys; ½ fresh in fall and ½ in spring; all fine dairy type. They were fed timothy hay $8.00 worth; silage 25 pounds a day,

$6.50; bran 4 pounds a day $6.50; pasture $5.00, making total cost of feed $26.00 per cow.

Returns from creamery, $46.85, making a profit of $20.85 per cow. Pounds of butter per cow, 229.1; price of butter 20.4; had hand separator. Barn good, well lighted and whitewashed. He reads dairy literature and when he gets to feeding more clover and less timothy hay and a little more of the right kind of grain food, he will do better. As it is, one dollar's worth of feed brought $1.80. Such cows as his ought to bring more.

Number 29 had 20 cows; 10 of them heifers with first calf. Grade Jerseys; one full blood Jersey, good dairy type; fresh in winter and early spring. Feed: timothy and clover hay and a little corn fodder, $7.00; silage 30 pounds, $7.00; middlings and bran, 8 pounds, $13.00; pasture, $5.00; making cost of feed $32.00.

Returns from creamery, $56.74; profit over cost of feed, $24.74. Pounds of butter 281; price of butter 20.2 cents. Has hand separator. One dollar's worth in feed brought $1.77.

This is a remarkable showing, considering that half his herd were heifers. He studies dairy literature. His barn is well lighted, has King system of ventilation. Has patent revolving, adjustable stanchions for cows, with partitions between them. He also has a manure carrier in his stable, as have some others in the neighboorhood.

SOME AVERAGES.

The whole number of cows kept by these 40 patrons was 556, an average of 14 cows to the herd. The average pounds of butter per cow was 202.1, and the average price was 20.4 cents a pound. The cost of keeping per cow was $30.00 and the average returns for butter per cow was $41.29, leaving an average net profit above cost of feed, $11.29.

Number 10 had the highest yield of butter per cow, 314.6 pounds, with a net profit of $32.89 per cow.

Number 6 had the lowest yield of butter per cow, 117 pounds, with a loss of $3.08.

Number 38 received the highest average price per pound of butter, 22.4 cents, and an average net profit per cow of $17.59.

No. 26 received the lowest average price per pound of butter, 18.6 cents with an average net profit per cow of $9.72. Number 26 had his cows all fresh in spring, and fed very little grain in winter.

The creamery books show that they produced nearly all their butter in summer when prices were the lowest. Number 38 had his cows all fresh in the fall and he fed them a heavy grain ration during winter. They produced the most butter when prices were the highest.

DOES IT PAY TO READ ABOUT YOUR BUSINESS.

I made inquiry of every patron whether he took papers devoted to dairying or studied dairy literature. Twenty-five answered "No." Their net profits were $8.95 per cow on an average. Eight patrons said they took agricultural papers that had some dairy reading in them. Their profits were $10.94 per cow. Seven patrons took papers specially devoted to dairying and they studied dairy bulletins from the agricultural colleges and other dairy literature, and their profits averaged $21.87 per cow. Those who read about their own business made $12.92 more profit per cow than did those who confined their reading to other subjects. With the average herd of 14 cows, this dairy reading seems to mean $180.88 added profits. Does it pay to read about one's own business?

Remarks made during reading of paper.

I found when I came to Wales, a community of prosperous farmers. In the main, they were really good farmers. I found that they had excellent barns, as a rule. I did not find a cold barn among all the barns that I visited. There were some, it is true, that were not well ventilated, and in some of them the atmosphere was not as pure as it should be for that reason, and some of them were somewhat filthy. I found some first class barns, that had all modern conveniences and equipments for keeping cows, that were well ventilated and well lighted and whitewashed. I will mention two of them. The barn of Row-

land Brothers is equipped very nicely and a man by the name of David James has a barn that is fixed in fine style, and I would suggest to any one that is going to build a new barn or remodel an old one, it might pay you to visit these barns. They are in different styles altogether, and one may suit your ideas and your circumstances, or the other one might suit you better.

Now, it was absolutely necessary that I should have the co-operation of the people where I was going to do the work. I had to have that and I want to say that I did have it. In almost every instance the patrons of the creamery were willing and anxious to give me all the information that I wanted. And it was also necessary that I should have somebody that was acquainted with the people and somebody that the people had confidence in to go with me, to introduce me, otherwise some people would be suspicious and think I was working some scheme for myself. Mr. O. M. Rowlands went with me about one-half the time, and Mr. Morgan Jones, the other half, and I have to say that the people seemed to have great confidence in those men and were very free to talk with me. I also had the co-operation of Mr. Heimerl, manager of the creamery. The creamery is run in good shape, there is no question about that, and the patrons are receiving as big pay as they are from any creamery that I know of. I felt that I ought to say these things.

I want to talk a little about number 6. He had twenty-five cows. I went out to his stable, he said he had good cows. I hope Number 6 is here, because I want to tell him some truths, and I know he is a man that wants to make money just as much as you or I do, and I guess he is doing pretty well in other lines of farming, appears to be. I went out to the stable and he had fifteen cows in the stable. The stable was not the neatest that ever was; it was warm enough; it was not very well ventilated, did not smell first rate, the air was a little close, cobwebs hung down two or three feet, showing that he had not even made any attempt to clean it up, and the cows did not look as though they were giving very much milk. I asked him if the cows were doing

well, and he said, yes, they were doing well. Now, he thought so himself, that they were doing well. He said, "Why, I get two cans of milk a day." I looked around and I saw the cans and they were the ordinary eight gallon cans, and he got two cans a day. I said, "Do you carry your milk every day?" "No," he said, "every other day to the creamery," so that he brought up every other day those four cans full of milk and that is what he was taking from a herd of twenty-five cows, fifteen of them only were giving milk. Well, I wanted to see the others, I said, "These are not all your cows?" He said, "There are some that are dry." I said, "Let me see them." I went out and looked them over and they were the same kind of cows, that is, mixed. And I wanted to find out the breeding, I said, "Have you got some Jersey in it?" I could see once in a while one with a mealy nose, that is one of the signs, you know, when all the rest of the characteristics are blotted out, that will stick out. He said, "Yes, I had a Jersey bull once." I looked around a little more, and I said, "I see some of them look as though they had some Ayreshire blood in them." "Yes, I had an Ayreshire bull once." Then I looked a little further and I said, "There is one that looks as though it had some Galloway blood in it," and he said, "Yes, I had a Galloway once." And I saw the animal at the head of his herd now, and the Lord only knows what that was. Now, that was the situation there with the man that was losing money, not getting paid for his feed, and I hope that he is here, because he will know that I mean him, for he will remember that conversation, and I said, "Are they good cows?" and he said, "There is one of the best, the most splendid cow I have got, and she is a fine cow." She had the Galloway blood more than anything else and she had plenty of hair.

It is a fact that there are hundreds of cows in Wisconsin and in the United States today that are ruined by two heavy feeding of concentrated foods. I am an advocate of very generous feeding and feeding up to the full capacity of the cow; that is, all she can eat and digest and turn into milk, but it must not be too much of the concentrated food. Look over the records of these great cows, and see what wonders they do. Do they ever re-

peat it? Never. They had been fed too high on concentrated food. There were seventy-five cows down at Chicago at the World's Fair, twenty-five Jerseys that made a remarkable record, that were crowded to their utmost, they had from 20 to 25 pounds of concentrated food, and do you know of one of them that ever did anything afterwards? Not one of them, as far as I can find, except Mary Maiden, and it took three years for her to get back to producing much. Now, although I am advocating always high feeding, I want to give you this caution, that they must have a certain amount of coarse food or they cannot continue on year after year doing good business. A cow is made with a stomach and machinery for handling coarse food and that is her natural food and she has got to have it, she must have it of she will suffer in health. She needs some grain food because she cannot get enough milk out of the coarse food to do her very best. Now, the question is, what proportion of the feed should one-third of her ration concentrated feed, that is, if she can be concentrated feed? My rule is that a cow should have about make good use of it, and two-thirds coarse feed, and then you are perfectly safe, if you feed her properly and handle her right, until she is 16, 17 to 18 years old. Now, if she eats ten pounds of concentrated feed a day and twenty pounds of coarse feed, that is all right. If you feed her fifteen pounds of concentrated feed a day, as this patron did, you are running pretty close to the danger line, although his case was not so bad, because a great deal of it was bran and that is not so concentrated. But a man is ambitious; I know, I have been there myself. I spoiled some cows by feeding too high because I wanted to make a bigger record, but I got so that I watched to see that they would eat a lot of the coarse feed. I had cows that I fed 15 pounds a day, but I watched close to see that they ate a great deal of hay to go with it.

The largest cow I ever saw was Rosa Bonheur, at the Michigan Agricultural college; she weighed 2060 pounds when I saw her, and gave 104 pounds of milk a day for two months at a time. Prof. Smith wanted to see what a cow could do if she had just what she wanted to eat, so he put her in a box stall, with

some oil meal and cotton seed meal and ground oats and corn and all kinds of feed, and he said, "Rosa, there is your feed, take what you want, there is your own ration, see what you can do. She ate at will and produced 104 pounds of milk, but it ruined her. She ate, a good many days, 47 pounds of concentrated feed. Well, remember, she was two cows in one, in size. When you take that into account you will see it was about 23 or 24 pounds for an ordinary sized cow, but it ruined the cow, and that is the point I wanted to make. Next time I saw her she was not good for anything. I want to tell you the experiment has been tried with calves, to see how a calf would do without having any coarse food. When it is a week old, why the calf does not need any, but pretty soon, if it has a chance, it will begin to eat something and begin to extend its stomach, it is made for coarse feed, but experiments have been tried and a calf could not live two months on milk alone without any coarse fodder. They have to have it. A cow could not live on oatmeal alone, although I have heard some men say she would. She may one winter, but she would not be any good the next year.

DISCUSSION.

Secy. Burchard: I think perhaps it would be well to state whether in giving the average price received for butter, this was inclusive or exclusive of the creamery charge for manufacture?

Mr. Goodrich: This was exclusive of the charge; this is what the patron got. I took the number of pounds of butter, as it was kept in the creamery book each month and footed it up for the year, and divided the money by the number of pounds, that would tell how much he got. I don't know what the charge was for making, I did not inquire; they were all charged alike, they had all taken their milk to the same place and marketed it, so they all stood an equal chance; they all sold their grain and feed to cows, and some of them got a big price for it, and some of them got a small price for it.

Mr. Hodgson: I would like to ask Mr. Goodrich if this census would be equal to the shippers to Milwaukee, or to any large

city; if he thinks the creamery business would pay better than shipping. I observe you have not touched on shippers of milk and cream to the large cities?

Mr. Goodrich: No, I wanted to take those that all went to the same market. Now, I don't know which it the best; Mr. Hodgson no doubt could tell better than I could. I presume he has a better field, I don't know, but I wanted to compare those. It is the cow we are after—to try to improve the cow, and we wanted to take those that took their product all to the same market.

Now, do you know that if I should go to the patrons, if I had tried to find out how much milk they had sent and how much butter they got, I would not have found out one-quarter of the information. One man, where I stopped to eat dinner, said, "I can you tell just what my returns are from the creamery and the amount of milk." So he got his statements out and went to figure them up, and he found there was one month out, and he could not find it. Now, he did better than some of them do; some of them can do it, but it is best to go to the creameries, that is the easiest and best way. To take it among those who sell to Milwaukee, there would be great difficulty. I could not go to the man that he sold the milk to, unless he sold all to him, and I would not know, and then there are other things in the way that you can imagine yourself.

Mr. Clinton: I notice Mr. Goodrich has said nothing about the after-effects on the fertility of the soil?

Mr. Goodrich: No.

Mr. Clinton: I will ask you, in case of a farmer like No. 1, and in case of a farmer No. 10, in running their farms for ten years, one feeding concentrated feed like No. 10, and the other feeding like No. 1, what would be the comparative fertility of their soil?

Mr. Goodrich: Well, it would be better where they feed bran, oil meal, cotton seed meal, such as that. There is no question but what it would make the manure more valuable. Of course I have been working out things that I could figure right down fine, but I could not figure that out to tell exactly what the difference would be. There would be some difference.

Mr. Rowlands: You mentioned where they were feeding

silage. How much silage, what number of pounds, would be the ordinary feed for a cow per day?

Mr. Goodrich: I used to think about thirty pounds per day. One man that I interviewed, fed, he was quite sure, 35 pounds a day; another man fed 25, another fed 30; there were five or six of those fellows that fed silage. We think for ordinary cows, say small dairy cows like Jerseys or Guernseys, 30 pounds of silage is enough; if you have big cows like Holsteins, they need more.

Mr. Burley: Is there any question about how much corn there would be in the silage.

Mr. Goodrich: Certainly; if there is much corn in the mixture you want to feed fewer pounds.

Mr. Taylor: Do you think it is advisable for the average dairyman, feeding silage, to be very careful about the corn in the silage?

Mr. Goodrich: I think it is a good plan to have it well mixed in the silo, so that what you get out each day will contain about the same proportion. The way they used to run it into the silo, the ears would run to one side, and when taking from that side they would get too much of the corn.

Mr. Taylor: You did not understand the question. In making up a daily ration for a cow, would you make a careful estimate of the amount of corn that should go into the silage?

Mr. Goodrich: Yes, with ordinary good corn, the corn is about ten per cent of the weight. That is, with thirty pounds the cow would not get over three or four pounds of corn. You can figure that out.

Mr. Taylor: Let us have an understanding about it. He says from three to four pounds of corn in a day's ration of ensilage. My judgment is, from the kind of corn we raise, there is from four to five and one-half pounds in thirty pounds of ensilage, and in our system of feeding we make no account of that amount of corn the cow gets a day in her silage. We feed her just as much concentrated food as though she did not get that four or five pounds of corn in the silage.

Mr. Reese: I would like to ask Mr. Taylor if he ever saw the time when he got too much corn in the silage?

Mr. Taylor: No, I often have wished that I could raise corn

without any leaves. When a cow is fed silage, she can handle a larger amount of feed in a day, and safely handle it. If she were fed on dry feed I would not think for a moment of feeding her four or five or more pounds of corn, but I can feed her on silage and have her do good work for me. It is safer to feed a heifer with silage corn, and it is also safer to feed corn when cows are out in the pasture,—I mean corn meal in the summer time. If you want to add anything to your pasture, give her corn meal.

Mr. Goodrich: That is right; corn is the best thing to feed on the pasture, I am satisfied of that. Cows know something, and cows refuse to eat bran when they are given grass to eat, very often, but I never had one refuse to eat corn meal. The cow gets protein enough out of the pasture grass and she is willing to take more carbo-hydrates out of the corn.

Mr. Hodgson: Supposing the corn stalk loses ten per cent in value in the silo,—I think that is the calculation,—through the heating process, how much difference in the loss in the corn and the stalk in the silo by the silo process?

Mr. Goodrich: I don't know that I understand you, you say the corn loses 10 per cent?

Mr. Hodgson: I think that is the calculation, I think that is the average.

Secy. Burchard: He says it loses 10 per cent in value.

Mr. Goodrich: Oh, no, I would not agree with that. My position is that corn when made into silage loses some in weight, loses some in dry matter, but it loses nothing in feeding value; it is worth more for feed after it has been in a silo than it was before, and I tell you my authority, an authority higher than any literature or any professor in any agricultural college, and that is the old cow.

A Member: I would like to ask you if you have ever fed a cow exclusively on silage?

Mr. Goodrich: Exclusively? No, I never did.

A Member: How do you obtain your results, if you answer by the authority of the cow?

Mr. Goodrich: I will tell you. I have taken corn just cut from the field and given a change of feed to a cow and she would drop off in milk and in butter when she would get the fresh corn,

and increase when she would get her feed out of the silage when it was put before her. And I have seen put before a whole herd of cows silage four years old, and fresh good corn fodder that was just right to put into the silo, when put before each of a herd of twenty cows, every one took the corn silage and said, "That is the food for me, give me some more."

Mr. Linse: Mr. Taylor has just referred to the fact that we do not pay enough attention to the amount of corn in the silage. I am just in the same position, but I do notice one thing,—my corn is heavy eared, in some cases it is heavier than in others, but whenever I get on the heavier eared corn, the heavier the ears, the more the flow of milk will increase. When I get on the heavier corn I feed the other concentrated feed just the same, that is, bran and other feeds, but I do notice a little change when I got on the heavier ears. That is my experience.

Secy. Burchard: Mr. Linse, when you feed the silage with more corn in it, the heavier eared corn, do you weigh it out, the same amount, pound for pound?

Mr. Linse: No, I do not, I measure it.

Secy. Burchard: It is a great deal like men feeding bran to cows, or feeding oats or ground corn, they feed by the measure and not by the weight, and then get up in a convention like this, or more frequently on the street corner or in some grocery, or something of that kind, and say, "Oh, I would just as soon have shavings for my cow as bran." But if they will feed the same number of pounds, irrespective of the measure, then they will find that bran has a feeding value far beyond their conception. And so with Mr. Linse. In my judgment, his silage with the greater amount of ears in it is measured in and he is feeding his cows more nutriment than when the ears are light, and that, rather than the greater proportion of corn in the silage, accounts in my judgment for the increase in the flow of milk. I want to say further, that experiments seem to have demonstrated that a pound of silage made from good, mature stalks, stalks that have thoroughly well matured, with the ears stripped off, is practically as valuable a feed for cows as silage made from the stalk and the ear together, pound for pound, but not measure for measure. Very few of us have any adequate conception of the value of corn, of the ears and of the stalks and the leaves of corn as a

milk producing, or even a fat producing food, because we have not used it properly. We have cut it up and we have shocked it in the field, and the winds and the rains have beat upon it until it is dried up to almost nothing, and then we throw it out on the snow, perhaps in the cold, for the cows to eat, and we will say, "Oh, well, corn stover does not amount to much as a food." Prof. Haecker has demonstrated that one of the most valuable foods for milch cows is what he calls corn fodder. He plows the ground late in the spring, harrows it and reharrows it until he gets a fine tilth and the soil is warm. Then he plants his corn, he harrows it before it is up; perhaps plants it with an ordinary seed drill with one or two spouts open. He lets that grow, not to produce ears very much, but to produce foliage. He puts that in the silo and he finds that about good silage as he can feed.

Mr. Linse: How does that compare in weight per acre of feed where the ears are produced; does he get as much, or more tons per acre?

Secy. Burchard: I cannot answer that.

Mr. Reese: That would be a direct contradiction to what Mr. Taylor says, would it? That is what I want to get at.

Mr. Taylor: No, no. I want to explain a little further what he said. He said without the ear was worth almost as much as the stalk with the ear. Well, there is about 40 per cent of the value of the corn plant in the stalk and about 60 per cent of it in the ear. Now, well preserved stalk mixed with a well-ripened ear, you get it in about the proportion of 40 to 60 per cent; there is not so very much difference chemically. I would rather have it in the pure ear than to have the matter that makes the ear scattered all along through the leaf and the stalk; it digests better in the animal stomach than if it goes on its way to the ear in the stalk.

Before I sit down I want to speak of another point. Mr. Goodrich looked over into this corner when he was talking about imperfect feeding. Now, he cautioned you about over-feeding. You are here in a dairymen's convention, and you hear us talking about feeding the dairy cow and feeding her plentifully and feeding her well. You go home to your herds and take an invoice, take a sort of census of what you are doing when you get back, and tomorrow or next week you will go down and get

a load of corn ground, a load of oats ground, and some cotton seed meal, and you get to feeding your cows better. Now, take what he has said about heavy feeding, overfeeding your cows, and be careful that you do not overfeed these cows that have been six or seven months in milk, that have run in your corn field and around the straw pile, be careful not to overfeed those cows that have been five or six or seven months in milk. But let me tell you, begin to feed a cow a little while before she freshens, and the more she eats the more milk she can give. It is as much easier work for a well-trained cow to give milk, as it is easier work for a trained horse to go fast on a track, it does not wear them out. But there is such a thing as overfeeding a cow when she is not in the proper physical condition, when she cannot receive and handle that feed. But begin with her soon after she freshens, and be very careful, as Mr. Goodrich says, that she does not get any check in her flow of milk. How surprised the boys will be, and how surprised the women will be, to see the flow of milk that old Brindle will give when she is handled right at freshening. There is another standard, that is, taking the cows, as our Jersey friends do, and Guernsey friends; a little while before they freshen, feed them high and keep right on feeding them high, even the day that they calve, and then a little while afterwards, making a good big flow of milk that astonishes everybody, and dairymen and breeders will be looking for that kind of blood to infuse some of it into their herds; that is another proposition. We are here to treat you as dairymen, we would like to make you better dairymen, more intelligent dairymen. Remember the cow that you have in your herd is not to blame for one single thing, and all you have a right to ask of her is that she is a well-born dairy cow, of dairy tendencies, and you are to blame for 169 things that she does not do the best in, and we will mention about 150 of them before we get through this convention.

Secy. Burchard: I would like to say to the gentleman here who suggested that there might be some difference between my opinion and that expressed by Mr. Taylor in regard to the silage, I do not object to the ears in the silage, mind you, I would not strip off the ears in the silage by any means. What I was getting at was, that pound for pound, the silage without ears has

been demonstrated to be nearly or quite as valuable as silage with the ears, but I do not know of any better way to dispose of the ears of corn, if you are keeping a dairy, than to put them into the silo with the stalks.

Mr. Taylor: Do you know of any way of raising a stalk that does not raise an ear?

Secy. Burchard: Yes.

Mr. Taylor: I think a stalk of corn that does not raise an ear is a sucker, and a sucker in a corn field is just as bad as a sucker in the human family.

Mr. Reese: I would like to ask Mr. Taylor which he would rather have, a ton of corn or a ton of stalk, for the purpose of feeding cows?

Mr. Taylor: We know we would not feed stalks alone; neither would we feed ears alone.

Mr. Reese: Which would be the more valuable?

Mr. Taylor: A ton of corn would be more valuable.

Mr. Reese: How many tons of corn can you raise on an acre?

Mr. Taylor: Two or three.

Mr. Reese: How many tons of stalks?

Mr. Goodrich: About a ton.

Mr. Taylor: We are getting corn and stalks, the best you can grow in this land for the dairy cow.

Mr. Reese: You have to plant your corn in hills to get this amount of corn.

Mr. Taylor: No, plant it in rows.

Mr. Reese: You get three tons of corn and one ton of stalks in that way?

Mr. Taylor: Well, dry stalks, maybe a little more.

Mr. Reese: I think you will find it just the other way, you will have one ton of corn and three tons of stalks, as a rule. If you want to raise corn, plant it the other way.

Mr. Emery: We will all of us take off our hat to the man who reared Brown Bessie, when he talks to us on the subject of dairying, but this afternoon he has spoken on this subject of corn fodder, and he speaks to us of a stalk that produces no ear as a sucker, and he does not believe that a sucker of corn is better than a sucker of the human family. Now, he speaks as a matter of belief, but that is not knowledge, that is not science, that

is not conclusive. He may believe a thing that is wholly in error. Now, it appears that in Minnesota Prof. Haecker has been conducting a series of careful experiments on this matter of raising corn fodder without the ears, claiming that they can raise a larger amount of corn fodder to the acre and produce a larger feeding value on that acre by that means of producing it, and it seems to me here is a question that is worth our careful consideration, and not side-track it as something that is already settled. Now, they are very sure there about the experiments of Prof. Haecker—he has been a very careful feeder, a careful experimenter—that it is a more profitable way of feeding, so I do not like to see that question sidetracked. I think it is a question for us to consider in Wisconsin, whether we can produce more fodder to the acre by planting this thicker corn with a different method of procedure and different culture.

Mr. Reese: The question comes up that any one who has a reasonably large silo has to put almost his entire farm into corn to fill that and has not got an ear of corn for the horse or hog, he has not got land enough to raise it. Now, if we could raise corn and raise more to the acre, that would fill that same purpose and give us ears for fattening hogs as a side issue, that is what I was trying to get at; if one offset the other. If it is just as good as this gentleman claims it is, it seems to me it will be the thing for us farmers to do; if it is not as good, on the other hand, we had better practice it as a side issue and raise the corn. But I do not know, I have not had much experience in feeding silage; but I think if you put corn into the silo that will give 100 bushels to the acre, I cannot see any direct results of putting all of that corn through the cattle; I cannot see that I get any more for it; in other words, they do not digest all of that corn, and if they do not digest it they get no benefit from it.

Mr. Philips: We have a farmer in our county that is farming 50 acres of land, he keeps 47 head of stock, he fills two silos, one for summer and one for winter. By continued dairying, such as this association recommends, he has got his land so rich that he fills those two silos from about 16 to 17 acres, fills them full and then he has two large cribs of corn left, and he sold the other day $192 worth of pork. He is not a man that does not have an ear of corn left for a hog or a horse. He is farming intelli-

gently and he knows the value of corn and corn silage, and he demonstrates it.

Mr. Reese: According to their idea, if he raised it the other way, he might raise enough stuff to fill those silos on ten acres.

Mr. Philips: Well, he can.

Mr. Linse: It seems that the question is that a stalk of corn with a heavy ear is not worth as much to put into a silo as a barren stalk.

Secy. Burchard: No, that is not the question.

Mr. Linse: Suppose he takes two or three stalks with the ears taken off, it makes the same weight, but my experiences are that with the corn on it makes the silage more valuable than with the ear off. Now, I have got that far to find that corn stover put in a silo is more digestible, I will admit, and is a better feed material than a dry stalk, but it is not concentrated food like the corn in the silo. Take that out, it forms a part of our concentrated food, and of course they get so much more concentrated food if we feed heavier eared silage. Now, as Mr. Burchard said about feeding heavy eared silage, they get more of it, they get more weight, certainly, but my cows get enough of the coarse feed anyhow. If it is not in the shape of silage it is in the shape of clover hay, or something else, that is all made up, but I say, whenever they get the heavy ears in my silage, they increase in the flow of milk. Of course, it is more concentrated feed. But that shows that the stalk itself is nothing but the ground stalk and it may be more digestible, better than the dry corn stalk I will admit, but it is a corn stalk, nothing else, that is our coarse feed, and I do not believe in the theory that by putting that corn stalk in the silo, while it makes it more digestible, surely it does not make it so much over and above in value.

Ex-Gov. Hoard: But it is the age, the age of the corn stalk that makes it more digestible. The more it goes towards maturity, the less value it is.

Mr. Linse: About twenty-six years ago, when I put in my first silage, I put in the green stuff.

Ex-Gov. Hoard: Let me qualify a little. After the corn stalk with the ear of corn reaches the glazing stage, then the longer it stands the less feeding value the stalk has.

Mr. Linse: I have a couple of silos to fill and I start in every

time in the glazing stage, and before I get through it is pretty well matured.

Ex-Gov. Hoard: Very well. Now, which is the best silage, that that comes out in the top of the silo, the last on, or that that is down in the center or towards the bottom?

Mr. Linse: I have two silos. That which goes on at the top that would be the most matured.

Ex-Gov. Hoard: Is that the best silage?

Mr. Linse: Well, now, I must say that depends mostly on the well-eared corn which gives me the best results.

Ex-Gov. Hoard: Have you made any close experiments?

Mr. Linse: Well, maybe not, not as close as our experiment stations are able to make; I can only look at the buckets and returns from the cows.

Ex-Gov. Hoard: I think we are not dividing this question rightly, but mixing it, consequently we get a little confused. If we would take the late growth in a corn stalk we would see, maybe. Now, then, they buy the pith of the corn stalk to stuff war ships with, and it is called cellulose. Now, that is found in corn stalks after a certain age. A corn stalk itself is digestible when cut and put in a silo and the cows eat it, it is digested, and that pithy material, which we call cellulose after the glazing period of the ears, is sucrose or sugary matter before, but changes over as the ear advances, the stalk grows more and more worthless, so that if we keep our corn until the ears are good, we have taken right back out of our stalk its true feeding value, and if we put the stalk and the ear in the silo at the glazing period, we then reach the sum of the combined feeding value of both of them, and get a larger return of feed from the silo than we would if we undertook to feed the ear separate and then have the poor stalk separate. Therefore, we have not been dividing the question rightly.

Now, Prof. Haecker's experiments were to the effect that the stalk itself, taken at the glazing stage, was 40 per cent of the combined value of both stalk and ear, but carried on a week or ten days, the stalk was not worth 20 per cent. Now, if we lose twenty per cent, where did it go? The ripening of an ear is a mother proposition; the stalk is the mother, here is the offspring, the stalk gives the offspring of itself, and the qualities of the

ear are taken out of the stalk and go into the ear. Now, if we can put the stalk and the ear together and put the highest feed value into the stalk, it seems to me that we then can reach a question of economy. Now, it is not a question of whether the ears are worth the most, or the stalk is worth the most, that is not it at all; it is whether the stalk and the ear both cannot be made worth the most put into a silo together. Go into the town of Lake Mills, and there are five farmers, I think, in that town that have not a silo. Go over into Waukesha county, and it would be a pretty good township where five farmers out of a hundred had a silo. What is the reason that, at just a little distance apart, one set of men demonstrate the usefulness of the silo, and another set of men right up close beside them do not know anything about it, that is, I mean, as a whole; it is worth thinking about.

SOME OF MY FINDS AND EXPERIENCES.

H. C. Searles.

The old saying is, "What is worth doing is worth doing well;" and I think this can well be applied to caring for milk on the farm, and while being delivered to the factory as well.

Since I have been employed by the Dairymen's Association I have visited 175 cheese factories and creameries. And while I find a few in first class shape I find a larger number that are not up to date. The quality of milk delivered at some factories I have visited was very poor, or a large percentage of it; and the factory at which it was being delivered was in equally as poor shape as to sanitary conditions to receive it! In such cases I have made it a point to visit them the second time to see if my instructions had the desired effect on those interested, and was much pleased with the improvement the patrons had made as to cleanliness of milk and condition of cans, and might add the factory had been scrubbed out as well.

The two most essential things to good milk are cleanliness and quick cooling. The milking process should be carried on in such

a manner as to avoid contaminating the milk with dust and dirt. The udder and flanks of cows should be cleaned with brush or cloth to remove loose hairs and dust. The hands of milkers should be clean and his clothing as well. The feeding of dry fodder should never be done just before milking time, as there is a large amount of dust raised at such times. All utensils in which milk is handled should be so made that they can be easily cleaned. Some tinware is ofttimes apparently clean but not really so, for the seams give place for the lodgment of dirt. All seams should be well flushed with solder so that no crevices are left, to avoid diffiiculties that might arise from this source.

Rusty cans and pails should never be used for handling milk. Strainers of cloth should first be rinsed with cold water, then washed well and boiled. This should be done every day. Milk should be strained as soon as drawn from the cow, and not allowed to stand in the stable, nor any other place where there are bad odors.

It's a popular impression that warm milk will not absorb odors, but that is a mistake, for it does and more quickly than cold milk.

Patrons should take extra pains to cover milk cans with a clean blanket while being carried from farm to factory to keep off dust, and the hot rays of sun in summer, also in winter to keep milk from freezing. It seems to me there is little thought given to this important subject by most of patrons. I have seen so many coming to factory without covering on their cans and usually the cans are covered with dust and a good many when removing can cover would turn it up edgewise and let all the dust go into the milk, and when asked why they do that will cay, "I didn't think." And another of the "did not think" kind are those that haul their milk on the manure wagon.

One thing that is overlooked in many of our cheese factories and creameries is the Wisconsin curd test. This should be used in all factories and will be a great benefit as each patron can see the difference between good and poor milk, therefore it would have a tendency to encourage each one to deliver the best milk possible. Clean, wholesome milk is not the only thing to be considered in a factory, for it is just as essential to have the factory clean as to have the milk clean.

In traveling through the country I find that there are some cheese makers that think all they have to do is to make cheese, the whey can be run out in any old dirty tank and carried home by the farmers, and if any bad conditions come back to him as a result that is none of his business. That's the farmer's business. Such men should never be allowed to make cheese or butter. On the other hand if a cheesemaker keeps a good clean factory and cleans the whey tank every day in *this* way he not only sets a good example for the patrons, but can in the most cases demand and get a good quality of milk.

DISCUSSION.

Ex-Gov. Hoard: I would like to ask Mr. Searles how many creameries he visited?

Mr. Searles: One hundred and seventy-five.

Ex-Gov. Hoard: How many stables did you visit?

Mr. Searles: Well, I did not visit the farmers very much.

Ex-Gov. Hoard: About how much interest do you find among those farmers and cheese factories and creameries in the idea of a clean stable, the right form of a clean stable and ventilation in their stables?

Mr. Searles: Very few that I found were interested very much in that line.

Ex-Gov. Hoard: It is impossible for any man to make clean milk in the ordinary Wisconsin stable. Impossible. In the ordinary average farm stable it is impossible to make clean milk, the cows plastered with manure, their sides and flanks, the milk specked with it every time when they are milked, and I do not think the average Wisconsin farmer really has an idea of what "clean" means. I have talked with hundreds of such men; they will say, "Why, my stable is clean." "Clean, how?" "Why, I cleaned it this morning." And I say, "Are your cows clean?" "Why, yes, as clean as Johnson's, or Chris Olsen's," mentioning all the time the fact that a neighbor had just as dirty cows as theirs, consequently they were clean. A man came into my stable one morning, looked at the cows, and stood

a moment, and said: "How often do you wash these cows?" I said, "They never were washed." "How often do you brush them?" "They are not brushed." "But," he said, "they are clean." "I know it." "Why, I do not see any manure stains on the white flanks of any of these cows, how do they keep so?" "Well," I said, "it is the form and fashion of the stable; the cows are obliged to be clean, and then we try to keep them clean, and then the stable is ventilated." And he said, "I noticed I could not smell any odor of stable in here."

Now, I will tell a story, if you can give me a minute. There are about half a dozen milkmen in the city of Fort Atkinson. The doctors have been sending me babies—doctors are responsible for babies, they say, more or less—they have been sending me babies. They were sickly and they were going into a decline and dying; the mothers could not nurse them, and the milk that they got, the babies refused, and the babies were going into a decline. I had eight of those babies on hand at once, and they are coming up and thriving and doing nicely. It is not because it is Guernsey, it is not because it is anything else than that the milk is clean, and a little baby with all of its instinct, powerfully sharp insight, refuses the food that is unfit for it, and takes to the food and thrives on it that is fit for it. There is an object lesson as to the value of a clean cow and a clean stable in that little record those eight babies are making that are on my hands and in my heart.

Mr. Emery: This subject of clean milk for the creameries and cheese factories and the village and city milk supplies of this state, in my judgment is the paramount issue today. And how to get this matter before the men who are producing this milk is an important topic. It is one I have given a great deal of consideration to and have had some practical experience in relation to it during the past year. I want to mention just one of the number of things we have been doing, and that we shall resume in the spring with a great deal of vigor, that we are now carrying on in the villages and cities of the state. For instance, in Milwaukee, and up in Green Bay, the entire forces are at work taking samples of milk. In Milwaukee they have 200 samples of yesterday and about 250 today, making about 450 in all, and these they are taking for the butter fat, testing them

for that, to ascertain the fact whether they have been watered or skimmed. These are very important matters. Well, will you think of it a moment, the comparative harmfulness of some clean water in the milk, compared with cow dung! Now, there is another test that we are making. We have four men, two sets of men, going into the dairies of the villages and cities of the state that are taking these samples of the milk; they have been doing this in factories so far as they could, they are now testing for the butter fat content for watering or skimming, and then they are applying the Wisconsin curd test to determine whether that milk has been produced under clean and sanitary conditions. Now, the Wisconsin curd test reveals this fact, and while we may not bring these patrons in the cities and villages to see these grades, we are trying to do it and we will resume our work in the creameries and cheese factories in the spring and shall pursue them with a great deal of vigor and energy. Take these samples of milks and apply this curd test. Now, where the milk is clean, the kind of milk that Gov. Hoard is producing, it produces a curd in about six to eight hours; it is clean and velvety; we cut it open and smell it and it has an attractive odor, agreeable, you feel as if you want to eat some of it, there is no mistaking it. We follow this up in scores of barns and up to the present time we have made no mistakes in our judgment as to the condition in which the milk was produced. Then there is another kind of curd that is produced that has gas holes, pin-holes, the gas holes look like the little holes in dough which is kneaded, and produced by the same reasons, it is the gas expanding that produces these little round openings. Now, that gas is produced by the gas forming bacteria that thrive in filth, and where the milk is produced under those filthy conditions, and where it is not properly cooled and cared for; or if it is it is kept too long. Sometimes it happens that it is kept over until the milk gets into this condition, then we get these curds. Now, if we cannot produce the best quality of butter or cheese from such milk, is it suitable for children and invalids?

What we are going to do and continue to do is to bring these patrons, so far as we can, face to face with these curds. We are going to make these curds in all these cheese factories and creameries so far as we can, and we will ask the patrons to

come in and see the milk that they are offering, and the curds that are produced from it, and to see those that are produced from their neighbors' milk and see the difference. You may tell a man that his milk is not good, he is angry, and he says, "I have got as good milk as anybody, and if this cheese factory does not want my milk, I will go to somebody else." Now, when he sees that curd and sees what his milk has produced, right beside his neighbor's that has a clean, firm, velvety curd, that has an odor that he can recognize as agreeable, and in every way right, and then takes the milk from his own herd and then gets his nose to it, it is so vile he turns away in disgust, then he will be convinced that his milk is not so good; and that is what we are trying to bring hundreds of thousands of patrons up against during the next year.

This question of the production of clean milk is the most important question that confronts us in this state today. If the cow is not clean, how can the milk be clean? We have got to study conditions for getting these cows clean, but first we have got to convince them that their milk is not clean, before we can arouse men to activity.

Ex-Gov. Hoard: I think the difficulty is that the average farmer, in the first place, does not read, and he does not travel,—neither reads nor sees, but stays on the farm, and measures himself by himself. Now, the result of it is that he gets misled.

Mr. Emery: Now, Governor, we all recognize this as an immense problem, and you have said this man won't see. Now, we are trying to get some of these men,—we cannot get all of them—to see these curds, and more, we are going to try to get them to smell of them, and if we get him to smell of them as well as to see them, we will produce some conviction. And when we have done this, we are going to do something more; we will say to them, "Now, gentlemen, we have shown you how this should be done, if you do not comply with the necessary conditions, we will prosecute you, and make you live up to them.

Adjourned until 8 o'clock p. m.

EVENING SESSION.

The convention met at 8 p. m., January 31, 1906.
The President in the chair.
Music by Industrial School Band.
Solo, by Mr. Barry Hayes, Jr.
Address by Mrs. J. Q. Emery, Albion, Wis.

THE LIVING PROPOSITION ON A DAIRY FARM.

Mrs. J. Q. Emery.

A bright, alert young woman edited the home department in a popular paper. From her office, she sent out most charming theories of how to conduct household affairs in all their complexity. In a sympathetic, understanding way she counseled wives how to manage their husbands, parents how to bring up their children, hostesses how to entertain their guests, and from time to time gave the readers of her department antidotes for family ills and discords and soothing applications for such ills as could not be permanently cured.

After a time this wise young woman married and her friends and admirers congratulated themselves on the prospect of seeing a home conducted on scientific principles, perfect in its own appointments and family relations and an inspiration and object lesson for all other homes in its vicinity. The young wife, however, greatly disappointed her royal friends and admirers who had been trying to model their homes after the pattern she gave them, by declaring at the outset that her first real work would be to clear her brain of all theories, so that there would be nothing to interfere with her enjoyment of her home and her husband in whatever way was easiest and best for them as individuals. Just think of the troubles she escaped by not trying to harmonize her theories with her actual life and not even allowing their ghosts to enter her new home.

There are many reasons why a woman actually living on a dairy farm should not undertake to discuss the problems peculiar to such a life. A little imagination and rhetoric are helpful in

telling any story, and too intimate a knowledge of facts often makes one prosy.

We have been told by some of these interesting writers in the City Offices that the farmers' life is a narrow life, chiefly made up of toil and grind and heavy work; that it is a monotonous life, a life without incident or interest; that it is often a dull, ignorant life, so restricted that it holds no possibilities for enthusiasm or culture or growth.

Before we accept these pessimistic views and inscribe over our gateways Dante's lines, "All hope abandon ye who enter here," let us take an inventory of the dairyman's possibilities for surrounding himself and his family with those things that will broaden their interests, stimulate their ambition and bring their lives into harmony with the great world about them.

A graduate of our Wisconsin Short Course, who was very skillful in the use of tools and the care of machinery, was asked why he had not fitted himself for some mechanical pursuit instead of general farm work. "Well," he said, "you know I was brought up in England. My father would have objected to having his son lose caste by being a laborer; but in England there is much dignity and importance attached to being even a small land owner and so I never considered what I was really best adapted to until it was too late."

Americans are coming more and more to feel, with their English cousins, that there is much dignity and importance attached to being even a small land owner, and men in all lines of business are trying to secure more or less farm land to be used for pleasure or profit as circumstances dictate. It is such a substantial possession, so secure and dependable, and there is something in nature's moods and aspects that appeals to almost every one.

Our real dairy farmer does not belong to that class. His farm is something more than an outside interest. It is his kingdom, where he and his family rule and take root as deeply as the trees they plant. But if he takes his landed rights more seriously, he has quite as much pride in his possession as has his city brother in his pleasure grounds.

The progressive, up-to-date farmer belongs to "Nature's Nobility" and can trace his agricultural lineage back to the illus-

trious "Father of his Country," who founded this American Royal family on the principle that "Agriculture is the most noble, the most useful and the most elevating employment of mankind."

This Dairymen's Association has met annually for years to discuss the problems its members have to deal with in their business, and to get inspiration and suggestions for advancing their interests. It has been a sort of family council where each member has contributed his share of experience and knowledge for the benefit of others. Balanced rations, comfortable and sanitary housing, suitable exercise, prevention of disease, selection of breed, weighing and testing milk, making butter and cheese and marketing them, all questions of importance to the dairymen, have been discussed in an honest, open way and the conclusions fairly arrived at seem to be, that well-bred stock, carefully housed and fed under the management of a well-bred dairyman, will yield a handsome profit to its owner; and that while the dairyman must eat his bread "in the sweat of his face," he may have it buttered to his liking.

But every member of this Association will agree that there is something of more importance on the dairy farm than the beautiful Jerseys or Guernseys or Holsteins, and that is, the dairyman himself and his family, and that conditions affecting their welfare are more important than conditions affecting only the material interests of the farm. If there is a place on earth where a comfortable home is the natural outgrowth of its own surroundings, it is on a dairy farm in Wisconsin. Drive through any dairy section of our state and you will see homes of thrift and comfort and often of beauty and elegance. These homes stand for all that is best in any home life. In one respect they stand for more than do homes in the city. They are the center of activity for the whole family. In the city men do their work in offices or factories or shops and have little time to enjoy their homes, and the wife and children cannot know so much of their work and interests pertaining as they do to outside people and affairs. On the farm the whole family is a unit and every member belongs to the Committee of Ways and Means.

To be a successful dairymnn, one must be a student of dairy literature. Our own state and the United States government

are spending annually many dollars in investigations and experiments calculated to help the dairy farmer in his business. He has a wide field for study and investigation on his own farm and in his own herd. It would seem impossible for a man to use his brains in studying the quality of soils and suitable crops, of modern methods of housing and caring for his stock, of the best methods of marketing his products, and letting his mental activity stop there. A man who studies and thinks carefully on one subject is sure to broaden his horizon on other subjects. It would be as easy to keep the river from overflowing its banks in the spring freshet as to confine a thinking man's thoughts to one subject, even though it be the one that most effects his pocket-book. The successful dairyman will be very likely then to have his dairy papers and journals in close proximity to the papers and journals telling of the world's progress in other lines of thought and work. This man, engaged in a business depending for its success upon the application of scientific principles in its management, a busness having a history, a literature, and men of the highest attainments and culture devoting their time and efforts to the solving of the problems it involves, cannot well be an ignorant, narrow man and hold an honored place among the dairymen themselves. He certainly ought to be the very man who would desire to secure for himself and family those things that make life broad and happy. The dairyman's family has the same intellectual needs, the same social instincts, as have people living in the city; and one of the greatest problems, here as elsewhere, is how best to minister to these needs.

There is a class of dairymen living near towns, often possessing large means, who have chosen this business for the freedom and satisfaction they get out of it. They have large acquaintances in the towns near them, and their church and social life centers in these towns. They mingle with the town's people and find their level there as followers or leaders, according to their ability or adaptability. Their children attend the town schools. They are really sub-urban residents of the town and have most of the advantages of both town and country life. Perhaps the greatest problem these dairymen have to consider is how to pre-

vent the life of the city, with its rush and excitement, from encroaching upon their rights as country people.

The large majority of dairymen, however, are further removed from social centers. They must make their own opportunities and are more dependent upon themselves for their social and intellectual development. Since Uncle Sam has sent his postman to the farmer's door, every day, with his mail, and telephones have connected the farmer's family with the neighbors, city friends and business houses, there is not so much to inspire one to dwell upon the subject of farm isolation as there used to be; and if all the trolley lines are built that are talked of, the farmer may have to give up this exclusive grievance. His city friends have already found him with their autos and made one more connecting link between them.

The dairyman's little village of homes for his family, his help, perhaps, and his stock, have the advantage of a beautiful background of forest and field and afford ample opportunity for the exercise of taste and ingenuity. Dame Nature, the kind old mother, loves to encourage her children in bringing out the beautiful qualities and attributes of her storied treasures, and seconds every intelligent effort they make to beautify their premises. As the basis of supply for family necessities, comforts and luxuries, they have the pleasure of working with live interests. It would be difficult, perhaps, to make one who has never lived on a dairy farm realize how the whole family became attached to the beautiful herds and flocks that are kept there. What a world of meaning there is to them in the names Brown Bessie, Mary Marshall, Shadybrook Gerban, Loretta D., and Yeksa Sunbeam.

One of the distinctive propositions on a dairy farm is the question of help. These dairy queens must be fed and brushed and milked and Governor Hoard and Mrs. Howie have really made us believe must be petted and caressed. It requires good, careful men to develop and handle them with profit, and such men are not always easy to find. It sometimes takes as much faith to undertake a business depending upon outside help, without a visible source of supply, as it does to run those charitable institutions that depend wholly upon popular contributions for their support. There is a limited source of supply, and that

is our Agricultural College at Madison. The young men from the Short Course may not have had much actual experience, but they have ideals as well as theories and they have not only learned many things well, but they have gotten some conception of the fact that there are many things yet to be learned. Most of these young men are preparing to take up this business for themselves and are wise enough to want to work a few years under the direction of experienced men while they are perfecting their own plans. The higher one's ideals, the better one's herd, the more systematic one's methods, the better the chances for getting the brightest and best of these young men.

There is also a large number of young men coming from European countries, who are ambitious to earn and save money, and who want to work where they can learn good methods. These men have to be taught many things, but they usually take an interest in their work and are faithful and trustworthy. Often, this help must be boarded by the farmer and whether this is wholly an annoyance or not depends something upon the family as well as upon the help. A strict business understanding as to what rights and privileges are included in "board" saves much trouble. There is often much pleasure and satisfaction in helping these young people to find themselves, and Wisconsin and Minnesota dairymen, at least, can never be quite sure that they are not helping to lay the foundations of Americanism for some future governor or statesman.

There are many ways of bringing the farmer and his family into touch with the great movements about them. President Roosevelt has called the Chautauqua Assembly, with its great reading circle and numerous smaller assemblies all over the country, "The most American thing in America." There is a farmer living in Wisconsin who has for many years rented a tent at the Assembly grounds at Madison and taken his family there. Just how he has managed to care for the crops coming on at that time and give his family this regular vacation in the busiest time of the year, I do not know, but he has done it. The tent is always there under the same old tree. A part of the family stay all through the Assembly, other members coming and going. What an education that family has received there. Every year they have had two weeks by a beautiful lake, meet-

ing people from all over the state and listening to lectures and talks and enjoying the fine music. Do they read of what Jacob Riis is doing in New York to benefit suffering humanity? They know Jacob Riis. They heard him at the Assembly. Do they read of how Mrs. Booth is trying to make the souls of prisoners free and provide for their starting right after leaving the prison? They know Mrs. Booth. Again and again have they been thrilled by her own stories of her work. Do they hear of the wonderful things accomplished for himself and his race by the great negro emancipator? Oh, yes! how they enjoyed seeing and hearing Booker T. Washington! When they read of Creatore and his Italian Band delighting large city audiences, they hear again the wonderful strains of music that flooded the auditorium and swept over the grounds, as the great master wielded his baton those sunny days at the assembly. And so year after year they have leisurely and pleasantly been in touch with the world's work and many of its workers at this Assembly and have gone home from it each year with new aspirations, new ambitions and an enlarged horizon.

It is not always those who have the most money who secure the greatest benefits for their families. Several years ago, a farmer had the misfortune to lose his home and all its contents by fire. A new house was built as speedily as possible and the family moved in, getting such furniture as they considered absolutely necessary for present needs. This furniture consisted of cooking utensils, a good dining table and chairs, beds and bedding and a second hand square piano. The piano looked rather out of place in the bare rooms, but the parents explained that their oldest daughter had just gotten where she was making rapid progress in her music and if she had to drop it then, she would lose all she had learned and possibly her interest in music as well. So they bought the old piano to use until they could replace other things and get a better one. That daughter's musical accomplishments have been a great source of pleasure to herself and her friends and have opened many doors for her that would have otherwise remained closed. Not all parents are so wise or so courageous in making choices.

Real life consists in the extent and kind of our interests.

City people plan for some sort of a summer vacation that

will give them a change and a rest from their regular duties and cares. Why should not the farmer and his family plan with equal regularity and care to leave their home for a short time each year and see how other people are carrying on the business of life,—attend lectures, concerts,—see what is being accomplished in the great centers of commerce and trade, and try to find what things there are in the strenuous life of the city that will bear transplanting to their country home, that will make it more beautiful, and more satisfying.

It is not necessary for a dairy community, however, to depend on outside agencies for all their opportunities for enjoyment and mental growth and recreation. Much of the social and intellectual life of the cities and villages is carried on through organizations—the churches, the lodges, the clubs. This is just as possible and just as desirable in the country. In many of the more ambitious cities, the men have organized clubs with a view to advancing the interests of the city. They seek to make public sentiment favorable to needed improvements. They study how to make their city attractive to those seeking places for pleasant homes and good business locations. They discuss public men and measures and reach out in all directions for the things that will help them to broaden their interests.

The women of the city, too, have their clubs. At first, they were organized simply as study clubs, a place where the college woman could brush up her history and literature, and the less fortunate woman could enlarge her horizon and learn to think quickly and speak pointedly. It was not long before these women, meeting regularly for study, began to feel the inspiration that comes from sympathy and co-operation, began to want to use their growing influence and strength for things not pertaining so directly to themselves. So they joined hands in trying to better things about them. These women through their club organizations are raising the standard of life for their own members, and because of their better knowledge and keener sympathies are more and more influencing public policy.

Country people have just as much need of this club life, this co-operative work, as have the town's people. What could be more enjoyable than for the farmer's families to organize a club to meet one evening each week in winter; the object of this club

to be to promote the social and intellectual welfare of its members and to consider and formulate plans for improving their surroundings. Do you suppose there would be many dull, ignorant people to be found in such a community after they had once tasted the joys of studying subjects of interest to themselves and their neighbors, with a view to sharing their knowledge and conclusions with those neighbors? There is no quicker way of learning that there are many sides to a question than to have it discussed by people who view it from different standpoints. City organizations discuss among other things, how to improve their streets and transportation facilities—the very things the farmers should consider. Why not have that long street in the country made beautiful by being kept free from weeds and brush, having trees planted for shade, an attractive approach made to each homestead, lawns graded and clipped and the name of the farm attractively placed where it could be seen at a glance. If there is a careless, indifferent man on the street, who does not care how his premises look, get after him, in a diplomatic way of course, appeal to his pride, if nothing else will do it, try to make him realize that his farm will be worth more money if it presents a good front to the world. Country air is sweet and invigorating, but the morning and evening dew and the dust or mud and the long grass and weeds by the roadside, make the highway anything but pleasant for a walk, if one cares for neat appearance. If all would work together it would be very easy to have a gravel walk from farm to farm in the more thickly settled districts of Wisconsin. If, after a good foundation was laid, this enterprising community should find a way to cement their walks, both private and public, and should employ the best methods of road making for their particular locality, they would only be giving themselves some of the legitimate pleasures and conveniences of country life. There are just as many ways of making country homes and streets beautiful as there are city homes and streets, and a very good place to create and strengthen public interest in them would be in such a club. It has been truly said that "There is nothing sentimental in affirming that the love of beauty can go hand in hand with toil, and that true art transfigures labor, giving it the dignity of the individual's chosen tasks performed with joy;

and without such joy, labor sinks into the lethargy of the plodding ox, or worse, is performed as by a machine instead of a living being."

Another subject of vital interest to every country resident, is the country school. Specialists and leaders in the educational world are recognizing that boys and girls in the country must have better opportunities for education—must be provided with schools that will prepare them for college or business life. Why not, in this club, investigate their plans for the consolidation of schools, for industrial education and the methods by which they propose to teach the elements of agriculture to the country school children. And while the powers that be are settling the questions of a "square-deal" for the country schools, in a large way for the whole state, this country club could be finding in what particular ways they could make improvement under present laws and conditions. They could make sure that the school house was well lighted, well warmed and ventilated; that the building and grounds were made attractive and kept in a sanitary condition; could see that they were getting the best possible results from the library fund; and most important of all, they could create a sentiment, favorable to investing enough money and enough time in careful selection to obtain a good, strong teacher, who would arouse interest and enthusiasm among the children for their school work. There is no law requiring country districts to be experiment stations for inexperienced or partially prepared teachers. The place for an inexperienced teacher would seem to be in a school supervised by a competent principal. Teachers in town high schools where country children, under present conditions, go for their next step on the educational ladder, find that pupils from different schools vary very much in their ability to master the work of the high school. Many do not even know how to study. Others are self-reliant, ambitious and competent. Every country boy or girl whether living on the street beautiful or in tumble down lane, should have the opportunity and be made to feel the necessity of acquiring a clear, concise knowledge of the subjects included in our course of instruction for country schools, and that too under the direction of a teacher who can arouse their ambition, teach them

habits of industry and application and lay a solid foundation for what is to follow.

A few years ago, an ambitious, conscientious young man taught a country school in a district where there was a large foreign element. One of the little boys, whose grandfather and grandmother could not speak a word of English, showed much ability. The teacher took this boy in hand and finding that he responded to every effort, impressed on him the fact that his future could be as successful as he chose to make it. The boy finished the country school course and under the inspiration and by the advice of the teacher went to one of the best city high schools in our state, where he not only carried his work and graduated with honor, but most of the time, worked for his board that he might stay in school. He is now a student in the engineering course in our state university and has his country school teacher to thank for the stimulating and moulding influence that sent him onward to the bright prospects before him.

These are only a few of the local subjects that might be combined with outside study, in a program that could furnish opportunity for social relaxation and mental stimulus as well as serving to make common interests of the things affecting that community as a whole.

We are not forgetting, in suggesting this winter evening club for the family, the great advantages which the woman's club offers the women in the country. One of the most honored club women in the United States, returning from a visit to the Orient, is enthusiastic over the renaissance of Japanese womanhood. In speaking of the great progress made by Japanese women in the last few years, she says that many of the christianized women intent on self-improvement are encouraged by their husbands and fathers to organize women's clubs to help them to prepare for the broader life that is to be their privilege in the new Japan. They have, so soon, learned that it is not what we get, or what we keep, but what we share that makes us strong. Some one has said "Human beings cannot exercise the full powers of their minds in the exclusive contemplation of their own affairs," and the country home-maker will be a happier, more resourceful woman, if her interest is occasionally taken outside

of her own individual life and its surroundings and brought into unison with other lives and their needs.

But, says the objector, how is this busy house-mother to leave her home and attend club meetings that must necessarily be held in the afternoon? Just as she leaves her home to attend bargain sales, picnics or parties. Mrs. Decker, president of the General Federation of Women's Clubs, says, "The club is to teach us to stay away from home with good results."

A gentleman whose business took him away from home a good part of the time, remarked, after his wife and daughter had for sometime been members of a Woman's Club, that formerly when he came home, he heard of all the little happenings of his own household and those of his neighbors'; but since the wife and daughter had belonged to the "Current Topics Club," he found quite a different atmosphere in the home, and was greatly pleased by the change from unimportant personalities to a keen interest in the great human family and a growing understanding of the world's work along different lines.

While joining the city club women in looking after child labor, the consumer's league and a host of other important topics, these country women could step aside a little and unite their efforts to lessen the labor in their own households. In a certain farming community one of the greatest drafts on the house-wife's strength is greatly reduced by an understanding in the neighborhood that on all occasions requiring exchange of help, such as threshing, filling silo, shredding corn, etc., each man is to go home for his supper, leaving the housewife only the dinner to prepare for the large number of men. To this might be added co-operative laundry work. These women might counsel how to make it an object for a good dressmaker to make the rounds of their families and save them much time used in going to town for such work; how to secure extra help in busy times. It is really much easier for an organization to accomplish things than for an individual to do so and in the end these busy women might succeed in lightening their burdens till the whole family could be treated to a larger social and intellectual life.

Last spring at the meeting of the First Wisconsin District Federation, a delegate reporting for a large city club, said they had invited several country friends of their members to join

their club and had so enjoyed the result that she recommended this policy to other clubs. There are many advantages in joining a club that is well organized and has learned to conduct its meetings according to parliamentary usage and get the greatest possible good out of them; and there is much pleasure and profit in meeting people outside one's own immediate circle in such a friendly fashion,—but not all country women can join such a club, and the country woman's club can grow to as full stature as the city woman's club, if it be as carefully nurtured; can join the federations and have the help of their committees in arranging programs for study and work; can have the use of papers, art portfolios, maps and charts; can attend the meeting of the federations, and we have the word of a good club woman that there will be no better, more original or more interesting papers and discussions than the country club woman will contribute.

A little boy writing a composition on the country, says, "It is the place where everything grows and every one is happy." Whether or not this be true of every one, it is true of the children. They enjoy country life without question or reservation. Who ever saw a normal child in a well ordered country home, that was not happy and enthusiastic in his love for his home and its surroundings? Where such pets, such an opportunity for even the little ones to share in the duties and pleasures of home-life? A gentleman interested in establishing and maintaining gymnasiums for city children tells us that what a boy does with his muscles affects his character and the boy in the country learns what he can do with his body without formal instructions. He vaults fences, swims, hunts, shoots, masters dogs and horses, and after a rough fashion, but a very effectual one, learns self-control and discovers his own resources. His sister has equally happy chances to grow into strong healthy womanhood.

In summing up the record of the closing year and the forces at work at home and abroad, a writer in a recent number of a popular monthly says: "The increasing love of the country as distinguished from the town must be regarded as one of the most significant and helpful facts of our time; and it continues to spread. . . There is an increasing number of books on

trees and flowers and the garden and animals and all the outdoor world; and these work for the strengthening of the Nation's fibre." It is pleasant to note that this "love for all the outdoor world," which has been the determining factor in most dairymen's choice of their life work, is spreading more and more to the people of the world at large. It promises a better understanding between country people and city people. It promises a new outlook for the city home and an added grace and beauty for the country home. This increasing number of books on trees and flowers and the garden and all the out door world will be shared by country lovers everywhere, whether they minister to the day dreams of the business or professional man in the city or foster the pride and increase the love of the country man for his surroundings.

And the two are not so far apart after all. The men who have contributed most to our national life have beeen lovers of the country. "One letter about farming is worth ten about politics" wrote Daniel Webster to the superintendent of his Marshfield farm.

"I would have been a farmer had any science of farming been known to those among whom my early life was passed," said Horace Greeley.

Oliver Wendell Holmes, who "peopled his Pittsfield farm with trees," wrote to a friend, "I have one particularly pleasant remembrance about my place, that I, in a certain way, created it."

William Cullen Bryant wrote to his brother, "Congratulate me, I have bought forty acres of solid earth at Hempstead Bay."

Mt. Vernon stands in the background of Washington's life as does the Hermitage in that of Jackson's.

"Only a judgement-day-roll-call," it has been said, "can number the vast proportion of distinguished Americans who have carried in their hearts the love of some country home."

The more we know of conditions on a dairy farm in Wisconsin and the real questions of life there, many of them perplexing and difficult, many of them refreshing and delightful, the more are we impressed that the living proposition is largely a matter of individuality and choice. It does not follow because it is possible for the dairy farmer to have fine stock, good buildings,

modern conveniences for himself and his family, a pleasant home with beautiful surroundings, books, music, pictures, those things that make home life attractive and pleasant, that he will have them. It depends upon what kind of a man he is, what the ideals of the family are, how much ambition, courage, perseverance they have, what life means to them, sometimes there are limitations that cannot be controlled; but if the spirit of progress and right living is there, it will manifest itself in some degree.

A beautiful new magazine devoted to American farming has on its title page, this quotation: "Farming is a profession requiring more shrewdness than law, more technical training than medicine, more uprightness than theology, more brains and resourcefulness than pedagogy. It is its own reward." The professional dairyman then, it would seem, has something to live up to. If he is to succeed in his profession and be worthy of it, he has something to do. He must study nature's laws that he may work in harmony with them. He must study the needs of mankind that he may minister to them. He must be honest with himself and his fellow men. He must study how to get the best and sweetest results from his environment; how to make his home beautiful, restful, inspiring to his own family and the friends who share it with them; must embrace every opportunity for himself and family to broaden their views, enrich their lives and come in contact with the great forces about them. Such dairymen and their families will have a standing in the business world and in the social world. Their lives will be full of rich experiences and they will count their gains, not wholly by extended acres, increased herds, expensive improvements, but in a larger way, by their opportunities for enjoying the better things of life and being able to contribute their share of intelligent progressive work to the factors that are tending to "strengthen the nation's fibre."

Music, Hayes Quartet.

THE LIBRARY IN THE RURAL SCHOOL.

Miss Julia Rockafellow, County Superintendent.

It is the business of our democracy to do more than protect the citizen from injury, more than assure legal equality of right and opportunity to all. Such a political organization as ours is bound by its very constituent elements to use the common power to provide the means which will enable everyone to make the most of himself; to fill *all* with a sense of gratitude which will impel them to do what they can to help the whole mass forward. These are the ideas which are more or less developed throughout the land.

They are the ideas which have resulted in an educational system, resting very generally upon public but somewhat upon private foundations. This system is essentially American and as such possesses some of the faults of American character, the greatest of which probably is the tendency to overdo. Our system may not do some things so well as that of other people but it does many things for all the people very much better than any other system does them. It not only trains the youth of our nation in practically every direction of intellectual activity, but the development of it, the support and care of it have brought untold advantage to our nation itself.

These popular ideas have given rise to distinguishing tendencies which have become so well ingrained as to be our educational policy. We believe that there can be no seasoned and hardened education without work. We are seeing that all kinds of work make for learning, steadiness and power. We realize the influence of actual accomplishment upon the making of a man no matter in what field it be achieved. These ideas have changed the standard of our schools. Earnestness, not fortune; power and endurance, not culture; ability and willingness to labor, have weight in shaping the purposes of our schools.

We believe in freeing the teacher from bias and undue influence thus exacting from him a better preparation for teaching. We believe in a closer unity of purpose between all classes of schools.

Culture has been the slogan of recent years. It is important, but strength is still more important. It is desirable, but it is still more desirable that boys shall be trained to bear the part of a real man, and the girls the part of a real woman. The leadership of a few tireless workers, such as the president of these United States, has done much to start a healthful reaction.

The education gained at school must, with the great majority of people, be meager at the best. This may be and should be supplemented by reading after the school life is ended. If it is the duty of the state to see that its citizens know how to read, is it not certainly no less its duty to see that they are trained to do the right kind of reading? Otherwise the ability to read may not only be harmful to the individual but a menace to the state.

If our education is the work of all our years; if it is not only for the young but for adults as well; if it is for life and not for a course; if it is to be carried on at home as well as at school, to be taken up in the hours or minutes of leisure as the proper accompaniment of our day's toil; if, as we believe, the welfare of the state depends upon the kind of thoughts nurtured in the minds of all, and these depend upon the reading done or not done; then education must be largely carried on by reading after school life is ended and the school must supply the readers. This, then, is the task set the modern school—the task of not only teaching the pupils how to read but a greater one—of leading them to love good reading so well that in all their lives thereafter they will seize every opportunity to read it. This is the central thought toward which our American methods have been unconsciously guided. It is the one thing which the school may do which continues to contribute to one's education so long as he lives. The home, in some instances, is doing more than the school, but it is the school, after all, in the great majority of cases, which must give the children this taste for good books and an introduction to their proper use. As great even as a good book is, the power to communicate to another the love for one, to win children to this, to lead them to appropriate to themselves ideals from characters in books, to deepen and enrich their emotions by suggestion—in other words, to so read a good book into a child that he is bound in some way to live it out in himself, is the teacher's privilege, the hope of which alone is enough to sweeten the days and weeks of unseen and never to be acknowl-

edged drudgeries of the school room. To make possible this privilege to the teacher, to make possible the attainment of one of the highest purposes of our schools, to foster the welfare of our people, yea, to help make enduring this government of the people, by the people, and for the people, libraries were placed in our Wisconsin schools. True it is that these libraries in the rural schools are small and inadequate, but, under the management of our skillful teachers, many desirable beginnings of this great work are being made.

Statistics have shown that the greatest amount of reading during common school age is done between the ages of 12 and 14. Soon after this the reader settles down to one class of reading. To begin then with the 12-year old in the selection of the books for these libraries is too late to attain the results we wish to see. In our rural schools there are, therefore, books for children of all ages, reference books and a few books for adults.

Now that we have them, some may wonder what use we make of them. In order to show only a few of the many ways we use them I want you to go with me in imagination to a few of the schools in this county. For the purpose of this discussion we will omit all matters pertaining to school visitation except those bearing upon this question—the use of the library. 'Tis on a Friday morning. As we enter the hall we hear a class being drilled upon the pronunciation of words. We discover, after entering, that it is a 3rd reader class. Having completed the word drill, various members are called upon to tell the story of the lesson. We discover that it is about George Washington and it is a biography, but not of the cherry tree and hatchet kind nor of the encyclopedic kind, such as we read when we went to school. No, it is one especially written for children, but equally interesting to us. There appears to be but one book for the use of the whole class—a library book. After the work of the study period has been tested, as shown in the telling of the story by the children, the work of orally reading the lesson takes place. This is as well done as you or I could do it. Then, as the time is not gone, the teacher says that they may tell what they remember of Lincoln, who was the subject of study a short time ago. Everyone is eager to tell something. As they relate the struggles of his childhood the cheeks glow with pleasure and in the eye you

see a flash telling us of their deep interest in those struggles which made Lincoln such a power when we needed strong men.

Upon inquiry we find that the one book is placed where all can have access to it at any leisure moment during the week. Upon Friday, the lesson occurs as we have seen it. Who can measure what good may result from such study of the lives of great men and women? Who can tell how many of those boys and girls caught an inspiration to live upright, honest, strong lives? The years to come will unfold the results.

Incidentally those pupils were forming habits which ought to be of great service to them in later years. They were required to step out in front of the class and tell to the class their thoughts. How many of us wish we had been trained so that in such meetings as you have held today we might have the confidence to stand up and ask a question pertinent to the discussion or utter some opinion which is burning within us for expression. This work with books gives our pupils thoughts. It is for the teacher, then, to so conduct the recitation that the pupils gain the confidence to utter them.

Upon the wall near a corner of this same school room we find a large number of pictures of the Pilgrim and Puritan days, and on a shelf underneath we see a portfolio on the cover of which we find a copy of that well known picture of John Alden and Priscilla—and the inscription, November, 1905. We will look within. We find a number of compositions. We glance through these and find that one set tells of the Pilgrims—their persecution, their dwelling in Holland and their voyage to America. Another tells of the first Thanksgiving. Upon inquiring we are told that during November the children read whatever they could find in the library concerning the Pilgrims and Puritans. This material was arranged by means of oral reproduction exercises into groups so that various phases of their life was finally worked out. Having this material thoroughly in mind the children were allowed to put their stories into written form upon paper of uniform size and quality. Of course it is plain that these children are getting the foundation for a formal study of history. When their minds have become stored with historical stories and biographies such as I spoke of a few moments ago, history ought not to be a dry, unreal subject.

And so I might go on taking you into schools at different seasons when Hiawatha, the little Indian boy, his people and Indian corn, or the Eskimo, or some other topic would be similarly treated. Similar work is done in preparation for the texts in geography. Later in the courses the pupils themselves hunt out all there is in the library or elsewhere to supplement the work in history, geography or civics. In fact, the libraries do not as yet furnish enough copies of some of these information stories, as for instance, the geographical readers by Carpenter. The teacher's ingenuity is severely taxed to plan, then, so that all may have access to what is desirable.

But some one is thinking of the little ones. What do you do to get them to love to read so that when they have acquired the art of reading, they will read? They are told myths, fairy tales and folk stories because they love them so. This is the age when they live in imagination; a crooked stick becomes a galloping horse to the boy; a bundle of cloth, the handsomest human being to the little girl. So when the teacher tells them the stories in which animals and trees talk, they are only listening to their own thoughts put into form. Nothing is too wonderful for the imagination of the little child. This gives the wee ones material for thought. There is a natural desire on their part to tell and talk about anything which has made an impression upon them, so upon our visits we will find them telling these stories to their classmates as did the older ones relate the biography of Lincoln or Washington. If the teacher be one who can lead them by a few suggestions we shall find them acting out many of these stories—one child for instance will be the Big Papa Bear— another, the mamma bear—another, the wee bear—and a fourth, little Goldenhair. Then the portions they tell will be what these characters in the story say, accompanied with the supposed actions of the same characters. But we also have animal stories for them which are real, and hero stories which are founded on fact, so that they do not live wholly in the fancy world. Then we have poetry for them and it will not be unusual to find these little ones able to recite many beautiful memory gems, and whole poems; such as, "The Raggedy Man," "Boy Blue," "Sweet and Low," "Barefoot Boy," "Come to Me, O, Ye Children," or "The Children's Hour." Having

learned something which is especially pleasing to them they often inquire who wrote it. When told—will come the question—"Won't you tell us something about him some day." Especially is this true if the teacher is skillful in planning her work and so has introduced them pleasantly to this work. Of course the teacher is glad to tell them something of the author, for she knows that when one has a desire to learn anything he does it easily and the impressions made are more lasting. So some day when we call again at the school they may take especial delight in telling us that Whittier was himself the Barefoot Boy, or that the girls in the "Children's Hour" are Longefollow's own daughters; as well as many other incidents of these masters' lives equally interesting.

We have poems too for the older pupils, but I will not take much of your time to speak of these. In this work, however, the pupil must *feel* what is described, he must *imagine* the pictures and obtain a *sense* of the depth of meaning contained in the poem, else his character or taste will be little affected. It is obvious that the pictures will be most vivid in the minds of those pupils who have had their imagination trained as I have just outlined for the younger ones, hence the double importance of this work in the early years.

We have another and entirely different line of work for all the pupils. I refer to the study of things surrounding the country boy and girl in wood and field, on the farm and in the home, till he comes to know the birds and their usefulness to the farmer, the common trees, the domestic animals, the poetry of the farm, the clouds, the air, the winds, the flowers and the fields. Recently we have added books upon elementary agriculture, hoping thereby to arouse the interest of the boys and girls in saving some of the waste upon the farms as ordinarily conducted, in improving roads, in seeing other phases of life on the farm beside that of drudgery.

Our libraries contain a few books for the adults and will contain more of them as the years come and go, for the present generation will use them when they have attained that age if our work in the schools is not without results.

All the books are now accessible during school months to all residents of the districts, and if the law were followed they would be accessible during vacation times.

In some schools we have the cleanest and purest periodicals; such as, "The Little Chronicle," or "The Pathfinder." These give the current news of our country and of foreign lands in an unprejudiced manner.

I have shown only a few ways by which we attempt not only to teach the children *how* to read but to *love* to read. The country schools have every advantage so far as material means are concerned; their environment is rich in organic and inorganic forms; the pupils can be individually known by the teacher; but in one thing they are lacking—the supply of teachers who can utilize that which offers itself in abundance. This is the want which every thoughtful person deplores, a want that will be met when the farmers themselves realize what a wonderful influence for good their schools may be made.

Music by Industrial School Band.

MORNING SESSION, THURSDAY, FEBRUARY 1, 1906.

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

FEEDING THE DAIRY COW FOR PROFIT.

A. J. Glover, Ft. Atkinson.

If I should say to you that I am delighted to meet with the dairymen of Wisconsin it would be only repeating what has been said to you, I presume, a great many times. I highly appreciate the privilege, because I know the high regard in which this association is held by dairymen in all sections of the United States. Notwithstanding, I have never attended a dairymen's meeting in Wisconsin, yet I owe much, in many ways, to the Wisconsin dairymen.

It was fourteen years ago last fall that a Wisconsin dairyman, who had also been both a student and instructor in the Wisconsin Dairy School came to the Minnesota Experiment Station and Agricultural School. I was a student in that school, and the person who came from your institution and who is now one of the leaders in dairy science, was my instructor in dairy husbandry. During the seven years which I spent in that institution there was no time that I was not connected in some way with the dairy department, and Prof. T. L. Haecker was my teacher and adviser. If I should drift too far, this morning, from the teachings of this association, remember that it is seven years since I left my alma mater, and I have come in contact with many practical cow keepers who are not in full accord with the teachings of scientific men. Bear with me then till the close of my talk and then I shall be at your mercy.

There is probably no question that is any more perplexing than the subject of feeding the dairy cow for profit. It is not enough to state the kind and amount of feed to give, but we must take into consideration the individuality of the animal, the amount of milk she is capable of giving, her care, her environment, her breeding and her owner. It is a dairy bred cow to be sure that we shall have under consideration, but there is a great difference in dairy cows, not only in the production of milk, but in disposition and otherwise. It is a well known fact that breeding for a special purpose tends to develop an animal that will be in harmony with her function. The dairy cow whose function is to make milk and who has for generations been bred for that purpose does not retain and carry as large an amount of flesh and fat as the beef animal. This is due to the fact that her energies and those of her ancestors have been turned to the production of milk, and flesh has been made subservient to that function. Because of these different functions, the dairy animal tends to become spare and angular, while the beef cow tends to become square and blocky. Temperament governs form, and form governs functions. The dairy cow does not need very much meat or fat on her back in order to perform her function of making milk. If she carries much flesh it is an indication that she will consume a large amount of feed for the milk produced. In other words, the cow that carries more flesh and fat than are

needed to indicate a thrifty condition is using more feed than she ought to for maintaining her body. The cow is not always to blame for this condition,—the feeder is sometimes over anxious to see his cattle look fat and sleek and feeds them more grain than they are capable of manufacturing into milk. This practice is more or less injurious to the cattle and it is a costly luxury. It is the observing feeder that watches these conditions and does not feed any animal more than she will consume economically.

A MAINTENANCE RATION.

Every living creature requires food to sustain life, whether it works or not. The loafing man eats; the resting horse consumes a certain amount of feed; and it is none the less true of the cow. The steam boiler requires a certain amount of fuel to maintain the steam to a given pressure when it is not working.

The cold air which surrounds it is constantly cooling the water, and in order to keep up steam some fuel must be added. In animal life the surrounding atmosphere is constantly cooling the animal's body and to maintain the body at a normal temperature, feed must be constantly added. Moreover, it takes a certain amount of feed to supply energy to do the work the animal has to perform in extracting the nutriments from the feeds and to carry them to the different parts of the body. The fuel which the boiler requires to keep up a given pressure of steam corresponds very closely to the feed that the animal demands to sustain life, and bodily health, without gaining or losing in weight. The feed thus used is called the maintenance ration.

THE WORKING RATION.

Where an animal is fed enough to support her body properly, and the steam boiler is given enough fuel to raise and sustain a given pressure of steam, if either is required to do more. to exert additional energy, each must receive more fuel. As soon as the engine is started it begins to take the stored up power from the boiler and transmit it into active energy. The boiler will supply steam for sometime to the engine without the addi-

tion of fresh fuel, but the time is short, and, if continued power is needed, more coal must be added to the fire. The harder the engine works, or the more steam that is used, the more fuel will the boiler require. It is just so with the cow,—for as soon as she begins to produce milk she requires more feed, and the more she produces. the more feed she will demand. There is a limit, however, to the amount of work that can be done in either case.

For instance, if the boiler is only ten horse power and there is a demand for twelve horse power, it will be necessary to crowd the fire with coal and increase the draft in order to produce the extra amount of energy. Every engineer knows that this is a wasteful way of producing energy. It is not only extravagant, but the boiler lasts only a short time when it is crowded to and beyond its capacity. It is generally understood that any piece of machinery should be stronger and capable of doing a little more than it is required to do under ordinary conditions. The cow should have the capacity of producing more milk than she is called upon to produce in ordinary herd work. It is not profitable, as a rule, to force a cow to the limit of her capacity. She should be fed all the feed that she will economically convert into milk, and at the same time retain her health and produce a strong calf. The working ration therefore does not mean crowding the machine continually to its normal capacity and sometimes beyond, making it short lived and the cost of production unnecessarily high, but rather a ration that keeps the animal in good physical condition, produces a strong calf and gives the most economical flow of milk.

A BALANCED RATION

is the proper amount of feed to sustain the animal for 24 hours and supply her with ample nutrients to do her work economically. In calculating a formula for a balanced ration there are no hard and fast lines to follow. We have tables, to be sure, that are based upon the results of experiments; they are helpful in calculating formulas for rations, but they cannot be followed to the letter, or we will make serious mistakes.

A few years ago, I was on an institute tour through the Red River Valley of Minnesota, and I advocated the balanced ration

as it was taught to me in school. In other words, I formulated a ration for a cow weighing 1,000 lbs. containing from 2.25 to 2.50 lbs. of digestible protein, 12 to 13 lbs. of digestible carbohydrates and .75 lbs of digestible fat.

The next winter I visited many of the same places and I found from the questions that were asked and through the discussions, that very few farmers had increased the flow of milk by feeding the ration that I had proposed to them the preceding year. What was the trouble? After investigating and considering the subject I discovered that the cows to which this ration was fed were not dairy cows, nor kept under dairy conditions. It was a waste of good feed for men to give so much to a class of cows that were not bred for dairy purpose, nor cared for, by men who had any knowledge of handling dairy stock. If I had told them first to put their cows in a warm, well lighted and ventilated stable and give them all the hay they would consume and from four to five lbs. of ground feed, I would have given them information that would have started them on the way to become successful dairymen, but a ration containing from ten to twelve lbs. of concentrates and roughage accordingly was altogether too much for a cow housed in a poor barn and giving from five to ten lbs. of milk per day. A balanced ration is correct enough, but it must be balanced to meet the conditions for which it is fed and according to the amount of work that the animal is doing.

FEEDING ACCORDING TO YIELD OF MILK.

There is no better system of feeding the dairy cow than to give her a ration according to the work she is doing and to nourish properly her body. Let us be specific in order to illustrate clearly this point: Supposing we have 1,000 lb. cow that is giving 25 lbs. of 4% milk daily (or is capable of doing this without crowding), and there is on the farm clover hay, silage and corn which is worth $13.00 per ton and barley worth $18.00. In the market we can purchase bran for $16.00 per ton; gluten feed for $25.00; oil meal for $30.00. In calculating the amount of feed necessary we first refer to our table to see what kinds and amounts of nutrients are required, on the average, for a dairy cow weighing 1,000 lbs. and producing one pound of fat per day. We find that it requires about 1.8 lbs. of digestible protein,

12.00 lbs. of carbohydrates and .5 lbs. of fat. The next question is: what combination of the named feeds will supply these nutrients the cheapest? We know from experience that corn silage and clover hay are good feeds and furnish nutrients at a reasonable cost. An allowance of 40 lbs. of silage is none too much for a cow weighing 1,000 lbs., and in 40 lbs. of silage there is 10.6 lbs. of dry matter containing .53 lbs. digestible protein, 5.6 lbs. of carbohydrates and .28 lbs. of digestible fat. An animal of this size will consume in addition from five to ten lbs. of clover hay, consequently, we will suggest that seven lbs. of clover hay be added to our formula. In seven lbs. of clover hay there is 5.9 lbs. of dry matter containing .48 lbs. of digestible protein, 2.51 lbs. of digestible carbohydrates and .12 lbs. of digestible fat. By adding the total amount of nutrients in the silage and clover hay together we find that we have 16.5 lbs. of dry matter containing 1.01 lbs. of digestible protein, 8.11 lbs. of digestible carbohydrates and .40 lbs. of digestible fat. So far, our ration does not contain enough nutrients to support the cow and make one pound of fat, or 25 lbs. of 4% milk per day. The question may come to you, why not increase the silage and the clover hay, till enough nutrients are supplied, for these feeds are cheaper than mill stuffs. A cow cannot eat enough of these feeds to produce the most economical flow of milk, unless the prices of milk feeds are exceptionally high and the price of butter fat comparatively low. Under such a condition it might pay better not to feed any concentrates, but feed all the silage and clover hay the animal will consume without waste. She will probably keep up in flow of milk for a short time by drawing from her system the stored up energy that she created when dry, just as the boiler with a pressure of 150 lbs. of steam will run the engine for a short time without putting in coal enough to supply the engine with all the steam that it will use to advantage. The cow, like the engine, will adjust her work to the amount of latent energy or feed that she is given. Therefore, under ordinary conditions, some grain should be added to this ration.

Experience and tables which have been tabulated from the results of experiments show that from seven to eight pounds of grain will have to be added in order to supply the cow with ample nutrients for doing her best work. What grains shall be added? In our silage and clover hay there is 16.5 lbs. of dry

matter containing 1.01 lbs. of digestible protein, 8.11 lbs. of digestible carbohydrates and .40 lbs. of digestible fat, and we need for this cow about 1.80 lbs. of protein, 11.94 lbs. of carbohydrates and .47 lbs. of fat, or there is needed the difference between the nutrients in the silage and clover and the amount required; which is .79 lbs. protein, 3.84 lbs. carbohydrates and .07 lbs. of fat. Since we have learned from actual feeding experiments that corn has about the same feeding value as barley and one can be substituted for the other, it is only business like to note which is the cheaper. Corn costs five dollars less per ton, which makes considerable difference for feeds so nearly alike in feeding value. This indicates that it often pays to exchange some home grown grain for mill feed. How is it to be determined that barley or corn or any other feed stuff is needed at all? This is largely ascertained by chemical analysis and digestion experiments, the results of which are combined in feeding tables found in books and periodicals and is one of the many illustrations of the benefits conferred upon the farmer by science and scientific investigation. Whenever clover or alfalfa is fed it requires at least half of the concentrates to be rich in carbohydrates and comparitively low in protein. We take 4 pounds of the corn chop, for I said we needed from 7 to 8 pounds of concentrates. In the four pounds of corn chop there is 3.6 lbs. of dry matter containing .32 lbs. of digestible protein, 2.67 lbs. of digestible carbohydrates and .17 lbs. of fat.

Corn chop is a heavy feed and since a ration for a cow should be made bulky, a rather light feed ought to be added. I have assumed that bran is worth $16.00 per ton, gluten feed $25.00 and oil meal $30.00. In order to determine the total amount of nutrients that is already in the feeds which have been chosen, it is well to put them in table form and the formula so far is as follows:

Feed stuffs.	Dry matter.	Protein.	Carbohydrate.	Fat.
	Lbs.	Lbs.	Lbs.	Lbs.
Silage, 40 lbs.	10.6	.53	5.60	.28
Clover hay, 7 lbs.	5.9	.48	2.51	.12
Corn chop, 4 lbs.	3.6	.32	2.67	.17
Totals	20.1	1.33	10.78	.57

This supplies enough nutrients for a cow weighing 1,000 lbs. and giving 15 lbs. of 4% milk, but not enough for an animal producing 25 lbs. of 4% milk. The cow may for a time produce more than 25 lbs. of milk on this amount of feed, but she will draw on her system for extra nutrients and will, in time, decrease abnormally fast in milk flow. To make this ration complete for the cow in question we need about a half a pound more protein, a little more than a pound more of carbohydrates. In four pounds of the gluten feed we have .93 lbs. of digestible protein, 2.03 pounds of digestible carbohydrates and .11 lbs. of fat. This amount of gluten feed furnishes more nutrients than are needed, so let us try three pounds, and we get the following: .70 lbs. protein, 1.52 lbs. carbohydrates and .08 lbs. of fat. This would do very well but it gives a little too much protein and costs a little more than four pounds of bran which has 3.5 lbs. of dry matter, containing .50 lbs. digestible protein, 1.54 lbs. of digestible carbohydrates and .12 lbs. of fat. This gives the proper amount of nutrients needed to balance the ration for a cow weighing 1,000 lbs. and producing 25 lbs. of 4% milk. It gives the following formula:

Feed stuffs.	Dry matter.	Protein.	Carbohydrates.	Fat.
	Lbs.	Lbs.	Lbs	Lbs.
Silage, 40 lbs	10.6	.53	5.60	.28
Clover hay, 7 lbs	5.9	.48	2.51	.12
Corn chop, 4 lbs	3.6	.32	2 67	.17
Bran, 4 lbs	3.5	.50	1.54	.12
Totals	23.6	1.83	12.32	.69

If the animal produces more than 25 lbs. of milk add one pound of the grain mixture for each three lbs. increase in milk.

It is probably well to consider a ration made up of timothy hay and corn stover for roughage in order that we may note the kind of concentrates that will have to be selected to supply the proper amount of nutrients to a cow producing the same amount of milk. I will not go through the process of formulating this ration but I will give the formula which is as follows:

Feed stuffs.	Dry matter.	Protein.	Carbohydrates.	Fat.
	Lbs	Lbs.	Lbs.	Lbs.
Timothy hay, 10 lbs..	8.7	.28	4.34	.14
Bran, 3 lbs.	2.6	.38	1.06	.09
Gluten feed, 2 lbs.	1.8	.47	1.14	.05
Corn chop, 2 lbs.	1.8	.17	1.33	.09
Oil meal, 1 lb	.9	.29	.33	.07
Totals without stover	15.8	1.59	8.20	.44
Corn, stover, 10 lbs.	6.9	.17	3.24	.07
Totals	21.8	1.76	11.44	.51

Corn stover as a rule is fed ad libitum but I have shown the amount of nutrients in 10 lbs. This makes a ration nearly as well balanced as the one containing clover hay and silage, but it is not as good a ration, notwithstanding it contains more expensive concentrates. It lacks a succulent feed which is much appreciated by the milch cows. Moreover, timothy hay is not as good as clover when there is an abundance of corn raised.

It is perhaps well to compare the composition of clover hay, timothy and alfalfa in tabular form in order to see why timothy is not a good hay where there is plenty of corn, and why alfalfa is such a very valuable hay for all kinds of live stock. In the following table we have shown the amount of digestible nutrients contained in 100 lbs. of timothy hay, alfalfa and clover.

	Dry matter.	Protein.	Carbohydrates.	Fat.
	Lbs.	Lbs.	Lbs.	Lbs.
Timothy hay	86.8	2.8	43 4	1.4
Clover hay	84.7	6 8	35.8	1.7
Alfalfa hay	96.6	11.0	39.6	1 2

Clover hay contains about 2½ times as much protein as timothy, and alfalfa 4 times as much. In 100 lbs. of corn there is 89.1 lbs. of dry matter containing 7.9 lbs. of digestible protein. 66.7 lbs. of digestible carbohydrates and 4.3 lbs. of digestible fat. Since corn contains such a low per cent of protein and a high

percentage of carbohydrates it goes well with alfalfa, because it is richer in protein and contains much less carbohydrates. Let us make a ration of alfalfa and corn for a cow weighing 1,000 lbs. and giving 25 lbs. of 4% milk.

	Dry matter.	Protein.	Carbohydrates.	Fat.
	Lbs.	Lbs.	Lbs.	Lbs.
18 lbs. alfalfa	16.5	1.98	7.03	.22
8 lbs. corn chop	7.1	.63	5.34	.34
Totals	23.6	2.61	12.37	.56

Corn and barley are about the only grains that will make a balanced ration with alfalfa. Corn and alfalfa not only make a balanced ration, but the combination seems to keep the cow in exceptionally good order. It is generally thought that it is better to feed at least two kinds of concentrates, not that the ration will be balanced better but for the sake of variety. If corn is the only concentrate fed with the alfalfa it is well to mix some cut alfalfa with the corn for the cow does not do well on so heavy a feed as corn if fed alone. She is built for a bulky ration.

We should note that there is enough protein in this ration to produce 35 to 45 lbs. of milk but only enough carbohydrates for 25 lbs. It is not so objectionable to have an excessive amount of protein as it is to have too much carbohydrates. To illustrate this let us make a ration of timothy hay and corn chop.

	Dry matter.	Protein.	Carbohydrates.	Fat.
	Lbs.	Lbs.	Lbs.	Lbs.
18 lbs. timothy hay	15.6	.59	7.81	.25
8 lbs. corn chop	7.1	.63	5.34	.34
Totals	22.7	1.13	13.15	.59

In this ration there is enough protein to produce only 10 lbs. of milk or about one and one-half times less milk than the ration containing 18 lbs. of alfalfa hay. A yield of two tons of timothy hay per acre is considered very good,—at this rate an

acre will produce enough timothy hay, when fed with corn, to produce 2,200 lbs. of milk. It is not uncommon to grow four tons of alfalfa per acre and four tons of alfalfa when fed with corn, will produce 11,000 lbs. of milk. In other words, an acre of land, when sowed to timothy, will produce 2,200 lbs. of milk, and if sowed to alfalfa it will produce 11,000 lbs. of milk; that is, one half an acre of alfalfa and 888 lbs. of corn will produce 5,500 lbs. of milk and one acre of timothy and 888 lbs. of corn will produce 2,200 lbs. of milk. Does not this illustration show that it is more profitable to raise alfalfa than timothy hay? There is another point which we have not considered, and it is this; that the timothy hay and corn make a very poor combination not only for making milk, but for keeping the animal in good physical condition.

Feeding the dairy cow for profit involves the study of each animal in the herd; it requires that a man should know the amount of milk and fat that each animal is capable of producing; the dairyman should grow alfalfa and clover hay, instead of timothy, to feed with corn silage and home grown grain; a farmer should understand the relative composition of feeds so that an intelligent combination can be made; the relative market prices should be ascertained in order to know whether it is advisable to exchange home grown grain for mill feed, and it is well to understand the relative prices of feeds and dairy products that we may know whether to feed concentrates liberally or sparingly. High priced feed and low prices for milk or its products is an undesirable combination, but it is sometimes economy to submit to a present loss if probably profit in the future will more than counterbalance it. Bear in mind also that the food of maintenance must be supplied and only that which is fed in excess of this should be considered when the market runs the wrong way.

DISCUSSION.

President Hill: Mr. Glover was for many years closely identified with the field work of the Illinois Experiment Station, and kept a close tab on the workings of that station. Previous to that he was in Minnesota many years, so that he comes to us thoroughly well posted. Now, let us have a good discussion.

A Member: Is your ration a maintenance ration?

Mr. Glover: We first must have a maintenance ration. A balanced ration does not work the same with all kinds of cows. This is a maintenance ration and work ration combined. Certain kinds of food have sufficient nutriment in them, but it is locked up in such a way that no animal can get it out of the food. We must always consider the digestibility of feed. Corn chop means the ground corn including the bran. Corn meal is another term. We do not feed bolted corn meal to cows. It is better ground coarse for the cow. Now, the cost of that corn chop is about three quarters of a cent a pound; bran is about the same. That is six cents, and clover hay we value at about $6.00 a ton; that makes about two cents for the clover hay; silage at $2.50 a ton, makes about five cents for the silage; about thirteen cents I think that ration could be made for, and when fed to dairy cows, should produce twenty-five pounds of standard milk.

Mr. Goodrich: And milk averaged for the year a little less than a dollar a hundred at the creamery and the farmers had their skim milk back.

Mr. Taylor: That twenty-five pounds of milk is worth thirty cents.

Mr. Glover: No, the market price of butter last week was 27 cents.

Mr. Goodrich: Many creamery men are buying butter fat in the creamery and paying the full price for butter.

Ex-Gov. Hoard: But it is not worth thirty cents to the farmer, we want the net returns to the farmer.

Mr. Glover: Let us say twenty-seven cents. Then the man has made fourteen cents on thirteen cents worth of feed; that is he has marketed thirteen cents' worth of his farm products to a dairy animal which has returned him twenty-seven cents. You

are all looking for good markets; I wonder if you are all considering the markets you have in your own barns, whether they are good or not? Sometimes they are the kind of a market that we should not take our feed to.

I want to speak of an experience that I had in Illinois where I went from farm to farm and tested dairy herds. On one of my trips I went to a certain man's place and he says, "Our baby is not doing well, we don't know what the trouble is; we give it our own herd's milk." I said, "I believe I know what is the trouble." I want to say, first, that I did not advise those men that I saw on their farms, to feed any different way than their natural way the first year. I wanted to see what they would do, and then I wanted to start them feeding for a profit in the second year. I said to this man, "Mr. Smith, you are not feeding your cows right to keep them in a healthy condition. Let us see what your ration is." So we looked into the kind of ration that was being fed and we found the cows were getting more carbohydrates than they could handle and keep in healthy condition and not nearly enough protein in order to produce normal milk. The result was that the cows were in very poor health and the man was losing money on them. I said "You better give your baby some condensed milk." He tried that and the baby came out all right, it thrived. I could tell you many instances like that, I could also show you how the next year, when we changed the feeding and fed a balanced ration, how the same cows produced sixty pounds more butter fat per cow than they did in the first year, and they were healthy, they looked well. His ration costs him less because he sold some of his feed and bought other feed that was better adapted to combine with his feed than those he had grown on his farm.

Prof. Emery: Will a cow eat eighteen pounds of alfalfa a day?

Mr. Glover: Oh, yes, they will eat twenty. I have been a little conservative, because timothy hay as a rule is worth more on the market than alfalfa hay.

Mr. Rietbrock: You mean it brings more money?

Mr. Glover: Yes, perhaps I misspoke myself. We are dealing with problems all over the United States, and it is true that in some localities timothy hay will really sell for more in the market than alfalfa. It does not in Wisconsin, though it sells

for more than clover hay even here. Therefore I hardly know what value to put on the alfalfa hay on the farm.

Ex- Gov. Hoard: Take it at the price it has been selling in Fort Atkinson, $12 a ton.

Mr. Glover: That means that the hay would cost about ten cents, and the corn would cost about six, and that would make sixteen cents. Of course it doesn't cost you that much to grow it.

Prof. Emery: Then shall we remove our silos and raise alfalfa?

Mr. Glover: No, you need them both; alfalfa and silage make a splendid combination, thirty to thirty-five pounds of silage and from five to ten pounds of alfalfa.

Ex-Gov. Hoard: You have not used silage in your illustration.

Mr. Glover: No, what I want to compare here is the value of timothy hay with alfalfa, the relative amount of milk that can be made from them. That is what you are looking for. You grow an acre of timothy hay, and feed a certain amount of corn and you get twenty-two hundred pounds of milk, while half an acre of alfalfa and the same amount of corn will give you fifty-five hundred pounds of milk.

Mr. Taylor: But in order to produce that amount of milk you have to have a certain class of cows.

Mr. Glover: Yes, we must have dairy cows, bred for dairy purposes, and kept under certain conditions, and all that belongs to the problem of right dairying.

A Member: Will you get it in the shape of fat if you don't get it in the shape of milk?

Mr. Glover: That would not be a dairy cow. A dairy cow that is milking and properly fed, does not put fat on her body.

The Chairman: While the most important part of this subject is this alfalfa phase, at the same time we have invited Mr. Coburn here to talk alfalfa to us so that we do not want to exhaust this subject now.

Prof. Emery: In that second chart, you have forty pounds of silage and four pounds of corn chop. There was a something said in connection with Mr. Taylor's remarks yesterday about getting along with four pounds of corn chops and four pounds of bran.

Mr. Glover: I don't think we just understood one another fully yesterday, and I would like to put that a little differently. We must remember that Professor Haecker plants his corn close together so that it comes up very thick and does not make a stalk much larger than my finger. It may develop a small nubbin, but not an ear. Now, then, the nutriment in that is distributed in the stalk and the leaves. The stalk has not thrown all the nutriment into an ear and there is not a large amount of crude fiber developed. If you plant your corn so that it will develop ears, after a certain time the nutriment goes over into the ear and the stalk begins to harden.

Ex-Gov. Hoard: Then you have one more proposition, that is the larger production per acre.

Mr. Glover: You can grow more of that kind of corn per acre and the cow that gets forty pounds of that corn, grown where the ear was not allowed to develop, will give you just as much milk. The chemist takes it into the laboratory and analyzes it and he says that silage has just as much nutriment to the hundred pounds as silage that had the ears on it; but it is in the stalk. What difference does it make so long as you are feeding a definite amount of nutriment?

Prof. Emery: Relatively, how much more corn to the acre is produced in that manner than as ordinarily planted?

Mr. Glover: I should say over twenty per cent more.

Prof. Emery: And does not Professor Haecker also claim that it has a larger proportion of protein?

Mr. Glover: Yes, but you know Wisconsin silage has a little larger per cent of protein than corn grown south of us, so perhaps it is not due so much to the method of planting as to the climatic conditions. Here silage averages 1.2 pounds of digestible protein, while farther south it is only .9 of a pound.

Mr. Goodrich: Professor Haecker has, by his experiments, upset some of our ideas that we got some years ago, but I know that long before we made any silage I and other dairymen used to plant some corn for fodder corn, we would put in a bushel and a half or two bushels to the acre and I fancy that is something like Professor Haecker plants it, and it grew up fine stalks and no ears to amount to anything. The stalks were soft and the cows used to eat them up clean, but the agricultural professors and teachers in those days told us that had very lit-

tle nutriment in it. They said that corn needs lots of sunshine to make the nutriment in it and when it was planted so very thick there was very little nutriment in it compared with corn that was planted a little thinner so that the sun could shine in it. Well, of course, I was going to follow these teachers, so I planted corn about eight quarts to the acre and I got as many tons to the acre as I did when I planted it thicker, especially in the dry seasons, and I thought it was better, because it had almost as much corn, if not fully as much as it would have had if it was planted four quarts to the acre and every stalk had an ear on, a small ear. Now, I am not taking issue with any of the speakers or with Professor Haecker, and I am trying to learn yet all I can about it, but I think this is quite an important question, and we would like light on it. One question is, does it here in Southern Wisconsin, or in latitudes farther south than this, have as much nutriment in it when it is planted so thick that the sun cannot shine in it and it does not have any ears on it? That is a question that we want settled.

It may be different way up in the northern part of Minnesota where the sun shines eighteen or twenty hours a day in the summer time, and it shines brightly, and they don't have any clouds. But this theory may be all wrong for us.

Ex-Gov. Hoard: Sunshine puts in the carbohydrates. It does not put in the proteins, it doesn't put in the nitrogen. It puts in the sugar, the carbohydrates and starchy matter.

Mr. Glover: I think Mr. Goodrich made a good point. It may not be good practice for this country.

Mr. Everett: You are not prepared to advise the farmers of Southern Wisconsin to raise corn without an ear?

Mr. Glover: No, I am not.

Prof. Emery: According to your chart it is apparent that it would not be wise for us all to drop silage and raise alfalfa and feed that with the corn?

Mr. Glover: We have a balanced ration here. The feeding problem is too big to cover all at once. You take cottonseed meal and corn and timothy hay and you can get a balanced ration, but the combination is not good. In the first place, you have a very concentrated food in cottonseed meal and corn and we know that the cow wants a bulky food. Moreover it is dry; it is not succulent, and we all know that the cow needs a certain

amount of succulent food, and that you get in your silage. The alfalfa comes along and supplies you with the protein that corn silage lacks. It also lacks another element that tends to keep the cow's bowels in good condition. There are no hard and fast rules to follow in making up these ration formulas, but they are good guides for the intelligent feeder. To start with, the cow needs succulent food; she needs bulky food; and then she needs grain food, according to the amount of milk flow. I do not believe that there are very many dairy bred cows in the United States, weighing a thousand pounds, that are capable of handling economically over ten pounds of grain per day for any length of time, and keeping in good physical condition and raising good strong calves.

Secy. Burchard: Why silage? This in a way would seem to indicate your preference for feeding cows forty pounds of silage, a little clover hay, some corn chop, but why silage for Wisconsin?

Ex-Gov. Hoard: It is an economic question.

Mr. Glover: It is the cheapest feed you can raise for a cow and she needs succulent feed.

Prof. Emery: Was it true that some of the feeders at St. Louis found they could lessen very much the quantity of silage and substitute alfalfa?

Mr. Glover: We are looking, not for a brief, phenomenal flow, but for the most profitable flow for a year; and not for this year alone, but for this year and for the coming years besides. For instance, in the Elgin district, some men have adopted a system of feeding fifteen to twenty pounds of grain per day, crowding their cows, but their cows do not stand that but four or five years. The true dairymen cannot afford to feed cattle like that. Moreover, do not understand that I believe in scanty feeding. I believe in liberal feeding, but make the bulk of your feed roughage, alfalfa, corn silage. You can grow those things here, and that is the reason I made this ration for Waukesha county. You can all have silos, you can all have clover or alfalfa hay. I could put down a ration of clover hay that would look just as well to you and it would be a balanced ration, but the cow would not keep up her maximum flow.

Mr. Goodrich: We have to put in some grain with the alfalfa.

Mr. Glover: Yes, and I would chop the alfalfa and mix the grain with it.

Mr. Goodrich: What is the matter with corn meal?

Mr. Glover: All right, you can have that, but I never would feed a cow corn chop alone.

Prof. Emery: But what are we novices to do? Brother Goodrich tells us he wants corn. Brother Taylor says to take no account of the corn.

Mr. Goodrich: No, he says a ton of corn doesn't make any more difference than a ton of silage, good silage.

Mr. Glover: This fodder corn has not taken the nutriment out of the stalk and made an ear out of it, but it has that nutriment in it. The stalk of corn that Professor Haecker talks about has the nutriment in the stalk and it has not made an ear. The stalk that Mr. Taylor was talking about yesterday had produced an ear of corn.

Ex-Gov. Hoard: The stalk stops growing and the ear develops from the stalk after a certain point.

Mr. Glover: Yes, and when we put corn in the silo with developed ears on it, we want to take it just as it stops taking the nutriment from the soil.

Ex-Gov. Hoard: I would like you to illustrate one thing more, and that is the combination of corn and ensilage and alfalfa hay making an almost perfect ration.

Mr. Glover: Corn goes well with alfalfa.

That is another thing in studying feeding, we must learn the combinations of feeds that seem to be best adapted to the cow.

Prof. Emery: You don't clear up my trouble. Here is Brother Taylor, a very eminent feeder, and he says take no account of the corn when you are feeding silage, while Brother Goodrich says, reckon with the corn and that seems to be in conflict.

Ex-Gov. Hoard: They have always been fighting one another, but I want to say one word right here. In my own experience, in my barn, I find that ten to twelve pounds of alfalfa hay a day and thirty-five pounds of corn ensilage with corn in it that runs seventy-five baskets to the acre, makes an almost perfect ration and it enabled me to reduce the cost of my grain ration fifty per cent. If I was feeding eight pounds for my grain ration a day, say, five pounds of bran and three pounds

of ground barley, I can get from my cows on the average about as much milk cutting that grain ration right in two and feeding corn silage and alfalfa. I could not do that without the silage; I couldn't do it with timothy hay. There is the economy of the silo; in this way I am enabled to make a cheap ration by adding that silage, a very cheap ration. And they do not ask me how much my milk costs, down in the St. Louis market or the Chicago market; that is my business at this end of it, the farm end, to reduce the cost of making the milk. I can't affect the market over there, not a minute, not a penny, but I can affect it at the farm end as to the amount of money that the milk is going to cost me, and there is where my head must come in, there is where my mind must do its work and that is where nine-tenths of the farmers pay no attention whatever.

They are looking over at the creamery all the while and asking, "How much are we going to get for our milk?" All the time looking over there and never paying any attention as to how much the milk is going to cost to produce. I tell you the farmer is not the master of any other spot or place, except his own farm, and the farm end of this proposition is the big end, and it has the least amount of brain devoted to it.

Mr. Glover: I want to say one thing further in regard to that herd. Last year that herd received from five to eight pounds of grain daily and they averaged, young and old, everything in the herd, 321 pounds of fat, equivalent to 375 pounds of butter, practically 7,000 pounds of milk. That is the Governor's herd.

Mr. Everett: Hoard's proposition is the best one that has been presented in this convention.

Mr. Glover: A half an acre produces two tons of alfalfa. You see by these figures that this one-half acre of alfalfa will produce twice as much milk as one acre of timothy hay—with same grain feed, of course.

Mr. Thompson: And you take the fertilizing value to the land and there is another additional element.

A Member: Have you any comparison of alfalfa with silage in the same way?

Mr. Glover: It is pretty hard to compare these things because they are quite different; we must have our alfalfa to feed with our silage. Some men will say that bran is worth

twice as much to feed to the dairy cow as corn chop. It isn't so always; corn chop may be worth twice as much as bran under certain conditions. It depends on what your other feed is. A man has got to study these things out.

A Member: You would not need as much corn meal if you had corn silage.

Mr. Glover: Not nearly so much, but at the same time you can feed corn chop always in connection with alfalfa. Corn in any form makes a good combination with alfalfa.

Mr. Taylor: My friend, Emery, over here, is uneasy. He thinks he has got Goodrich and me at loggerheads with each other. Evidently he was whispering yesterday while I was speaking and did not get the force of my remarks. I said that forty pounds of corn silage that grew an ear on every stalk, which was planted four stalks in the hill, five feet in the rows, north and south, where the sun shone on the stalk and on the ground and developed the sugar in the lower joints of the stalk very largely, that was the kind of silage that I liked to feed to my dairy cows, forty pounds a day, and in such corn silage there is on an average about four pounds of corn and that four pounds of corn is what bothers Brother Emery, but it does not bother the cow at all.

Prof. Emery: I understood you to say that you take no reckoning of that four pounds of corn; that you feed just as much corn as if there was none in the silage.

Mr. Taylor: For that cow, that she may do her best work in the dairy, please make no reckoning of that amount of corn in that day's ration. If you get to figuring on that four pounds you will be withholding some more feed from her and she needs the rest of her feed and can take care of that four pounds, because her digestive capacity is greater with that succulent feed. I did not intend to say, and I do not intend to say today, that there is no value in the four pounds of corn found in the ensilage, but please call it "pie" or "cake" or "dessert," "extra," whatever you want to call it, don't make any reckoning of it.

Ex-Gov. Hoard: Don't feed any less of anything on account of it.

Mr. Taylor: No; that is the idea. Don't reckon out something else because you are feeding that corn in the ensilage.

There is another question I want to bring up. We have got

onto two lines of computation; we are computing from the value of the corn stalk with an ear on it and have made that a unit of computation in making up the ration of the cow; with the Haecker kind of corn grown up in Minnesota, there he made the acre of ground the unit of computation, and so there was inconsistency in our standpoints. If you take an acre of ground and make that the unit of computation in growing feed for a cow, possibly you can raise more food elements on an acre of corn planted thick than planted thin and it may be a reasonably well balanced ration. Did you ever think that oat straw was a pretty well balanced ration?

Ex-Gov. Hoard: It is for paper making.

Mr. Taylor: It is for the cow eating it. The chemical analysis shows it.

Secy. Burchard: Oh, no.

Mr. Taylor: Pretty near it. But how much of it would you have to eat to get enough, if you were a cow?

Mr. Goodrich: It is one to twenty-six.

Mr. Taylor: Then I am way off. I just ask you to forgive me for mentioning that part of it.

Mr. Goodrich: Don't make another such a mistake.

Mr. Taylor: No, I won't.

A Member: Corn at the stage you put it into the silo, the glazing stage, is an excellent feed for an animal and especially excellent for the cow, and she will thrive on it and do well for a time, week after week. If you feed that same feed put into the silo, week after week and month after month and not give them anything else, you have got animals that are ready for the bone yard. Doesn't that prove the fact that the food has lost a large part of its value and you are not taking out what you put in?

Mr. Taylor: No. It proves that it is not a balanced ration.

Ex-Gov. Hoard: With forty pounds of silage, you are feeding thirty pounds of water. With your dry fodder, if you feed sufficient to equal the forty pounds of ensilage you have only got ten pounds.

The Member: But if they will do well on that.

Ex-Gov. Hoard: They won't. If you continue it long enough with either one, she will not live on silage alone any more than she will on corn fodder alone.

PROFITABLE MILK FROM THE PRODUCERS' STANDPOINT.

Charles Linse, La Crosse.

The Chairman: Mr. Linse owns two farms in La Crosse county and keeps fifty excellent cows on each. On one farm a large part of the milk is made into butter and on his home farm the milk is delivered to a high class trade in the city of La Crosse.

Mr. Linse: Mr. Chairman, Ladies and Gentlemen: When I received an invitation to come to this convention and address you on dairy topics, I was saying to myself, now, what in the world can you tell these dairymen of the state of Wisconsin but what they already know—may be much better than yourself, and I strained my brains very much for days to think of something new, something great, something that might interest you, but I couldn't think of any thing but the old story that has been talked over and over, and so if I fail to interest you, I hope you will return good for evil and let me hear from you and learn something from you. That is what I am after always, and now I give you what I have got.

Market milk from the producer's standpoint is the topic before us. How to make the production of milk most profitable is what we are all trying to find out. But what course to follow in order to accomplish this, depends so much on personal and local conditions, that no one method can be given for all concerned in the matter. Nevertheless, there are certain general principles which must be observed if the production of milk is to be profitable at all.

To make the production of any article profitable three points must never be lost sight of, namely: cheapness of production, superior quality of the article produced, and, last but not least, a good market for it.

In our case, the dairyman or milk producer must aim to produce milk at as low a cost as possible. The first thing necessary for the accomplishment of this purpose is good cows. If he wants to produce milk profitably he must have dairy cows from

a dairy breed; while, on the other hand, no man who understands his business would undertake to produce first class beef from a dairy herd. Notwithstanding, that these facts are indisputable, they are not yet fully understood and realized by many farmers engaged chiefly in the production of milk.

But the best cow would be of very little use to her owner, if he failed to give her the proper food and care. This is also an undisputable fact, but how many owners of cows have really grasped this simple truth? How many of them realize that it takes a certain amount of food merely to sustain the animal's life, and that both this food and his time are a total loss, if he does not supply her with food over and above what is needed to maintain life, in order to produce milk. In a certain sense a cow is a machine which transforms food into milk. To make milk production profitable that machine must be worked to its full capacity. The owner of the steam engine may fire his engine, the year round, with just enough fuel to develop sufficient power to turn the empty wheels; so a man may feed his cow just enough to keep her alive, turning an empty wheel, so to speak. In either, fuel and feed would be a total loss. But to attain the best results it is necessary to feed not only the proper amount, we must also feed the proper kind of feed to our cows. So much has been said and written about the so-called balanced ration, that I will not enter into the question of feeding in detail, nor try to establish what proportion of the different food elements a ration for a cow should contain; but I will say—and I know it to be true by my own experience—that a succulent food, fed during the winter season is a great aid in the production of milk. In the earlier days, I used to grow turnips, mangel-roots, beets and carrots, and I fed them to my cows with the best results; but they require a great deal of labor to raise and to feed—enough to make them a comparatively expensive food. Today I think nothing more about raising these roots for such purposes, as for the past twenty-five years I have had, as a substitute for them, a succulent food in the shape of corn silage. And, by the way, I will and must say, that there is no other food produced on the farm, which cheapens the production of milk so much as corn silage.

In addition to good food a cow must have good care, if she is to do her best. Good, warm, comfortable quarters must be

provided for her. One thing that has always been a surpirse to me is, that farmers who have warm, comfortable stables for their cows will turn them out in the cold for a good share of the day, where they stand in the yard or around an old strawstack, all crumpled up and in evident misery converting their food into carbon, to keep up their animal heat, instead of turning it into milk for their owner. What can be the object of such a practice? For I have found it not only among lazy, shiftless farmers, but among men who are really trying to do their best for their cows. They do it because they believe a cow must have exercise. Now this idea of exercise, according to my experience, is a mistake. I have found that my cows never do better than when they have the least exercise, when they are lying down, chewing their cud in comfort, and putting all their energy into making milk for me. This is to my notion, all the exercise a cow needs. You may say, "What about their health? A cow needs exercise for her health." I reply: For several years I have kept my cows in the barn all winter, without turning them out at all for about five months during the cold season; and at the spring opening, a healthier lot of cows could not be found in the state.

We have been aiming to get a large quantity of milk from our cows, but quantity alone will not do it, we must have quality as well as quantity, to make dairying a success. No first class article, be it butter or cheese, can be made from second class milk. Now the question might be asked: "What constitutes first class milk?" My answer is: The milk must first come from a healthy cow, kept in a clean, well ventilated stable, free from all foul odors; she must be fed with wholesome food, free from all mould and decay; the milking must be done in the cleanest possible way. The milk must be removed from the stable as fast as milking proceeds, and cooled, at once, to a temperature of 45, or at least 50 degrees Fahrenheit. While certain kinds of food sometimes influences the flavor of milk, yet in most cases when the milk is ill-flavored the cause lies not in the food the cow eats, but in the air she breathes. It is the foul stable odors passing through her lungs that taint the milk. A great deal has been said about the so-called cow or animal odor in milk. For years I have heard some of our best dairymen, and even professors, argue this animal odor question, and debate as to how to get rid

of this seemingly necessary evil. Airing, complete airing of the milk, was the remedy recommended. Now, I claim there is no such thing as an animal odor in milk, at least nothing that can be properly so-called. The milk of a cow that eats pure foods and breathes pure air is never better or more free from odors, than when in her udder. We know that certain kinds of food and plants, and also, as I have already said, foul stable odors, will give milk a bad flavor. But these odors you can not get rid of by all the airing you may give the milk.

Now a few more words as to how a man should market his milk so as to get the largest possible return. As I said in my opening sentences, a man must be governed to a great extent by his own circumstances and conditions; what may prove a most profitable method for one, may be an absolute impossibility for another. My own experience is limited to making butter and selling milk at retail, direct to the consumer. I have never sold a pound of milk to a factory. I have made butter on the farm for nearly 40 years, and for the past five years I have been engaged in selling bottled milk. A man can certainly realize more on his milk by making it into butter himself, than by selling it to the factory. Not because he saves the expense of making—for his labor is worth as much as the labor of the butter-maker in the factory—but because he can make an article superior to that of the factory, and can therefore demand a higher price for it. Now I hope that my friends, the buttermakers, will not declare me an outlaw for making such an assertion. They must admit that the farmer has full control over his cows and milk, and, therefore, does not have to depend upon some one else's skill and honesty; while the butter maker in the factory, in these particulars, is dependent upon a great number of persons, over whom he has little or no control. The farmer, therefore, has the advantage over the creamery in making the finest quality of butter. But in order to reach that high mark of perfection which will justify him in demanding a high price for his butter, a man must have an abundance of skill and patience and perseverance. The more easy way, and probably the better way, for the average farmer, is to sell his milk to the creamery.

As I have already stated, I am at present selling bottled milk to the consumer. If a man lives close to a city he can make this quite a profitable business; but that he will find that skill

and honesty are more essential to this, than to any other method of marketing milk. A man has to build up a reputation. He must be known as a strictly honest man; people must have confidence in him.

The successful dairyman must be progressive and a student of his business; he must attend dairy conventions, read dairy literature, bulletins, etc., and mingle with successful men engaged in the same kind of business. In short, he must avail himself of every opportunity to improve his mind in order that he may conduct his business intelligently and derive a profit. More than this he must do a little advertising. No business man, in our day, thinks for a moment of being able to make his business a success without advertising. And why should not we farmers make use of ordinary business methods in marketing our products? "Yes," you will say, "this advertising is a regular nuisance; in most cases it's a swindle, generally there is no truth in it." You may be right—in many cases it is a humbug. But at the same time many thousands of good, honest men advertise, and prove to people that they can rely on what they tell them. Now you want to be among these honest advertisers, and tell people that you are prepared to supply them with first class home made butter, or strictly pure milk; and if you prove what you tell them, success will be yours.

DISCUSSION.

The Chairman: I have noted in some of the remarks made here a little bit of antipathy to the silo question. Governor Hoard spoke yesterday of how many more silos there are in Jefferson county than in Waukesha county. Now, you have heard what Mr. Linse says about the silos, and I hope you will go for him as hard as you please, and I believe you will go away from here ceasing to be critical of silos. Now, go at him.

Prof. Emery: At what time do you feed silage, before or after milking, or do you pay no attention to that?

Mr. Linse: We do, we milk first, before we feed anything in the morning, and when we have done milking we feed a fodder

ration, which contains about—I haven't the accurate figures, but it is a bushel basket containing about two-thirds silage and one-third chopped corn stover to each cow. Some will eat more and some less. The corn silage we throw out in the evening on the feeding floor and mix it with the corn stover, it kind of softens it.

Ex-Gov. Hoard: One softens the other.

Mr. Linse: Yes, and the cows like it in that way, and I am trying to please the cow. We mix it at night and feed it the next morning. Then they get their ration of concentrated food. One man brings up the corn silage and stover, the coarse food, and puts it in the manger, and another man follows right up with the concentrated food and puts it right on the silage and they eat it altogether.

Prof. Emery: Do the cows clean up all this dry fodder?

Mr. Linse: They will first eat the parts that suit them best, as all cows will do and some men, and then they will go for the balance. This is a pretty good gauge, not to overfeed. They will pick out the best and if they have too much they will not clean it all up, they will leave a few nubbins perhaps and we will clean out the manger.

A Member: Did you ever feed any corn meal?

Mr. Linse: Yes, I used to, sometimes.

Ex-Gov. Hoard: What is your concentrated ration?

Mr. Linse: At present I am feeding wheat shorts and dry brewers' grains. We moisten them with hot water about six hours before. They will swell up and soften and then we take these grains and mix them right with the dry shorts and they make a very nice combination.

The Chairman: I remember once, Mr. Linse, that you fed the refuse from a mill, screenings. Was there any particular reason why you discontinued that, or was it because you could not get the screenings any more?

Mr. Linse: I fed those screenings in the early days, when I bought them very cheap. I used to buy them for three or four dollars a ton, I watched the elevators and when the time came that I could get a lot of them cheap, I used to buy fifty or a hundred tons and fatten cattle, stock. In those days I had my own grinding apparatus and steam outfit and I steamed all those ground screenings, not because I thought they were more

nutritious, but these screenings contained a lot of foul weeds. My neighbors got onto it and they went after them, too, but they didn't steam them and they got their farms all full of all sorts of stuff. I steamed mine and that killed those seeds. Now, screenings are so much looked for that I don't buy them any more. On the other hand, for milch cows I thought these seeds put an ill-flavor into the milk. Anyway I didn't feed any more.

Mr. Race: Are those brewers' grains with molasses or just common dried grain?

Mr. Linse: Just common dried grain.

Mr. Dewey: What breed of cows have you?

Mr. Linse: I have bred Jerseys for the last twenty-five years about. They are bred on the old farm where the butter is made. But I am now engaged in the milk business and I have about two-thirds Jerseys and one-third of other cows. A man engaged in the milk business finds it a pretty hard matter to keep an even flow from his own breeding, and he must have that. It is a pretty hard matter to get those cows to come in just as you want the milk, over the whole year. Another thing, I am hardly getting a big enough price so I can afford to sell all straight Jersey milk, so once in a while I have to mix in other kinds.

Mr. Dewey: How long have you used silos?

Mr. Linse: Twenty-five years, coming twenty-six. If I remember right, my silo was the third one built in the state. They had one on the Experiment Station farm and Professor Henry gave me at that time an introduction to a man, I think Dr. Weeks of Oconomowoc.

Mr. Philips: Mr. Linse is producing just as clean milk as Mr. Gurler, but he hasn't got quite the market that Mr. Gurler has.

Mr. Linse: I have been growing silage going on twenty-six years and we have learned a great deal about growing silage.

Prof. Emery: At the end of the twenty-five years, do you say that silage is the cheapest food the farmer can raise?

Mr. Linse: It produces the cheapest milk of anything you can grow on the farm.

Mr. Dewey: And is it your opinion that the food value of the silage is out of the silage itself, or do you get better returns out of your other food from feeding silage?

Mr. Linse: Well, I think that the silage itself is not only a

cheap food, but I think it is a very wholesome food. I think that the little acid in the silage is a sort of a digester—I have got that idea, I don't know whether I am right or not, but I believe it helps the digestion. I know my cows never have been healthier than they are while they get their silage. They like it and they do well on it, and are in bright, healthy, good condition.

A Member: How short do you cut your silage?

Mr. Linse: Not quite so short as some, about an inch and a half I think, and I see no necessity for cutting any shorter.

Mr. Goodrich: Do you aim to feed your cows a variety of food, or keep them right straight along on one kind of forage or one kind of grain for months at a time?

Mr. Linse: Well, they get a variety, but about the same variety pretty much during the winter season. It is a little mixed sometimes; they get silage, of course, every day, and in combination with the silage I have, for instance, some corn stover, they get that for a couple of weeks. Then I get some oats, cut it green, make hay out of it, but sometimes that gets to be kind of tough. I cut that on the feed machine and mix it with my silage and they will eat it up clean, so they get that in combination with the silage. Then sometimes I have clover hay. Unfortunately the last two winters our clover got killed by winter killing, so I had but little. This I cut up with a feed cutter and mix with the silage. They get one ration of hay of whatever kind I can buy or raise myself.

Ex-Gov. Hoard: You seem to be quite strongly inclined to making a chop of your feed, cutting up everything.

Mr. Linse: It is not because I think that it adds anything to it; on the other hand, I think a cow must have some bulky food that is coarse, it aids digestion, and they get one meal along at noon. I feed them just what they like to eat. When they have their morning's ration, chopped food and silage and concentrated food, notwithstanding, that we take the best care in watching those cows to see that each one gets what she wants, still sometimes a cow don't get quite satisfied and so this noon ration of hay comes along and they will get just what they want to eat. Some are a little more hungry and others a little less. So I do not chop up the food because I think it is of more value to them, not because it is more digestible, but because it is so

handy to feed, it is more easy to handle. We always feed hay once a day.

Mr. Race: Did you ever feed any alfalfa?

Mr. Linse: I am very sorry to say I have not, because I haven't got it. I don't think I can raise it on my farm.

Ex-Gov. Hoard: Have you tried it?

Mr. Linse: I have tried it, yes; and I am going to try it again. My boy is commencing to experiment on it I think in the valley. We have these slopes of good, rich clay soil, with limestone bottom, and I think it ought to be all right, providing it doesn't winter kill.

Ex-Gov. Hoard: I think you will find it will grow on that kind of land. I think where it has a good slope it will do better than down where it is on the flat land.

Mr. Linse: We shall try hard to raise it. I have tried a little on the place where I am now, but I think that soil is not very well adapted to it, at least it did not do well.

Ex-Gov. Hoard: I never have visited your farm, you know, though you have visited mine, but I thought from what you said that you put a very high value upon the question of whether your cows get a constant supply of pure air. How do you ventilate your stables?

Mr. Linse: I ventilate on the King system.

Ex-Gov. Hoard: Do you notice any difference in your judgment and observation in the thrift and tone and condition of those cattle since you introduced that ventilation system, from what obtained before?

Mr. Linse: I did not have exactly the present system that I have in my new barn, still the old barn was well ventilated, for the past thirty years, as long as I have been engaged in the business. My stable was pretty clear from foul odors always.

Ex-Gov. Hoard: For how long did I understand you to state in your paper that you have kept your cows in the stable, was it four or five months in the winter?

Mr. Linse: And I do it still.

Mr. Goodrich: How many years have you practiced that?

Mr. Linse: This is the third year. Even on the old farm I did keep my cows in for weeks at a time, in severe, cold, stormy weather, and then turned them out, but I found that the change, after they were kept in the barn for a week or ten days and then

turned out again for a few days, did not seem to work well. It is much better to get the cows accustomed to staying in, if you keep them in at all, or if you turn them out at all, turn them out a little every day if it is only half an hour.

Mr. Goodrich: Do you water in the barn?

Mr. Linse: Yes.

A Member: How do you tie them in the barn?

Mr. Linse: I use the so-called Bidwell stalls.

Ex-Gov. Hoard: Where you keep cows in the barn in that way, there must be sufficient warmth so that they give a good flow of milk.

Mr. Linse: Oh, certainly.

Ex. Gov. Hoard: Now, then, under those circumstances it becomes imperatively necessary, doesn't it, that these cows have pure air; otherwise, there is where tuberculosis is going to get in its work, from a lack of ventilation and the cows confined.

Mr. Linse: Now, on this question of pure air, even if you turn out the cows part of the time during the day, if they breathe foul air in that stable for one-half the time it is just as bad, I don't know but it is worse if they are turned into the cold after breathing that warm, foul air twelve hours?

Ex-Gov. Hoard: We are coming rapidly to understand that we have got to furnish pure air to our cows.

Mr. Taylor: Not very rapidly.

Ex-Gov. Hoard: Tuberculosis is making men understand it. They have killed three herds in my township in the past six months, and every one of them poisoned to death by the deliberate stupidity of the owner, and you couldn't make either of those men listen a minute to any instruction or any thought. But the mills of the gods grind slowly, though they do grind fine, and those three men lost herds varying from eighteen to thirty-one cows. Now, they are willing to say, "Men and brethren, what shall we do?"

A Member: Don't you think that the feed had something to do with that? Don't you think that these people were feeding some of this rotten, ground food?

Ex-Gov. Hoard: No, tuberculosis is not a food disease; it is a germ disease; the same as smallpox. Smallpox doesn't come from what you eat, it comes from a germ.

A Member: Do not the condensers object to the by-products which you say you feed?

Mr. Linse: I can't see why this by-product, if it is in proper condition, is in any way injurious at all. My customers would object very much to my feeding wet brewers' grains because they will produce a fermentation very rapidly.

Secy. Burchard: And because they foul the manger.

Mr. Linse: Yes; while the dried brewers' grains come direct from the malt kettle, they go through the press and are dried in ten or fifteen minutes, or perhaps they are run over some kind of a machine that dries them. At any rate they make one of the best feeds we know of; my cows have never done better than since I fed dried grains.

A Member: Did you ever feed malt sprouts?

Mr. Linse: I fed a few, years ago. I think they are a good thing, but I can't buy them in La Crosse. Our wise lawmakers have made a law, as I understand, that every dealer in these by-products, brewers and mills, have to pay a license, and we have only one large brewery in La Crosse which handles these grains, at the same time the brewers there sell them in wet state, they have ten times as much of these malt sprouts, and they are excellent feed, they are the highest protein of any by-product, except gluten feed, but they tell me they can sell all their malt sprouts, but they won't pay the license.

A Member: Can you give the dairymen a list of what ought to be fed and ought not to be fed to dairy cows in the shape of these by-products?

Mr. Linse: Well, I don't know of any by-product that would be injurious to a cow.

A Member: Have you fed any of these distillery slops?

Mr. Linse: No, I never fed any, and I suppose I would not feed them, but all other things—by-products—bran and shorts and other foods, oil meal certainly is a splendid food. Gluten feed I never fed. I don't see any objection to feeding any of those things.

A Member: Then you emphasize the fact that it is more the way a man feeds it than the food itself?

Mr. Linse: Well, all those foods can be overdone and if you feed to excess, you will injure your cows' digestive organs and

if a cow does not digest well, she will produce ill-flavored milk and unhealthy milk.

Ex-Gov. Hoard: Have you ever tried ground barley?

Mr. Linse: I have not. My son has this winter, and he says his cows are doing very well. He doesn't feed it alone, he mixes it with bran.

Ex-Gov. Hoard: It is one of the best combinations I have ever got a hold of; say, you are giving a five-pound ration, three pounds bran and two pounds barley meal with your alfalfa.

Mr. Linse: I haven't alfalfa, I would have to double that.

Secy. Burchard: I simply want to say in reply to certain questions here about the dried grains, that at a recent convention of the New York dairymen, Dr. Jordan of the New York Experiment Station, treated this subject, not only from the point of a scientist, but from actual feeding, and he says, there is no better feed, whether for the health of the cow or the healthfulness of the milk, than dried brewers' grains, and dried distillers' grains, too. Now, there is a well founded objection against distillery slop and there is a well founded objection against wet brewers' grains, not because it is inherent in the grains or the slop when the cow gets it, but because they are almost invariably sure to befoul the mangers and the barn, to make places around in the cracks where bacteria will grow and multiply, to become rotten, and, of course, to give off more or less offensive odors which will have a tendency to taint the milk more or less as they go into the cow's nostrils and through the nostrils into the lungs and into the blood and into the milk.

Mr. Race: I would like to ask will it pay the common run of farmers, will they think it good business, to sell barley at fifty cents a bushel, a cent a pound, and pay five dollars a ton for wet grains when it takes about four tons of wet grains to make one of dry feed?

Mr. Goodrich: That would be the same as $20 a ton for the dried grain.

Secy. Burchard: And $20 a ton for the barley.

Mr. Race: What is the process of producing these wet grains?

Secy. Burchard: They withdraw a portion of the carbohydrates from the barley, so that a pound of brewers' grains contains a much larger proportion of protein than does the bar-

ley, just the same as bran contains a larger per cent of protein than wheat from which it is made, because in milling the wheat, they have taken out the starchy portion but have left a large part of the protein, that was in the wheat kernel, with the bran, so that you get a larger proportion of protein in your malt sprouts or your dried grains, than you do in the original barley.

Mr. Race: But if you balance that barley with other food?

Secy. Burchard: I had occasion just the other day to answer that question. The question came in, whether a man could feed wet brewers' grains in place of corn meal to balance up a ration, and I was first disposed to answer no, of course; but on reflection, I did not know why we could not do that. Of course the wet brewers' grains would increase the amount of protein in the ration and make it much more than was really necessary for the cow, but the scientists tell us that the cow can use the protein for exactly the same purposes that she uses the carbohydrates; that is, its fuel value is practically the same, and after she has used sufficient protein to make her milk and her muscles, she would turn the surplus over toward making heat, and I came to the conclusion that five pounds of the wet grains were practically equivalent, in feeding value for all purposes, to one pound of corn, and corn and barley are quite similar, you know. So I think that if a farmer should sell his barley for fifty cents a bushel or twenty dollars a ton, and buy the wet grains at five dollars, he is making about an even trade; providing now, when he uses his wet grains, that he gets them fresh and that he feeds them fresh and that he is very careful about the receptacles in which he feeds them and does not let a lot gather round in the corners, etc. If he had an old fashioned butter bowl to feed out of, it would be a very nice thing; or if he would make a modern cement manger, rounding all the corners so there will be no good place for an accumulation in corners, just as Mr. Searles said about the milk pail. You don't want a pail or any other milk vessel to have these ordinary seams, but you want them flushed up full, solid, so there shall be no little cracks for particles of milk to accumulate in. It is just the same way with your mangers, you must avoid cracks and corners. The modern cement manger is an excellent thing and the cow washes it out

very cleanly every time, if you do not overfeed her, with that excellent cleaner, her tongue.

Mr. Walter Jones: It seems to me there is another product that might be used profitably, and that is beet pulp. How is that for a feed?

Mr. Linse: I don't know anything about it, I never fed it.

Mr. Jones: We have a beet sugar factory in this country and they deal largely in by-products.

The Chairman: Dry or wet?

Mr. Jones: They call it molasses beet pulp now. It is dry with molasses added to it.

The Chairman: Molasses feed and beet pulp are two different things.

Mr. Jones: They mix the molasses with the dried beet pulp. I have had it in my barn.

A Member: Is there such a thing as dried beet pulp? Isn't it the refuse from molasses that they are talking about?

Mr. Race: I have bought molasses grains and there's brewers' grains and beet pulp and you have another one, malt sprouts, mixed together. I have bought this stuff when I couldn't really tell what there wasn't in it, there were mill sweepings and everything else in it. I am not condemning those grains by any means. A man sent me two hundred pounds to try them, but if you don't have a warm place to keep them—well, I had to take an axe to chop the bag open in the winter time.

Mr. Weidener: It seems to me that a part of Mr. Linse's explanation was given here yesterday. I have no doubt in my mind that he is a profitable cow man and I think one of his greatest profits is the long pieces of corn put in the silo.

Mr. Wells: Have you ever fed corn meal as part of the ration with ensilage?

Mr. Linse: I never have, as long as I am feeding ensilage.

The report of the secretary was read and adopted.

SECRETARY'S REPORT.

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

I have the honor to submit the following report, covering the period from the adjournment of our convention in Wausau last February to the present time.

It is known to all of you that I preferred a very urgent request in my last report to be relieved from further service as secretary, and that the matter of selecting a successor was referred to the Executive Board. At a meeting of that Board, held at Madison early in May, after mature consideration, it appeared to the members that the time had not arrived when a change in the office of Secretary was expedient, and, not without considerable reluctance, I deferred to their opinion, with the understanding that the President of the Association was to relieve me of much of the responsibility theretofore resting upon the Secretary. It is but justice to President Hill to say that he has most faithfully carried out his part of the program, but I am more than ever conscious of the importance of entrusting the duties of Secretary to some one who can give them more time and thought than it has been practicable for me to devote to such matters in recent years. I am profoundly grateful to the Association for the honors bestowed upon me, and the confidence and courtesy of which I have been the recipient for so many years, but the time has arrived when consideration for the individual should give place to the welfare and increasing usefulness of the Association. As contributary to that end I place my unconditional resignation in your hands.

During the past year I have drawn orders on the Treasurer to the amount of $3,245.79 for the current expenses of the Association. The names of the persons in whose favor these orders were drawn will be stated in detail by the Treasurer, and it will therefore suffice to report here in summary the purposes for which the expenditures were made, as follows:

Convention expenses at Wausau	$467.75	
Convention premiums	195.69	
		$ 663.44
Chesse Instructor, (Aderhold)	$619.50	
Creamery Instructor, (Corneliuson)	558.50	
Cheese & Creamery Instructor, (Searles)	519.50	1697.50
Miscellaneous expenses		33.62
Swiss Cheese Instructor, (Marty)	$315.00	
Swiss Cheese Instructor, (Zumkehr)	420.00	
Printing Report	87.98	
Miscellaneous	28.25	
Total for Swiss Cheese purposes		851.23
		$3,245.79

There remains to be paid, for services and expenses properly chargeable to the past year:

Secretary's salary	$250.00
Office expenses	12.98
Postage, including mailing of last year's reports which have not been received, (estimated)	60.00
Printing and Stationery	22.00
President's travelling expenses	50.00
Salary and expenses of Instructor for January, (estimated)	150.00
	$544.96

It will thus appear that the current expenses for the year fall a little short of our annual appropriation from the state, which is $4,000,—but not more than prudence dictates as a reserve for unforseen emergencies.

There is now in the hands of our Treasurer, if there are no errors in my bookkeeping	$1,083.96
And the available balance with the State Treasurer is	3,841.73
Making a total of	$4,925.69
We expect to receive for memberships this year	200.00

This furnishes a fund of say $5,100 with which to meet the expenses of this convention, (which with premiums may reach $800), pay the accumulated expenses of last year and to carry on some kind of field work during the coming year.

Since the change in the law so materially increasing the staff of the Dairy and Food Commissioner, there is less necessity, in my judgment, for this association to continue instructional work along the lines followed in the past. It would be better, in my opinion, to discontinue visiting cheese factories and creameries, and take up a line of work more directly connected with the milk producer, such as the organization and superintendence of test associations, modeled perhaps after the control societies of Denmark.

In making up his recommendations to the Governor for the appointment of Instructors under the new law, Commissioner Emery, anxious to secure good men, requested me to release Messrs. Aderhold, Marty and Corneliuson from their engagements with this Association that they might accept appointment under him. Believing it would be conducive to the general good of the dairy interests of the state that these men, who had proven their efficiency and had gathered valuable experience concerning the duties of inspectors and instructors while in our service, be transferred to the staff of the Commissioner, his request was acceded to, and they received appointments. It is believed that the Dairy and Food Commission as now constituted is doing excellent service under the new law. It is too early yet to expect very much in the way of visible results, as most of the work hitherto has been preliminary, but with the head of that Commission an ex-president of this Association, and his first and second assistants and three of his inspectors formerly employed by it, we may, and not without good reason, expect to see Wisconsin regain its supremacy as the banner dairy state of the Union.

Respectfully submitted,

GEO. W. BURCHARD,
Secretary.

The Chairman: I will now name the members of the following committees:

Nominations: W. D. Hoard, J. Q. Emery and C. H. Everett.

Resolutions: C. P. Goodrich, Fred Rietbrock and E. L. Aderhold.

Finances: H. C. Taylor, A. J. Glover, Charles Linse.

Exhibits: H. C. Searles, O. P. Clinton and D. O. Thompson.

Adjourned till 2 P. M.

Convention met at 2 P. M.

President Hill in the chair.

TUBERCULOSIS AS IT RELATES TO THE DAIRY FARMER.

Dr. H. L. Russell, Madison.

Mr. President, Members of the Convention: The subject that has been announced is tuberculosis as it affects dairy cattle.

In a question of this kind the first thing we can consider is whether the gravity of the disease warrants a full consideration such as is outlined for this afternoon. You have given a prominent place on your program to this matter and in bringing it before you I think we can perhaps profitably turn our attention, first, to the amount of tuberculosis which we have in this state. First, are we in possession of facts which enable us to know what proportion of our cattle are affected with tuberculosis? Is that proportion greater among dairy cattle than among beef cattle? Is this disease on the increase or the decrease in a general way, and altogether what is the gravity of the proposition?

We have been working upon this problem of tuberculosis in the state of Wisconsin about twelve years. The Experiment Station was the first to introduce the tuberculin test as a means of diagnosing the presence of this disease in cattle. This was done in 1893 and I might say that these tests were the second,

so far as I know, to be made in the United States. They were made very soon after the introduction of the tuberculin treatment with human beings.

In the earlier years of this agitation, progress, with reference to the accumulation of data as to how prevalent tuberculosis was, was exceedingly slow. In those early days it was a question as to the accuracy of the tuberculin test as to its integrity, whether the results which were obtained by the aid of the tuberculin test could be relied upon and we had in addition to this a great deal of apathy and indifference to overcome on the part of the farming public. They were rather reticent in taking up what might well be termed at that particular time a new fad, and not only that, but there was actual opposition on the part of a good many people in regard to the application of the test. So that in the early days of this agitation, the accumulation of data was relatively slow.

The work against tuberculosis, however, in this state has been carried on, not only by the Experiment Station, but also by the State Live Stock Sanitary Board and through these channels there has been accumulated a considerable body of evidence. The data which has been collected by the State Veterinarian and the Live Stock Sanitary Board has been from herds in which cattle were known to be tuberculous. The staff which was at command for the study and eradication of the disease is so small that the state officials felt it was preferable for them to give their entire attention to the detection of the disease in connection with herds of suspected animals which have been found to react. Such experiments would therefore cover a relatively larger number of reacting animals than would occur if the cattle were tested throughout the state at large. The consequence is that we cannot take the data which have been accumulated under these circumstances as representative of what is actually present in Wisconsin.

Now, in connection with our work at the Experiment Station we have, in an educational way, attempted to spread information with reference to the tuberculin test. Through this medium we have secured a considerable body of data in which tests have been made upon herds in which there was no especial reason to consider that those herds were likely to contain tuberculosis, and therefore it would seem that data of this class is much more re-

liable, so far as the state at large is concerned, than that which was taken from suspected herds.

TABLE I.—*Tuberculin tests made on suspected herds.*

	Number of herds tested.	Number of herds showing reactions	Number of animals tested.	Number of animals reacting.	Per cent. affected.
State veterinarian, 1898-1900	...	...	588	191	32.5
Experiment station to 1900	...	...	323	115	35.6
Live stock sanitary board, 1901	43	36	807	242	30.0
Live stock sanitary board, 1 02	34	23	752	166	22.0
Live stock sanitary board, 1903	48	39	1,316	331	25.1
Live stock sanitary board, 1904	67	51	929	209	22.4
	192	149	4,695	1,254	26.7

TABLE II.—*Tuberculin tests made on non-suspected herds.*

	Number of herds tested.	Number of herds showing reactions	Number of animals tested.	Number of animals reacting.	Per cent. affected.
Under auspices of Exp. Sta., to 1901	...	...	935	84	9.0
Under auspices of Exp Sta., in 1901	22	10	425	84	19.7
Under auspices of Exp. Sta , in 1902	14	5	306	42	13.7
Under auspices of Exp. Sta , in 1903	11	4	182	5	2.7
Under auspices of Exp. Sta., in 1904	33	13	688	44	6.4
Under auspices of Exp. Sta , in 1905	41	17	726	44	6.0
	121	49	3,262	303	9.3

I have presented in this table here a brief summary of the number of animals which have been tested and also the number which react, which have been secured under these two auspices. These figures represent the suspected herds, herds in which the State Veterinarian had reason to believe, before he made an examination, that the disease of tuberculosis already existed in those herds. The consequence is that a very much larger proportion of these animals were found to be affected than was the case in the work of the Experiment Station, which for the most part has been conducted upon nonsuspected herds. You will understand that this chart includes all of the examinations which we have made in the state, but by far the larger proportion of those were dairy herds.

The suspected herds are incorporated in this series of data. I

will not go over the details of that, but will only say that the average for the last five years in suspected herds was that about one animal in four was shown to be infected, whereas the number of animals which were found to be infected in the non-suspected herds, including all those that have been tested by our short course students, by members of the Farmers' course and by other people who have examined herds, in that class, the percentage of reacting animals is less than ten per cent.

Now, in addition to these data which I show upon this chart, I may say further that within a comparatively recent time, several towns have passed ordinances requiring all animals that furnish milk for direct supply, to be tested with the tuberculin test. The city of Monroe, for instance, is one of those in which such a local ordinance has been passed, and one hundred and eighty-five animals have been examined within the neighborhood of this city and the percentage of reacting animals is seven per cent. The city of Beloit last year had a similar experience, owing to the fact that one of the most prominent dairy herds which was supplying milk to that city, was found to be very badly affected with tuberculosis and a great many people became interested in this question, who under other conditions, perhaps would have neglected it. In deference to public sentiment, although there was no local ordinance to that effect, nearly all milk-supplying animals of this city, were subjected to the tuberculin test, and eight hundred tests have been made in the vicinity of Beloit with a finding of ten per cent reaction.

The city of Minneapolis, although not within the confines of our own state, may be also taken as representative of this line of work. That city two years ago passed a similar ordinance that all milk supplying animals must be tested with the tuberculin test before their milk can be disposed of in the usual way, and the per cent of reacting animals for the year 1903 was 7.25 per cent; the per cent of reacting animals for the year 1904, in which there were 4,300 head of stock examined, was 6½ per cent.

Now, these represent what we may call dairy conditions. Although the data are not large in comparison with the entire number of cattle in the state, they represent, so far as those special localities are concerned, what we may call fairly accurate

data, and I believe at the present time we are in possession of a sufficient amount of data to give us the means of making a very fair estimate as to how prevalent tuberculosis is in Wisconsin today. That percentage, I would say, would run somewhere between five and ten per cent. Now, when we compare that percentage with what is found in other states—in the East and also in other states around us, we find that most of this data has been accumulated under such conditions that it is impossible for us to determine with any considerable degree of accuracy just how prevalent the disease is, because in almost all cases in other states the data has all been thrown together; that is, the suspected as well as the non-suspected herds, and the consequence is we cannot get at any fair degree of comparison. In a general way I think we may say that the percentage of animals found to react in other states has been greater than in our state, so that I think we may say that is a hopeful sign so far as Wisconsin is concerned. We are certainly not in as bad condition as other dairy regions of the world.

Take, for instance, Denmark; in Denmark a few years ago the percentage of reacting animals to those which did not react to the test, was as high as forty per cent, and we look upon Denmark as one of the most progressive, and most important dairy regions of the globe. That condition has been brought about very largely through the fact that the rank and file of stock raisers and breeders did not take this matter to heart. It is one of the most vital questions that we can consider and while you are attempting to improve your breeds of stock you must not neglect this aspect of the question.

Now, one thing which is very marked in regard to this matter of tuberculosis is its irregular distribution. While we may say that about one animal in ten is likely to be affected with tuberculosis in our state, we will find nevertheless upon examination that this disease is very unequally distributed. I have distributed to the audience bulletins (Bull. 133, Wis. Expt. Station) showing the distribution of tuberculosis in suspected and non-suspected herds in Wisconsin and you will see upon page 7 of the bulletin a diagram which gives you an idea how prevalent tuberculosis may be in a herd and still no physical symptom be apparent. You will see from the comparative length of the black and white lines that in some instances a very large

proportion of even unsuspected herds reacted to the tuberculin test, and that is exactly what we found under ordinary conditions; we found many herds that were entirely free and then a herd in which the disease has gained an extensive foothold, sometimes thirty, fifty, seventy-five per cent of the animals actually being affected, although the appearance of the animals was perfectly healthy. When you are dealing with a disease of that class which is so insidious in its character, which is so difficult to recognize in its early stages, it increases very much the gravity of the proposition.

Now, is this disease more prevalent among our dairy stock than it is among other varieties of stock?

I think we may say from the data which we have at the present time that tuberculosis is no respecter of breeds any more than it is a respecter of persons; that the beef breeds are equally susceptible with the dairy breeds and while we do find upon analysis of our data that a larger proportion of tuberculous cases are to be found among animals that are used for dairy purposes rather than breeding purposes, or milk supply, this is simply a condition which is brought about by the environment in which those animals are placed. From the data which I have at my command I find from analysis that we have twenty per cent of dairy animals affected; eighteen per cent milk supply animals and eleven and a half per cent breeding animals.

The amount of data which I have of beef animals exclusively is so small that it is hardly worth while to draw any conclusions from it.

Whether an animal will acquire tuberculosis or not turns then not so much upon the breed of the animal as it does upon the environment in which that animal is placed.

Tuberculosis in a human being is distinguished from most diseases in that it is a disease which is contracted in the home, in the house. A person, for instance, following an indoor vocation is very much more liable to contract tuberculosis than one who lives out of doors. Among clerks and other people who live in doors, the disease is two or three times as prevalent as among farmers and gardeners. That is a condition which is brought about, not so much by increased susceptibility of the person working inside, as it is because of the increased opportunity for the contraction of contagion, and I think we may fairly say that

if tuberculosis is found more abundantly among dairy animals than among beef stock, it turns, not upon the breed, but upon the closer housing which these animals are likely to have.

Is this disease upon the increase? Do we find a larger proportion of animals suffering from tuberculosis in Wisconsin now than we did in the earlier years of this agitation?

My belief is that it is diminishing; that we are more than holding our own in fighting this dreaded scourge. It is true, unquestionably, that public sentiment is very much more awakened than it ever has been before. This last month we have sent out over three hundred lots of tuberculin among farmers for individual tests, an amount which exceeds by a considerable quantity anything which we have ever sent out before, so that this agitation with reference to this disease is having the effect that a very much larger number of animals are being tested than at any time in the previous history of our state and the results indicate that the percentage of reacting animals is steadily diminishing. The number of animals, for instance, in non-suspected herds in the year 1905 was 6 per cent; in 1904 it was 6.4. In the early years it ran up from 9 to 10 and as high as 19 per cent in some years.

I think it is safe to say that the disease is being held down rather than making active progress, and if that is the case, it is all the more necessary that we do not relax in our efforts in this direction.

A very important question is, how this disease is introduced into our herds? What are the ways whereby a herd becomes infected with this disease? We must remember at the very outset that this disease, as is the case with all other communicable diseases, has a certain definite and distinct origin; that there is a certain specific bacillus, a certain germ which is the cause of the disease, and tuberculosis cannot be produced unless that germ finds it possible to obtain access to the body. So that no kind of environment in and of itself will result in the production of the disease.

The nature of the environment has a great deal to do with the rapidity with which the disease spreads, but it does not cause the disease; it is only a predisposing factor and that cause is the tubercle bacillus, so that until an animal is brought in contact with a tubercle bacillus and that organism gain an entrance into

the body of a susceptible animal, it is impossible for the disease to exist.

There are two ways in which this disease is most frequently introduced; one is through the medium of the purchase of animals which are infected in the early stages, stages which are not recognized at the time of purchase and therefore the introduction of animals into the herd, unwittingly introduces this dreaded scourge.

Another method of introduction is through the medium of feeding infected skim milk from a creamery or cheese factory, either skim milk or buttermilk which contains the seeds of the disease. These are the two main methods whereby stock is brought in contact with the tubercle organism and either of them will be effective in introducing the disease into a herd.

So far as the purchase of slightly affected animals is concerned, this can be brought about in one of two ways: either by the purchase of pure bred animals in a laudable attempt to breed up and improve the strain which you are handling, you may thus unwittingly introduce through a pure bred bull or a high grade animal the seeds of the disease, or, it is often introduced through the medium of common or grade stock which very frequently are disposed of at public sales. The public auction is responsible in great measure at least for the distribution of this scourge. Some ten years ago I am confident that tuberculosis was more frequently distributed through the medium of pure bred stock than through the latter method, namely, the sale of ordinary, common stock at public auction. At the present time I am satisfied from our data that the reverse conditions obtain.

We have here in this state a number of breeding men who are paying especial attention to this matter, who recognize the absolute necessity of knowing beyond all question the condition of their herds and in a no inconsiderable number of cases, the breeders themselves have used the tuberculin test to find out the actual condition of their herds prior to selling any animals. We have data collected in one instance, where a single herd has been the means of disseminating the disease to sixteen other herds in these central western states; that is, in Wisconsin, Iowa and Minnesota. This condition arose entirely through ignorance, I believe. The owner of this herd did not know of the existence of tuberculosis in his herd and while he sold his stock, which

was a very high quality of stock, he also transmitted to these herds where this stock went, the seeds of this disease, which caused in some cases very large losses, running up into tens of thousands of dollars.

This condition, however, does not obtain so much at the present time, and I am of the opinion that the larger proportion of tuberculosis is introduced into our herds at the present time through the purchase of grade stock at public or private sales, more so than through buying pure bred animals. The greatest difficulty that we have to contend with is the indifference of the buyer. If a buyer, when he goes out to get an animal which will serve as a means of building up his herd, would use the tuberculin test as an indication or index to determine whether that animal contains the seeds of the disease, it would be possible to stamp out this malady, but the indifference of buyers both at the present time and in the past has been such that they have excluded this most valuable agent. Let me cite an illustration: Two or three years ago you will recall that we had a foot and mouth disease in the eastern part of this country, in Massachusetts. This disease has caused enormous losses throughout different portions of Europe, and the Government used such drastic measures as the wholesale slaughter of large numbers of cattle in New England. Here was an opportunity for people who were stocking their farms and who were all informed as to the advisability of this test, to take advantage of this tuberculin test as a prerequisite in bringing animals into their herds, and yet only one fourth of those people took advantage of that test. Until we can rouse the buying public to the importance and necessity of using the tuberculin test, it will be impossible to expect the state to make such progress in stamping out this malady as it should.

Public auctions, in my judgment, at the present time are more important factors in the dissemination of this disease than ever before, and this is brought about through the fact that at the present time the disease has been established in so many different foci. So many different herds have become involved, and the opportunity for the transmission of the disease is very much greater than it was in the early years when the native grade stock of our farms had very much less of it.

Now, I believe in matters of this sort that the best pedagogical principle we can employ is to use a concrete illustration which will impress itself upon the minds of the public, and so I want to bring before you this afternoon a single illustration of this sort of the influence which the public auction can have and may exert upon the dissemination of this disease. The chart which I have here gives the figures as to a herd which was owned by a farmer in one of our southern counties. The farm was occupied by a tenant, they were unable to agree in regard to the disposal of stock and so they resorted to the usual means of a public auction, to sell the stock and then divide the proceeds. The man recognized that he had some very valuable animals and he had one of his friends buy back some of those which he supposed to be the most valuable. The tenant also selected a number of the animals from this herd and bought them back and took them off onto another farm. The remaining animals were sold to ten or twelve other farmers, most of them in the vicinity. This sale was made in the month of October. In the next February, just about a year ago, one of these men who had bought five head of cattle from this herd and introduced them into his own herd where he already had sixteen animals, in applying the tuberculin test found that three out of the five reacted. A neighbor across the street hearing that the test was to be applied, brought his one animal over which he had also purchased at the same time and it was found that this cow also reacted to the tuberculin test. Putting these two things together, it seemed probable that this original herd must have had tuberculosis present, so an attempt was made to find out just exactly the condition of the herd. A test of the 13 herds into which animals from this original herd had been introduced, showed that 12 out of the 13 had brought this dreaded scourge into their own herds by buying cattle at this auction.

In the following table the actual condition found is shown:

TABLE I.—*Dissemination of tuberculosis into various herds by purchase of stock.*

Herd.	Total No. animals in different herds.	No. animals from original herd.	Total No. of tuberculin reactions.	No. of tuberculin recreations in animals purchased.
1	21	5	3	3
2	18	18	14	14
3	38	6	3	3
4	8	3	4	2
5	5	2	2	1
6	3	3	3	3
7	1	1	1	1
8	15	1	1	1
9	32	1	1	1
10	18	3	0	0
11	2	1	1	1
12	2	2	2	2
13	22	9	1	1

The result of this investigation was that the detection of this condition at that particular time saved that particular community from losses which would have aggregated thousands of dollars if it had run along unnoticed, so that instead of this single focus of disease, there would have been at least a dozen separate foci established, because it is absolutely impossible, so far as we know at the present time, to stop the progress of this disease after it has once become established.

That shows what a public auction may do with reference to the distribution of this disease.

It seems to me we can all ask ourselves whether or not legislation should not be had in our state with reference to this matter. The state is doing all it can to stamp out this disease. We have a statute on our books requiring a test of all animals brought into the state. Now, what can we do within the state? We certainly have this disease present. It is true it is not as severe in comparison with some other dairy regions as it might be, but we are doing nothing to prevent this man selling to another man, or this breeder selling to some individual and so distributing the disease wider and wider.

We are taking, for instance, our nursery stock, and having it examined by an inspector for the San Jose scale and for other diseases, which will result in loss if they become established on our farms, but we are doing nothing at present through the medium of legislation which will prevent the distribution of

disease in this way. I throw it out simply as a suggestion as to whether or not the time is not approaching when we should have some legislation along this line.

We have spoken of the methods of infection, of the possibility of infection through skim milk or butter milk. Now, not all the milk of reacting animals is actually infectious at the time that the test is made; there is in all probability not more than a quarter of the animals that actually respond to the tuberculin test whose milk is tainted with the tubercle bacillus* but no man can tell at what particular time the animal may pass over from the earlier stages in which the milk is free from diseased germs, to that condition where the milk is actually infectious, and the consequence is we must treat the milk in all reacting animals in such a way as if it contained tuberculous organisms.

If the percentage of this disease was as large in our state as it is in Denmark, we would be obliged to treat every drop of skim and butter milk in such a way as to destroy these bacteria, and that suggests the question whether we should not have legislation requiring the pasteurizing of the whey, skim and butter milk which comes from our creameries so as to kill the tuberculosis bacilli. We have evidence that the disease is sometimes introduced among younger animals through the feed rather than through the lungs, through milk which had been taken to the creamery and there mixed with the milk of other parties and brought back to the farm.†

In one case we know that three herds whose milk was delivered at a certain factory were affected with the disease, and the milk supply was infected in this way, and the disease introduced in other herds through the skim milk.

Do you know at the present time that tuberculosis in hogs is increasing with greater rapidity than it has ever been known to do in regard to cattle? In the last ten years there has been an increase of over five hundred per cent of this disease in swine,

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*The percentage of udder tuberculosis is usually very small, not more than a small per cent, but animals not affected in the udder may give off tuberculous bacteria in their milk.

†Since this address was given, we have collected evidence in co operation with the State Live Stock Sanitary Board, in which it has been conclusively demonstrated that several creameries in this state have been spreading tuberculosis to young stock by means of infected skim milk.

and it is more largely intestinal than it is pulmonary. We do not say that it is all due to skim milk, because there is such an increase in non-dairy districts, but whatever the true cause is, there is no question as to the fact that the creamery method of distribution is of importance.

It is possible for us to eliminate this sort of infection entirely by heating the skim milk by the exhaust steam so as to destroy the tubercle bacilli beyond all question. What is done in Denmark is to heat every drop at a temperature which will kill the tubercle bacilli before this milk is taken back to the farm; the laws are enforced on that subject.

In this matter it is not necessary to rely upon the opinion of the individual buttermaker, whether he has sufficiently heated the milk or not, because there is a positive test that will enable the inspector to tell in a moment or so whether the milk has been heated to a high enough temperature or not.

I am thoroughly in favor of legislation which will put into the hands of Dairy Commissioner Emery, a law which will enable him to test the skim milk at every factory to find out whether it has been sufficiently heated or not, and in that way regulate a possible scourge of that sort. Besides freeing the skim milk from the dreaded tubercle, this process will also improve the general quality of the milk, because of killing out many of the gas-producing bacteria that now impair severely the quality of our products.

Another question that we will turn our attention to very briefly is the recognition of this malady.

We never miss an opportunity before an audience of this character to speak a word in regard to the tuberculin test, because it is the one agent that we have at our command which enables us to separate the slightly affected from the perfectly healthy animals, and it is therefore of the utmost importance if there is any one in this audience who does not know how to recognize the presence of this disease, that they become acquainted as soon as possible with this test.

In tuberculosis, we have a disease that is so insidious in its development, so long a period of incubation, the disease in the earlier stages is devoid of characteristic symptoms, that it is beyond the power of the ordinary man, or the most skilled expert, to detect its presence at an early date. There is no man

that can ascertain by physical examination, with certainty, whether an animal is affected or not. In the tuberculin test, we have an agent which is so far superior to the ordinary man's judgment that it should be given precedence over all other methods of diagnosis, and fortunately it is a method very easily applied. Even in the hands of a layman with a very little experience, it can be applied in such a way as will enable him to tell with a great degree of accuracy whether his animals are affected or not.

In this bulletin (No. 133, Wis. Expt. Station) of which I spoke there is an appendix which gives very briefly the details of the tuberculin test, its manner of application, and I believe we can do no more for the stock interests of the state than to spread the information with regard to this test just as far and wide as we can to encourage in every possible way the use of the test as a means of detecting the actual condition of one's herd.

The diagnosis of tuberculosis is a most important question. It is of great importance that each one of you consider personally this question: "Is my herd free from this disease, or may it possibly be infected?" And the only possible way in which you can answer that question with any degree of accuracy whatever is to have the tuberculin test applied to your herd.

That then is your first duty. Your next duty is, that if you find your herd free from disease, never to buy an animal unless that animal is subjected, first, to the tuberculin test. You may buy it from some man who sells on that basis—there are breeders whose herds are tested once or twice annually, so that you can buy animals that are known to be tuberculosis free.

On the other hand, you can take your chances, but before that animal is admitted to the remainder of your herd, test it every time in order to find out whether it is or not. We make this a uniform practice at the Experiment station.

There is not a year passes in which we do not reject animals that have been bought from outside. Sometimes we are unable to buy them on the basis of the test, and those animals are held in quarantine until the test is first applied. In that way our herd remains free from tuberculosis, simply because we use the test as a door through which every animal passes into our herd, and in this way we can keep out this most dreaded scourge absolutely and entirely. There is one other point that I wish to

call attention to in connection with this matter, and that is what influence environment has upon the spread of this disease? It there anything in our methods of handling the stock which increases the ability of the disease to spread from animal to animal in our herds more rapidly than otherwise—anything which diminishes the resisting power of the animal?

These are factors which are of a general hygienic or sanitary significance.

The same principles which apply to tuberculosis in the human being are equally applicable to this disease among stock. If there is any one thing concerning which our knowledge with reference to tuberculosis in the human being is positive and certain, it is that such conditions as overcrowding, poor ventilation, poor food, lack of sunlight, overwork,—conditions of that sort are the most powerful predisposing influences with reference to the disease in the human being.

Where do we find tuberculosis in the human family most abundant? Not in the homes of the rich or the leisure class. It is primarily a disease of the masses, of the lower strata—not exclusively so, but tuberculosis in the tenement districts of our large cities is five times as great as it is in the middle stratum of society, simply because the social conditions which surround those people are such that if the tubercle organism is introduced into their midst, it thrives more rapidly and the opportunity for the distribution is very much increased. Frequently the same conditions prevail with reference to stock—the overcrowding, the imperfect ventilation, the lack of sunlight—all are factors that favor the development of the disease.

We had an illustration of this last year in our state—one of the worst cases of tuberculosis which we have ever found. A man in the southern part of the state having a herd of some seventy-two animals was carrying the milk of that herd to a Swiss cheese factory. The conditions on his farm, and, particularly in his cow barn, were simply beyond description. The manure in the barn was a foot and a half thick, there was absolutely no provision for ventilation; there were five little windows about one foot by three, and four out of those five windows were boarded up. It was impossible at noon to read newspaper print in that barn, and the stench was so strong it was almost impossible for a person to stand it for more than a moment, and

still those were the conditions under which seventy-two of those animals were crowded into close quarters, where, if the disease organism was present, there could be no more ideal conditions for its development. Here the tuberculin test was applied, and sixty-nine out of seventy-two of those animals responded, and it was absolutely impossible to utilize the carcasses. Every one was killed upon the place and buried in a ditch.

That condition did not produce the disease, but it did function in the more rapid development of the disease. It was this condition which furnished fuel for the flame; the necessary match to start the fire was the tubercle bacillus, but here was the dry tinder, the kindling, and when the match was applied the flames swept with unwonted fury. If no spark falls, the fire cannot start; if you do not have the tubercle bacillus, the disease cannot begin its work; but if the match is dropped into dead leaves and grass, favorable conditions of environment, there is nothing that will stop a widespread devastation.

In this brief space of time we have considered the economic aspect of this question, looking at the problem from the standpoint of the dairy farmer. Can you afford to allow this disease to be present in your herds?

We have ignored entirely the sanitary or hygienic aspect of this question, simply on account of lack of time, and this is a phase of the question which is very important. The inter-relations between the bovine and the human, the possibility of human life being affected by the tubercle organism coming from milk is a phase of the question we cannot touch today. We are looking at this question simply from the standpoint of the stock-raiser—whether you can afford to have in your herds the seeds of this disease.

This is unquestionably the worst scourge with which the stock-raiser has to contend in Wisconsin today. Its insidiousness invests it with a special danger. If it was a disease which raged as does black leg or anthrax, the gravity of the proposition would not be nearly as great as it is, on account of its unseen method of development.

We cannot afford to spend the time and energy each year as stock-growers in breeding up and improving our herds, unless we take precaution first to find out their actual condition. We should take the experience of others and profit by what others

have found with reference to this matter. Here is a case where foresight should be exercised in place of hindsight; here is a place where the experience of the man should be heeded who has had tuberculosis in his herd—and no man who has ever had this disease in his herd wants to get it again. The only way, so far as I know, that we can be sure in the matter, is to start at the bottom, determine the actual condition of affairs by means of the tuberculin test, and then use the test consistently and continually.

In closing I will call your attention to a number of tissues which have come from tuberculous animals. Last week there was a herd condemned by the state veterinarian in the vicinity of Lima, in which over fifty animals were found to be infected. They were shipped to Milwaukee for slaughter and Dr. Roberts has kindly sent out some of the tissues for inspection.

DISCUSSION.

Ex-Gov. Hoard: I want to ask you, after you have demonstrated the presence of tuberculosis in a herd and you have extirpated it—killed off the animals—what will you do with the situation in the stable to prepare it for the occupancy of healthy animals?

Prof. Russell: It is absolutely necessary, after the animals have been disposed of, that the stables should be adequately and efficiently disinfected. It is perfect folly to wipe out the herd and then put another into the same stable. This disinfecting can be readily done by the use of ordinary disinfectants—we have a bulletin upon that point that we will be glad to send to any one. It would take considerable time to go into the general matter of disinfection.

Ex.Gov. Hoard: Would it be sufficient for a man to drench that stable thoroughly with hot whitewash?

Prof. Russell: Whitewash may be used for part of the work. In the first place, it is necessary to remove all loose stuff and get down to the woodwork of the stable itself. Clean out thoroughly all loose material. Then the mangers and feed boxes should be washed with something stronger than white-

wash—something like formaline—about 5 per cent; or, if corrosive sublimate is used, it should be about one part to 500. Solutions of corrosive sublimate, however, must be made up in wooden utensils, not metal.

So far as general barn disinfection is concerned, whitewash is very satisfactory, but it must be used thoroughly, and made from fresh, not air slaked, lime.

Mr. Hickox: What do you know about bovovaccine?

Prof. Russell: That is a new remedy that has been discovered recently. Prof. von Behring has been working upon a cure for tuberculosis, and bovovaccine is a means of vaccinating the animal so that it will not acquire tuberculosis. It has to be introduced by an expert veterinarian into the jugular vein of the animal when the animal is a calf, two injections are made. Such animals become resistant to the power of the bacillus. It is more a prevention than a cure, although the remedy has not been upon the market long enough to establish thoroughly its claims. We must wait until it is further tried.

Mr. Goodrich: Do animals ever recover from this disease when once contracted?

Prof. Russell: I have never seen a case in which I was certain of any real recovery. It occasionally happens that animals will apparently respond to the tuberculin test and upon repeated investigation fail to respond. In such a case the question is always as to the accuracy of the first test.

Mr. Goodrich: Do they not live sometimes several years after they have the disease?

Prof. Russell: Animals will live for a period of five or six years or even longer and be in apparently good condition. The disease, however, is there, in latent, dormant condition, and at some time, generally owing to some local influence, it passes from the chronic to the acute form, and then the affected cattle will run down very rapidly, so that such an animal may be in the herd a number of years, spreading the disease and yet show no signs of it.

Mr. Race: Where tested animals are killed, does the owner stand all the loss?

Prof. Russell: No; one method is that the animals are to be appraised by three appraisers from your vicinity and the state pays one-third of appraised valuation. Another method is

to have them shipped to the government abattoir, where they are slaughtered under government inspection and the owner receives the entire proceeds.

Then again, there is the method of quarantining very valuable animals and breeding healthy progeny—it is a positive fact that you can raise a healthy calf out of a diseased mother, providing you do not use the milk of the mother in an unheated condition.

SCORES ON DAIRY PRODUCTS.

Read by Secy. Burchard.

Cheese.

Exhibitor's Name and Postoffice Address.	Flavor 45	Texture and stock 30.	Color 15.	Finish 10.	Total 100.
Otto A. Kielsmeier, Manitowoc	44¾	29¾	15	10	99½
Alex Bruhn, Spring Green	42	28	15	10	95
Johannes Bros., Green Bay	35	26	15	9½	85½

Butter.

Exhibitor's Name and Postoffice Address.	Flavor 45.	Grain 25.	Color 15.	Salt 10.	Packing 5.	Total 100.
Helendale St'k Farm, Athens	43	25	15	10	4½	97½
John E. Boettcher, Janesville	43	24	15	9	5	96
L. G. Heimerl, Wales	43	24	15	10	3	95
W. F. Hyne, Evansville	40	25	15	10	5	95
A. E. Puerner, Jefferson	42	23	15	9	5	94
Wm. F. Krohn, Whitewater	41	24	15	9	5	94
E. A. Paddock, Elkhorn	43	22	13	10	5	93
Murphy Bros., Waukesha	40	23	15	9	5	92
C. H. Wilde, Calhoun	39	24	15	9	5	92
John W. Hawton, Waukesha	37	23	15	9	3	87
A. E. Dixon, Evansville	36	22	15	9	5	87

ALFALFA, ITS VALUE AND HOW TO GROW IT IN WISCONSIN.

F. D. Coburn, Secretary Kansas State Board of Agriculture.

Mr. President, Ladies and Gentlemen of Wisconsin: I can assure you it is a very great pleasure for me to appear this afternoon before this splendid audience of splendid men and women.

I am a native of the county west of you and so I am merely coming home today. I beg you to understand at the outset that I do not appear before you in the capacity of a professor nor a chemist, nor even a college man. When I should have been connected with a college I was fortunately or unfortunately down in the swamps of Arkansas with a gun, trying to coerce the Southern Confederacy into the union.

I have been invited to talk to you about alfalfa and its bearing on agriculture and dairying and these kindred interests. The subject is too big for any one man to handle in any one day and so I shall touch the high places and deal in glittering generalities.

As most of you know alfalfa is no new plant. It is as old as history and has been grown in a greater or less degree in some countries from the beginning. It is relatively new in this country; possibly we have had it a hundred years or more, and it probably came up to us from South America, possibly up along the Pacific coast and found its way into California and New Mexico.

The facts about alfalfa seem to be that nobody dares tell the whole truth about it, or perhaps more than half the truth about it, without being set down as about the biggest liar on earth. Alfalfa, unquestionably, is the greatest forage crop that grows out of the ground. It has no peer so far as we know. It has no rival in its line. Another feature about it is that those who know it best believe in it most; it is only those who don't know alfalfa and haven't had anything to do with it who are incredulous.

Furthermore, it has been discovered in recent years that it will grow anywhere. The theory that it would only grow in certain localities and under certain favorable conditions has been entirely exploded, and it is being grown now in every part of the country, in every state, and grown successfully. It is no longer considered impossible in any part of this country, and those who have tried it most are the best witnesses to that effect.

Up to within a very few years it was an orthodox proposition in Kansas and the West that it was no use to sow alfalfa where cottonwood trees would not grow or where corn would not flourish. There is nothing in that. Alfalfa grows everywhere, it grows out on the high plateaus of the West where there are only fourteen inches or less of rain in a year; and yields immensely down in Louisiana, where they have sixty-five inches It grows in New England, it grows in Alabama, it grows in Virginia, it grows in Manitoba, it grows in Minnesota, and, as you all know, it grows successfully in Wisconsin, under proper treatment.

We all know that until recent years red clover has been the great staple crop; we talk about clover for hay, for fertility and for restoring certain kinds of land, and so as that has been the standard, nothing is more natural than that we should compare any forage crop that is new to us with red clover. Red clover in most parts of the United States where alfalfa is a stranger is ranked as the richest and best yielding forage, and the fertilizer and renovator par excellence.

The Massachusetts Experiment Station, after a series of tests, reports that 100 pounds of clover contain 47.49 pounds of digestible food and 6.95 pounds of proteids, while 100 pounds of alfalfa contain 54.43 pounds of digestible food and 11.22 pounds of proteids.

The New Jersey station reports that the average yield per annum of green clover to the acre is 14,000 pounds, and of green alfalfa 36,500 pounds; the protein in the clover is 616 pounds and in the alfalfa 2,214 pounds; one ton of alfalfa has 265 pounds of protein, and clover only 246 pounds. But alfalfa will produce three, four or more cuttings each year, while clover will produce but one, or at most two. Further, clover will ordinarily survive but two years while alfalfa will last from ten to one hundred, thus saving many plowings and seedings. It is also estimated that the stubble and rootgrowth of alfalfa are

worth at least four times as much for humus as are those of clover, while the mechanical and other beneficent effects of the long alfalfa roots far excel those of clover. The alfalfa field is green for pasturage a month earlier in the spring than clover, and may be mowed a month earlier. It starts a vigorous growth at once after cutting, covering the ground with its luxuriant foliage before the second growth of clover has made any substantial progress.

Alfalfa has one of the most wonderful root systems of any plant that we know anything about. As a matter of fact, nobody knows how far down into the earth they go. A government engineer reported an instance in Nevada where alfalfa roots were discovered one hundred and twenty-nine feet long. He did not bore down into the bowels of the earth one hundred and twenty-nine feet to find this out, but there was a tunnel through a mountain, in a rocky formation containing cracks and crevices, and the observer noticed coming down through the roof of the tunnel a large number of rootlets from some source, and there was no way of accounting for them, except that they came from an alfalfa field on the surface, one hundred and twenty-nine feet above the tunnel. I believe that about the farthest anybody has had the courage to follow alfalfa roots down with a spade has been somewhere from twelve to twenty feet. At the same time I believe there is no record of any one following a well developed root down and finding the end of it.

A further peculiarity of these roots is that they are of considerable size and of great numbers, and they bore down into the soil to depths no other roots reach, and they not only utilize for their own growth the mineral and other elements of fertility down there, but they bring them to the surface, and eventually these roots decay—the process of decay is going on all the time as well as the process of growth, and wherever these decay, whether the alfalfa is plowed up or not, and especially so when the alfalfa is plowed up— they are a source of great fertility in themselves, they leave the soil full of openings into which the rains penetrate and the humus and fertility from the surface are washed, and the soil is renovated and made over in that way. Then, again, these roots, with their bacteria and the nitrogen they gather, afford a remarkable source of fertility, and so the man who raises alfalfa, instead of robbing the soil, depleting it, skin-

ning it, is enhancing its value every year. No one can tell to just what extent the value per acre of that land is enhanced when it is once set in alfalfa.

In my country they estimate the increase in its value anywhere from $10 to $50 an acre by having the land well set in alfalfa, and I may say that in Kansas there are lands that a few years ago could hardly be sold for any price—they were a glut on the market at $1.25 an acre—which are now producing profitable crops of alfalfa and are selling to men from Wisconsin and Minnesota and elsewhere at from $30 to $50 an acre. That is what alfalfa is doing for our country.

Another thing about alfalfa—it is good for all kinds of farm stock, no matter whether they are Percherons or pigs, or cows or chickens, they all like alfalfa and all thrive on it. As to its qualities, you are all familiar with wheat bran and the experiment stations seem to have demonstrated that alfalfa, pound for pound, is nearly as good as wheat bran, and it is stated from the stations, too, that one ton of the leaves of alfalfa is worth as much for feed as 2,800 pounds of wheat bran.

I should let fall a suggestion here—if you don't want lots of work don't fool with alfalfa. Our Professor Cottrell went to a farmers' institute down in the southeastern part of our state and talked alfalfa to people who were sure it wouldn't grow there—and you have missed half your life if you have not heard Cottrell talk alfalfa—and one man stopped him and wanted to ask him some questions and seemed much interested. Well, the professor helped him all he could, and five years after, being in the neighborhood, he went to that man's place and met his wife. She looked at him suspiciously, and at last recognized him as the man who put her husband up to sowing alfalfa, and she says, "I want you to get away from here. My old man followed your advice; he sowed a lot of alfalfa and we haven't done anything since on this farm but make hay." Some of you men will know how to apply this story.

It is no use sowing alfalfa on swampy land, where the water is near the surface; alfalfa won't stand wet feet. The roots of no plant that I know anything about will work harder to get to where there is water for their sustenance than those of alfalfa, but if the roots stand in water it will perish, and it is a waste of time to sow it on land that has not a fair degree of natural

drainage. Furthermore, it is no use for you to sow alfalfa on land not in first class condition—in such condition as you would have an onion bed. If you are not enough in earnest to put your land in that condition, leave alfalfa alone. It is worthy of, and deserves, the best preparation that your land can have, and in order to succeed well it must have it. It must be loamy and fine. Do not sow alfalfa in a soil light, loose and friable. The soil has got to be sufficiently packed so that the rootlets can get a foothold; if they can't do that they haven't much to go on.

The real way to have success is to begin two or three years before sowing it, by getting the weeds and weed seeds out of your land. If you can't get the field cleaned up, free from weeds, don't sow alfalfa. I have been wondering which is the more important factor in connection with sowing this crop—the man or the seed. I wouldn't be surprised if it was the seed. You can't do anything, no matter how hard you work, without good seed, and perhaps every one who has sown alfalfa knows how hard it is to get just the right kind of seed. It behooves every one to use all due precaution, every effort to get seed that is pure, that is clean, and that is germinable. I did not say seed that is new, because so far as experiments show it seems that germinability in alfalfa seed is not greatly affected by a few years' time. I am advised by the best authorities that know anything about that, that alfalfa seed which is all right to begin with will only depreciate in its germinability from one to one and a half per cent in five years—if it is kept under favorable and proper conditions of storage.

The government at Washington has been paying no little attention to this seed problem, especially the imported seed. Some years ago we exported two or three million pounds of seed, but in more instances we import it. It mostly comes from Germany or German ports. The government has been keeping tab on some of these imported seeds, and congress, at the last session I believe, authorized the Secretary of Agriculture to investigate the seed that is on the market, especially imported seed, and find out to what extent it is adulterated and filled with impurities, and so the government agents have picked up seed as found in the different markets in different states, and here are a few of the results as published by the department of agriculture. They give the names of the seedsmen who have sold this seed and where

they are located. It is not necessary to mention names, but here are some of the results:

A firm in Rhode Island was selling seed that had nearly 33 per cent of one kind of weed seeds; nearly 3½ per cent of another kind of impurity. Another had 38½ per cent; another 44½; another 43½; another 31.77; 45.73 percentage of adulterants, and so on—these large percentages of impurities and adulterants when you are paying for pure seed. One sample of this seed was from Troy, New York; another from Indianopolis; one from Milwaukee, and I am pleased to say that the Milwaukee sample had, all told, less than 6 per cent adulterants; one from Denver, about 17 per cent. Three of the very worst are from Indianapolis and one from New Haven, Connecticut; this last was nearly half adulterants.

I think I must give credit to the Milwaukee man, W. E. Dallwig, 34 Juneau avenue, whose seed contained the lowest percentage of adulterants in the list—less than six per cent.

The government has been testing large lots of these imported seeds—twenty to thirty tons—samples taken right out of these large lots. In one sample there were found in a pound of this seed 16,000 weed seeds; in another 32,430; in another 17,299; in another 16,435—mark you, not in a bushel, but in a pound. In another nearly 22,000; in another 23,000; in another 21,000, and so on, and in some of these the percentage of alfalfa seed that would actually grow was found, in one case, to be as low as seven seeds out of a hundred. In other samples they ran as high as eighty-four.

Here is what they found in the way of dirt—not adulterants, but broken seed and dirt; in one instance was 16 per cent; in another 21½; in another 34½ and in another 72. That last was in a consignment of 6½ tons in one importation, and only 6½ per cent was alfalfa seed that would grow, the rest being worthless.

The Ohio station at Wooster has been experimenting along these lines. They went into the market and bought samples—a dollar's worth each from different places under different conditions, and tested them, and the quantity of germinable seed was found to range from 5.1 pounds to 9.3 pounds in a dollar's worth; the number of noxious weeds found in a dollar's worth of supposed alfalfa seed ranged from 360 to 185,940. Seven of

the fifteen samples each carried more than 23,000 noxious seeds. So, when you go into the open market, you see what you are liable to get, and then it doesn't prosper and you don't prosper and you lay it on the alfalfa, saying that it won't grow in Wisconsin. Seed bought at $7.80 per bushel showed as low as 61.2 per cent that was germinable, so that the actual cost of that good seed was $12.74 per bushel. Nine of the fifteen samples had less than 77 per cent of germinable seed. One pound sample contained 21,728 noxious seeds, of which 18,144 were lamb's quarter or pig weeds; the same pound also had 3,136 seeds of dodder. Another pound carried 6,420 seeds of crabgrass and one had 3,325 seeds of foxtail. If you are sowing that kind of seed, it is not remarkable that your alfalfa does not prosper. The Ohio station recommends that no alfalfa seed be sown until it has been screened carefully through a screen of twenty meshes to the inch, to remove dodder seeds.

I want to say, as an outsider and observer of things, that you have here in the state of Wisconsin some of the worst blow-hards on earth; they will advertise their seeds to do anything that you want done—if they can find out what that is, and it is not necessary for me to mention the names—you want to look out for those fellows who are flooding the country with catalogues.

I have here a suggestion from a government bulletin as to how these seeds are handled by certain seedsmen, how the dead seed and screenings are mixed with the good seed to the profit of the dealer: The cost of 100 pounds of this worthless seed is $2.00; the cost of 100 pounds of good seed is $15.00, making $17.00 for the cost of the mixture. He gives you a great bargain by selling you a mixture at $12.00 per hundred weight, or $24.00 for the 200 pounds, he making $7.00 profit on the deal.

Mr. Aderhold: Why can't we raise the seed?

Mr. Coburn: My counsel to you would be not to bother with attempts to raise seed. If, for instance, you let the first cutting ripen seed, you have pretty nearly knocked your alfalfa crop for the rest of the year out of the running; the effect seems to be very debilitating.

Mr. Aderhold: The yield of hay per acre is much more valuable than the seed?

Mr. Coburn: Possibly; it depends somewhat upon the environment.

Mr. Rietbrock: How can we get seed?

Mr. Coburn: There is plenty of seed in the market. Don't put off till sowing time getting your alfalfa seed. If you are going to sow it next August, look it up now.

Ex-Gov. Hoard: We must sow it here at least by the first of June in order to get root enough to go through the first winter.

Mr. Coburn: But it is coming to be the almost universal testimony, so far as I know, in the Trans-Mississippi region, that the thing to do is to sow it in the fall. Spring sowing west of the Mississippi has largely gone out of vogue. If you want to experiment with alfalfa and if you want to sow it in June, this is a good time to begin to look after your seed and do not buy it or sow it without having it tested. As far as I know, any experiment station will test your seed for you if you will send samples, but be sure not to buy alfalfa seed without having it tested, and with a guaranty.

Ex-Gov. Hoard: The trouble about that is if you send to a seedsman and ask him to send you a sample of good seed, that tests all right, what guaranty have you that that man will send you then, on your final order, seed as good?

Mr. Coburn: I can't say; that is one of the problems we have to meet.

Now, about the kinds of seed. You will be told about the Turkestan and perhaps twenty other different kinds of seeds. The Turkestan alfalfa was very widely exploited but it has hardly made good as a superior variety and there is no "dry land" alfalfa, such as we have seen advertised; no one sort that will especially flourish on the high plateaus of the west.

You have heard about the experiments that have been made in the last month or two at the Kansas experiment stations at Hays City, out on the plains, and have been told that there is a variety that would grow almost without any moisture at all. That statement has never been made on authority, no such discovery is pretended to have been made, and nine-tenths of this talk is wild. There is no one variety of seed that is better than others. I should counsel that you buy alfalfa seed grown as nearly as possible under your conditions and along this latitude; do not sow seed here which has been grown under entirely different conditions, say down in Louisiana or Mexico, or under irrigation.

Ex-Gov. Hoard: Northern Nebraska, northern Kansas and

from there north to Wyoming and Montana give us the best seed we can find.

Mr. Coburn: Now, as to the quantity of seed to sow: There is a great difference in the quantity required on account of these adulterations I have been telling you about. We are obliged to sow a large quantity of such seed, and when I say large quantity, I mean thirty pounds. If all your seed grew and you sowed twelve pounds, the plants would be so thick that they would destroy themselves in the first season; they would be thicker than the hair on a dog's back. Under reasonably favorable conditions and the right kind of seed as to cleanliness and germinability, twenty pounds would be thousands and thousands too much.

(The discussion was interrupted by Secretary Burchard for the purpose of introducing to the convention Governor Davidson, who had been in the convention for a brief visit, but was obliged to leave to meet another engagement.)

The Chairman: This question has been passed in on this alfalfa matter. Perhaps some of these gentlemen can answer it. "In the discussion on alfalfa, this afternoon, the question of soil inoculation will come up. I have seen it stated that where sweet clover grows thriftily, inoculation is not needed. As you know, sweet clover is a pest along most of the highways in town, and I would like to know whether that is an indication that our soil is in proper shape without inoculation."

Mr. Coburn: Alfalfa requires a special sort of bacteria for its prosperity, and the bacteria that is suitable for the other legumes is not suitable for alfalfa, but it happens that the bacteria pertaining to sweet clover agrees exactly with that of alfalfa, so that wherever sweet clover is growing, that soil is inoculated, and it is just the thing that you need, if you haven't anything more convenient, to scatter on your alfalfa field to inoculate that soil. In other words, the best assurance that you can have that alfalfa will flourish in a given neighborhood is that sweet clover is flourishing there. If it is you need not send to Washington or elsewhere for inoculating material. Sweet clover is a hardy, persistent plant, and it will grow sometimes where nothing much else will grow. The soil where it grows is properly inoculated for alfalfa.

Ex-Gov. Hoard: Sweet clover is a biennial. Now, just a

word about this inoculation. Soils in many localities have not the elements or bacteria or inoculation which alfalfa needs and the alfalfa does not flourish well, while all the other conditions may be favorable.

Mr. Hodgson: We have found it is possible to raise alfalfa without inoculation by taking the roots and transplanting them and we raise alfalfa all right.

Mr. Coburn: You cannot sow alfalfa seed in every kind of ground and expect it to grow all right, but many millions of acres are so conditioned, so inoculated naturally that alfalfa will grow to great advantage.

Mr. Race: Would you sow a nurse crop with your alfalfa?

Mr. Coburn: In our country the nurse crop idea is absolutely exploded, nobody does it. We want to give the alfalfa every chance, as it is a wonderfully delicate plant.

Prof. Henry: What is the best method of sowing?

Mr. Coburn: The general custom is to sow with a drill. A drill is not made that will not drop too much seed unless something is mixed with it. Sometimes it is mixed with corn chop. Sometimes we harrow the seed in one way and then cross-harrow.

Ex-Gov. Hoard: In front of the drill, we have a seeder in which the alfalfa is put that will gauge it down to nine pounds. The drill comes along and sows the grain in the drill just ahead of it, scattering the alfalfa.

Mr. Coburn: We do not sow any other seed with alfalfa.

A Member: To what depth should the seed be put in the soil?

Mr. Coburn: About one inch. The idea is to have it deeper rather than shallower.

A Member: What do you do to keep out the June grass?

Mr. Coburn: Why, the great tonic for alfalfa always and everywhere so far as I know is to disk it with the disk harrow and to mow it. In my country it is the uniform practice to use the mowing machine and the disk harrow, and if there is anything the matter with your alfalfa, disk it.

Ex-Gov. Hoard: Do you mean disk it in the spring or after each mowing?

Mr. Coburn: Yes. I have verified the statement of a man in Oklahoma who last year made nine cuttings of alfalfa, carrying fourteen tons per acre, and he disked that alfalfa each time after seven of the mowings, seven times.

Ex-Gov. Hoard: With the disk set pretty nearly straight?

Mr. Coburn: One great purpose of that disking is to split those crowns. Whenever you split a crown, each one of those split parts begins to put up new shoots. You set your disk harrow any way you want it. How you set the machine is optional with you. Sometimes for some purposes they will set at an angle expressly for splitting these crowns; they will set again relatively straight. The object of splitting the crown is to get more stalks, more stems. There are instances where as many as 360 stems have been counted from one root, or from one seed, if you please.

Mr. Race: Would not the condition of your soil make a difference in the depth you would sow? A man sowing alfalfa on a heavy clay soil with lots of rain, as we had last year, might fix it so they wouldn't come through at all.

Mr. Coburn: That is not impossible. No man can tell what the weather and the conditions are going to be. Of course, you cannot sow under any conditions in which you can guarantee it will come through; you have to sow it to the best of your knowledge, and let it go at that.

Mr. Meyer: Do you disk in the early spring before cutting?

Mr. Coburn: Yes, you disk any time you feel like it.

Mr. Race: I understood a gentleman to say that if he let the alfalfa go to seed, there would be a tendency to injure the plant.

Ex-Gov. Hoard: It would debilitate it.

Mr. Race: I attended an Institute last year and we had a discussion. There was a certain ten acres of alfalfa in my town that we thought was sowed on one of the poorest farms in the town, ten pounds to the acre sowed with oats the same as clover, and the second year they took off one crop of hay and one crop of seed. Mr. Scribner said that would be the end of that alfalfa field, as I understood, but that field came up this year to my waist, and I am not at all a short man.

Mr. Race: That field to my knowledge did not have any cultivation otherwise than what happens in the soil.

Paper on same subject read by Mr. J. F. Widmann, Ft. Atkinson.

MY EXPERIENCE WITH ALFALFA.

J. F. Widmann, Fort Atkinson.

The study of raising and handling alfalfa is one of great importance to the farmer and stock raiser. The study of alfalfa is of greater importance just now than the study of any other farm crop, not because it is of greater value, but because it is a comparatively new crop for the farmer, and also of its immense value to the farmer and stock raiser.

Any farmer whose land is adapted to the raising of alfalfa, can hardly realize what he is losing financially, if he neglects to study and grow alfalfa hay for his stock.

In the spring of 1902, I sowed six acres of alfalfa; the land, upon which I sowed the seed, had been cropped for a long time, and was not very productive. I did not fertilize the land at all. The field had been plowed in the fall; in the spring after I finished sowing my small grain, I took a disc harrow and worked the land into a fine seed bed, and then sowed the alfalfa seed at the rate of 30 pounds per acre. This field I sowed without any grain; the season was very favorable, and on the 14th of July I cut the first crop, which was about ¼ weeds; on account of the weeds it was slow drying the crop, besides we had lots of rain. This crop laid broad cast for six days; I would run the hay tedder over it, and shake it up and before night it would, generally, rain. One afternoon it was very dry, so I hauled it to the barn; this crop amounted to six loads.

I did not value this crop very much on account of the weeds, and what hay there was, was as yellow as straw. When I fed this hay I was very much surprised to see the cattle eat every spear of alfalfa. The second crop I cut the first of September, and had six more loads from the six acres.

During the following winter the cows did so well while I was feeding these two crops, that I concluded to sow twelve acres more. This twelve acre field I sowed with oats, sowing 1¾ bushels oats per acre. The oats yielded good, and the alfalfa caught well and made a good stand.

In the spring of 1904 I sowed twelve acres of barley, at the rate of two bushels per acre, one half of which I sowed with alfalfa and the other half with red clover. The alfalfa did

splendidly, but the red clover was a failure. Since then I have concluded to sow all alfalfa.

Last spring I sowed seven acres with barley, sowing one bushel of barley and 30 pounds of alfalfa seed per acre. This new seeding also looks well, so I will have twenty-seven acres for hay this year.

In sowing alfalfa, the first important step to success is the selection of a suitable piece of land. Select a piece of high land, upon which corn does well, and you will find that alfalfa will also do well upon it. Do not select any low land, for alfalfa will not do well upon it.

The next important step is the buying of seed. I consider this very important; too many farmers do not realize the danger of sowing seed in which there may be foul seed.

Seed that is A No. 1 generally costs two dollars more than common seed; the very best grade has no dried or shrunken kernels, or any particles of dirt or foul weed seed. The seed should be tested. I test mine in the following manner:

Take two hundred kernels just as they run and put into a glass fruit can. In the evening, about five o'clock, fill can about half full of water, let stand until about eight o'clock the next morning, then pour off the water and screw the cover with rubber on to the can air tight. In one and one-half or two days you can see just what the seed is doing. When the sprouts are ¾ of an inch long, take out the seeds and count the sprouted kernels and you can easily figure out the per cent of seed that will grow, and if 95% will sprout, sow it, and if not take it back and buy some more of a different dealer.

The price of alfalfa is about from $8½ to $11 per bushel, which would cost about $5 to sow 30 pounds or one-half bushel per acre. This seems high compared to the cost of sowing red clover. Red clover seed generally costs about $8 and one bushel will sow five acres which will make the cost of seed for red clover per acre $1.60.

Now compare the life of alfalfa with the life of red clover and the cost of seed will be in favor of of the alfalfa clover.

In sowing the seed I use a grain seeder to which is attached a grass seeder. I set the grass seeder to sow 15 pounds and sow the field one way and then cross it so as not to leave any streaks between the seeder. I raise the teeth of the seeder, and drag

the field with a slant tooth drag. In sowing and dragging I use the lightest team that I have, so as not to have so large and deep foot prints in the field. I use this method of sowing with or without a nurse crop.

Sowing without a nurse crop you would be more sure of a good catch. I do not advise clipping to kill the weeds, when sown without a nurse crop, but let weeds and all stand until some blossoms appear on the alfalfa. In clipping to kill the weeds you are just as apt to kill some of the alfalfa.

Alfalfa is naturally a heavy yielding crop, the roots go down below the roots of any other crop raised on the farm. I have dug up roots that were six and one-half feet long, these I dug in a field three years old. The roots are about the size of large lead pencils and taper down to a hair, so you see the root has the power to reach and raise any fertility that has leached out of reach of any other farm crop. Red clover roots do not go down over 14 to 18 inches.

This year the first cutting yielded an immense crop. I measured one field and it measured 3½ acres, and the yield was eight large loads hay of first quality, without a weed in the piece. My fields seem to yield better as they increase in age.

I do not wish to keep a piece longer than six years, because I wish to change about on the farm. I don't think that there will be any weeds left in the field after cutting three times a year for six years. I have always cut mine three times; you must leave the fourth crop standing as a protection in the winter. It is a hay that all kinds of stock eat with a relish and do well on it.

I am feeding 12 brood sows some middlings, milk and water mixed and the balance of their ration consists of alfalfa hay. It would do any hog raiser good to see these hogs stand up to a rack and eat hay like a lot of cattle. The hogs are doing fine and are not getting a kernel of corn. They were fed the same last winter and raised fine, large litters of pigs. Feeding brood sows this way is cheaper and better than when fed corn.

It also makes a good hog pasture; after cutting the first crop of a field of three and one-half acres. I turned in 100 hogs. The hogs could not keep the clover down, so I took them out on September 1st, and cut the crop for hay which yielded one load per acre. The hogs damaged the field considerable by rooting

and eating the crown of the plants. It is also a good food for poultry; chickens will roam over the alfalfa fields for hours at a time and get half of their living off from it.

I had one field that did not do just right, so I top dressed it during the fall of 1904 and the next spring this field yielded as good as any on the farm. I think it is a very good plan to fertilize the land before sowing to alfalfa, this will insure a better stand and the crops of hay will be larger.

Now, in regard to curing the hay, some of our best authorities advise using caps. I will not say anything about hay caps, because I have never used them. Now, I think that the recommendation of hay caps, by our best authorities, has a tendency to create a prejudice against the sowing of alfalfa, because they think that it must be terrible stuff to cure. These same authorities recommend the use of hay caps for curing red clover. For my part I would rather cure alfalfa clover than red clover.

Now, as to the right time to cut the first cutting, a man must use and exercise his own judgment. When the clover is very rank and heavy it must be cut early to make the hay as tender as possible. When the alfalfa is very heavy, I cut just as soon as I see a single blossom; this will make the hay tender and nice, and also gives the second cutting a good chance to make an early start.

The second and third crop I do not cut until a number of blossoms appear in the field. About four or five hours after cutting I run over the field with a hay tedder, and run the tedder every morning until the hay is fit to haul to the barn. If the weather is rainy, I would rather have it rained upon laying broadcast than to have it in windrows, or shocked or bunched up; and as soon as it is dried on the top I start the tedder and shake the water out of it. As soon as it is dry enough to haul, I haul with all possible haste. Sometimes I rake and bunch with a horse rake, and sometimes I load with a hay loader. Of course, the hay loader breaks off some leaves, but you would never know that there were any leaves gone if you did not see them fly while going up the hay loader.

Alfalfa hay never gets as dirty and dusty after a rain as red clover does; it will also stand a great deal more rain than red clover. Red clover is almost worthless after a few heavy rains, that is after it is dry.

The successful growing of alfalfa is only another branch of farming which stimulates and helps to keep up the high price on our land, and enables the farmer to farm it on such high priced land.

Without the aid of new and better crops and better blood in our live stock, the farmer would not be able to farm it on such high priced land as at the present time.

Now I would recommend any farmer to sow one-eighth of his farm to alfalfa.

If you would drive from Jefferson to Fort Atkinson, a distance of six miles, you would see growing successfully over 100 acres of alfalfa and most of these farms could not be purchased for $150 per acre.

DISCUSSION.

Question: Do you use hay caps in making your alfalfa hay?

Mr. Widmann: I do not use hay caps:. I put up twenty acres last year without any, and I have got hay just as green as can be and lots of it.

Mr. Lobdell: How about pasturing alfalfa?

Mr. Widmann: No, you must not pasture it; it won't stand pasturing in Wisconsin.

Mr. Lobdell: That is my experience, it kills it out to pasture it. How long will it last if you do not pasture it?

Mr. Widmann: I estimate on that field of alfalfa about six years. It will last longer, but after six years the June grass gets into it and I plow it up.

A Member: If it is not cropped too closely, will it bear pasturing?

Mr. Widmann: No, not at all.

A Member: I have been pasturing some three years and it isn't gone yet.

Mr. Goodrich: Don't let anybody fool you by saying that you can pasture alfalfa. You can't do it and expect it to live.

Ex-Gov. Hoard: If a man wants clear, sober reasoning as to experience with alfalfa, he can have it and he will see why he should not pasture it. The crown is exceedingly sensitive to

pressure, and when you cut the first crop and haul it over your field, I can show you distinctly the wheel marks on the second crop all over your field. That ought to be proof to you. The difficulty with men is that they do not observe enough. You pasture alfalfa and the heavy pressure hurts the crown, and by and by your alfalfa commences to fail.

Mr. Crouch: How about when you run a disk harrow over it?

Ex-Gov. Hoard: That doesn't run over it, it splits it. I never have tried it in this state, and Wisconsin conditions and climate make me a little cautious. I am going as fast as I know and can learn from a Wisconsin standpoint. Your horse traveling over your field with the disk leaves simply the mark of the pressure of your horse. The disk splits it, not separating it.

A Member: You had a piece of alfalfa right out by your barn and half of it was very good and half was not. What was the matter with it?

Ex-Gov. Hoard: I had an eight-acre piece of alfalfa from which I took three crops. I left the fourth crop, knowing of course that I must not cut the fourth crop. I was away from home and my foreman hated to see that fourth crop wasted, as he thought, go back onto the ground, and it was the 25th of September. He thought it would run a ton and a half to the acre, and so he went on it and went to cutting it, and I came home about the time he had about five acres out of the eight cut. There was a square chunk in the center, about three acres, and I was shocked when I saw what he had done. I said, "August, you have ruined this alfalfa." But he says, "It will grow enough to shield it, to shelter it for the winter." "No, it won't, things don't grow much after the 25th of September, but we will know more about it next spring," I said. "You will leave that square chunk in the center," and he did so, hauled in the hay. I went off, was away several months of the winter, and I kept writing to August and asking about that field, and he would say, "I think it is all right." I came back and when the spring opened,—and here comes in the reasoning on this thing—I had had no experience before, I had only reasoned from what I knew of the biology of the plant, but here was the experience—when the spring opened, you could pull two thirds of those

crowns right out, they were rotten, while there stood that square chunk in the center which had not been cut, as strong and rampant as could be, and on that center piece, three acres, I cut about six tons to the acre, while outside of that was dead, we had to plow it up. Now, do see the meaning of these things? Several men about me who have cut a fourth crop in that section have suffered by it. A German there in Oakland had four acres, as beautiful a stand as I ever saw; there came a very severe drought in 1901 and that stood up beautifully, spring seeding. He was tempted and he went and turned his cattle on that new seeding.

Mr. Goodrich: I tried to drive him off of it.

Ex-Gov. Hoard: Yes, that is right. Well, you know the next spring he had no alfalfa; he ate it down and trod it down, and he said, when I remonstrated with him, he said, "What does a newspaper man know about farming?" The farmers about there are interested in this thing, one will say, "Why don't you grow alfalfa? Hoard grows alfalfa, you ought to know as much as a newspaper man about farming." "Oh, but that is a humbug," he says, and so this farmer that I remonstrated with, thought it was humbug, but he lost his alfalfa. Now, from thirty-five acres of land last year I put one hundred and eighty tons of alfalfa into my barn, that my brother Rietbrock tried to coax out of me at $12 a ton. I produced two large silos full of good fodder on twenty-five acres of ground, about 250 or 275 tons; on thirty-five acres, 180 tons of beautiful hay, as good as bran, nearly, in its feeding value. Do you see how I could economically carry on that farm, a lot of stock and make money out of it, when I could produce the entire subsistence necessary for that stock in alfalfa hay and corn ensilage, and do you see how much of the farm I could turn out to pasture and how little would be required to be bought for their sustenance in the winter? John Widmann is a good farmer and he has given you good gospel. He lately sold to a Mexican man twenty-six head of pure bred Holsteins and grades for $2,500.

Mr. Widmann: Twenty-six hundred dollars, Governor.

Ex-Gov. Hoard: I am glad to be a little under, John.

A Member: How did your alfalfa keep in the silo?

Ex-Gov. Hoard: I didn't put it in the silo. I said I had corn ensilage for my silo. On twenty-five acres of ground, I

filled two silos and on thirty-five acres of ground I filled a lot of barn room with alfalfa hay. I never have tried putting hay into the silo. I do not grow any other hay but alfalfa hay.

Mr. Garrett: Don't you think if you had top dressed that fourth crop that was cut off, it would have done better?

Ex-Gov. Hoard: That won't do it. You cut alfalfa after the 25th of September, and it bleeds badly and the crown does not set for the ensuing crop, and if the crown does not set on the alfalfa roots—the buds set, I mean, in the ground, then it seems to sicken and dwindle away, it fails; so that in cutting alfalfa we want to get on it early just when there is the first indication of blossom, when the buds have set in the ground for the next growth. If you cut it too late, after it has blossomed, you will have a spindling growth.

Mr. Coburn: I want to call your attention to this sample of alfalfa that is here. That is a very good specimen of alfalfa, strictly prime. It might be a little greener, but it is a very good color. That was grown on Kansas upland about as poor as we have, and the man cut it three times this year, realizing four tons per acre. I took it out of a barn in the neighborhood to bring here as what the Professor would call a concrete illustration. Now, before parting company with you I want to suggest to you Wisconsin people to remind you how much you have been favored in this state by having in it such citizens as Hiram Smith and W. D. Hoard, General Burchard and Mr. Goodrich here, and others that I might name and should name, who have been the cause of bringing to your state millions and millions of dollars, great prosperity and great eminence. You are known everywhere for what you have done in the cattle line, dairy cattle particularly, and this has largely been incited by the example and the words of these few men, and I want to testify here as a man from an outside state that this fact is recognized everywhere and you ought to build these men a monument, up there at Madison, sometime, five hundred feet high—don't overlook it. It is almost impossible for you to realize how greatly you have been favored, by and through these men. I might add that Kansas has sent up here one of her boys to help Dean Henry. Professor Otis is one of our boys and he knows all about alfalfa. I hope you will get up next to Dan, because he is worthy of your most kindly consideration. You will see his name in the

papers from now on, Professor D. H. Otis, from Madison, and I commend him to your consideration. He is pure gold, he is all right, and I am glad we can contribute such men to Wisconsin and her prosperity.

Mr. Clinton: I am asked to extend the thanks of the ladies of the Congregational Church for the generous donation of prize butter by Mr. Rietbrock, and also of the cheese by this Association. You will get a taste of both the butter and cheese at the banquet tonight.

Adjourned to meet at 10 o'clock the next morning.

MORNING SESSION, FRIDAY, FEBRUARY 2, 1906.

The Convention met pursuant to adjournment at 10 A. M.
The President in the chair.
The report of the Finance Committee was submitted to the convention by Mr. Glover, and received.

Waukesha, Wis., Feb. 1, 1906.

We, the committee apopinted to examine the books of Secretary and Treasurer, beg to report that we have examined said books and vouchers and find them to be correct and accord with the report of the secretary to the convention and now on file in secretary's office.

Auditing Committee

H. C. Taylor,
Charles Linse,
A. J. Glover.

The Secretary read the following letter from Stephen Faville, one of the ex-presidents of the Association:

Madison, January 26, 1906.

Col. Burchard:

Yours containing notice of the time and place of meeting of the *Old Class* received. I can think of nothing that would give me more pleasure than to meet my former comrades and laborers in Dairy Vineyard, for believe me I have the same feelings for them that you say they have for me. But my sight is so much gone that it would not be at all prudent for me to go away from home alone, so I shall have to content myself at home and imagine the good time you are having and the wise and helpful things that are being said. Tell the *Old Boys* and *Girls* (for me) that I have not lost an iota of my faith in the *Dairy Cow,* but that she will more and more (as we come to trust her more intelligently) help to bear the financial burdens that are sure to press upon the coming generations. Now, that my work day is over it is one of my pleasant memories, the small part I took in starting an industry that has proved so potent a factor in the struggle to keep the "wolf from the door."

I tell you boys we builded better than we knew. Who would have dared to predict that in a little more than a quarter of a century the business we started and fostered would become one of the leading industries of the state. But so it is and my word of cheer is let the good work go on.

Now, Col., I can't see a word that I have written, so if I have written anything that I ought not to you can strike it out and if I have omitted anything you can supply the omission. With the most kindly greetings for the whole convention and wishing that you may have a pleasant and profitable meeting, I am your brother dairyman,

STEPHEN FAVILLE.

Mr. Emery: I occasionally meet on the streets of Madison our old friend, Mr. Faville, and always when I meet him I am impressed that he carries with his eighty years the enthusiasm of youth. He always speaks to me about this association and the work of dairying with enthusiasm and interest and has kept up

a progressive spirit. He is not living in the spirit of eighty years ago, but in the spirit of the present; he is learning how to grow old wisely.

On motion of Mr. Philips, duly seconded, the secretary was instructed to send to Mr. Faville a message of love and greeting.

WORK OF THE WISCONSIN DAIRY AND FOOD COMMISSION.

J. Q. Emery, Dairy and Food Commissioner.

Delivered before the Wisconsin Dairymen's Association at Waukesha, February 2, 1906.

In the time given to me, I have not time to recognize, as I would like to do, the influence of the various organizations in the formation of this commission. The dairy interest of this state has been forcible. I recognize that this association, the Butter Makers' Association, the Cheese Makers' Association and the Dairy School, have been very powerful in benefiting these great dairy interests, and it has been the constant effort upon the part of the present commissioner to keep the Dairy and Food Commission at work in its own legitimate lines of work. The spirit of harmony and co-operation which has prevailed in each one of these agencies, the trying to uplift the cause in its own legitimate field of work and thereby produce the most effective co-operation, have been mighty forces in this state in the past, and particularly in this association because it has had a few able, competent, disinterested men who have worked unselfishly for the life of the dairy interests of the state. So long as that spirit prevails, no jealousy or bickering shall enter in to divert our efforts from the cause to ourselves.

I have, with much interest, studied the thirty-three annual reports of the Wisconsin Dairymen's Association. More and more as I have studied these reports am I impressed with the many important achievements in this state, which haye had their initiative in the Wisconsin Dairymen's Association. The in-

itiative for the establishment of the Wisconsin Dairy and Food Commission was taken by this association.

In the year 1887, at the fifteenth annual meeting, held at Sparta, President W. H. Morrison called the attention of the association to the need of such a commission and recommended that steps be taken to secure such a result. The following resolution was adopted at that session, which though somewhat mild looked toward the establishment of such a commission:

> *Resolved,* That this association ask of the legislature a law with proper police authority, to prevent the manufacture and sale of any form of adulterated cheese, for the pure article. That any adulterated cheese shall be branded and sold for what it is. That any violation of this law shall incur a penalty of not less than $100 for the first offense. There must be a suppression of the practice of adulteration of cheese or the cheese industry of Wisconsin will suffer almost irreparable loss.

In 1888, at the sixteenth annual session, held in Ripon, President H. C. Adams, in his annual address vigorously advocated the establishment by the state of a Dairy and Food Commission. At that meeting the association adopted the following resolutions:

> "*Resolved,* That in the opinion of this association, the time has arrived in the history of the state for the passage of a law similar to that in existence in Minnesota, Ohio, New York and other states, and the providing for a dairy commission, whose duty it shall be to ferret out and prosecute all adulterations of butter and cheese, and the sale of the same, as well as other foods, and we respectfully ask the next legislature to enact such a law and establish such a dairy commission.

Again, at the seventeenth annual session, held at Augusta, in 1889, President Adams in his annual address, at greater length and with greater vigor, advocated the establishment in Wisconsin of such a commission. At that session the association adopted the following preamble and resolution:

> "*Whereas,* Imitations of butter are being sold in Wisconsin in violation of laws, to the prejudice of honest goods. Cheese is being made in large quantities, robbed of its

natural fat, filled with lard or other foreign fats, and not stamped as the law provides. Adulterated and impure milk floods the market of towns and cities, drugs are made useless, drinks made more poisonous, and nearly every article of human food diminished in value by adulteration; therefore,

Resolved, By the Dairymen's Association, that as dairymen and citizens we hereby earnestly express to the state legislature our unanimous request for the passage of bill No. 444, A., providing for the establishing the office of food and dairy commissioner, and for the execution of all laws aimed at adulteration."

It is both interesting and significant to remember in this connection that the father of this association, Honorable W. D. Hoard, was governor of Wisconsin in 1889.

By Chapter 452 of the laws of 1889, the office of Dairy and Food Commisssioner for the state of Wisconsin was created, and he was authorized to appoint two assistants, one to be an expert in the matter of dairy products and the other to be a practical analytical chemist. These three comprised the commission until the year 1895.

The following are the duties of the commissioner, then prescribed which, with slight amendments, remain at the present time:

"It shall be the duty of the commissioner to enforce all laws that now exist, or that may hereafter be enacted in this state, regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food or drink or of any drug; and personally or by his assistants to inspect any article of milk, butter, cheese, lard, syrup, coffee or tea, or other article of food or drink or drug, made or offered for sale within this state which he may suspect or have reason to believe to be impure, unhealthful, adulterated, or counterfeit, and to prosecute, or cause to be prosecuted, any person or persons, firm of firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food or drink or drug, contrary to the laws of this state.

Said commissioner or any assistant shall have power in

the performance of his official duties to enter into any creamery, factory, store, salesroom or other place or building where he has reason to believe that any food or drink or drug is made, prepared, sold or offered for sale, and to open any cask, tub, package or receptacle of any kind containing, or supposed to contain, any such article, and to examine or cause to be examined and analyzed the contents thereof.

The first commissioner was the Honorable H. C. Thom, who was appointed by Governor Hoard, May 29th, 1889. The first chemist was Professor F. G. Short and the first assistant commissioner was Mr. H. K. Loomis. Mr. Thom was succeeded by Mr. D. L. Harkness; Mr. Loomis was succeeded by Mr. Walter A. West, and Professor Short was succeeded by Mr. George C. Cox. Mr. Harkness died in 1894 and was succeeded as commissioner by Thomas Luchsinger.

In February, 1895, Honorable H. C. Adams was appointed commissioner. Mr. W. W. Chadwick was appointed assistant commissioner, and after serving a two year's term was succeeded by C. W. Sweeting. A. S. Mitchell was appointed chemist.

The legislature of 1895 added a stenographer and confidential clerk, also a dairy inspector to the commission, the latter at $3.00 per day and expenses; Norton J. Field was appointed as such inspector. These were the only additions to the corps of the commission from its establishment in 1889 until the year 1903. The limitations of this paper preclude a presentation of the work of these several administrations, farther than to say, that during Mr. Adams' term of office the laws relating to the sale of oleomargarine were amended and greatly strengthened and were enforced; laws prohibiting the manufacture and sale of filled cheese were enacted and enforced, which with the United States tax on filled cheese practically wiped out the filled cheese iniquity from the state; laws regulating the sale of renovated butter were also enacted and enforced, and in 1897 the first general law defining the adulteration of food was enacted.

Hon. H. C. Adams resigned as commissioner May 1, 1902, having served a little more than eight years in that capacity. He was succeeded December 24, 1902, by the present incumbent. Mr. Mitchell voluntarily resigned the position of chemist, December 31, 1902, and was succeeded by Dr. Richard Fischer, the

present incumbent. The office of assistant commissioner having become vacant in the fall of 1903, Mr. U. S. Baer, the present incumbent, was appointed to that position. January, 1904, Mr. F. E. Carswell was appointed successor to N. J. Field, as dairy inspector. Mr. F. M. Buzzell was appointed food inspector, Mr. J. G. Moore, creamery inspector and Mr. Bjorne Lovdal, assistant chemist, under authority of the law passed by the legislature of 1903.

As a result of persistent public agitation and effort with the legislature a law was passed in 1905 which added to the commission an assistant commissioner at a salary of $1,600 a year; an assistant chemist at $1,200 a year; a chief food inspector at $1,200 a year; 4 cheese factory, dairy and food inspectors at $100 a month, and 3 creamery, dairy and food inspectors at $1,200 a year. The complete organization of the commission since the legislature of 1905 has been but recently completed and the personnel of the commission is now as follows:

J. Q. Emery, Dairy and Food Commissioner.
Richard Fischer, Ph. D., Chemist.
U. S. Baer, Assistant Commissioner, Dairy Expert.
J. G. Moore, Second Assistant Commissioner, Creamery Expert.
F. M. Buzzell, Chief Food Inspector.
Ethel D. Thomas, Stenographer and Confidential Clerk.
A. E. Kundert, Assistant Chemist.
F. W. Tweeden, Assistant Chemist.
F. E. Carswell, Cheese Factory, Dairy and Food Inspector.
E. L. Aderhold, Cheese Factory, Dairy and Food Inspector.
J. D. Cannon, Cheese Factory, Dairy and Food Inspector.
Fred Marty, Swiss Cheese Factory, Dairy and Food Inspector.
Thomas Corneliuson, Creamery, Dairy and Food Inspector.
H. C. Larson, Creamery, Dairy and Food Inspector.
P. A. Larson, Creamery, Dairy and Food Inspector.
Will McAdam, Creamery, Dairy and Food Inspector.
James Van Duser, Creamery, Dairy and Food Inspector.
W. F. Scott, Food Inspector.

This brief sketch of the origin, development and personnel of the commission is given as a matter of interest to this organization, which has been so instrumental in its establishment and

growth. Of the eleven men who are assistants and inspectors, eight are either graduates of our dairy schoool or have been instructors in that school, and four of them have been employed by the Wisconsin Dairymen's Association as traveling instructors. The law of 1905, which added ten to the commission, expressly provides that the appointees shall be experts in the special lines of work required of them.

Published reports of the commission show the work of the commission relating to creameries and cheese factories, to have been limited to emergency wants made upon the commission for testing the milk of patrons as to butter fat content, skimming and watering. The number comprising the commission was so small that no other systematic work for improving the conditions of creameries and cheese factories seemed possible. This work of milk inspection, however, with the prosecutions that were made for violations of the law, has, without doubt, had a marked effect in improving the quality of milk offered at creameries and cheese factories in so far as the butter fat content is concerned, and the work done of inspecting city dairies has also had the effect to improve the quality of city milks. With the largely increased force of the commission, provided during the past three years, more work and of different character has been possible.

Between the 4th day of July and Christmas all of the 1604 cheese factories, 971 creameries and 271 skimming stations, making a total of 2856 were inspected. The purpose of this inspection was to acquaint the managers and makers with the laws relating to the sanitary conditions required of cheese factories, creameries and skimming stations, and of legal qualities of milk for manufacturing into the food products of cheese or butter. It was thought wise and proper, before commencing a vigorous campaign, having for its object the improvement of the quality of milk offered by patrons of cheese factories and creameries, to see to it, first, that the cheese factories and creameries and their surroundings were in a clean and sanitary condition. It would seem not only unwise but unjust to undertake to compel patrons to furnish clean and lawful milk to a cheese factory or creamery that was itself in an unclean and unsanitary condition. The instructions given to assistants and inspectors were that when cheese factories or creameries were found in an unclean

or unsanitary condition to state to the management the provisions of law relating to the same and give a reasonable time in which to put the factory into a clean and sanitary condition. That inspection was to be followed by a second inspection after a reasonable time, and if there has been no reasonable effort at compliance with previous warning, then to bring prosecution for violation of law. As a result about 30 prosecutions were made within the time specified, and with two exceptions conviction secured. In most cases the party plead guilty and paid the minimum fine of $25 and costs. There can be no doubt that the report of these prosecutions by the press of the state had a stimulating effect upon the managers of cheese factories and creameries generally throughout the state, and that in consequence there has been a thorough-going cleaning up of factories and creameries. This has been noticeable by buyers of our dairy products, who have visited these places, and by insurance agents, who are carrying policies on these factories. They have commented in most favorable terms upon the results of these inspections.

Having completed the inspection of all these cheese factories and creameries, two members of the force have been detailed to attend the farmers institutes during the winter and give instruction on the subject of lawful milk. These men were instructed to make their teaching concrete. They were instructed to use curds prepared by using the Wisconsin curd test to show the effect upon clean and improper methods in the handling of milk. They were instructed to use filtrates, showing the filth taken from milk actually offered at creameries and cheese factories. They were instructed to contrast by means of pictures the difference between a clean and a filthy cow and in general to instruct on the suitable care of the herd and of the milk and utensils for the production of a lawful milk.

Four men have been detailed for the winter to make an inspection of city milks. This includes a test for the butter fat content, skimming or watering, and also the use of the Wisconsin curd test to determine the qualities of milk, as to cleanliness and proper care. These inspections are followed up by inspections of the premises, utensils on the farms, barns and herds of producers of these city milks.

One man has been detailed to devote his time to the enforcement of the law relating to the sale of oleomargarine, and another man has been detailed to enforce the law, requiring that cans that are used in shipping milk to cities by railway or steam boat lines must be thoroughly cleansed before returning to patrons.

Another feature of the work of the commission inaugurated within the past few years is the publishing of a quarterly or a semi-annual bulletin, which contains the results of inspections of cheese factories and creameries. The actual conditions as found at these factories and creameries have been reported. The factory and its surroundings that have been kept in a clean and sanitary condition have been so reported; where factories have been unclean and unsanitary those facts have not been concealed. That these bulletins containing these reports have been of a character tending to stimulate improvement, I think admits of no question. These bulletins also contain the reports of analyses of foods suspected of being adulterated that have been made by the chemist of the commission. Publicity is thus given to unlawful adulterations and as these bulletins have been sent not only to every creamery and cheese factory in the state, but to all of the dealers in foods, they have been educational in that they guard against unlawful products by furnishing to dealers means of knowing the true character of such products. More and more as time has passed, dealers have come to value these bulletins and to consult them as to the revelations they make concerning food products.

I desire now to call attention to a line of work that so far as it has been possible has been done during the past two years and which will be resumed in the early spring to as full an extent as we are able in the matter of creamery and cheese factory inspection. The inspector goes to the creamery or cheese factory for the purpose of improving the conditions there. His mission must not be to promote self-satisfaction with existing conditions. The ever present spirit and purpose must be that of progress. We can justify the employment and payment of these inspectors only for the purpose of improving existing conditions. Besides a small case for taking milk samples from patrons, each inspector is provided with a case containing the very best imple-

ments or supplies that are required for him to do up-to-date work in a cheese factory or creamery. The inspector goes to the creamery or cheese factory to examine carefully and inquire into every condition present in that creamery or cheese factory and to ascertain what is right and what needs improvement. This he does in the presence of the maker and thereby many times raises the standard in the quality of the maker's work. The inspector goes to the creamery or cheese factory early in the morning. He procures a list of the names of the patrons. He has bottles ready for taking a sample of each patron's milk as delivered. He examines the scales to ascertain if they are accurately balanced or are so set as to cheat the patron out of a few pounds of milk each morning, and lay the foundation for the report of a large overrun, for not only does inaccurate weighing defraud the patron but makes a false report and impression as to the amount of overrun and the price paid per pound for butter fat. The kind of competition thus engendered is fraudulent and destructive of the best interests of the creamery and cheese factory industry.

The inspector stands by the weigh cans and inspects the work of the man who receives the milk, as well as the milk and cans of the patron. He scrutinizes the method of taking the samples of milk for testing and how the composite samples are cared for. He observes carefully whether or not the man who is taking in the milk receives any unclean, unsuitable or unlawful milk, and if unclean, unlawful or otherwise unsuitable milk is offered by the patron and received by the creamery man he warns both alike concerning the unlawful and unwise practice. At times he instructs the patron as to the proper way to wash and care for his cans and the proper method of caring for milk. He shows him how the quality of the product and therefore the price and hence the profits to the patron are ultimately dependent upon the clean and wholesome character of the milk furnished by the patron. He discloses to the patron how these bad milks affect the flavors of the dairy products in quality and value and how some rations fed to the herd at improper times or in unsuitable quantities may injuriously affect the entire output of the factory, thus imposing a loss upon all the patrons.

He requests the patrons to meet at the factory late in the

afternoon or early evening. With the samples taken he then proceeds to make the Babcock test for fat, the lactometer test for watering or skimming, and a Wisconsin curd test to determine the character of the milk of each patron as to its cleanliness or the kind of care it has received. When the patrons meet him later in the day he makes known to them the per cent of milk fat found in each patron's milk. If he has reason to suspect watering or skimming of milk by any patron he furnishes a sample to the state chemist for more detailed analysis. He exhibits to them the samples as shown by the Wisconsin curd test, which is an actual and accurate demonstration of the character of each patron's milk. Here they see from one patron's milk a curd that is of a fine velvety, firm texture, having a clean agreeable flavor. This demonstrates that the patron's milk from which this curd was formed was produced under clean conditions, quickly cooled and otherwise properly cared for. He exhibits the curd from another patron's milk that has in it gas holes or pin holes so-called. This has a tainted flavor. This peculiar texture and flavor are due to gas forming bacteria. They thrive in uncleanliness of some sort. He shows them a curd from another patron's milk that is spongy in texture and has a very offensive flavor or odor. He explains to them that this is due to conditions worse than those from which number two resulted. He explains to them that it is impossible to make the best quality of butter or cheese from such milk and further explains to them the great loss that is being sustained by the butter or cheese factories due to bad milk. He lets them see the curds produced from each patron's milk that each may see and know for himself that there was a difference in the quality of milk furnished by the different patrons both as to fat content and cleanliness. He explains to them how the good milk and the bad milk are each produced and warns them against the supplying of bad milk as being wrong and unlawful and liable to lead to prosecution if continued.

Having taken samples of the milk from the last gallon or two of the patron's milk as it was delivered from the cans and having passed that milk through filtrates of absorbent cotton or through filter papers, he exhibits to them the actual filth, if any, thus taken from their milk on the morning of his inspection.

He illustrates and explains the use and reliability of the Babcock test when skilfully used. He explains the requisite conditions for securing accuracy by that test. He has instruments and uses them to test the pipettes to see if they are absolutely correct as to size. He tests the calibration of the bottles to determine their accuracy and inaccuracy. He applies his speed tester to the Babcock test to ascertain if the operator is running it at the rate of speed to give accurate results. He tests the sulphuric acid to find if it is of the correct strength. He ascertains at what temperature the operator reads the test and if he measures the fat column from the lowest point at the bottom to the extreme top limit of the meniscus as he should. He tests the skim milk, butter milk and whey for butter fat content. He ascertains if the weights used for weighing the cream in testing are accurate. He examines the weigh-cans, pipes, pumps, churns, vats, vat gates and everything connected with the factory to ascertain if they are kept clean, and he does the same as to the floors and walls as well as the surroundings. In his inspection of the surroundings he gives particular attention to the drainage, and where that is defective he suggests means for securing adequate drainage. If conditions are found bad or unlawful he warns the maker or manager that they must be changed within reasonable time or prosecution must necessarily follow, and he prosecutes if the change is not made.

The curd test gives him a cue as to what patrons need his inspection, and so he goes to the premises of the patrons who furnish the worst milks and he points out to them the changes to be made. If he finds the milk at the factory below the legal standard of butter fat or otherwise unlawful, he visits the farm and takes samples there for testing. The discrepancy, if any, between the tests of the milk at the factory and that at the farm determines the course to be pursued.

I have dwelt upon the work of the commission along dairy lines because that is of special interest to dairymen; but dairymen as citizens are also interested in the work of the commission as it relates to food adulteration. The limitations of time, however, permit only the briefest reference to this work. A conservative estimate places the annual cost to the people of this country for adulterated food products at four hundred million

dollars; that does not mean that there is no value whatever in many of these adulterated foods, but the price at which they are sold is greatly in excess of their actual value and the price they would bring if sold in the market for what they actually are. Immense fortunes have been built up by the difference.

There are more than 6,000 groceries or general stores in this state where foods are sold; 2,000 meat markets, and nearly 1,000 drug stores, not to mention the numerous places where drinks in the form of beverages are dispensed.

There are now two food inspectors constantly in the field, aided incidentally by the other inspectors, and three chemists in our laboratory kept constantly busy analyzing foods suspected of adulterations. Let me briefly state the character of some of the adulterations we have found in our experience during the past three years.

Buckwheat Flour: Low grade wheat, rye and corn flour. Also gypsum.

Chocolate and Cocoa: Containing starch and oxide of iron.

Candies: Paraffin and clay.

Catsup: Artificial color, chemical preservatives, tomato refuse (skin and seed).

Apple Cider: Adulterated by addition of preservatives (salicylic acid and hydrofluoric acid). Often diluted with water or with sugar water. Sometimes contains no apple juice but is made from sugar, water, tartaric acid, artificial flavor and coal tar dye.

Raspberry and Orange Cider and Rootbeer: Made from sugar, water, tartaric acid, saccharin, salicylic acid and coal tar dyes.

Soda Water: Often contains saccharin, salicylic acid, coal tar dye.

Cream: Boric acid, formaldehyde, gelatine, artificial coloring matter, deficiency in fat.

Evaporated and Condensed Cream: Containing only 7.9% milk fat.

Cream of Tartar: Composed of calcium acid phosphate, calcium sulphate, alum and starch.

Grape Juice: Sugar, water, tartaric acid and coal tar dye.

Currant, Strawberry and Raspberry Jellies: Made from apple pomace, starch paste, gelatin, glucose, artificial flavor, tartaric acid and coal tar dye.

Jams and Preserves: Made from under ripe or decayed fruit, from fruit refuse, apple pomace, glucose and coal tar dye.

Lard: Cottonseed oil and beef stearin, beef tallow.

Lemon Extract: Wood alcohol, terpeneless lemon oil, robbed oil of lemon, oil of lemon grass.

Vanilla Extract: Wood alcohol, vanillin, coumarin, prune juice, caramel, coal tar dye.

Cider Vinegar: Spirit vinegar with artificial coloring matter, sugar, glucose or apple pomace.

Malt Vinegar Spirit vinegar with artificial coloring matter, sugar or glucose.

Wine Vinegar: Spirit Vinegar.

Spirit Vinegar: Pyroligneous acid.

Maple Syrup: Mixed with glucose, cane syrup or sorghum, or made entirely from sugar and a decoction of maple wood, hickory wood or corn cobs.

Maple Sugar: Made by the evaporation of the above.

Meats, Chopped Meats and Sausages: Colored with coal tar dye and preserved with sulphites and boric acid or borax.

Milk: Formaldehyde, boric acid, borax, added water, skimming, artificial color.

Molasses: Glucose, poisonous salts introduced in the refining of sugar.

Sorghum: Glucose.

Syrup: Glucose.

Olive Oil: Cottonseed oil and peanut oil.

Pepper: Pepper dust, pepper hulls, cocoanut shells, olive pits, roasted cereals.

Cayenne Pepper: Oxide of iron.

Wine: Sugar, water, tartaric acid, tannin, coal tar dye.

The increase in the number of inspectors and in the number of chemists for the commission during the past three years has made it possible to greatly extend the work in restraining the sale of adulterated foods. This, with the awakened interest of the people throughout the state, occasioned by the exhibit on adulterated foods at the State and several County Fairs, and the

making of that exhibit at more than a score of different cities throughout the state, accompanied with an address upon the subject of Food Adulteration, has resulted in producing such anxiety upon the part of manufacturers, jobbers and dealers in foods that for the past three months a small army of traveling representatives of manufacturing and jobbing firms have traveled this state in a lively manner, removing unlawful foods from the shelves of dealers and in many instances from the state, and relabeling others so as to make them comply with our law.

The question "what shall we do to be saved" seems to have become one of vital interest. Within the past six months more than fifty meat dealers have been prosecuted and convicted for selling chopped meat or sausage containing chemical preservative or artificial coloring in violation of law, and the prosecutions of dealers in other varieties of foods have impressed upon the minds of dealers that there is a law which must be obeyed. Time fails me to tell of the specific laws recently enacted or amended relating to adulterated milk or adulterated cream; canned goods; vinegar; prohibiting the use of artificial coloring and antiseptics in chopped meats and sausages; relating to chemical preservatives in foods; relating to maple syrup and maple sugar; glucose mixtures; buckwheat flour; condensed milk and evaporated cream; lemon extract and vanilla extract and others. These laws have greatly strengthened the food laws of the state and their enforcement must result in greatly improved conditions.

The question of pure food is one that should interest every citizen of this commonwealth. The extent to which food adulteration has been carried almost passes belief. To solve the problem of pure foods is a stupendous task and will require Herculian efforts by the American people. It is a problem that must be solved. That it will ultimately be solved and solved right my confidence in the American people does not allow me to doubt.

(At close of paper): I wish Mr. Baer would add to what I have said, the comment that he heard about the Canadian meeting by a certain party.

Mr. Baer: Mr. Chairman, a certain traveling man told me, at Oconomowoc last week, that he attended the meeting of the

Eastern Canadian Dairymen, of which Association Mr. Albert Johnson is president, and Mr. Johnson had attended the annual meeting of the Wisconsin Cheese Makers in Milwaukee in January and he went back and told the people in Canada what Wisconsin was doing, what the Wisconsin Dairy and Food Commission was doing for the great dairy interests of the state, and he said this to those people. "We must wake up. We must follow suit. The markets of the world that are handling our goods and the export market are hearing all this, and I have been to Wisconsin and bought a large quantity of cheese there in Richland county for our fancy trade, and I found the goods all right, I found the factories clean over there," and he said, "Gentlemen, it is high time that we were getting busy over here, or Wisconsin will take our cheese markets away from us."

The report of the Committee on Nominations being called for, the report was made by Governor Hoard as follows:

Your committee beg leave to report the following names for officers of this Association for the ensuing year, agreeably to your instructions:

For President, W. J. Gillett of Rosendale.

For Secretary, General G. W. Burchard, who has so long and faithfully served us, and who has not yet proven his inefficiency on account of age.

For Treasurer, H. K. Loomis, who has for over twenty years faithfully carried the funds of the Society and has done yeoman's work in the representation of this Association and the interests of the state at great expositions.

The report of the Committee as made by Governor Hoard was unanimously adopted on motion of Mr. Moore, duly seconded.

The Committee on Resolutions submitted the following report and the same was approved and adopted.

RESOLUTIONS ADOPTED BY THE WISCONSIN DAIRYMEN'S CONVENTION AT WAUKESHA, FEBRUARY 2, 1906.

Resolved, That this Association, realizing that the utmost freedom of inter-state commerce is the life and soul of the dairy industry of the entire country whereby we can reach both domestic and foreign consumers with reasonable despatch and cost, do hereby endorse President Roosevelt in his struggle to enlarge the powers of the Inter-State Commerce Commission and we urge upon our members of Congress their support of the Hepburn rate bill now before that body. The Secretary is hereby instructed to forward to our members of congress copies of this resolution.

Resolved, That the Wisconsin State Dairymen's Association, appreciating the great work which has been done by the Agricultural Experiment Stations of the United States in the development of better farm knowledge, and realizing that these stations have received no additions to the income from the federal government since the original act was passed in 1887 which provided for them; and realizing further that the constant extension of their work requires additional funds.

We do hereby express our hearty approval of Bill H. R. No. 345, introduced by Representative Adams of Wisconsin, which provides for a gradual increase of appropriations to these stations for five years until the final increase shall double the present appropriation to each station: and

Resolved, That a copy of these resolutions be sent to each of the Senators and Representatives in Congress from this state.

Resolved, That this Convention recommends that the Association inaugurate at the earliest practicable time one or more "testing associations" rendering such aid thereto as may be necessary to insure their successful operation.

Resolved, That the National Dairy Union of which Mr. S. B. Shilling is President and Chas. Y. Knight is Secretary, by its record of achievement in the past, and its vigilance and efficiency in looking after the interests of the dairy farmers and the manufacturers of dairy products, thereby thwarting the unlawful and anarchistic schemes of oleo manufacturers and dealers, has

richly earned our gratitude and is entitled to our continued confidence and support.

Resolved, That this Association, representing the dairymen of Wisconsin, most heartily commends the legislature of 1906 for the laws enacted, materially increasing the staff and thereby the efficiency of the state Dairy and Food Commission.

Resolved, That it is a source of sincere gratification to us, for which we are devoutly grateful to Almighty God, that we are permitted to have with us in this convention Hon. W. D. Hoard, one of the founders of the Association, its first secretary and at one time President, and with a single exception present at its every consecutive annual meeting, of which this is the thirty-fourth. The indebtedness of this Association and the dairy farmers of Wisconsin and of the United States to Mr. Hoard is beyond computation in figures, or expression in words. We pray that there may be vouchsafed to him many more happy years of life and usefulness among us.

Resolved, That we regret that the infirmities of age prevent the attendance at this meeting of the other survivors, Messrs. Stephen Favill and H. C. Drake, of that small group of earnest dairymen who assisted in the organization of this Association at Watertown, February 15, 1872. We tender them the assurance of our continued and profound respect.

Resolved, That we congratulate Prof. W. A. Henry, Dean of the Agricultural College of Wisconsin, upon the completion of a quarter of a century's labor with this Association, and we tender to him the assurance that its members have had no occasion to regret or withdraw the welcome extended to him at our convention in Waukesha twenty-five years ago.

Resolved, That the dairymen of Wisconsin are unalterably opposed to the bill, recently introduced in Congress by Representative Grovesnor of Ohio, reducing the tax upon oleomargarine colored in imitation of butter, or any other modification of the laws now in force relating to oleomargerine and renovated butter whereby their efficiency in protecting the market and the consumer from fraud, deception and trickery shall be in any degree lessened. Experience has amply demonstrated that neither the manufacturers of, nor dealers in, these products have any reason to complain of the laws as they now stand, except that

they have rendered it increasingly difficult to dispose of their wares for what they are not.

Resolved, In view of the necessity of using every possible means to limit the spread of bovine tuberculosis in the state, and the importance of an early diagnosis, which can readily be established by the use of the tuberculin test, this association recommends to the dairymen of the state the widespread introduction of this test as the best means of determining the actual condition of herds.

Resolved, That it is the profound conviction of the Wisconsin Dairymen's Association that the time has come when the Dairy Division of the Department of Agriculture at Washington should be elevated to the dignity of a distinct Bureau in that department with funds sufficient to more adequately and worthily cover the great field of dairy industry. When we consider the magnitude of this great industry, second only in value of annual product to the corn crop, the reason for this desirable change will be apparant. We call upon the members of congress in both houses to use their influence to this end.

Resolved, That this association takes great pleasure in hereby expressing its appreciation of the efficient manner in which its officers, President Hill, Secretary Burchard and Treasurer Loomis have performed their duties during the time they have held their respective offices in the past.

According to the past custom President Hill, who has served in his official capacity for two years, is to be retired and the best we can hope for is that his successor will be equally efficient.

We also are thankful that Secretary Burchard has reconsidered his determination to retire, and consented to serve us, for at least the ensuing year, as our Secretary which office he has so ably filled for the past eight years.

Resolved, That this Association is deeply thankful to the citizens of the city of Waukesha for the cordial welcome and hospitality extended to us, making us their guests indeed. We are encouraged in a belief and faith that urges us to continue our efforts toward advancing the dairy interests of our state, by the intense interest shown by the farmers of this vicinity in the topics presented for consideration at this convention and the great degree of intelligence in dairy matters exhibited by them

signifies that seeds of dairy truth sown by this Association and other agencies has not fallen on barren soil in Waukesha county.

Further we resolve, That the memory of the elegant banquet tendered us Thursday evening by the citizens of this city will ever remain one of the pleasant recollections of our lives.

C. P. GOODRICH,
E. L. ADERHOLD,
FRED RIETBROCK.

The Chairman: It gives me great pleasure, indeed, to say to you that Professor W. A. Henry, Dean of our Agricultural College, is with us this morning. Twenty-five years ago, at the meeting of this Association at this place, Professor Henry made his first appearance before an audience of Wisconsin farmers. He is with us to-day, and I am sure you are pleased, as I am.

THE IMPORTANCE OF CO-OPERATION AMONG DAIRY FARMERS.

Prof. W. A. Henry, Madison.

Members of the Wisconsin State Dairymen's Association:—Twenty-five years ago I attended the ninth annual meeting of this Association in this beautiful city of Waukesha. I had been in the state but a few months and the impressions of that meeting are deep in my memory. Pardon me if I grow reminiscent.

Charles R. Beach, of Whitewater, a noble Roman in face and bearing, a philosopher in reason, and a first-class farmer in execution, gave us a scholarly address. His butter at that meeting scored 50 points out of a possible 50 points. How naturally it follows that a worthy son, trained in our Agricultural College, is today the honored head of the dairy department in one of the eastern agricultural colleges.

Hiram Smith, of Sheboygan Falls, was there,—stern, sturdy

in thought, rich in pungent expression. Here is a paragraph from the paper he read at that meeting:—"There are many farmers in our day more intent on planting in certain stages of the moon than they are in the pulverization of the soil; more confidence in certain breeds for milkers than they have in June-cut hay and ground feed; more faith in boring holes in the horns of sickly cows than in warm stables."

The leading attraction was X. A. Willard, the scholarly Empire State dairy authority of the last generation.

D. W. Curtis was secretary, as he was for many years thereafter. How we all loved Secretary Curtis, quiet, full of accomplishment, honest and frank to the core.

The editor of the Jefferson County Union, W. D. Hoard, was the life of the meeting. There was no Hoard's Dairyman in those days, but the greatest dairy editor the world has ever seen was in the process of evolution. Who can ever measure the worth of that one man to this commonwealth! Great as is our love and admiration, his worth falls far short of full recognition.

Those pioneers of the cheese industry, Stephen Favill, bright, earnest and pointed, and Chester Hazen, quiet and earnest, were wheel horses in their line.

Mrs. Kelley, God bless her! was there with her well sharpened pencils and rapid moving fingers, placing in permanent form, knowingly and wisely, what we said. How many grammatical errors and bungling sentences made by us in dairy meetings has this woman put into good English, in her time, and how often has she made clear what we left imperfect and unsatisfactory when struggling for expression!

At that meeting I presented a paper on standard rations for the dairy cow. That was the first time the subject of scientific rations was ever brought to the attention of the farmers of this state in a public meeting. Nothing can show better how great has been the change wrought in the last quarter of a century.

The Wisconsin State Dairymen's Association was then in its early youth—vigorous, eager, ambitious, and seeming to feel in its every vein its rapidly growing power. Dairy science was weak in those days, but dairymen's hearts were strong. Dairy practices were imperfect in those days, but the dairyman loved his calling.

There is an unexplainable essence and substance to pioneer efforts—a something in youth that is richest and dearest of all. In later times our efforts may be more finished, there may even be more to boast of, but a quality is gone, a something is lacking that we know and realize but cannot explain.

"There are gains for all our losses,
There is balm for all our pain
Yet when youth the dream departs
It takes something from our hearts,
And it never comes again."

The difficulties which beset men in the beginning of things tend mightly to the building of character. Strong men are the natural product of pioneer efforts. These struggles bring out qualities and round out character as nothing else can. The Wisconsin State Dairymen's Association in those early days was as a lion in strength. Nowhere else in all America, I believe, has ever any body of men in an equal degree, so completely obliterated self when working for a common cause.

The Wisconsin State Dairymen's Association is the true parent of the Wisconsin College of Agriculture of today. Because of this Association's efforts and support, we have the Dairy School as a part of the Agricultural College. The Wisconsin Dairy School was the first of the kind in America and the exemplar for all others on this continent. As children of the Dairy School and this Association, we have two powerful kindred organizations,—the Cheesemakers' Association and the Buttermakers' Association,—splendid societies, each doing a great work.

The Wisconsin State Dairymen's Association is likewise the parent of the Dairy and Food Commission branch of the state government. This splendid service, now for the first time properly recognized by the whole people of the commonwealth, was conceived in the brains of this organization and born in the office of the Governor of this commonwealth when one of the charter members of this Association, W. D. Hoard, occupied the Executive chair.

Today I am proud to stand before yon and recite these era-marking events. Most of the old guard that were here at that meeting of twenty-five years ago, have crossed the dark river,

and those of us who remain are not far from the brink. Thank God, we have not lost courage, more than did those noble ones who have already passed over. We await our turn, happy in the thought that we too have done something to advance the weal and welfare of this great commonwealth.

Friends, I wish today to bring to your attention, with all my remaining powers, one further great opportunity now close before the dairymen of this state.

It is a line of effort that we half recognize but have hardly measured up in its full size.

My thesis is, *Wisconsin is destined, in opportunity and its realization, to become the greatest state in the Union for the rearing of high quality, pure-bred dairy stock.*

Everywhere that dairying is carried on, there is a demand for better dairy animals. Men now-a-days go half way around the globe in search of a pure bred, high quality dairy bull or an ideal dairy cow. It is quality first and price afterwards. Wisconsin should become the great center of supply for this enormous demand. Here is a mine of untold wealth awaiting development by our dairy people. It is ours if we will only make it so.

Of all states in the Union, Wisconsin is the best in which to rear pure-bred stock of any and all leading dairy breeds. We have the soil, the crops, the pure water, the healthful climate, and, best and most important of all, the people to accomplish this great work.

There is no question about the markets. The United States and every civilized notion will today take from Wisconsin any and all of the high quality dairy animals we can possibly produce. The market is unlimited. Our farmers are now selling to other states thousands of grade dairy cows annually at from $40 to $50 per head, and frequently more than that. It costs no more to feed or care for a pure-bred, worth from one to two hundred dollars, or even more, than it does for the grade. There is more money in producing high quality dairy cattle than ordinary ones. Our people should enrich themselves by making this difference in production and price their own.

There should at once be a great awakening among our people on this subject. Each bright, ambitious young dairyman should

carefully study which breed of dairy cattle he can best care for. Having settled this matter, he should at once embark intelligently in the venture, aiming to make it his main life work. Heretofore we have drifted too much in our agiculture. We must look upon one line now as our life work. Our agricultural college is doing a great work in this line. Each year it is sending into the ranks of pure bred breeders of dairy stock in this state, scores of young men, ambitious to take up the work and strengthen the associations.

The next point to which I wish especially to direct your attention is the importance of co-operation in the production of pure-bred dairy stock. Each community should be single in its line of effort. A community organization should be formed which will decide by vote the breed of cattle it adopts. It will then proceed to get rid of all but this one breed, and to bring in the best specimens available of the chosen breed. This community will have choice bulls which will be used in common by the members of the community organization. Co-operation will be the watch word. There can be co-operation in advertising, in caring for visitors, in caring for would-be purchasers; co-operation in shipping stock as well as co-operation in many of the common farming operations. All of these breeders will have silos and will co-operate in filling them.

Let me illustrate how there is already an unconscious beginning of this form of co-operation. About Lake Mills one finds principally Holstein cattle. This region is now known far and wide as a possible source for this breed of cattle. The farmers about Lake Mills should keep right on in their present line. They should discard everything but the Holstein breed of cattle. They should co-operate in buying the best bulls of that breed. There should be a sign at the railroad station, visible from the car window to attract the attention of travellers passing through that station. This sign should state where and how lovers of Holstein cattle living elsewhere can get in touch with the Lake Mills Holstein Co-operative Breeders' Association. As we ride through the beautiful country about Lake Mills, we see in the rich pastures great herds of Holsteins—how attractive they are! This is just as it should be. A cattle buyer at Lake Mills a couple of years since told me that in eight months he had

bought and put on the cars at that station eight hundred head of dairy cattle, mostly grade Holsteins which he had bought up for others. We all know how cattle have gone from that station to many other states and even other countries, at excellent prices. What has been done at Lake Mills in a half-hearted, disjointed way should now be taken up by the people of that region in an organized community effort. If there were twenty times as many farmers breeding Holstein cattle at Lake Mills as now, there would be fifty times as many Holstein buyers coming to that station and leaving their good money with the farmers.

Another form of community effort which deserves the commendation and support of this association is the splendid effort at Athens, by Mr. Fred Rietbrock, of this Association. All honor to the man who has so wisely looked into the future and planned results which are now coming his way. What Mr. Rietbrock has attained has not come from accident or chance. Everything has been carefully planned.

We all rejoice with him in the well-earned success already reached, which we believe is after all but the prophecy of larger things to come. Mr. Rietbrock has not only put money into his business, but brains and wise foresight. Let the Guernsey interests around Anthens expand a hundred times and there is still room for growth there, as there is room for Guernsey communities at dozens of other points in the state. There can be no over-production of high quality, pure-bred Guernsey cows.

I use the illustrations of Lake Mills and Athens to show what should be going on at a hundred other points in this state. All the high quality-pure bred dairy cows that are not needed in our own state will be eagerly taken from us by people of other states.

The times are particularly propitious for a forward movement for the breeding of pure bred dairy cows. Our dairy and food commissioner is cleaning up the cheese and butter factories of our state, so that our dairy products will bring better prices and dairying will, consequently, be stimulated by the better net returns. This splendid service will add immensely to the revenues of our dairy farmers. Our Dairy School is now turning out butter and cheese makers by the hundred each year. These will help in higher quality production. It is especially important

to know that our Short Course in Agriculture is sending back to the farms of Wisconsin each year, scores of earnest, ambitious young men who are joining the ranks of breeders of pure bred dairy cattle.

There is one question in this great problem that needs careful consideration at this point. Some of our dairy herds are afflicted with that dread disease, bovine tuberculosis. Fortunately, science has given us a quick, cheap and accurate method of determining whether cows are afflicted with tuberculosis or not. No dairyman need longer have tuberculosis among his cattle. The bacteriological department of our Agricultural College and the Live Stock Sanitary Board of this commonwealth, are co-operating energetically to drive out bovine tuberculosis from Wisconsin. Every owner of a dairy cow in the state, and especially every breeder of pure bred dairy stock, should resolve that so far as his own cattle are concerned, no tubercular specimens will be allowed to exist.

Each one must settle this matter for himself, and all should settle it alike. An honest breeder of dairy cattle will no more be willing to sell a possibly diseased cow to a stranger or a fellow breeder, than he would to put poison in the food set before a stranger when a guest at his table. My friends, we must wake up to the importance of stamping out bovine tuberculosis, realizing how intimately such effort is connected with the real advancement of the stock breeding interests of this state.

A powerful factor in the improvement of dairy cattle is the official testing of dairy cows by the Experiment Station. Records of production by dairy cows is now placed on a high plane of accuracy and reliability. When we read that a cow has officially produced so much milk and so much butter-fat, we believe it. Confidence is the basis of every business transaction. Last year the Wisconsin Experiment station placed upon the record books the accurate production of over 350 pure-bred dairy cows in this state.

The world accepts these records. The dairyman uses them to measure the efficiency of his work, as a breeder and feeder. We have had as high as eight representatives on as many different dairy farms at one time making those tests. The station welcomes more work in this line.

Mr. President, no one can look over the changes wrought during the last quarter of a century without being mightily impressed with the tremendous advance that has come to the dairy interests of this commonwealth. Every member of this association must feel a sense of pride in reviewing the result attained. More than that, he should feel that now he must double his efforts to bring full fruition as a natural sequence of the vast amount of seeding that has been done. We are just ready in Wisconsin for a great forward co-operative dairy movement. All the forces for good, built up and strengthened through these past years, must be combined, and we must have co-operative effort. Our breeders must work together. We must have communities actuated by a single motive of producing the best of dairy cattle and in large numbers. Buyers go where they can get the largest assortment of the best goods. We can bring buyers of dairy cattle to this state from distant points by the thousands, if we have the proper stock with which to supply them. But we must co-operate . The losses resultant from individual effort are appalling. Men no longer stand alone in great business enterprises in the cities. Our farmer stock breeders must learn the lesson of co-operation as farmers are learning it in other countries. Wisconsin's motto is "Forward." The times are now ripe for a great forward movement in co-operative production of pure-bred, high quality, disease-free, dairy cattle for use by the dairymen of this state, with liberal supply for other states and foreign countries.

(Added at close of paper): I understand that there is a co-operative movement on foot of cream shippers in this immediate vicinity and I wish to give them my most hearty approval. My friends, we can no longer stand as individuals, and run our own farms, and take care of our own cattle in our own peculiar way and get the results that we must get in the future. Living is high, the standards of personal comfort and convenience are raised, prices of land are going up steadily, we must have more money, we have got to do something to hold our own.

If a man comes to Wisconsin to buy cattle, he must go from one railroad station to another, from one county to another, to find even a few animals such as he may want. In breeding pure

bred cattle, we must work together. This cream shippers' organization, all these things, must meet with our hearty support, and we must get away from this enormous loss that is going on. We think we are highly educated, we measure our great progress, and in some ways we show it, but in the production and distribution of milk, probably, fully fifty per cent of our energies are wasted. The same is true of breeding; the same is true in selling stock. Let us get rid of that foolishness, let us be men and let us learn the power that comes from all working together in each community for a single purpose.

DISCUSSION.

Ex-Gov. Hoard: Mr. President, the universal American citizen hates to give up his identity, hates to co-operate, and particularly so in agricultural matters.

We have been running creameries and cheese factories here for years, and yet in the best of them they have not yet studied or learned what is meant by co-operation. When I study the history of co-operation in foreign countries, I am amazed at the lack of American comprehension and adaptation. Just think what a single cheese factory or creamery,—take one with one hundred patrons,—what do those patrons do for themselves and what could they do for themselves if they would take advantage of that one idea—for instance, what couldn't those men do in the way of purchasing feed, and yet I do not know of a single creamery or cheese factory in this state where any of the patrons buy bran, gluten or anything else.

Mr. Moore: There is one at Albion.

Ex-Gov. Hoard: Well, they say it takes exceptions to prove the rule. Now, Albion is so far back in the country from the railroad that they have got some sense; ten or twelve miles, isn't it?

Mr. Moore: Oh, no, three miles from Edgerton.

Ex-Gov. Hoard: When I used to travel from Albion to Edgerton in 1858 and 1859, it seemed to me longer than that.

But take it in the purchase of machinery, the purchase of supplies of any kind that the farmer needs, what couldn't the

patrons of a single creamery or cheese factory do for themselves? Yet who does it? Every man measures himself by himself—as St. Paul says, is a law unto himself, and there you are. Now, here comes up this new idea that is taking foothold, and is already established in Michigan in some places. They hire a man, and say, they pay a dollar a cow for putting that man in their territory, he tests some cows for tuberculosis, also for butter. He goes through a herd and along to the next man, twenty or fifty or one hundred farmers, and they pay a dollar a cow. I test my cattle every year, it costs me $150 a year and I know how they stand. In this way every farmer can know whether he is carrying a lot of worthless animals.

Read the cow census reports that have been published in Hoard's Dairyman, now numbering over 12,000, and which cost me nearly $3,000 to put that mass of information shortly before the men who care to read it,—and God knows they are too few,—and they show that about thirty-five out of one hundred farmers simply keep their noses down to the grindstone working, manufacturing milk, sheltering and taking care of cows that absolutely do not pay enough money at the creamery to pay for their food.

Now, what could you do with co-operation? Suppose that those one hundred farmers had co-operated together to test their cows and throw out the poor ones, breed up, get some ideas into their minds and make better cows. I think the Professor's ideas are remarkably sound, they are in the line of further progress. You are today treading on ground which other men foresaw for you. You are occupying ground today that other men absolutely foresaw for you and provided it for you. Why shouldn't you project ahead the ground that the boys that are to come after you shall occupy? That is the meaning of all this. Every man stands some how or other upon the shoulders of his neighbors. Some of us cannot see as far as some others can, but the meaning of progress is that he shall occupy the new ground when it comes and not refuse to occupy it.

This matter of co-operation is the coming proposition.

I just want to add one word more—you know I haven't talked very much to you at this meeting, I have spared you, and you ought to be thankful—I want to take in just this one question of

testing, to know what you are doing with your herds of cows. It is a simple thing.

Now, the past year I have just finished with my herd composed of pure bred Guernseys and grade Guernseys, I have tested the pure breds—there are only eight left of the grades—and I have been testing the pure bred cattle in this way: Every seventh week, for the whole week, the milk is weighed and a composite test is taken of that whole week, and that tested. When the next seventh week rolls around, that is repeated. It doesn't take much time, the creamery will do it for you, you can take samples for each cow and mark them on the bottle and you don't want to put in the richest milk, neither do you want to cheat yourself by putting in the poorest, though I know men who love themselves so dearly that they do love to cheat themselves, which is love wrong end first. Now, this that I am going to give you is the result. It is not large, it is good, it is fair. It is not what I could have made with this herd by any means. The cows were not fed any grain from the 15th of May to the 15th of October, but the twenty-six cows with eight heifers returned 6750 pounds of milk on the average. One cow gave over 11,000, and made 672 pounds of butter, but the average of the whole herd is what I am telling you, and that was 6750 pounds of milk, 322 pounds of butter fat, 375 pounds of butter. Three cows in that herd disclosed themselves and were discarded. I have been taking a sort of comparative test of them all along, but here was the first thorough test running for a year. Those three cows paid, but they didn't pay enough.

Now, how much better equipped am I in front of my business for that test of my herd? How much better am I master of my own comprehension and my own judgment? How much better can I demonstrate the things that I need to do to those several cows? How much better can I push one up a little and if possible, supplement her effort? How much wider is my comprehension? But it seems to be a horror to nine out of ten dairy farmers, this idea of testing their cows. One young man came to me and said that his father wouldn't have any of that humbug business of testing cows on his farm. The boy wanted it done, the father said no. Well, so many men stand with their back to the light that it is hard, you know, to get them to see.

As the fellow said, they are like a man riding on the hind end of a railroad train, they never see anything until after they have passsed it. So, in this work—we come together like this and we rub together and get ideas, and the one thing I am calling attention to is put up in one word of seven letters, and that word is "Contact"—contact. The man who puts his mind into contact with books, with ideas, with thoughts, with methods, becomes a man who grows in comprehensive intellectual power. The man who narrows his contact is the man who gets smaller all the time. Education means contact.

Prof. Henry: Mr. President, Denmark has a geographical area within it of one quarter of this state. Denmark nas some splendid soil and some land so poor she cannot grow anything on it, in her sand dunes. Now, from that country they send out about twenty-eight millions of dollars of exports of butter per year. In eggs, they export from ten to twelve million dollars per year. This great United States of America does not export over half a million dollars worth of eggs. The United States send abroad cotton, wheat, corn, all kinds of agricultural products, an average of $11 worth for every man, woman and child in the country.

Little Denmark, one quarter as big as Wisconsin, and with as many people on that quarter as we have in the whole state of Wisconsin,—200,000 plus,—exports $33 worth of agricultural products per person in the whole country.

Denmark has 350 men who spend their whole time going from farm to farm working for the farmer in these co-operative tests that the Governor has mentioned, and the farmers pay their expenses, assisted somewhat by the government. We have with us Dr. von Elbrecht, the representative of the Danish Government who is under a year's absence studying dairy problems and has been carrying on his work for some time at the University of Wisconsin, at the College. I know that he could give you some very interesting facts, but he seems to be out of the room at present.

Mr. Emery: How about the standard of living over in Denmark as compared with the standard of living in Wisconsin?

Prof. Henry: I have been through Denmark, I have eaten with the farmers and been at their meetings. I studied their

organizations and saw that they lived very comfortably, their houses are very nicely furnished.

Mr. Emery: It is reported that they eat large quantities of oleo and sell their butter.

Mr. Moore: You don't have to go to Denmark to see that.

Prof. Henry: If the Denmark farmers want to economize in that way, I have no fault to find. They export about seven millions of cheap butter and oleo and about thirty-five millions of butter.

Now, their bacon exports come from co-operative establishments. I saw one establishment where eight hundred farmers brought their hogs to one killing place, the meats were cured there, and there are dozens of places like that in Denmark.

In this country, we are scared to death by the Standard Oil Trust and other things. In Denmark they are not afraid of the great combines of packers, but those things are worked through co-operation. At this pork packing establishment the farmers get about a cent a pound more for their hogs than we get.

Little Denmark exports over $15,000,000 worth of pork products, and they bring, next to the Irish bacon product, the highest price. It is first Ireland, then Denmark, then Canada and the cheapest grade is the United States, and there is no reason why Wisconsin farmers, at least, with their milk and grass and everything else, should produce anything but the highest priced article. We have got a start in the direction of co-operation in the creamery work. Wisconsin can afford to pay 350 men, or as many as are necessary to do the work that those men are doing.

Mr. Emery: The suggestion of co-operation with regard to the production of meat is one that should specially interest farmers. The meat question has become a vital question, and I think when you come to understand one half of the truth of that matter, you will be willing to co-operate to get some decent meat for yourselves and there will be a good market at splendid prices for what you have to sell.

Mr. Moore: The Governor started to say that there was no place in Wisconsin where co-operation is carried on, but I mentioned Albion. For eight years I was up there myself and the factory I was in had about twenty-three patrons and today it

has a hundred and eighty to a hundred and ninety patrons, and gets as high as 30,000 pounds of milk every day, and secures the highest price for its product. In addition to that, the farmers get their binding twine and we have every year a representative of that interest who comes to us and sells us binding twine, from six to eight thousand pounds, at a considerable saving. We also buy bran and gluten meal at wholesale and the farmers get it without any additional cost. Also we buy salt by the carload and when we buy salt for the creamery we have the balance of the car made up with salt for the farmers. I remember an instance where we furnished it to them for less than ninety-five cents a barrel and they had been paying $1.25 and $1.50 a barrel for the same kind of salt. We saved as much as four or five dollars a ton on bran. I remember Professor Henry said he would give us a certain amount of money if we would start up a laundry, and I did start one up, and I would have succeeded if it had not been for the women folks. The men could bring their dirty clothes when they came to the creamery with the milk, but the women folks were like my wife. She says, "You don't suppose I will let my clothes go in with everybody's."

I think the time is ripe to work along the lines indicated by Professor Henry.

The Chairman: There was a little bit of co-operation started along this line of breeding dairy cattle right here in Waukesha county. I know that last year, or within eighteen months at least, fifty to one hundred dairy cattle, Guernseys, were brought into one community in Waukesha county, and scattered among eight or ten different breeders. There is a nucleus for a large production, but I do not know whom to call upon to tell us about that. I see Professor Woll is here and the Experiment Station has recently given out a new idea with reference to this testing question. We would like to hear from him.

Prof. Woll: I suppose the President refers to what we call semi-official tests. Under the auspices of the Experiment Station, these tests are conducted for two consecutive days each month. Our men come to the farms and see the cows that are placed under the test, see them milked, take a sample of the milk so as to make the test and other data necessary to certify to the production of the cows for those two days. Then the

farmers and breeders keep careful account of the milk from day to day, and return to the Station the record of these individual milkings which have to be certified to under oath. Then the quality of the milk in that two days' test is taken to represent the average quality of the milk for a month, and by multiplying we get the total milk for the month, and we get the average test, and we get also the estimate of the total production of butter fat for each cow for the entire month. This is continued from month to month and gives us finally the production for the whole year. The figures of the breeders are checked up in various ways so that we have every reason to believe that when the production is certified to at the end of the year, that it is very close to the actual production of the cows.

Ex-Gov. Hoard: Why do you call it a semi-official test?

Prof. Woll: For the reason that the representative of the University cannot be responsible for all the figures in those tests on the production of the cows, when he is not there, the rest of the time the burden lies with the breeder or farmer.

Ex-Gov. Hoard: You expect to give it the endorsement of your Experiment Station officially in the same way you have previously, then why should you call it semi-official?

Prof. Woll: Because we cannot, under the conditions, testify to the absolute correctness of the yield.

Ex-Gov. Hoard: But you give it the same endorsement?

Prof. Woll: No, not exactly the same, because in the so-called official tests our man is present at every milking during the testing period, and once a week he makes a test so that the yield of milk that is certified to on those days is correct to our exact knowledge. On the other plan, for two days in each month, the tests are official, but when you come to apply the results of the two days for the entire month, then you introduce an assumption which renders the tests somewhat less accurate than on the official tests.

Secy. Burchard: Why is not the sample, the two days' sample of the product of the cow, about as good an indication of what the cow has been doing, when compared with the figures that the owner gave you—why isn't that about as accurate a sample of the cow's production as is the reading of the fat in the test bottle which takes a very minute portion of the two days'

yield of the cow, and from that to estimate the total contents for those two days? Why does not your checking up for two days afford you just about as accurate a gauge for the month's production as the Babcock test does for the amount of fat in the milk?

Prof. Woll: I think it does. And I will work it out with that end in view, to examine just exactly what conditions will be shown. But I believe that for all practical purposes, the tests for two consecutive days each month will give a true indication of the quantity of the milk during the year, as well as the average quality.

Ex-Gov. Hoard: Are you carrying on any comparative tests, —the two together, to see whether one is as accurate as the other?

Prof. Woll: No, that is not practical, for this reason: that the keeping of a man at the farm for an entire year would be entirely impractical. We are doing it with our Station herd.

Ex-Gov. Hoard: Let us see whether this semi-official test is as good as the old way.

Prof. Woll: We have data on that score already in regard to the tests that have been conducted in the past with Guernsey and Jersey cows. Our Guernsey tests, we test only one day a month during eight months in several cases. In several cases, the owner has taken composite samples at any time during the month that it happened to come and by comparison of his figures with ours that have been taken one day in the month, we find very small differences, running between one or at most two per cent.

Mr. Glover: Don't you think these two days' tests made each month come closer to the actual capacity of the animal than the seven days' test?

Prof. Woll: Yes, I think so. At the same time, I would not want to convey the impression that I consider the short, seven days' tests are of no value. But those conditions should be taken into account in judging of results.

Mr. Glover: Do they show the maximum production of the cow?

Prof. Woll: They do, if the breeder has selected the right time, the maximum result for seven days.

Secy. Burchard: Now, Professor, I think there is an explanation that should come in here that you have not suggested. Take, for example, your representative goes to Hoard, and he collects his two days' sample, or in the case of Guernseys, his one day's sample, either way, and the test may be abnormal. Don't you take a supplemental test at that same time?

Prof. Woll: No, such a thing might happen, but our men have a certain traveling route laid out for them, and it is impractical for them to stay more than one day at a time; but we can take the average of the preceding month, and the following.

Secy. Burchard: Now, suppose that that one day's or two days' test was abnormal, even in the amount of milk or per cent of butter fat, what would you do?

Prof. Woll: If it was abnormal, I would look to the average.

Ex-Gov. Hoard: How would you know it was abnormal?

Prof. Woll: If you go over the figures, that we obtain in the case of any one cow for a series of months, you will very soon know whether it was correct or not.

Mr. Glover: I tested two cows in the same herd, kept under the same conditions, fed about the same amount, and they are of the same breed. One cow produced enough butter fat to enter the advanced register; the other cow failed. Now, this test ran for seven consecutive days. I kept a yearly record of those cows, visiting the place from time to time throughout the year, and at the end of the year here are the results: the cow that entered the advanced register made 250 pounds; the cow that failed to become recorded in those records, made 450 pounds, almost double the production of the other. That is one instance, and I could cite you more, showing the importance of making more than a weekly test to find the true capacity and value of your dairy cows.

Mr. Emery: Is a test for a year a guaranty of a cow's production for a series of years? For instance, Governor Hoard tells us that in his experiments he discarded three cows. Is it absolutely certain that in that respect the Governor acted wisely? May it not be true that that was an off year for those three cows, and that another year they would have shown greater capacity?

Ex-Gov. Hoard: No, their previous records confirmed that test.

Mr. Glover: The Babcock test gives accurate records for the time being, but do not take the results of one month or one year to determine the true value of the cow. Take in consideration the ancestry of that cow, her dairy form, her conformation, and then, together with her history, her pedigree, so to speak, you are able to determine whether that cow is going to be a profitable animal, but not in one year. Scale tests become valuable only when they are used for a series of years.

Mr. Emery: Is the guaranty of the production of the year greater for a series of years than the seven days' test for a series of days?

Mr. Glover: No, sir.

A Member: Do you tell these farmers that if they go home and test their cows and make up their minds that certain ones are not paying, that if they go and sell those cows they might pay next year?

Mr. Glover: Don't sell them. I caution farmers not to dispose of their cows on one year's test, for any man who has studied the question knows that a one year's test does not determine the value of the cow. For instance, Sweet Briar, one year she would make 200 pounds; the next, 400; the next, less than 200, and the next, 500, but at the end of ten years' work, Sweet Briar had placed to her account 350 pounds average, a year; she was a valuable cow. If you had taken the Babcock test and the scales and gone into your herd and Sweet Briar had been there and you had struck a year when she made only 200 pounds or less and had sold her, you would have sold a valuable animal. Don't go too fast in this matter, or you will make serious mistakes.

Ex-Gov. Hoard: And still do not take it from what Mr. Glover has said that you should not test your cows, that it is no use testing them.

Adjourned till 2 P. M.

Convention met at 2 P. M.

President Hill in the chair.

The report of the committee on exhibits read by Mr. Searles and adopted.

The Committee on Exhibits and Dairy Machinery would respectfully report that the eleven entries of butter show by the average score of 93 that its quality is above the average for this season of the year.

The average score on the three entries of cheese was 93 1-3, the average being brought up greatly by the box of twin cheese exhibited by Otto A. Kielsmeir of Manitowoc, the exceedingly high score of 99½ shows that care has been taken both in the production of the milk and in the manufacture of the cheese. Patron and cheese maker are to be congratulated upon this excellent product.

The exhibit of Dairy Machinery is small, there being but four of the standard make of hand separators, namely, the Empire, the Sharples, the United States and the Iowa.

The exhibit of the James' cow stanchion should give to the dairyman an idea in providing comfort as well as cleanliness for the animals in his stable.

The Model Silo exhibited by the Creamery Package Mfg. Company, we hope will interest all dairymen.

It is the opinion of the Committee that a larger exhibit of *both* dairy products and dairy appliances would be of great educational value to the visiting farmers and dairymen.

H. C. SEARLES.

TREASURER'S REPORT FOR 1905.

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.

1905.			
Feb. 20.	Amount in hands of treasurer	$1,024 60	
	Memberships	242 00	
	Sale sweepstakes cheese	9 00	
May 20.	From state treasurer	2,000 00	
Dec. 7.	From Mr. Rietbrock for work by inspector	54 15	
1906.			
Jan. 30.	From state treasurer	1,000 00	
31.	Memberships	6 50	
			$4,336 25

Disbursements.

Feb. 20.	Hotel bills at Wausau and Prof. Beach, services and expenses	$187 75	
	Mrs. Adda F. Howie, expenses, Wausau convention	12 49	
	E. H. Farrington, expenses, Wausau convention	11 02	
23.	P. H. Kasper, premium	15 00	
	W. J. Hine, premium	15 00	
	A. E. Dixon, premium	15 00	
	C. M. Kates, premium	14 50	
	J. E. Bretcher, premium	13 17	
	E. A. Paddock, premium	13 17	
	Carl Bjerregaard, premium	13 17	
	Albert Erickson, premium	10 54	
	W. F. Kohn, premium	7 90	
	E. L. Duxbury, premium	7 90	
	James Van Dusen, premium	6 60	

	Fred Reitbrock, premium	5 27
	Sunset Creamery, premium	3 95
	Cleveland Creamery, premium	15 00
	Nick Grimm, premium	10 54
	A. Bruhn, premium	10 54
	H. E. Braumann, premium	5 27
	J. F. Bachmann, premium	13 17
	F. H. Scribner, expense attending convention	12 60
	G. W. Burchard, expense attending convention	10 26
	E. L. Aderhold, expense attending convention	5 46
	C. P. Goodrich, expense attending convention	15 20
	Chas. Hill, expense attending convention	18 31
	T. Corneliuson, expense attending convention	11 89
	H. C. Taylor, expense attending convention	35 49
	W. J. Gillett, expense attending convention	12 55
	Geo. C. Humphrey, expense attending convention	14 02
	A. D. De Land, attending executive committee meeting at Madison	11 60
	H. K. Loomis, attending executive committee meeting at Madison	10 40
Apr. 7.	T. Corneliuson, instructor	182 50
	Mrs. A. L. Kelley, reporter	120 71
	C. P. Goodrich, attending board meeting	2 64
	Fred Marty, instructor (supplies)	1 75
17.	E. L. Aderhold, instructor	91 50
May 10.	T. Corneliuson, inspector	111 00
	E. L. Aderhold, inspector	136 50
June 10.	Henry Elmer, printing report	87 98
	T. Corneliuson, instructor	135 00
	E. L. Aderhold, instructor	158 00
15.	Fred Marty, instructor	140 00

July	8.	Fred Marty, instructor	100 00
		Fred Lanz, for Wisconsin curd test...	10 75
		E. L. Aderhold, instructor	164 00
		T. Corneliuson, instructor	125 00
	31.	T. Corneliuson, instructor	5 00
		E. L. Aderhold, instructor	69 50
		Fred Marty, instructor	75 00
Aug.	16.	H. K. Loomis, expenses attending executive committee meeting	8 98
Sept.	16.	Peter Zumkehr, instructor.....	165 00
		John Luchsinger, personal account...	15 75
Oct.	4.	H. C. Searles, instructor	130 50
	9.	Peter Zumkehr, instructor.....	125 00
Nov.	4.	H. C. Searles, instructor	122 45
		Peter Zumkehr, instructor	130 00
Dec.	6.	H. C. Searles, instructor	130 05
1906.			
Jan.	5.	H. C. Searles, instructor	136 50
Feb.	6.	W. D. Hoard, printing	22 00
		G. W. Burchard, secretary, services and expenses	276 20
		H. C. Searles, instructor	126 80
		Chas. L. Hill, expenses for year.....	20 02
		Balance in hands of treasurer	645 44
			$4,336 25

The Secretary read a letter from Milwaukee, signed by the Citizens' Business League, and another one from the Mayor of Milwaukee, both inviting the convention to hold its next meeting at Milwaukee, and the Secretary was instructed to acknowledge with thanks the invitation so extended, and to say that the matter of fixing the place of meeting next year is left with the executive committee.

Mr. W. W. Marple was invited to address the convention, especially in regard to the National Dairy Show in Chicago, February 15th and following days. In doing so, he concluded with a most eloquent description of the dairy cow and her contribution to civilization.

RAISING DAIRY COWS AND HEIFERS FOR MARKET.

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

Mr. President, Ladies and Gentlemen: I am, if I can bring you down to earth after Bro. Marble's peroration, to call you to a sober, close, practical contemplation of a topic which is to-day with you commercially, with you practically, with you as a farm proposition.

I enjoyed Bro. Marble's talk exceedingly well; almost any old soldier would like it. From the 21st day of May, 1861, to the 4th day of July, 1865, with a short interval, I saw something as a private soldier, of the great conflict which gave us, like an earthquake, a tremendous upheaval, and I have often felt in my heart of hearts, that I could not wonder at the bitter feeling that is entertained, particularly by the Southern woman, for she bore the burden of the war as no other being did, be he man or woman. She saw "war's wide desolation" in the death of her kindred, in being driven forth by that conflict which Sherman so aptly characterized as "hell." She saw it while her Northern sisters abode in the homes of peace and contentment. No wonder then that she feels often as she expresses herself today over the result of that conflict.

But a larger, wider, broader providence than either she or her brother, had ordered this great conflict, and that out of it might come, as from ashes, the uprising of another sphere, the up-building of a broader thought, the cementing of a new form of American civilization, and it has come and is coming.

I have presided at four agricultural conventions in Mississippi. The Southern people are particularly an emotional people, and I wouldn't give much for anybody in the routine of life that had no heart in the life they live. I remember attending the first convention; my wife was with me, and it was at Jackson, and just before they called the convention to order, the local executive came and told me I was selected to preside. I had not been in the state of Mississippi since the war; here was a delegation of three or four hundred people from the North, and this vague and uncertain thing that might come from the contact of

these two sections, and they had never said a word to me about presiding, and I said I wouldn't do it. Well, you know, particularly you old fellows here like myself, how a woman can tip the scale with a man, and I felt my wife's sharp elbow in my ribs, and the injunction, "Go along!" so I went along; I went up to the speaker's stand, buried as it was with flowers and commenced to talk in a sort of perfunctory manner—I couldn't tell how exactly—I tried to get my mind under my feet, you know, but what I said sounded as tame and meaningless as could be. Suddenly there arose before me a vision, and the vision seemed to have tongues, and it said, "You old fool, what are you about? You must get ahold of this people; you must say something to them that means something, for you can't help yourself." Then I concluded I would throw myself square at them from the standpoint of man to man, and I stopped a moment, and said, "This is the second invasion that I have participated in on Southern soil." Instantly I saw every ear, you might say, pricked up, and I looked over that audience, especially among the women, and could almost hear them say, "What is that blamed Yankee going to say next?" Then the vision arose before me again, and I said, "The first invasion brought woe and tears, destruction, desolation and devastation, and it was a great mistake; it never should have occurred, but like all great mistakes it knew no solution but the bitterest, it had to be fought out. Thank God, it has passed like a nightmare. Hundreds of times down here in this Southland at night on the picket line, have I heard this cry go up, 'Hello, Yank!' "Hello, Johnny!' 'Throw down your gun, come over here and let's swap.' And from out the serried ranks of two great warring sections would step two of the common representatives of the common wants of our common human nature, and proceed to exchange, oblivious of war."

"Why not may the cry go up again, 'Hello, Johnny!' 'Hello Yank!' Throw down your prejudices, come over and let's swap.' And out of that audience, suddenly burst the old rebel yell. I hadn't heard it for years and when it came the goose pimples went up on me. But everything was all right; we staid there four days and fought out a lot of questions. Sometimes a dozen of them would be on the floor, clamoring for recognition; some-

thing had been said that struck the right chord, and I had only to stop a minute and look at them and say that it was all right. And so we had session after session, we learned many things, I saw what a wonderful people they were, what a wonderful empire there is in that Southland; they want to build their country up, they are seeking the gospel of the cow, which is also going to be the salvation of Missouri where Bro. Marple comes from.

Once in a while we hear somebody talk who is worrying about an oversupply of dairy cattle and products in Wisconsin. Do not fear it. The growth of cows in Wisconsin is only about five to six per cent annually, and the growth of population and consumption is so vastly ahead of the production that today, with our wonderful army of cows at work, the market price for their products is higher than it has been in ten or twelve years, and bears a higher relative price than that of any other agricultural production. There is no fear of overproduction, except of poor goods, that is all. The production of poor butter, poor milk and poor cheese is the outgrowth of ignorance and stupidity, which this Association has set itself to destroy, if possible. I find that everywhere poor dairy products are an outgrowth of ignorance.

There was a time when, the Bible says, God winked at ignorance, but He does not do it any longer. No, He got tired of winking and He has, instead, a Dairy and Food Commissioner in the shape of Professor Emery, who will not wink, but hit. He works through human agencies, along these lines, through commercial forces, through legislation and everything else to extinguish and extirpate ignorance. We are in the twentieth century, in a land of schools, a land of newspapers, a land of thought, and—yes, churches. Still some of the most ignorant men I know are right in the church.

My friends, your presence here today is a cheering thing; in the last hour of this convention, after you have filled this room as you have, from day to day, it is a wonderfully cheering and encouraging thing that in this community of Waukesha county the old gospel yet rings true. We have spent here three days in heart to heart discussion of important topics, trying to get the mind, the mental concept, right, knowing that if the thought is

right the man goeth right. If the thought is wrong, the man goeth wrong. We have been trying all the time to work for the right ideals.

Now, I am to talk to you this afternoon upon the question of Raising Cows and Heifers for Market.

In the beef sections of the country, the one object of every farmer is to raise cattle for the market as beef animals; feed for beef, breed for beef, house for beef, handle for beef; and that is a great, broad proposition that is forming the thought and study of thousands upon thousands of farmers.

Now, I say to you that the time has come when you, as farmers of Wisconsin, should turn your thought just as squarely and definitely toward the production of cows and heifers for the market as cows, as the beef men produce steers for beef.

One-half of all the offspring of cows are males, one-half females, and yet statistics in the state of Wisconsin show that if we have a million cows and there should be a million calves and a half million heifers and a half million males, that after all only about five or six per cent of the females ever come to cowhood.

Now, that shows you that there is a force at work somewhere that is reducing very powerfully the productive power of the female side of the house. There are a number of things that fix the fate of the heifer before she reaches cowhood. In a large proportion of instances,— so large that it has become a very serious waste,—she is not worthy of making a good cow; she has not the cow property or element in her, and she goes to the block along with her brother, the steer.

There are just two points I want you to consider that comprehend this proposition.

First, let me say, however, that there is a tremendous demand for good cows. You may not think it, but there is a tremendous demand for good cows. I live in Jefferson county and can demonstrate it to you, and I want to speak to you a moment as to the effect of the dairy industry upon that county. It has 36,000 inhabitants by the last United States census. It has about 40,000 cows. That county is twenty-four miles square, and it has nearly one hundred creameries and six cheese fac-

tories. That county, twenty-four miles square, is enriched every year by her cows dropping two million of dollars into that area. Two million dollars are earned by the cows of that county every year. The average production in butter is about 250 pounds per cow, and that cannot be equalled by any county in the United States today. Silent forces have been at work on the minds of those farmers, largely German, that today are shown in that wonderful percentage of quality in those cows. The total valuation of her agricultural production is about five million dollars, including her beef crop, her pork crop, her calf crop, and whatever grain crops she markets, her hay and butter crops, all of these.

Now, in addition to all those things, this last year Jefferson county has sold cows and heifers to go abroad into various portions of this and other countries, notably Mexico, nearly a half million dollars' worth. John Widmann stood before you yesterday, talking to you about alfalfa; there is a young German who had the sense and wit to see that his course should be toward the broadening way, that tomorrow he should be a little farther along the road toward a higher comprehension of what dairying means, and the next day a little farther, and he has done that by studying, reading, thinking. He used to come to me repeatedly for informatin; he would ask me, "Haven't you something to read?" and I would give it to him, and so he has been a student.

Now, what is the result of that study? Last year, a gentleman came up from Mexico and bought four carloads of cows, one of them of John Widmann and paid him $2,600 for twenty-five cows, a few of them registered, most of them high grade Holstein cows. I tell you, that went deep into the minds of a lot of stupid men; men who did not think it paid to study and read, but they saw that John had fertilized his mind.

Now, that is a single, concrete instance of what I want you to take into your minds as indicative of the goal that I want men to work toward.

Out of Fort Atkinson and Lake Mills have gone the past year, I might say, hundred of carloads of grade cattle, cows that have been bought and taken to old Mexico, to Nebraska, to Ohio and the Eastern milk-producing districts. To such an extent has this reputation grown concerning Jefferson county cows that we

are today seriously hampered; the creamery men are complaining that the cows are taken away at high prices, from $40 to $75 per cow. You see how this influence has been at work, and there are just two points that are working in the mind of the Jefferson county farmer, helping to bring these things about. First, the right kind of a sire, a dairy bred sire, for that gives value in the mind of the buyer to the heifer and the cow that is to be. It does not give value for the time in the mind of some farmers, because they have no concept of what the buyer wants, and so they say that anything will do in the way of a sire. The result of this false estimate is that I can go into Waukesha county and into some parts of Jefferson county, and I will find farmers who have bred to a Jersey sire to get richness in the milk, and then bred to a Holstein to get quantity, and then bred to a Guernsey to get color, and then to a Shorthorn to get size.

All this comes from looseness of ideas, a lack of well defined thought in the mind as to what a man should do. You can't breed cattle that way and secure a high degree of excellence, and yet a great mass of farmers love to fool themselves trying to do that very thing.

Now, the Jefferson county farmers have learned, to a large extent, that they must breed in a straight line and they must have a thoroughbred sire to do it with. If they want Guernseys, they breed from a thoroughbred Guernsey sire; if Holsteins, from a thoroughbred Holstein sire; they are keeping on in that way, and the result is that men come there who are scouring the country for grade Holsteins and grade Guernseys. At the bottom of all this is a clean, definite adherence to the value of the sire, in the mind of the farmer.

Now, then the other point. The care and rearing of the heifer calf. If I can get the farmers entrenched solidly on that first point, the sire, and then on the second point, nature will take care of herself between them. Let us talk a moment upon the rearing of the heifer calf. For several years, every spring, I have turned off a little bunch of twelve to fifteen grade Guernsey heifer calves at about seven or eight months old, dropped in the fall, reared carefully in the winter and sold in the spring for an average in the past three years of $22 apiece. All I have had to do was to put a little advertisement in the Dairyman,

saying that I had such a bunch of calves to sell and the answers would come to me as far east as Pennsylvania and as far west as Washington or Montana, and I could have sold fifty just such calves, or more, if I could have had enough to make a carload. One man wrote me that he would take three carloads of such calves with a registered Guernsey bull calf if I could find them for him, but I couldn't, simply because there were not enough men about me breeding and rearing calves in that way who would supply this demand.

I could go out and buy a dozen carloads of scrub things, every calf standing in mute protest against the ignorance of the man that reared him and against his heredity. I could go out and buy lots of such calves for five, six and seven dollars apiece at that age, when I was getting $22 for a well marked Guernsey grade heifer calf, or my neighbor over there the corresponding price for a well marked Holstein calf.

Now, these things have made an impression upon me, and I want to tell you that I figure out that I receive for my skim milk fed to those calves—53 cents a hundred pounds—almost the price of full milk in the cheese factories in the country in the summer. Now, how is it done? I fed those calves a dollar's worth of oats; fifty cents' worth of dry blood meal, that I procured at the packing house in Chicago; a dollar and fifty cents' worth of alfalfa hay; that makes $3.00. I allowed $3.00 for the carcass, that is $6.00, and six from twenty-two leaves sixteeen dollars. Then, they consumed 3,100 pounds of skim milk. I call it 3,000 pounds for easy calculation, and I credited the sixteen dollars to the skim milk, the rest of the food I had been paid for. Probably the scientists would say I could not, that I could not credit it all to the skim milk, but I paid cash for the other stuff and was paid back for it and I give the skim milk, 3,000 pounds of it, credit for the balance or $16.00. That went into the calf. Now, you see that made the business exceedingly profitable to me. But lots of men say, "Oh, well, maybe you can do it, but I couldn't." So every man turns his face away from the truth and undertakes to put an excuse between him and the truth. These calves were sold to farmers and I could have sold a lot more for the same price.

Now, the right rearing of a calf is really a fine piece of work,

and I am going to spend a few minutes in telling you how these calves were reared.

The only place in the barn where I use a stanchion is in the calf stable. The stanchions run down one side and across the end, and this little stable is ventilated on the King system, so that they can have pure air, and there is a dirt floor, which is taken out every year and fresh dirt put in, and then it is covered with a heavy layer of straw, and every morning that is raked back and whatever is foul is taken out, and every morning that dirt floor is disinfected, because I am dealing with a baby. Every mother knows that a baby must be kept dry and clean or it absorbs poison enough to sicken it; and the bovine baby is just the same. You shut these calves up in the winter and give them no opportunity to move about; they will lie down in a clean place always if they have an opportunity, but you shut them up and force them to lie in their own filth and they sicken, they do not thrive. But you put them into a stable like mine, give them fresh bedding, disinfect it, see that it is sweet and clean and also that this stable is pervaded with pure air, which always means circulation—you cannot blow good air into a room unless you let the foul air get out, so you must provide for the taking out of the foul air as well as the inlet of the pure air. These calves are given pure air to breathe. You step into that stable and you can hardly smell the odor of a stable. You step into my barn stable, one hundred and forty-two feet long and thirty-six feet wide, with over fifty animals in it, even after it has been shut up all night, and you will hardly smell the presence of cattle in it. You may smell a little of the silage odor, but that is harmless.

What is the meaning of that? It means that in that stable the air changes every hour, and the foul air is drawn off and the pure air comes in; the cows are bright and clean and their eyes are bright; they eat well and do good work. The same law applies to the little calf stable.

The calf is allowed to remain with the mother until she has passed the milk fever stage, that is, three to four days. It is then taken and weaned, and once in a while we have a stubborn one. I have just got one taught to drink after six weeks; we had to turn the milk down its throat with a bottle, but, of

course, the calf must learn to drink. It is kept in a little stall by itself, constantly bedded and kept clean, until it is big enough, at the end of about four weeks, to go into the calf pen. There they are divided again and the larger ones put by themselves, so that the calves are sorted to run together nearly about a size. When the skim milk comes in from the farm separator every morning and evening, warm and sweet, each calf is given its allowance in its pail, and the pails are clean. Many a calf sickens and dies from the pail that he has eaten out of being foul. These pails are cleaned and steamed and every effort made to give the calf sweet, clean milk. This calf's bed is renewed every day, a heavy bedding of straw. I will buy straw of my neighbors before I will let my calves suffer, and I have bought as high as a carload of baled shavings. There is nothing I invest in more cheerfully for my cattle than in bedding; it tells in the appearance of the animal at once.

Now, when this calf has learned to drink, she is given for about four weeks, about a couple of quarts of whole milk until we taper off into the skim milk alone, fed warm and sweet. She is put into the stanchion when she drinks and is kept there for an hour and given her oats, and then a little alfalfa is thrown to her and she gets over this baby instinct of sucking. If you turn them loose immediately after feeding them their skim milk, they will go to sucking each other's ears and they will get sickened in that way, but hold them in the stanchion for about an hour and they will begin to lick up their oats. I like to feed a little ground barley with the oats, I am a great admirer of ground barley in my dairy.

After an hour she is turned out in the sun at a time when the cattle are not in the yard; we like to give the little fellows all the liberty we possibly can.

Now, under that usage they thrive so nicely that these men come along and willingly pay me $22 a piece for seven and eight months old calves.

I have put these facts before you, and I want you to digest them, and I ask you, don't you think it pays me? The skim milk I fed to my hogs last fall stood me in 20 to 25 cents a hundred; the skim milk fed to those calves stood me in 53 cents. Now, if every man who has a grade herd should say to himself, "I

will have the best sire I can find, a prepotent, well bred, well appearing sire—no combination, gentlemen, but one that has heredity in a straight line''—if you will have that kind of a sire and then will rear the heifer half in this way, you are bound to develop a fine cow, or the material for one.

I am receiving reports from some of these calves I have sold. I sold the first bunch three years ago, and the gentleman writes me that not one of those calves but what turned out a superior heifer, and they were nothing but grades.

Now, what do you think did that? First, the influence of their father in their veins; he came down from a long line of strong, heavily milking mothers. Furthermore, you will find often in the mother an influence giving that calf a bent toward maternity.

Then, second, good usage—right rearing as a calf, kept growing and developing. Now, the function of maternity calls for development; this calf cannot become a good mother unless she is developed well, but many a man puts a bar right on her development and sets her back and wonders that she is not a good cow.

Now these are the facts: First, the market. The market today is calling for more than men can give, but, mind you, they want clear, straight-line grades. They do not want a ''grand combination'' in grades, they want dairy-bred heifers of one line of blood in the sire. So, select the sire, then grow your heifer right and you need not worry about the result.

Gentlemen, I am very much pleased to have had this opportunity to address you.

DISCUSSION.

Mr. Goodrich: I want to add a little advice that I have culled that tends to show something of this effect of mixed breeding. You know in this last cow census that I took, I described one man that had twenty-five cows. I saw in those cows some little symptoms of the Jersey blood—I could see the mealey appearance about the nose, and that is the last thing that disappears of the Jersey characteristics. So I said to the man, ''I see

some Jersey blood here." "Yes," he said, "I had a Jersey bull once." Then I looked a little further and I saw something that resembled Ayrshire a little, and I spoke about that, and he says, "Yes, I used an Ayrshire awhile." Then I saw something that looked like some other breeds, and so there were all kinds, and in that herd I found the cost of the feed was $26 a year and on the figures given me by the man's own statement the results from the creamery showed $22 a year.

A few years ago I took a cow census in the vicinity of Fort Atkinson for Hoard's Dairyman. I took the census of seven hundred cows and I tried to figure out all the valuable lessons that I could. I was continually being asked, "Which is the best breed of dairy cows?" and I figured it out this way—I will say that where the Jersey blood predominated I called those cows Jerseys, and the same way with Holsteins and so on. Among those seven hundred cows there were twenty-eight herds of Jerseys, 466 cows, the average product of whose milk was 4,798 pounds, butter, 244.7 pounds. For each dollar's worth of feed they returned $1.62, so that the average net profit per cow was $17.58.

With the Holsteins, there were nineteen herds, 450 cows; average amount of milk per cow 6,080; average pounds of butter, 255. For each dollar's worth of feed they returned $1.50; the average net profit, per cow, was $16.99, only 59 cents below the Jerseys. Of the Guernseys, there were eleven herds, 185 cows; average pounds of milk, 5,141; pounds of butter per cow, 252½; for one dollar's worth of feed, they brought $1.60; the net profit per cow was $17.92. So you will notice those three breeds run almost exactly parallel as to profit, so how can I say which is the best breed? I didn't fix up a theory, I was hunting for facts.

Now, then, about mixed dairies; there is some mixing there in Jefferson county. There were nineteen herds of this kind, containing 346 animals; the average amount of milk per cow, 4,455 pounds, the average amount of butter per cow, 208½; 40 pounds below the others. Now, what was the cause? Was the trouble with the cow or the man? Perhaps both. The man did not have a definite purpose. He did not have a determination to do the best he could, but he would start in one direction;

he would get discouraged, then he would run in another direction, and if you keep zigzaging that way, you will never get anywhere.

There are very few men in Jefferson county who believe in a dual purpose cow, but I found four herds, 54 cows, the average amount of milk was 4,219; the amount of butter was 194.4 pounds, and one of those men owning such cows, was the one that owned the farm that John Widmann is on now, and is making lots of money on, and he was sure in his own mind that he had the best cows in the county.

Mr. Race: Do you warm the milk after separating?

Ex-Gov. Hoard: No.

Mr. Race: How much oats do you feed a calf? You spoke of feeding them until they were six or eight months old.

Ex-Gov. Hoard: I said a dollar's worth in the whole time; that would make about three bushels. I fed them whole. I think it would be better if they were crushed or rolled at first but in about six weeks the calf begins to grind them. It begins to raise a cud in about four weeks, and it is a great thing to watch it when it begins to do so.

Mr. Blackwell: How do you feed the blood meal?

Ex-Gov. Hoard: It is put in the milk. I give the calf, with the skim milk, about two quarts a day whole milk, at first; then I run it off into skim milk.

Mr. Race: Isn't there danger of introducing some disease through the blood meal?

Ex-Gov. Hoard: No; it is submitted to a heat of about 250 degrees. They catch the blood from only the healthy animals. I find it very useful.

Mr. Emery: How many times a day do you feed your calves?

Ex-Gov. Hoard: Twice, morning and night from the separator. I commence on the blood meal, with about half a teaspoonful at first and gradually enlarge it until at the end of six or seven months they are getting from one to two teaspoonfuls.

Mr. Emery: Do you give them anything in the skim milk as a substitute for the butter fat taken out?

Ex-Gov. Hoard: Sometimes I have used ground flaxseed where I thought they needed it, but with alfalfa hay I have no difficulty whatever.

Mr. Emery: Do you feed silage to calves?

Ex-Gov. Hoard: No. It is a little unhandy to go from the calf barn to the silo, though I do not believe it would hurt them. What I am after is a constant use of protein food for this young calf. I give skim milk and alfalfa hay, oats and the blood meal.

Prof. Henry: That is right.

A Member: If the silage was real handy, would you give them any?

Ex-Gov. Hoard: I don't think I would.

The Chairman: Isn't there another point, that you wish to develop a large digestive capacity?

Ex-Gov. Hoard: Yes, I like to develop a calf with a good, harmoniously developed barrel.

A Member: Do you water your calves?

Ex-Gov. Hoard: Yes, the water stands right there in the tank.

A Member: Did you ever lose a calf by bloating on cold water?

Ex-Gov. Hoard: No, not cold water, but I lost a calf worth $100 from sudden bloat. The men neglected to clean out the pail it was fed from.

Mr. Emery: Why do you use the ground instead of a wood floor?

Ex-Gov. Hoard: Because it will absorb a little better. I carry out the dirt next spring as manure.

Question: What disinfectant do you use?

Ex-Gov. Hoard: Zenoleum or creolin.

Question: How often do you use it?

Ex-Gov. Hoard: Every day, and land plaster besides. I use land plaster in my stables all the time.

Mr. Race: You prefer it to air-slaked lime?

Ex-Gov. Hoard: I never would use lime.

Prof. Henry: I think we are going one step ahead on land plaster. You can buy ground rock phosphate for ten to twelve dollars a ton, delivered from the phosphate mines in Tennessee. You can put that on manure and use it as land plaster, and you are then introducing phosphates. Professor Whitson's experiments in some parts of this state and in Illinois show that this can be profitably done from Illinois clear up. Now, by buy-

ing this phosphate rock at those low prices we get a disinfectant which conserves the ammonia in the manure, and the manure acts on the phosphorus in this rock and tends to set it free and we get phosphorus in a very cheap form and it is highly valuable. I commend it to our farmers. I believe the time has come when large quantities will be used with great benefit to our land.

Ex-Gov. Hoard: I have been trying to get it, but our dealers don't keep it.

Prof. Henry: If you and your neighbors would combine you could buy a carload.

Ex-Gov. Hoard: I can't convince my neighbors they should buy phosphates. I can't get them to pay anything for salvation.

A Member: What is the difference between phosphates and nitrate of soda?

Ex-Gov. Hoard: Nitrate of soda is nitrogen.

The Member: I have been getting a great many pamphlets about nitrate of soda.

Prof. Henry: Don't buy the nitrate of soda. Your clover crop, and specially alfalfa, will bring $16 to $30 a year out of the air, so you don't have to pay for that. You don't need it for that purpose.

Ex-Gov. Hoard: We can't make one thing stand in the place of the other. One of the real useful things about blood meal is that it is a remedy for scours in calves. You know they are very apt to get scours and blood meal seems to be one of the best remedies we can use. It costs about $3.00 a hundred pounds. You can have it sent to you from Swift & Company, from the Union Stock Yards at Chicago, or Armour & Company, and get it easily. Send them the money and they will sent it to you.

Prof. Henry: I guess they are not all licensed to sell it here; those two are.

Secy. Burchard: Sixty dollars a ton for a feed seems a large price. The question came in to us the other day: "Can I afford to pay $3.00 a hundred pounds for blood meal to feed to calves?" The answer to it was, that blood meal was fed by ounces with the other feed, while the other feed that he mentioned was fed by the pound, and when you come to compare the protein contents the blood meal is much cheaper. Do not be frightened by the price of blood meal; you feed it by the teaspoonful at first.

A Member: What quantity of skim milk do you feed and how often?

Ex-Gov. Hoard: That depends on the calf somewhat. You know a feeder has to stand in the place of the good mother, and he has to have—that old word—I wish it were used more than it is—he has to have "gumption;" he has to be the judge of the condition of the calves. When my calves begin to show they are off, they get less feed until they come back to their appetite and tone. I feed all the way from two to four quarts of milk to a feed twice a day, and I am very careful not to overfeed my calves, but to feed enough so that the calf shows in the hair and the eyes and the general look that it is thrifty and growing, but not to fatten it. I don't want to make veal of it. I have the oats right there in front of the stanchion and they start on them as soon as they want to. The older ones will eat them up and the younger ones will pay no attention to them at first but the example of the older calves will soon set them eating the oats and hay.

Mr. Rietbrock: What do you do with your male grade calves?

Ex-Gov. Hoard: Sell them at ten to twelve days old to calf buyers at about $3.00 a head. I don't pay any attention to the male.

The Chairman: You see to it that the grade male does not remain in the country?

Ex-Gov. Hoard: Yes. Now, I have given you a justification of my work in the profits that I get. I have told you the prices that I get, and they are not high. It is a thing that every farmer can do, not something that a thoroughbred breeder only can do. Come to my barn and look it over, and you will not find a thing in it that the commonest man in the world cannot do. Mr. Washburn, the Dairy and Food Commissioner of Missouri, was up there the other day and looked it over. Mr. Washburn said, "I am glad I visited your farm for the reason that there are no frills about it, there isn't a thing about it that I can see that the commonest man cannot do.

A Member: What do you do with your calves in the spring?

Ex-Gov. Hoard: I sell them.

The Member: But those that you do not sell?

Ex-Gov. Hoard: There are no grades I do not sell. I want

all my calves to be dropped in the fall if I can. I can rear a calf through the winter. dropped in the fall, say, September, October or November and turn it out the next May. At the end of eight months, I can put a calf on the market at least thirty to forty per cent ahead of what I could do if that calf were dropped in the spring; and for the reason that I can control the temperature more easily and I can control the feed and I am absolutely relieved of the effect of flies for eight months in the beginning of that calf's life, and he gets a start. Now, if he is dropped in the spring, he walks right straight into the rapacious jaws of the flies, doesn't he?

Mr. Emery: I thought the fly's jaws walked into him.

Ex-Gov. Hoard: Well, reverse the operation and it doesn't give the calf much relief then.

Mr. Emery: Do you feed the calves any grain in summer?

Ex-Gov. Hoard: Oh, yes, I feed my calves that are dropped in the spring. I feed my thoroughbred calves oats until they are a year old right along, and feed them milk until they are about ten to eleven months old. I want to develop this registered calf that I am dealing with so that in the end she will make just as strong and vigorous a breeding mother out of that heifer as I possibly can. Now, I will tell you what my registered cow earns me after I have her developed. The creamery pays $76.27 for the milk, and the calf brings $100, so you see that good cow earned me from $177 to $200 a year and her keep cost we $31.60. There is an opportunity for me to get a good profit and the demand is so great that I can't keep it supplied.

A Member: At what age do you have your heifers drop their first calves?

Ex-Gov. Hoard: I have been having them calve at twenty-four and twenty-six months, but I am changing over to have all the heifers to drop their calves when they are two and a half years old.

The Chairman: We have had a whole lot of good talk, but we have reached the limit of our time.

We wish again to thank our friends for their courtesy and all the members for their attendance and careful attention.

This convention is now adjourned sine die.

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