Thirty-sixth annual report of the Wisconsin Dairymen's Association : held at Monroe, Wis., March 11, 12 and 13, 1908. Report of the proceedings, annual address of the president, and interesting essays...

Wisconsin Dairymen's Association
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THIRTY-SIXTH ANNUAL REPORT

OF THE

WISCONSIN
Dairymen's Association

HELD AT

Monroe, Wis., March 11, 12 and 13, 1908.

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

COMPILED BY
A. J. GLOVER, Secretary.

MRS. A. L. KELLY, Stenographic Reporter.

MADISON
DEMOCRAT PRINTING COMPANY, STATE PRINTER,
1908

LETTER OF TRANSMITTAL.

WISCONSIN DAIRYMEN'S ASSOCIATION,

Secretary's Office,

FORT ATKINSON, June 30, 1908.

To His Excellency, JAMES O. DAVIDSON,

Governor of the State of Wisconsin.

DEAR SIR—I have the honor to submit for publication, as provided by law, the Thirty-Sixth Annual Report of the Wisconsin Dairymen's Association, showing the receipts and disbursements during the past year, also papers relating to the dairy interests read and discussions had at the annual convention held at Monroe.

Very respectfully,

A. J. GLOVER,

Secretary.

OFFICERS.

PRESIDENT,
F. H. SCRIBNER,
ROSENDALE, FOND DU LAC COUNTY.

VICE PRESIDENT,
A. D. DELAND, SHEBOYGAN, SHEBOYGAN COUNTY,
President 1877.

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

W. D. HOARD, FORT ATKINSON, JEFFERSON COUNTY.
President 1891-3.

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

G. W. BURCHARD, FORT ATKINSON, JEFFERSON COUNTY,
President 1896-7.

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

C. P. GOODRICH, FORT ATKINSON, WIS.,
President 1900-1.

J. Q. EMERY, ALBION, WIS.,
President 1901-3.

CHARLES L. HILL, ROSENDALE, FOND DU LAC COUNTY,
President 1904-5.

W. J. GILLETT, ROSENDALE, FOND DU LAC COUNTY.
President 1906-7.

SECRETARY,
A. J. GLOVER,
FORT ATKINSON, JEFFERSON COUNTY.

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

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

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

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

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

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

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

H. C. ADAMS, DANE COUNTY,
President 1887-89. Died July 7, 1906.

STEPHEN FAVILL, DANE COUNTY,
President 1886. Died —, 1906.

ARTICLES OF ASSOCIATION.

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 places as in their judgment its interests so demand.

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

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

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Dairymen's Association

AT THEIR

THIRTY-SIXTH ANNUAL CONVENTION

Held in Monroe, March 11, 12, and 13, 1908.

President W. J. Gillett in the chair.

The Chairman: In the absence of the mayor of this city, Mr. Phineas W. Clawsen will present a few remarks at this time.

ADDRESS OF WELCOME.

Mr. Chairman, Ladies and Gentlemen: I never was more surprised than I was a few minutes ago when I was requested to fill the place of the mayor, but it would be strange if we could not bid you a hearty welcome to this little city of Monroe, anybody could do that. Indeed, you are more than welcome.

Gentlemen, you are engaged in a great work, the dairy interests of this state. I was deeply interested in that business at

an early period of my life, but in proper time I was weaned and lost my interest temporarily, at least.

We have in this county as you are well aware, very large dairy interests which have been a source of great revenue. I presume that no sixteen mile square in the state of Wisconsin can show as many cows and as large dairy interests as we can in Green county, largely in the hands of the Swiss-Americans.

Gentlemen, there are only a few of you here, but where there are a few earnest men engaged in a good cause, there is nothing to fear. I trust your sessions will be profitable and result in great good to this community, and I trust that the community will show its appreciation by its attendance. I trust your exercises will be satisfactory and agreeable, and again giving you the most hearty welcome on behalf of the city and speaking for the mayor who is out of the city, I bid you welcome. If I knew where the keys of the city are, I would present them to you; I do not know where they are, but I think Governor Hoard will find them if anybody can.

RESPONSE.

CHARLES L. HILL, Rosendale.

Mr. President, Mr. Clawsen, speaking on behalf of the city of Monroe and Green county, and Gentlemen: It gives me great pleasure to respond to this address of welcome given by Mr. Clawsen of this ctiy. It is indeed a great pleasure to me personally, and I am sure it is to those who have been previously interested in this Dairymen's Asscciation to once a year gather in this annual meeting.

We come to Green county realizing that we are in one of the pioneer dairy sections of this state. Driven perhaps to dairying, the citizens of this part of the state, because of the rather rough character of the land as compared with some of the parts of the state, it proved to be their salvation.

I note on the back of this program that the banks of the city

of Monroe have upon deposit, $1,800,000 of farmers' money, probably pretty nearly all derived from milking the old cow, and that in other banks of Green county there are deposited a million and a half dollars of these same farmers' money.

In some other section of the state, older sections than this, where the land was more nearly level, they proceeded at once to raise grain and they did it because they could easier gain a livelihood upon that kind of land, but later on it became necessary in those sections of the state and of other states to do something to bring back the fertility of the soil which had been sold out by the bushel to feed the inhabitants of Europe with white flour. They were wise enough to turn to the cow, and nobly did she respond, and if the cow has responded to the demands of Green county, as we know she has, she stands ready to respond for every other one of the counties of the state.

Wisconsin, I believe, stands second only to New York in the value of its dairy products, and of all the states of the Union, if she stands second now, she must stand first some day because of the large amount of undeveloped territory that is in the northern part of the state, to say nothing of the year by year increase of the dairy business in these southern counties.

It was my pleasure to spend nearly all the month of January in New York state, and comparing that state with our own, I see that the dairy sections of that state were first driven into dairying as was this section of this state, because of the rough character of the land, but that we have the advantage of them in this race for supremacy in the dairy industry, because of the fact that we have yet so much undeveloped territory that is bound to be some of the very best of the dairy sections of the state. We have with us at this time, I am glad to see, some farmers who have come from the far northwestern part of the state in the hope that they will gain for that section of the state the next meeting of this Association, and I must say, from recent visits in that part of the state, that my sympathies are with them, and I hope that they will be given the next year's meeting of this Association there.

There are also with us dairymen from Illinois on the south and Minnesota on the north—we ordinarily speak of Minnesota

on the west, but in this case the men who come here to enjoy these sessions with us are from the northernmost part of Minnesota, and they too are interested in the development of the dairy industry in the northern part of Minnesota, and doubtless, when they go from this state to their own state, they will tell their people, as I am telling you, that Wisconsin won't be in it when Minnesota has developed her dairy industry.

But perhaps I am wandering from the subject. I want to thank Mr. Clawsen for his welcome to us here. I am sure we all come here not as instructors, but as learners. If any person is so well posted on any business that he cannot go into a meeting and learn something that he did not know before, he is in a hopless condition, and the more a man knows to begin with, the more readily he learns from his fellow man, and I hope we are going to learn much from the men who will later on be here. These dairymen of Green county, who have built these fine houses and great, large, red barns, could undoubtedly tell us very much of the things that tend to the prosperity of the people. It has impressed me this year as never before, because in the fall I took a daylight ride across the state of Missouri, from Kansas City to St. Louis, without practically seeing any buildings that would be considered buildings in Green county, until you get within a few miles of St. Louis where you will see some fine big barns and some good alfalfa.

Now, without taking more time, I will repeat the thanks of this Association to Mr. Clawsen and the city of Monroe for this welcome.

C. H. Everett, Racine.

Mr. President: It is a pretty hard matter for me to talk to anything but an audience of farmers, and these gentlemen here are nearly all professional farmers, and this is a pretty hard place to put an old hayseed who can't talk anything but cows, silage, etc.

I have been to Green county a good many times in Farmers' Institutes and other kindred meetings, and have always met with

a warm reception, especially in the city of Monroe, and we all like to come here; you have a lot of good people in this county and in this city, warm-hearted, hospitable entertainers.

I like to meet and hope to meet at this meeting the dairy farmers of this vicinity.

This is a milk producers' convention; it is not a cheesemakers' convention or a buttermakers' convention, properly speaking, but a meeting for the dairy farmer, for the milk producer; he is the man we want to get at and that we hope will be here before the final adjournment of this meeting. We want to talk to him about the kind of cows he is keeping; we want to ask him how much he is getting for the feed that he is selling to those cows; we want to make him understand, if possible, the value of thought, the value of thinking, and that is the trouble with the Wisconsin dairyman, he doesn't think, he doesn't seem to reason and think out the problems that are capable of being solved.

Uncle Theodore Lewis was known to some of you who are present, the hog breeder of Dunn county, a plain German farmer, but a man who was wiser than his generation. I once heard him say at a Farmers' Institute in Minnesota that the higher we climb, the more extended the horizon, and the more we study the more we come to understand something about our ignorance. So the problem for the farmer is to think more, is to come to know the truth about a dairy cow, and about the proper feed for her, how to feed her so as to get highest price for the products grown upon the farm. I am reminded of a little story which is a true one. This happened in the Wisconsin legislature last winter at Madison and I happen to know of the facts. In that legislature was a man by the name of Reynolds, from Door county, a hard headed Scotch farmer, a man without education only as he had educated himself, by reading and thinking, but a man who was always seeking truth and who had been successful in finding it in his business as a farmer.

There was a bill introduced in the legislature by a member from Pepin county who had the floor in advocacy of this measure. Something in the bill didn't suit our friend Reynolds, and he objected to the bill, winding up his little speech by saying, "I am agin the bill." Our friend from Pepin county took of-

fense and twitted the old Scotch farmer with being an uneducated, and illiterate man. Mr. Reynolds immediately rose to his feet and said, "The gentleman thinks that I am uneducated. Well, now I am going to tell you how I got my education. I went into Door county a good many years ago, took my axe and went into the woods and commenced to chop out a home and when I got tired, I would sit down on a log and read. I always had a book with me and I would read until I got rested, and then I would chop again, and then I would sit down and read and then I would think, and that is more than my friend from Pepin has done."

It is thinking that brings a man success.

The President of this Association is the owner of a cow—a lot of cows, but one cow in particular. She has just completed a year's test. The name of this cow is Colantha 4th's Johanna. She is a Holstein. She produced in one year 998.26 pounds of butter fat, or the equivalent of about 1,164 pounds of butter, she produced in that year over 27,000 pounds of milk.

If you look at the President of this Association, you don't see anything remarkable about him, he isn't as good looking as either Burchard or I, but he must have applied some thought to that cow and her product. Mr. Gillett is a man who thinks and reasons and studies.

We have got another cow, a three and a half-year-old Guernsey up in Marathon county and she produced 603 pounds of butter fat, over 700 pounds of butter as a three and a half-year-old, and is quite evident to all of us that the owner of that heifer was a man who thought, a man who studied the proposition of dairying all along down the line.

That to me seems to be the only way to solve the problem of dairying.

You all know about these things, but I am sorry to say it is the farmer who is not here and who is not willing to get ahold of these facts that needs this kind of a meeting. He is not willing to apply himself.

A Racine county dairyman came into my office the other day; he thought he was not getting as good results as he should from his cows, and he didn't know how to do better. I said to him,

"You are in the right frame of mind, I am glad you came in." I asked if he had tested his cows and he said, "No, I hadn't thought of that," and he hadn't thought of a thousand and one things that every man ought to think of to try to help himself as a dairyman.

Mr. Clawsen: A thought has occurred to me. Twenty-seven thousand pounds is a good deal of milk for one cow, and I simply want to suggest that we have a very fine Ananias Club here in the city of Monroe and I am president of it, self-elected, and I would be glad to be of service to any of you gentlemen who want to get into our club.

Secretary Burchard: I have no doubt our friend is well qualified to preside over such a club.

ANNUAL ADDRESS OF PRESIDENT.

W. J. Gillett, Rosendale, Wis.

Members of the Wisconsin Dairymen's Association, Ladies and Gentlemen: Again we are reminded that another year has been added to the life of the Wisconsin Dairymen's Association, and I take pleasure today in greeting you at the opening of this, our thirty-sixth annual convention.

The past year has been one of continued prosperity on the part of the dairy husbandman of Wisconsin and elsewhere. The industrial condition of this great commonwealth has been such as to stimulate the demand for dairy products, and this demand has stimulated prices to the extent that it has made a good margin of profit for the producer possible.

Whether the recent financial disturbance will continue to depress the business affairs of this country, is a matter for serious consideration and I can not suppress the thought that we have for a time at least, reached the top and that it behooves our dairy farmers to guard well the avenue through which leakage is most liable to occur.

In any event, the time was never known in this country, when

a herd of good cows, properly fed and judiciously managed, did not compensate its owner well for the feed, time and labor expended, and it is safe to say that we have passed through contingencies that are not liable to be repeated in the near future.

According to statistics for the year 1905, fifty-seven million dollars represent the annual revenue for dairy products supplied by 944,000 Wisconsin cows. From this we can form some conception of the importance of our dairy industry to the resources of the state.

Wisconsin today ranks first among the states of this Union in the total aggregate for butter; second only to the great state of New York in the total aggregate for cheese; and second only to the Empire state in the total aggregate of all dairy products and by-products. Such is the evidence for determining the rank of our dairy industry among the states of this nation.

According to statistics for the year 1906, nearly three hundred and forty-nine thousand Wisconsin cows supplied milk to cheese factories, for which the owners received, not considering the value of by-products, $13,907,600, or an average of about $39 per cow per annum. More than five hundred and sixty-four thousand Wisconsin cows supplied milk for creameries, from which was made 101,059,394 pounds butter, bringing a cash return, not counting the value of by-products, of $22,058,346, thus showing an average yearly production of 179 pounds butter per cow and an average gross return of about $39 per cow per year.

I cannot refrain from calling attention to the average earning capacity of our cows under prevailing Wisconsin conditions. A large number of herds within our borders are showing a yearly average of 300 to 400 pounds of butter per cow per year, in fact, many are even surpassing these figures, which would indicate an average earning capacity of $100 or more per cow in many instances. What then, must be the conditions under which many of the cowkeepers of the state are laboring, that the average is reduced to 179 pounds butter per cow, or to an average earning of $39 per year? To the owner, what must be the loss occasioned by many animals that are allowed to live in the guise of the profitable dairy cow?

It would seem that prevailing conditions in many herds, and the animals used for dairy purposes, are but burlesques to the dairy business.

While the state of Wisconsin ranks high among the dairy states of this nation, and while the average producing capacity of her animals maintained for dairy purposes is second to those of no state in the Union, still there is much room for improvement, and a broad field for our missionaries among the cowkeepers of the state.

For the purpose of comparison, and as an illustration of the possibilities in breeding, development, care and feeding of the dairy cows, you will pardon me for mentioning the performance of a cow in our state, that recently completed an authenticated yearly record of 27,432 pounds of milk, containing 998 pounds of butterfat or the equivalent of 1,164 pounds marketable butter. The actual return from the milk of this cow delivered to a cheese factory, aside from the value of the by-product, was $329.13, or more than eight times the annual earning of the average Wisconsin cow, while the quantity of butter which could have been made from the fat she produced, was more than six times the amount produced by the average cow, omitting the proportionate increase in the value of her by-product.

The results that are possible for one man to accomplish, are always possible and within reach of his neighbor under the right conditions.

Of course, we never expect to see many cows produce 1,000 pounds of butterfat per year, but it would seem that, by better breeding, better feeding and caretaking, deeper thought, and a wider observation of cause and effect, we might reasonably expect to double the producing capacity of the average Wisconsin cow.

In this great race of life, it is a lamentable fact, but nevertheless true, that the accumulation of money or the greed of gain, is the underlying force that prompts the average man to action, and there is perhaps no argument that will appeal to him quicker than one convincing him of the drainage by which his finances are being sapped.

There are many cowkeepers who are, to a greater or less ex-

tent, blind to their own financial upbuilding, resulting from a lack of knowledge and a keener appreciation of the principles that lead to progression. Many are overworked by manual exertion and neglect the more important part of allowing the brain to solve problems that would lighten the burden of the weary hands. Our most successful dairymen and our best breeders are those whose minds as well as muscles have been engaged in the execution of their business engagements.

There is little hope for him who settles down in his own shadow, content with his own accomplishments; for it is discontent that prompts us to try to climb higher. He who does well will aspire to do better, and he who does better is sure to try for further improvement.

Some were born to lead, while others never advance under any conditions. Some were born to succeed, while others never rise above a certain level. We can not all lead, but we can all follow and we can all succeed.

The spirit of aggression often leads to progression, and there is always hope for him who is willing and anxious to be taught.

What we need in our rural districts and for a further uplifting of our dairy husbandman is more education, more light, and a deeper, broader and keener knowledge of the forces that stimulate improvement and progress.

The subject of profitable dairying and its emoluments is broader and deeper than some of us realize, and the science of breeding, the art of feeding, and a favorable environment, are among the more important factors that contribute to success and enter into this great cow race.

The dairy cow is no financial support to the ignorant, shiftless man, who is indifferent to her individual characteristics and maternal instincts.

The solution of this great proposition lies in a wiser selection of our breeding animals, better caretaking and more liberal and intelligent use of feeds.

It is no speculation or experimentation, but as sure as the laws of gravitation, and by him who realizes these things and acts accordingly, we may expect the standard of excellence to be con-

tinually improved, and by him who is negligent of and indifferent to them, the average will never be raised.

In the approved pure bred sire lies the foundation for upbuilding and the salvation for future live stock improvement, and the sooner our dairy farmers appreciate this fact, the sooner will there arise, through a medium of a better class of animals, the spirit for successful advancement and the temptation for better management; hence, the adoption of wiser methods that will materially affect prevailing conditions, and tend to raise the standard of excellence of the Wisconsin cow, which will continue to contribute, and more liberally, to the great resources of the state.

The present prevailing prices of feed stuffs have been such as to make our dairy rations very expensive, without any proportionate advance in the price of dairy products. Such conditions of course cut down the margin of profit for the producer, and yet it seems advisable to recommend the liberal use of proper rations, in the hope that present conditions will not long continue, and that our herds may be kept in condition to respond at any future time.

I am pleased to report that the agents of this Association in the field have been doing work which I am sure will prove of lasting benefit to those with whom they have been associated and to those who have manifested an interest in their own advancement. Several test associations have been organized in different sections of the state, many of which now stand and flourish upon foundations of their own, and which can but serve as educators to those who have become identified with them for the purpose of a better acquaintance with their own conditions and the existing relation between feed and cost or economy of production.

Our Dairymen's Association stands as an exponent of the dairy cow of Wisconsin and our dairy interests. Its membership is made up of our most thrifty and influential dairy farmers; men who love the farm and the animals that have contributed to their happiness, and made farm life congenial and profitable; men who have distinguished themselves as practical farmers, practical breeders, practical feeders, and practical

dairymen, and to whom Wisconsin owes a lasting debt of gratitude for the energy and skill they have exercised in their own business operations, thus making of themselves living examples for the uplifting of Wisconsin's dairy industry.

The future enterprise of our state lies with the young men of today, and it is an inspiration to note that our average young man on the farm, is starting out in his business career with a deeper appreciation of better breeding, a wider knowledge of feeds and feeding, and a better understanding of caretaking and favorable environment. Our past is at least secure; our present reflects much credit upon us as a dairy state; and, by our young men on the farm, let us hope that, in the not far distant future, the average producing capacity of the Wisconsin dairy cow may be doubled.

In closing, permit me to extend to the dairymen of the state, most hearty congratulations upon achievements already secure, as well as upon the most auspicious outlook.

To the members of this Association and others, I wish to express my deepest sense of appreciation and gratitude for the courtesy and kindly consideration that has been invariably extended to me during my terms as your president.

I have done but little for you and regret that I have been unable to do more, but on the transfer to my successor of the Association's official gavel I shall willingly and gladly surrender to him the honor and authority which for the past two years has been reposed in me as chief magistrate of this Association.

Governor Hoard: If a few remarks from me are in order, I wish to thank President Gillett not only for the excellent address to which we have listened, but also for the fact that he is both a good cow breeder and a cow manager—and there is no better place for genius in this world than to be able to understand a cow, for the inside of a cow is the darkest place on earth and I know of no product of God that contains more of His mysteries today than a mother.

Thinking the other day of the human mother and going back

to Hippocrates and Aristotle, I thought of the fact that the finest intellects of this earth, from the days of the Greek, to the present time, have been steadily devoted to an effort to understand the mystery of human motherhood. All over Europe do we find schools devoted to her study. All over the United States are medical colleges devoted to her study. Do they understand her yet? No. And why? Because great is the mystery of life, and only a little way into this mystery has human intellect penetrated. And the mystery of motherhood is as great with the bovine mother as with the human mother.

When men stop to consider what life means, or attempt to understand what it means, they are smitten with wonder that there is not a larger comprehension on that question among the men who deal with it.

We have a small audience here, but we can go back to the thought that the Christian Church saw a time when there were but twelve men advocating the doctrines they stood for, and Christ had nothing under the sun left to Him but a choice of sinners when He selected those twelve apostles. There is an almighty sight in this world in a choice of sinners. There are some saints that I would rather not associate with than some sinners and we are all "poor critters," as Widow Bedott says, and yet out of that humble beginning only 1900 years ago, we see this wonderful spread, this wonderful massing of effort and of enthusiasm.

Now, we have, as I said, a small audience here today, though in 1872 there were but seven men came together to form this Association, the seed of this great industry, and we must not measure the proposition of the dairy interest of Wisconsin by any of its conventions.

That was a splendid thought that President Gillett uttered when he said that the only man that strives to do better is the man that is doing well.

Sometimes I get a little discouraged. I was at the baptism of this little Association, there at the borning of the infant, and I have sometimes felt as though the average farmer of Wisconsin had no care nor no thought nor nothing by which I could lay hold of him, and yet I know better. I have only to look at the

great material progress of this industry to see that I am a very poor diagnoser of the situation. It is bigger than I am; it is bigger than the Association, and there are thousands of men thinking about it and they are saying but little. And yet I often think that utterance of Christ on the cross is exceedingly applicable to the situation, "Father, forgive them, for they know not what they do." They know not what they do. And yet somehow or other, a wonderful work is being done, and when President Gillett spoke of Wisconsin's duty and her comparative product with the whole United States, standing only second, I thought to myself, " and only about one-third of the state is under the hand of the husbandman." What may not Wisconsin do when the whole of the state in this area is under the hand of an intelligent dairy farmer? What may not yet be done with that vast territory of the state in the north that is yet to be brought under his hand? Not so long ago we knew very little about that vast wilderness. I rode on the Wisconsin Central many, many miles a few months after that road was opened. I went along studying the cuts to see what the soil was. Since that time it has been coming gradually into the hands of the man who tills the soil. It is as yet a great unsolved problem and the portion of the state that is doing this dairy work is but a small part of the state, and yet $57,000,000 were rolled up last year as the earnings of these men.

That is not all; the cow has contributed to the substance of every farmer's family. Isn't that so? She is a wonderful creature, and do you wonder that the old Hindu called her the "Foster mother of the race?" Do you wonder that the old Hindu established her as a "titular divinity"— and that isn't a very bad word to use, is it, I don't know that I ever really saw the significance of it before.

Now, this county of Green is a very interesting problem and a problem I want some of you gentlemen from abroad to study and think about. Here is a little colony of Swiss people working up in a quiet, simple way, some of the most interesting problems connected with the history of dairying in this United States, and it shows what plain, simple, steadfast industry can do, the most wonderful solvent anywhere.

They came here, comparatively speaking, only about forty years ago, and commenced this industry, and we are told today that over three million dollars are deposited in the banks of this county as the surplus of their earnings, and I will guarantee to you that those old Swiss people have not placed a tithe of what they have got in the banks. The old German people are a peculiar people about money, they seem to distrust banks. I know in Jefferson county that Mr. Grimm told me when he started his bank that he could have had $250,000 from out of the stocking legs of the old German farmers. When you consider this distrust of the banks and then the amount in the banks of Green county, you may safely reckon that that is not nearly all they have. They have taken care of the cow and worked out this problem in the matter of Swiss cheese.

They suffer by their isolation. A few years ago they were in a very bad state; they had never identified themselves with the Wisconsin Dairymen's Association; they stood aloof. I used to regret it very much. I used to talk to some of their representative men about it, but we never could get them to identify themselves with us. The time came a few years ago when they found themselves up against a very bad problem; their cheese was getting into disfavor and becoming somehow or other in a bad condition and they didn't know what to make of it, and they finally appealed to the Wisconsin Dairymen's Association and it sent one of its men down here and he went to inspecting and found that they were innocently and ignorantly pursuing a method of practice that was destroying the flavor and quality of their cheese, and that inspection aroused them and from that time since they have identified themselves with our dairy school and more with our Dairy Association. They have been doing better work and they have learned that no set of men on earth can live to themselves alone, and I believe that the future of Green county and the profitable carrying on of Swiss cheese making is but on the very threshold of what it is to be.

I do not want to inflict any further remarks upon you, but I want to say to you that for an old man who has watched this industry for a good many years, particularly in Wisconsin and who has seen the marvelous development of it, he feels a good

deal sometimes as though he could say with him of old, "Now let thy servant depart in peace, for mine eyes have beheld Thy glory."

Recess till 1:30.

The convention met at 1:30 P. M., March 11, 1908.

COWS *vs.* COWS.*

By WILBER J. FRASER, Chief in Dairy Husbandry, Illinois Experiment Station, Urbana.

Mr. President, Ladies and Gentlemen: After ten years' study of the subject from the economical standpoint, I do not hesitate to express it as my settled conviction that the weakest spot in the dairy business is the poor cow.

The actual relation of the efficiency of the individual cow to the real profits in dairy farming is a matter little realized by the people depending upon this occupation for a living. The profits on the average dairy farm today can be easily doubled.

THE COW IS THE MARKET.

A dairyman considers his market to be the place where he disposes of his milk, cream and butter, and in one sense this is true, but the place where he markets such of the products of his farm, as grain, hay and silage, is the dairy cow. The efficiency of the cow consuming these must therefore bear a vital relation to the dairyman's profits. If in a town having two grain elevators, one paid one-half cent a bushel more for grain than the other, no farmer would be foolish enough to sell his grain to the one paying the lower price. Yet dairymen will persist in keeping cows year after year that are paying them only twenty-five cents a bushel for grain, while others in the same herd, or that

*This title is used advisedly. There is a constant tug of war between the profitable and unprofitable cows in nearly every dairy herd.

can easily be obtained at a reasonable price, will pay fifty cents a bushel or even more for the grain they consume. The difference in price which individual cows are paying for their grain is not so apparent as the difference at the elevators, but it is none the less actual and affects the pocket-book just as surely in the end.

As an illustration of the great difference in individual cows, notice the records of some of the cows in the dairy herd at the University of Illinois.

PRODUCTION OF ROSE FOR 12 YEARS, AND QUEEN FOR 8 YEARS: CONTRAST IN EFFICIENCY OF COWS.

Rose.			Queen.		
Lactation period, Mo.	Lb., milk.	Lb., fat.	Lactation period, Mo.	Lb., milk	Lb., fat.
*21 1	14,462	701	10½ 1	3,471	126
21 2½	14,536	762	9½ 1	4,078	156
12 1½	10,217	507	13 3	3,838	134
15 1½	12,680	637	11 1½	5,474	194
13 3½	6,018	291	14 1½	5,726	196
16½ 1	10,412	511	12½ 2½	6,526	200
23 4	11,059	556	13	6,803	219
9	7,688	350	3	1,201	38
Total 12 yr. Ave.	87,102 7,258	4,318 360	Total 8 yr. Ave.	37,117 4,639	1,263 158

*The larger figures show the length of time the cows gave milk and the smaller ones the time dry.

ROSE HAD 57 WEEKS OF ADVANCED REGISTRY RECORD.

Twelve pounds of butter fat for a single week is the production required for admission to the Holstein-Friesian Advanced Register. Twenty different weeks in her third lactation period, Rose made more than 12 pounds per week. Three times in this period she made 17 2-3 pounds of butter fat per week. For

five successive weeks, six months after calving, her average was 13 pounds of butter fat per week. In her fourth lactation period, there were 16 weeks during each of which Rose made more than 12 pounds of butter fat; and in her fifth lactation period, 21 weeks.

Rose's average production for 12 years including time dry, was 7,258 pounds milk and 360 pounds fat. Her largest year was 11,146 pounds milk and 581 pounds fat.

Butter for 12 years, 4,318.36 pounds, worth at present prices (25 cents per pound), $1,079.59.

Skimmilk for 12 years, 72,585 pounds, worth at 15 cents per 100 pounds, $108.88.

Total receipts for 12 years, $1,188.47, or $99.04 per year.

Just think what the receipts of a dairyman would be whose herd consisted of 25 cows of this kind—$2500 per year, exclusive of calves and manure.

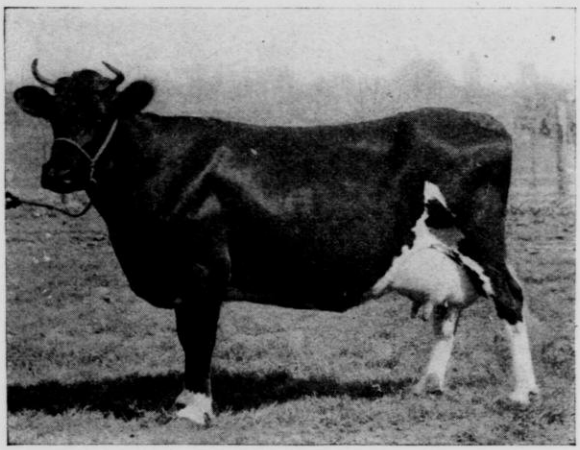
Rose was bought for $50 when 4 years old. She has had only ordinary treatment, no better than she would receive on a good dairy farm. She has not been pampered or fed to produce the utmost she was capable of making.

Remarkable as in the performance of this grade cow, she is not heralded as standing apart in unapproachable splendor, but as a great leader of the thousands of money-making cows in our dairy herds.

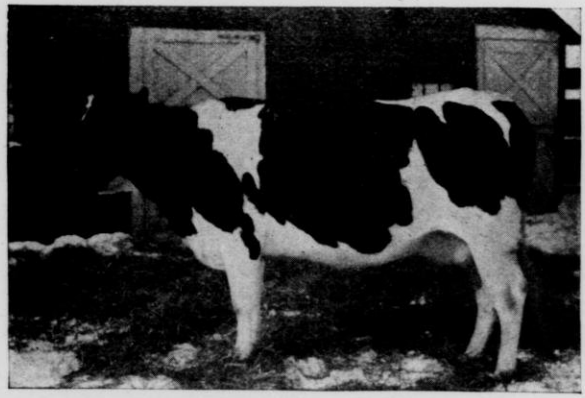
In striking contrast to Rose, and the class of cows she represents, is Queen. With equally good feed and care, Queen's average production for eight years was only 4,639 pounds of milk and 158 pounds of butter fat. Her production is but two-fifths that of Rose and she barely pays for her board.

BEST AND POOREST COWS IN SEVERAL HERDS.

Two cows, known as No. 1 and No. 3, were purchased from a large herd and taken to the University. They were fed and cared for in the same manner and their average production for three years was as follows: No. 1, 11,390 pounds milk and 404 pounds fat; No. 3, 3,830 pounds milk and 138 pounds fat.



ROSE AVERAGED FOR TWELVE YEARS 360 LB. FAT; MAKING $50 PROFIT.



QUEEN AVERAGED FOR EIGHT YEARS 158 LB. FAT LACKING 59 CENTS OF PAYING FOR HER BOARD.

Reduced to a like feed basis, the four cows produced for an entire year in the following ratios: Queen, 100; No. 3, 121; Rose, 304; No. 1, 312. The best two produced practically three times as much as the poorest two cows.

A little over a year ago, the Department of Dairy Husbandry purchased the best and poorest cows from six different herds. These were shipped to the University and a careful record kept of all feed consumed and milk and fat produced. The record for an exact year of ten of these cows from five of the herds is given below; showing the cost of milk and fat produced by the different cows at market price for feed.

BEST AND POOREST COWS IN FIVE HERDS.

No. Cow.	Lb., milk.	Lb., fat.	Cost per 100 lb., milk.	Cost per 1 lb., fat.
83	11,794	382.4	$ .61	$ .19
84	8,157	324	.87	.21
85	9,592	406.3	.75	.18
86	3,093	119.2	1.56	.40
93	9,473	358.6	.76	.20
94	7,846	232.1	.87	.21
95	14,841	469	.56	.18
96	7,686	324.1	.80	.22
97	8,563	291	.78	.23
98	1,411	52.8	2.77	.74

The records separated by the lines are of cows from the same herd.

Compare the amounts of milk, fat, and cost of same. This shows in a striking manner the difference in earning capacity of the different cows. The best cow of all produced over ten times as much milk as the poorest cow, and produced it at 56 cents per 100 pounds in marked contrast to the $2.77 required by the poorest cow to produce the same amount.

THIS DIFFERENCE GENERAL.

From the testing of over 1,000 cows in the dairy herds of Illinois, it has been proved that this great difference in cows extends to practically every herd in the state.

Included in the dairy investigations of this Station, are the individual records for a full year of 554 cows in thirty-six Illinois herds. To make a large and fair comparison, take the lowest one-fourth and the highest one-fourth of all these cows—278 head or half of the entire number. The lowest 139 cows (one-fourth of all) yielded an average of 133½ pounds of butter fat during the year, and the highest 139 cows produced an average of 301 pounds of butter fat.

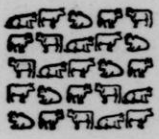
The Elgin price of butter the past five years averages 23 cents per pound, and this is the usual price the dairyman gets for the butter fat in his milk, it costing the overrun to make the butter. At 23 cents per pound for butter fat, the poor cows make an average return of $30.77. At the low estimate of $30 per year for feed, this would leave 77 cents per cow for the whole year's profit. But the best 139 cows make an average income of $69.32. Allowing these better cows $38 per year for feed ($8 better than the poor producers) the clear profit is $31.32 per cow. These calculations allow the skimmilk, calf and manure, to pay for the labor and interest on the investment.

139 COWS MAKE $100; ANOTHER 139, $4,000.

The profit from the whole 139 poor cows is only $107, but the clear money from the best 139 cows amounts to more than $4,000. Every one of these good cows averages as much clear profit as forty-one cows of the poorer kind. Herds of these two kinds would have to be kept in the following comparative numbers to produce exactly the same profit for the owner.

GOOD COWS		POOR COWS
1 cow	equals	40 2-3 cows
15 cows	equal	612 cows
25 cows	equal	1021 cows

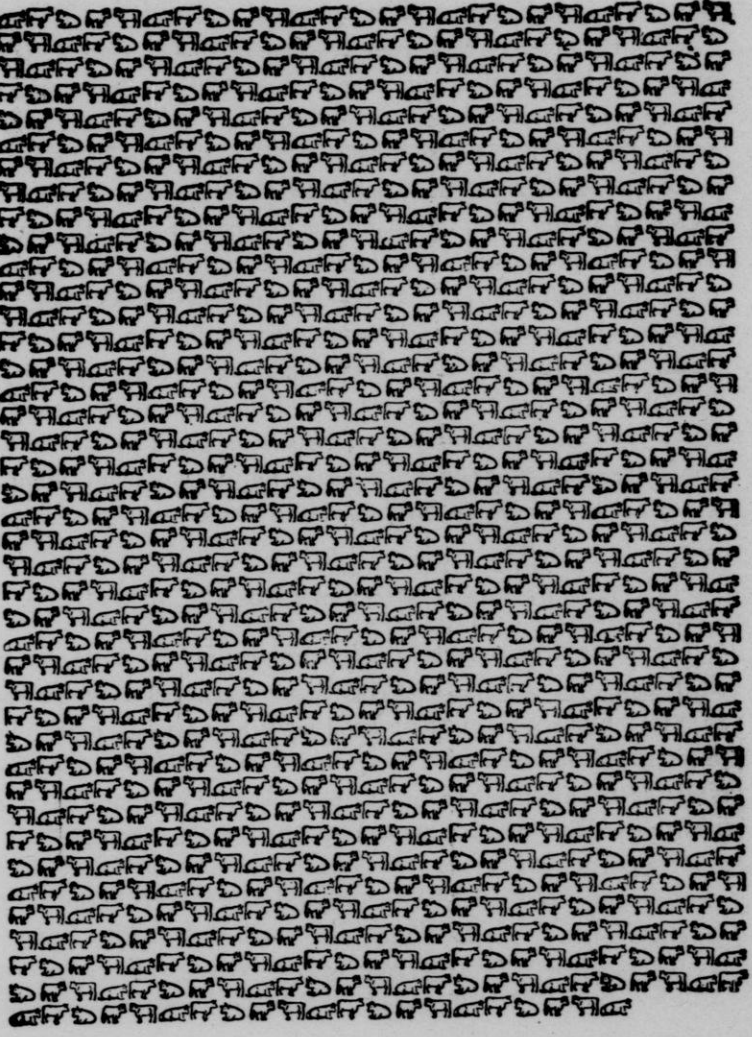
Twenty-five cows, each producing 301 lb. butter fat per year, return a profit of $783.



This is the average production of 139 cows comprising the best fourth of 554 cows in 36 Illinois dairy herds.

The lowest fourth (139 cows) of the same 36 herds averaged 133½ lb. butter fat per year.

The picture below shows exactly how many cows of the poor kind, (1,021) it takes to return identically the same profit ($783) as the above 25 good cows.



THE PICTURE AND THE PROFIT.

These figures sound big, but in their abstract form they are too weak to tell the full story. The accompanying pictures show the exact relative sizes of two herds made up respectively of these two kinds of cows, that would yield the same profit for the owner. The one contains twenty-five cows and the other, 1,021 cows. They are all present to represent their value. In four and a half days each cow in the large herd earns one cent profit. The whole 1,021 make less profit per day than one carpenter. Thirty of them would produce the value of one acre of corn—if the ground isn't too rich and the price doesn't exceed 50 cents per bushel.

Twenty-five cows of the better kind would return the dairyman a clear profit of $783 per year. They could be kept on an 80-acre farm; they would require a barn only 32x45 feet and a 100-ton silo, and the cows themselves at $70 per head would cost only $1,750—a very good little business.

But a dairyman could make just as much money (and no more) from the 1,021 cows of the other kind. However, the investment would be somewhat different, and no dairyman in his right mind, would attempt to handle this herd, yet this is just what, in effect, many Illinois dairymen are now doing with at least a portion of their herd.

The only difference from the above picture is that the worthless quarter million cows of Illinois instead of being grouped in herds of 1,000 are scattered and mixed in many herds—some in almost every herd in the state. This enormous waste of the dairyman's investment, and time and effort has extended into almost every cow-lot in the dairy regions. Is it any more businesslike or any more profitable per cow, to keep five, ten or twenty-five such cows than to keep 1,021 of them?

HOW TO SOLVE THE LABOR PROBLEM.

We hear much in these days about the drudgery of the dairy business. And certainly it is drudgery to milk the number and kind of cows that many dairymen are attempting to do business

with, but what is the remedy? For answer look at the following table, which shows the year's production of each cow in a herd of thirty-four in northern Illinois.

LESS COWS MORE MONEY.

Cow No.	Lb., fat.	Value fat @ 23c per lb.	Profit per cow @ $35 for feed.
1	102	$23 46	$-11 54
2	107	24 61	-10 39
3	110	25 30	- 9 70
4	121	27 83	- 7 17
5	123	28 29	- 6 71
6	124	28 52	- 6 47
7	124	28 75	- 6 47
8	125	29 44	- 6 25
9	128	30 36	- 5 56
10	132		- 4 64
11	133	30 59	- 4 41
12	134	30 82	- 4 18
13	145	33 35	- 1 65
14	149	34 27	- 73
15	151	34 73	- 27
16	157	36 11	1 11
17	158	36 34	1 34
18	158	36 34	1 34
19	161	37 03	2 03
20	168	38 64	3 64
21	170	39 10	4 10
22	175	40 25	5 25
23	181	41 63	6 63
24	182	41 86	6 86
25	184	42 32	7 32
26	195	44 85	9 85
27	196	45 08	10 08
28	200	46 00	11 00
29	211	46 23	11 23
30	213	46 69	11 69
31	218	47 84	12 84
32	221	50 83	15 83
33	227	52 21	17 21
34	254	58 42	23 42

Profit from whole herd = $ 76 63.
Profit from last 19 cows = 162.77.

Here is a herd of cows that made for the owner $76.63 above market price for his feed and labor. If he had disposed of the poorest 15 cows (the first 15 in the table), each of which lost him money, he would have made $162.77. In other words, he might have been relieved of milking 15 cows and increased his actual profit by $86.14.

This same condition exists to a greater or less degree in practically all the herds tested. To remove the drudgery from dairying and give the dairyman the profit he should receive for his labor and money invested, these charity boarders must be found out, and sent to the butcher.

Tied to the Wrong Cow.

Americans don't take kindly to the idea of chains and slavery, but many a dairyman has unconsciously drifted into the condition of the man in the picture.

He doesn't know where he is going; he simply follows the cow. The dairyman has blindly followed without figuring; he has worked hard with his hands but little with his lead pencil, and the dollars have come his way very reluctantly. But the hands of science and the most successful dairy experience have provided him a key to the situation, and if he avails himself of its help there will be a reformation in that dairy. He will soon hand over his end of the chain to the butcher.

But do not mistake this cow for a rare specimen of an almost

extinct family. On the contrary, she is very common in all our dairies. The dairyman, who says that dairying doesn't pay, is "ten to one" boarding several cows of this kind in his herd. That chain is heavy and tight, but he has carried it so long that he thinks burdens belong with dairying, or he lays the blame to ill luck or a poor price for milk.

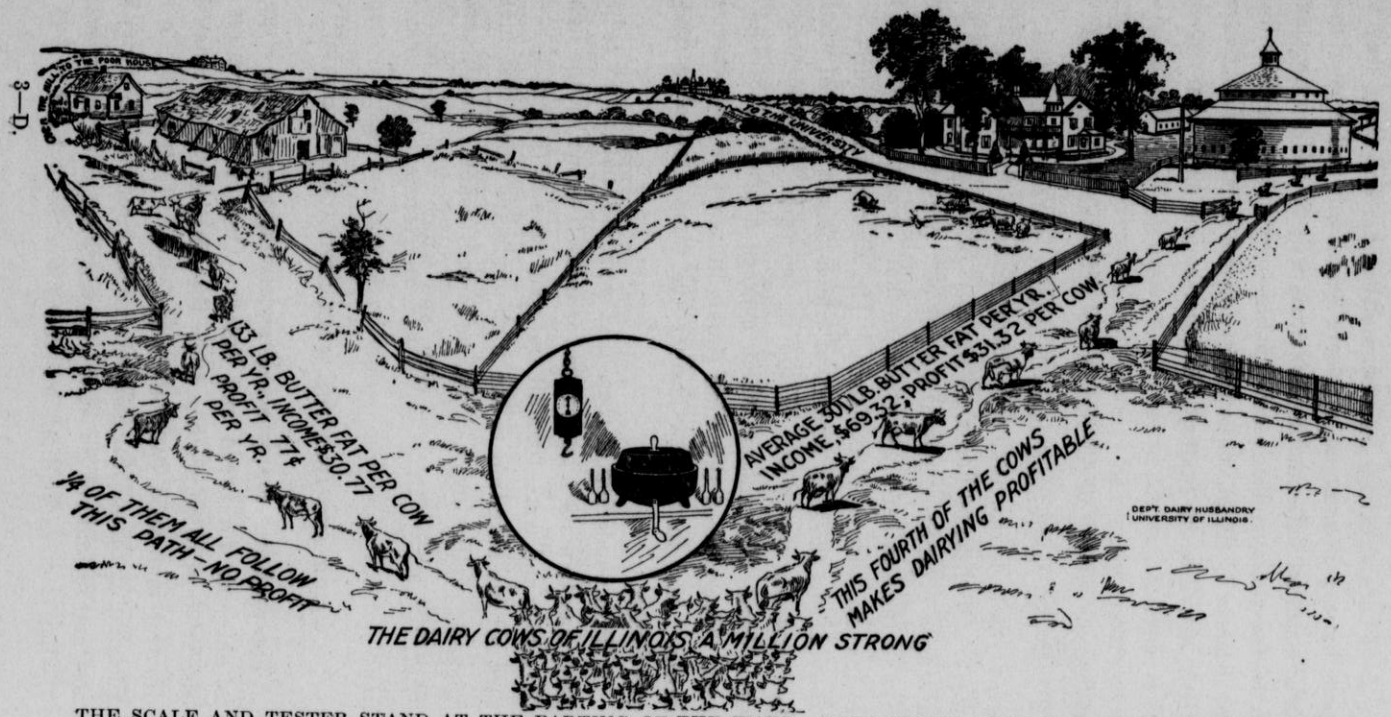
The faults and failings of the worthless cow have cancelled or concealed the profits of the good cow, just as human idlers are a tax upon their fellows. The good cow has to do the work for both. Not knowing the production of either, the dairyman has overestimated the poor and underestimated the good.

THE PARTING OF THE WAYS.

Illinois has a million dairy cows. Like men, they do not all travel the same path nor reach the same destination. Whither are they going, and how far, in their service for the dairyman? Who has stopped to ask, much less to answer, the question? What difference is there in their efficiency? In the profits they leave in the owner's pocket at the close of the year? The dairyman has been in the dark as to the paths his cows take. But under the arc light of the scales and the Babcock test the parting of the ways is made plain. Half of all the cows in Illinois take the one or the other of the above paths. Extensive investigations by the Illinois Experiment Station indicate that a fourth of all the cows in this state follow the left-hand path.

But the highest fourth of the 554 cows produce 301 pounds butter fat, and they are the cows taking the right-hand path above. These are certainly the right cows, and the path they take leads right on to the right things for the dairyman—profit, progress, plenty, an attractive home, wider usefulness, higher education for his children, and real enjoyment of country life for all the family. And the right dairyman will take great pains to add this kind of cows to his herd.

COW PATHS THAT LEAD FAR APART



THE SCALE AND TESTER STAND AT THE PARTING OF THE WAYS. THEY PROVE THAT EACH COW GOING UP THE RIGHT-HAND PATH IS WORTH AS MUCH TO THE DAIRYMAN AS 41 COWS ON THE LEFT-HAND PATH.

As seen above, the poor cows naturally find their way to a poor barn, a poor home, a poorly kept farm and a poor dairyman—and in the end, the dairyman will do well, after slaving hard for years, if he doesn't find his way "over the hills to the poor-house." If all these things are not met with on that cow path, it will be no fault of the great bovine procession traveling that way.

SAME DIFFERENCE EXTENDS TO HERDS.

Not only individual cows but large portions of herds, and even whole herds, take the wrong path at the parting of the ways. Of these 36 herds, all the cows of the poorest three herds averaged a profit of but $1.74 per cow per year. The average cow of the best herd is worth more than 24 cows of the kind that forms the poorest three herds. The writer shows three other dairy herds, the milk returns of which show a profit of 62 cents per cow for the year. While in the same neighborhood are three herds the milk of which average a profit of $60.94 per cow. One cow of this kind equals 96 cows of the other three herds. And in another locality the same kind of a contrast was found.

A little pondering of these divergent cow paths may help the dairyman to make a good turn for himself—turn on the light of the scales and test—turn off the poor cows to the butcher—and turn all his attention to the high-producing cows that make a specialty of turning feed into milk and money. It all depends on which path the cows take—and which cows the dairyman takes.

WEIGH AND TEST THE MILK INSTEAD OF GUESSING.

The profitless cow is a real and living issue and a large one in dairying for bread and butter. One of the greatest and easiest steps of improvement in the dairy business today is to discover and weed out these poor cows. Isn't it time to stop guessing at these vital elements in the profit of the dairy business and to find out for sure—by weighing and testing the milk—what each individual is earning for the owner?

We all know there is a difference in dairy herds as well as in individual cows. But do we clearly understand that some herds do not pay for the feed given them? That other herds pay too small a margin of profit to justify the investment in money and labor? And that still other herds are making their owners big money? When we realize this, it is easy to see how the profit can be doubled. Do dairymen in general know that these differences rest on plain causes and that may be readily understood, and that a change from the poor herd to the highly profitable herd is a comparatively easy matter, within the reach of any farmer who is able to keep cows at all?

Ten years of observation of Illinois dairy herds and the individual testing of more than 1,000 cows in fifty herds, has given the writer positive evidence of the practical worthlessness of about one-fourth the cows in these herds, and the exceedingly great efficiency and value of the best one-fourth. Both these classes of cows are common in every community, and as a rule there are some of each in every herd.

NO ACCOUNTS KEPT.

It is equally surprising that these poor cows are not known to the owner; their demand on his charity is not suspected. It is very hard to find a dairyman who employs any means whatever of knowing the exact returns from each cow in his herd. The ordinary dairyman has no idea of how much milk, butter fat or butter each animal produces in a year, or how much it costs to feed her. The natural result with the majority of our dairy farmers is large investment of money and labor for too small returns.

HAVE A PROFITABLE STANDARD.

Few, if any, herds tested by this Department but contained cows of the lowest fourth that produce only 133 pounds fat. Nearly every herd also has some good cows producing over 300 pounds fat. The dairyman should have a profitable standard and raise this each year, selling all cows that fall below

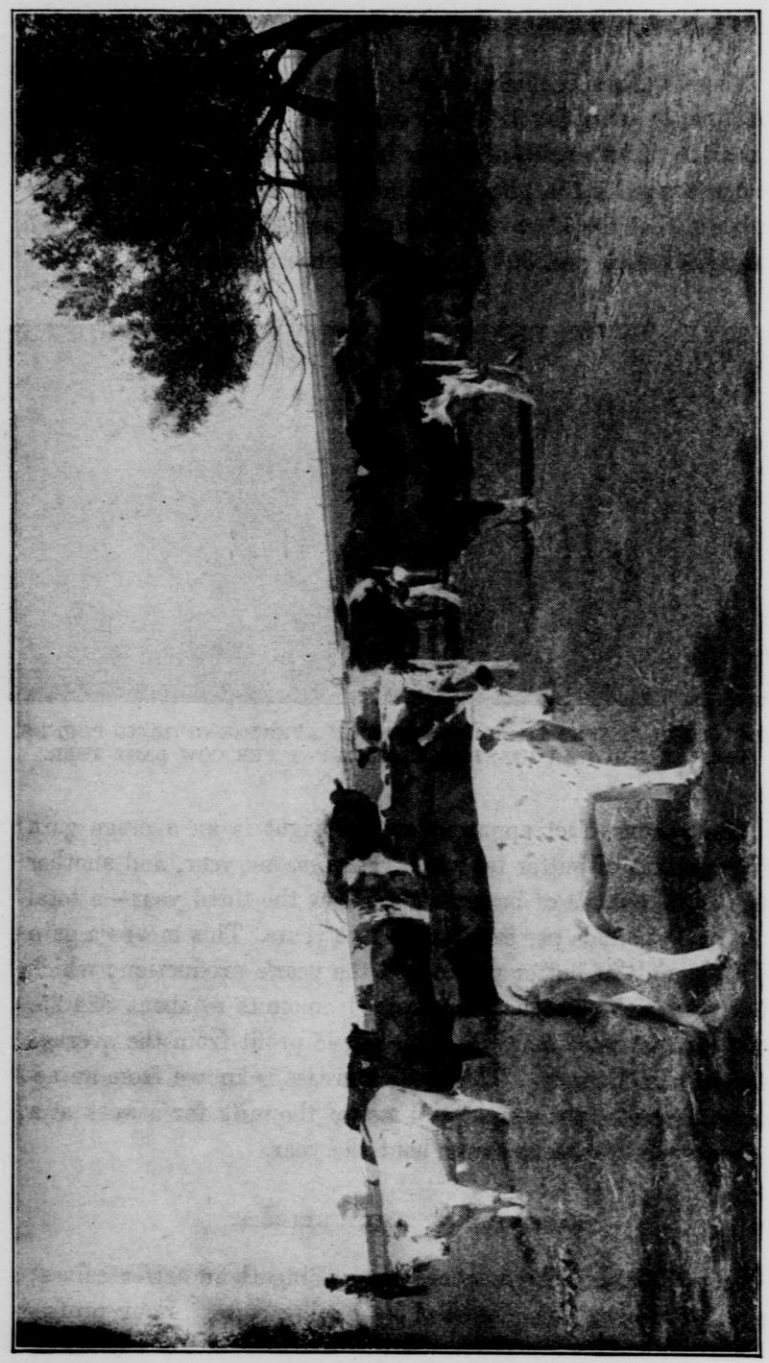
this standard. This is easily done and it requires much less energy to weed out the poor cows than it does to continue to milk them. Generally speaking, no dairyman can afford to keep a cow that will not average 220 pounds fat per year.

WHOLE HERD BROUGHT UP TO 307 POUNDS BUTTER FAT PER COW BY TESTING AND WEEDING OUT POOR COWS.

To illustrate how the production and profit of a dairy herd may be increased by testing the individual cows, disposing of the poor producers, and putting better methods into practice, I desire to call your attention to the record of the herd of Mr. Charles Foss, which was tested by this Station. The detailed record appears below:

No. of cow.	1904.			1905.			1906.		
	Milk, lb	Fat, per cent.	Fat, lb.	Milk, lb.	Fat, per cent.	Fat, lb.	Milk. lb.	Fat, per cent.	Fat, lb.
1	5,970	4.55	272	.....	.....	.....	.....	.....	.....
2	8,579	3.19	274	8,062	3.2	262	10,201	3.55	363
3	4,818	4.27	206	.....	.....	.....	.....	.....	.....
4	3,212	4.7	151	6,663	3.9	258	6,895	3.88	269
5	6,360	3.72	237	6,196	3.5	218	.....	.....	.....
6	9,802	3.94	38	8,607	3.9	339	7,674	4.83	371
7	4,701	3.67	176	.....	.....	.....	.....	.....	.....
8	6,902	3 47	239	.....	.....	.....	.....	.....	.....
9	4,408	3.79	167	6,442	3.4	220	9,567	3 6	338
10	5,368	4.05	218	6,634	3.6	236	8,313	3.55	296
11	4,498	4.35	196	7,819	4.0	316	5,943	4 22	251
12	6,823	3.71	254	5,834	4 2	244	8,202	3.83	314
13	3,773	4.47	167	4,356	4.2	182	.....	.....	.....
14	5,890	3.26	1 2	7,731	3.1	238	8,211	3.21	264
15	.....	.....	.....	7,263	4.1	298	7,493	4.17	313
16	.....	.....	.....	9,630	3 28	317	12,999	3.30	439
17	.....	.....	.....	.....	.....	.....	7,589	3 83	303
18	.....	.....	.....	.....	.....	.....	6,660	4.15	277
19	.....	..	.....	.....	.....	.....	8,617	3 31	295
20	.....	.....	.....	.....	.....	.....	4,342	4.8	*209
Total.....	81,134	.....	3,135	85,267	.....	3,128	112,804	.....	4,302
Av. per cow...	15,800	3.86	224	7,105	3.66	260	8,057	3.81	307

*For 11 months.



THE HERD THAT AVERAGED 8,057 POUNDS OF MILK AND 307 POUNDS OF BUTTER FAT PER COW.

GAIN OF 83 POUNDS BUTTER FAT PER COW IN TWO YEARS.

These figures furnish a very interesting study. It is seen that the 14 cows the first year averaged, 5,800 pounds of milk containing 224 pounds of butter fat; that the 12 cows the second year averaged 7,105 pounds of milk with 260 pounds of butter fat; and that the 14 cows the third year (1906) averaged 8,057 pounds of milk and 307 pounds of butter fat per cow.

FOUR HIGH GRADES THAT PRODUCED AN AVERAGE OF 10,060 POUNDS OF MILK AND 378 POUNDS OF BUTTER FAT PER COW LAST YEAR.

The greatest fact apparent at first sight is an average gain of 36 pounds of butter fat per cow the second year, and another gain of 47 pounds of butter fat per cow the third year—a total gain of 83 pounds per cow for the two years. This means a gain of 97 pounds of butter per cow in the year's production; which at the average price he has received amounts to about $24.25. This gain is much more than the whole profit from the average dairy cow in Illinois. The above increase is known from an accurate record of the weight and test of the milk for a week at a time every nine weeks throughout the year.

SACRIFICE OF DAIRY HEIFERS.

Many Illinois dairymen are not raising their heifer calves; instead the herd is replenished by buying cows. Four profes-

sional cow buyers sold about 7,000 cows in the vicinity of Elgin alone last year; besides this many cows were shipped in by dairymen themselves. On many dairy farms the heifer calves, good, bad and indifferent, go for veal. Where this is done it means there is no provision for perpetuating the dairy herd or the best cows in it.

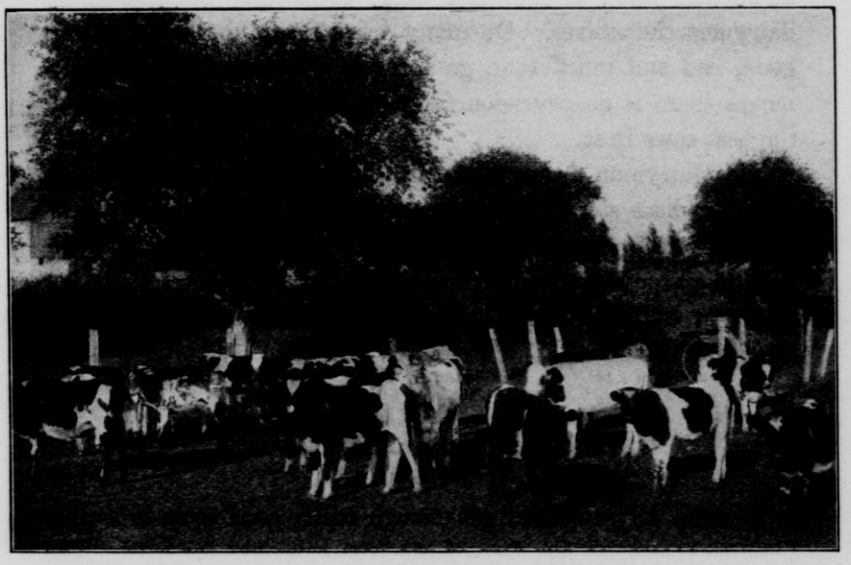
The dairyman from whom the Illinois Station bought cow No. 1 (whose story is told in this paper) with a three years' record of 405 pounds of butter fat per year, was making no effort to perpetuate her superior qualities but was selling her calves at $2.50 each. This is certainly a ruinous practice to the dairy business.

TENDENCY IS TOWARD POOR COWS.

The cow buyer cannot get enough really good cows to supply his purchasers, as but few of the best cows are for sale. The dairyman himself must raise the heifer calves of his best cows, and not depend on anybody's offerings to replenish his herd. He has the breeding stock, the feed—cheap feed—and the equipment. Calf-raising is a natural part of his business. It is absurd to suppose that as a rule he can buy as good cows as he can raise. The reasons are very plain. He needs to retain but few calves each year and can sell the less-promising ones. He knows the parentage of the calves and need save none but those from high-producing mothers. It is far easier to sell inferior stock (to the butcher) than to buy cows that are excellent producers.

A prominent dairyman of the state says of his grade herd, "The heifers we raise from our best cows are better milk producers with their first calves than are the average mature cows we can buy." Several of our most progressive dairymen have said practically the same thing.

The three accompanying illustrations taken upon Northern Illinois dairy farms, well illustrate the right way to keep up the herd. One picture shows a boy's gathering of sacrificed calves that give promise of developing into a good herd for him.



A SHREWD YOUNG FINANCIER'S CLEVER DEAL IN PICKING UP THESE SACRIFICED HEIFERS AT FROM $2 TO $3 APIECE.

PERPETUATING THE GOOD QUALITIES OF THE TESTED MOTHERS, MAKING A HERD MUCH BETTER THAN YOU CAN BUY.

THESE TWELVE CALVES ARE HALF AND THREE-QUARTER BLOOD GUERNSEYS. THE OWNER REFUSED $50 APIECE FOR THEM WHEN 15 MONTHS OLD.

A MISTAKEN IDEA.

Yet in the face of all this, hundreds of dairymen make no effort to save their best heifer calves, and they think they have a reason. They say that it takes too much milk. This question was carefully investigated with forty-eight calves by the Illinois Experiment Station. Twelve calves at a time were tested at four different times. It was found they could be successively raised on 150 pounds of whole milk and 400 pounds of skim-milk. This milk was fed at the rate of ten pounds per day until the calves were fifty days old, when it was gradually lessened one pound per day for ten days and then no more was fed. No substitutes for milk were used. Only ordinary grains which the farmer produces, and a good quality of legume hay were fed, showing that the dairyman can raise a calf in this way with almost no extra trouble. Several of these calves are now cows in milk and good producers, indicating that they were not injured by this method of raising.

The sale value of the milk fed these calves was as follows:

150 lb. whole milk @ $1.00 per 100	$1.50
400 lb. skim milk @ $.30 per 100	1.20
Total	$2.70

And these prices of milk are liberal, especially as they are paid at the farm, and no money or labor is expended in hauling the milk to market. It is not so expensive to raise a calf as the dairymen have thought. The grain and hay consumed by the heifers of high quality will give much better returns than the same feed fed to cows.

CHEAPER AND BETTER THAN YOU CAN BUY.

A prominent and successful dairyman of the state says that he can raise a heifer to the age of two years at a cost of $20, including the value of the calf at birth, and he has been offered $50 for some of his heifers at that age.

Another dairyman who has successfully managed a large herd of cows for several years, estimates that it costs about $18 a year to raise the average calf.

But even allowing $40 to raise a heifer to the age when she begins to give milk, she will then be the equal of cows that could be bought for $60. Here is a clear advantage of $20 per cow in raising over buying, but the actual added profit in the life of the home raised and well-raised cow is more apt to be two or three times this amount. Isn't this a good business proposition?

Another great advantage in raising the heifers is that the owner may feed his calves in the correct manner to develop them to their greatest capacity. Cows that have been properly raised are much more efficient, and therefore worth more than if they had not been so raised.

Somebody somewhere must raise the dairy cows, and that somebody must be a dairyman if the calves are to be of high quality. Such calves cannot be raised on the range like feeder calves, horses and sheep, because they must be raised from tested dams.

If breeding means anything anywhere, it means that the quality of large milk production is likely to be transmitted to the daughters. This has been so thoroughly established by thousands of tests that it admits of no argument. There is no other animal from which such an absolute and complete record of performance can be secured as from the dairy cow. Shall the value

of these records to her progeny be thrown away by not saving the good heifer calves?

Nobody else has so many natural advantages as the dairyman for raising good heifers, and nobody else has the dairyman's interest in or is likely to succeed so well at it. That it is not now more generally done in Illinois is one of the vital defects in our dairying, and one largely responsible for the poor or very ordinary results too often obtained on our dairy farms.

PECULIAR VALUE OF A GOOD DAIRY SIRE.

Raising the heifer calves of good high-producing cows, is a great fundamental requisite for the best and easiest improvement of the dairy herd. But those calves will take their qualities from both parents, and it is equally important that the calf shall have good parentage on the male side.

An inspection of dairy herds will show that many times comparatively little attention is paid to the quality of the sire. In a recent visit to the dairy region of Northern Illinois, the writer noted six herds in which the heifer calves were raised for future cows, but in which the sires used were miserable little scrubs, veritable runts and weaklings, obtained by simply saving a grade calf from a poor herd. Of many other sires fairly good as individuals, nothing is known of the actual milk production of their female ancestors.

THE SIRE EQUALS HALF OF THE HERD.

With a herd of 40 cows, as here illustrated, each cow represents 1-80 of the future herd each year, and the whole number of 40 cows represent 40-80 of the herd, and the good well-bred sire represents 1-2 or 40-80 of all the quality and qualities, character and characteristics, *the capacity for milk production*, and everything else, transmitted to the calves which are to constitute the succeeding herd.

=½

=½

A fine dairy sire can be bought for $150.00, and with 40 grade cows at $60.00 per head, the herd comes to $2,400.00. The bull costs only 1-17 of the investment, yet he will improve the future herd as much as the other 16-17. The extra $100.00 put into a good sire is the best investment in the herd.

Forty-one animals are purchased; one animal will influence the future herd as much as the other forty. It is worth while, then, to give much extra time and study to the selection of that one, the sire.

From generation to generation the succession of well-selected sires goes on increasing and intensifying the improvement of the herd. In this way the sire becomes three-fourths, seven-eighths, fifteen-sixteenths, etc., of the herd. In fact in a few years the sire is practically "the whole thing."

So the sire may be much more than half the herd whether judged by the quantity, strength, quality, or accumulated effect of the characteristics he transmits. It is literally true that the sire may thus, within a few years, at slight expense, completely transform a dairy herd and more than double its profit.

Every man who has had any extended experience or observation in the use of a good pure-bred sire from high-producing dams at the head of a dairy herd, will agree that this sire was of peculiar value and great economy in building up the herd.

The records of dairy breeding have proved it conclusively a thousand times over. No man who studies the facts can doubt it. The evidence is to be seen in the heifers of every such sire, and in their contrast with heifers lacking such parentage.

COST VS. VALUE OF A GOOD DAIRY SIRE.

As previously shown, improvement in the dairy herd must come largely from the sire side. A few poor females may do little permanent harm to the herd but a poor sire will do untold damage. The pure-bred sire is almost to be more prepotent than the grade cows. No more economical investment can be made by a dairyman than to spend time and money in obtaining the best sire possible. Frequently dairymen hold the penny so close to the eye it is impossible to see the dollar a little farther off, and this is just what a man is doing who has a dairy herd and thinks he is economizing by buying a poor or even common sire.

ARITHMETIC APPLIED TO THE QUESTION.

If, for example, the good pure-bred sire improves the milking capacity of his daughters by only one and one-half pounds of milk at a milking, above the production of their dams, this would mean an increase of 900 pounds of milk for the ten months or 300 days during which ordinary cows should give milk; they would also be much more persistent milkers; that is, would give milk for a longer time in the year, and would regain their flow of milk better after an unavoidable shortage of feed as in summer drought. Such daughters may certainly be credited on the average with 1,000 pounds more milk per year than their dams produced. At the low estimate of $1 per 100 pounds, this extra amount of milk would be worth $10 per year. The average cow is a good producer for at least six years, or until she is eight years old. Each daughter having a pure-bred sire will therefore earn $60 more money in her lifetime because of the good qualities of her sire. It will on the average be four years after purchasing the sire before his first daughters

will have finished their first lactation period and brought in the first extra $10. Eight dollars and twenty-three cents kept at compound interest for these four years at five per cent, will equal $10, so a daughter's improvement or increase of income the first year is worth $8.32 at the time her sire is purchased. The cash value of the daughter's improvement (inherited from the sire) figured in the same way for each of the six years she gives milk is shown in the following table:

RESULTS FROM A GOOD SIRE.

One daughter's improvement first year	$8.23
One daughter's improvement second year	7.83
One daughter's improvement third year	7.46
One daughter's improvement fourth year	7.11
One daughter's improvement fifth year	6.77
One daughter's improvement sixth year	6.45
One daughter's improvement for six years	$43.85

The total increased income for the lifetime of a common grade cow over her dam because of having a good sire is $60. The above table shows the cash value of this $60 as $43.85 at the time the sire was purchased.

In an ordinary dairy herd of 40 cows, an average of 18 heifers per year should be obtained, and 12 of these should be worth raising, making it easily possible for a bull to earn 12 times $43.85, or $526 per year. This would amount to $1,578 in the three years that a bull is ordinarily kept in service.

COST OF PROVIDING EVERY HEIFER ONE GOOD PARENT.

	Pure-bred.	Scrub.
Cost of sire	$150.00	$30.00
Interest, 3 yrs., 5 per cent	22.50	4.50
Cost of keeping, 3 yrs	100.00	100.00
Risk, 3 yrs	50.00	10.00
Total expense, 3 yrs	$322.50	$144.50
Value at end of 3 yrs	100.00	30.00
	$222.50	$114.50
	114.50	
Extra cost good sire, 3 yrs	$108.00	
Extra cost good sire, 1 yr	36.00	
Extra cost good sire, 1 daughter	3.00	

Considering the male calves as worth no more than if sired by a scrub, it would then cost $36 to provide one good pure-bred parent for the 12 heifer calves which are raised each year, or $3 per heifer. Where else can such an investment be found? Three dollars expended bring in an average return of over $7 per year for six years, or $43.85 in all. This makes a clear addition of $43.85 to the income of each daughter or a net profit of $40.85—and of $1,470 for 36 daughters in the three years. Here is nearly 1,000 per cent profit on the investment. The original cost of the good sire looks very small beside the $1,470. It really pays, as nothing else on the farm pays, to put $150 into the right kind of a dairy sire that will return practically ten times $150 within three years.

An examination of details will show these estimates to be conservative. There is plenty of margin left for failures and unfavorable conditions. One thousand pounds of milk per year is a conservative estimate of the improvement of the daughter's production to credit to a good sire, but the details of figuring it may be varied to suit conditions in different herds and different localities. One hundred fifty dollars is certainly a liberal allowance for the purchase of a pure-bred sire, and results here named are based upon having a first class animal at the head of a herd. A herd of only 35 or 40 cows is taken for illustration, while a vigorous sire properly fed and exercised is sufficient for a herd of 45 or 50 cows provided he is not allowed to run with them. There is another distinct improvement of the good sire's daughter besides her milk production; it is the improvement of her blood or breeding, as the result of which her daughters will be better milk producers. This blood improvement of all the daughters accumulated through a series of years means a remarkable increase in the efficiency of the herd.

COMMON EXPERIENCE.

It is the common experience of all dairymen who have used a really good improved dairy sire that the investment has made them royal returns. The $150 cost price looks "too big" only to the narrow vision that cannot see the natural improve-

ment of the herd certain to follow. Many a dairyman might have reason to say that he cannot afford to pay a big price for a fine cow, but the same argument does not apply to the purchase of an improved bull, because the sire's influence spreads so much farther and faster than that of the cow.

If the heifer calves are to be raised for dairy cows, there is absolutely no business or reason on earth for keeping a scrub bull. The dairymen who think there is, pay a heavy price annually for maintaining that tradition. The scrub bull is the most expensive and extravagant piece of cattle flesh on any farm. He does not stop at being merely worthless but will lose the farmer the price of two or three good bulls every year he is kept. The dairyman could not afford to keep a scrub bull if the animal were given to him, if he were paid for boarding the beast and given a premium of $100 per year for using him. The presence of the scrub sire in so many Illinois herds—many times without a single qualification except that he is a male—is an offense and disgrace to the dairy business and a plain advertisement of the dairyman's thoughtless bid for failure.

FACTS FROM ACTUAL RECORDS.

In the herds tested by this Station in one portion of the state, the average annual production per cow where grading has been practiced is 263 pounds of butter fat, and in the herds where grading has not been practiced, the average annual production was only 178 pounds, making a difference in favor of grading of 85 pounds butter fat per cow, which is worth at 25 cents per pound, $21.25. This improvement by actual test in the dairy herds of the state, is over twice that attributed to the good sire in the estimates above. For further facts on the benefit of a pure-bred sire, look at the illustrations.

Starting with common red cows, the above herd is the outcome of 14 years' continuous use of pure-bred Holstein-Friesian sires. The result is that every animal in the herd looks like a pure-bred, and the herd tested by this Station last year averaged 6,850 pounds milk which is large considering that a goodly number were heifers.

The owner has paid only $212 for pure-bred sires during this time, and has sold $2,300 worth of fine cows to other dairymen. Fine as this record is, the owner would have done far better still had he paid more attention to getting sires with better individuality, and whose female ancestors for several generations had been large producers, and when possible, selected tried sires that had proved their worth by daughters that were large producers.

I close as I began. *The actual relation of the efficiency of the individual cow to the real profits derived from dairy farming is little realized by the people depending upon this occupation for a living. The profits on the average dairy farm today can easily be doubled.*

DISCUSSION.

Mr. Goodrich: Speaking of discarding unprofitable cows, I was one time urging a man to discard his poor cows so as to

make a profit on the rest and he says, "I wouldn't do that. If I did, what would I do for cows?" He had to have cows.

Ex-Gov. Hoard: Another man said to me when I was talking to him the same way, "What will I have to eat up my feed?"

Mr. Goodrich: I figured out in my herd it was worth $12.50 to feed and milk a cow for a year, just for the labor.

Prof. Fraser: It is taken for granted that the calf and the skim milk will pay for the labor and the interest on the investment and the depreciation on the cow. Any cow that is worth keeping at all ought to give at least 220 pounds of butter fat.

Secy. Burchard: In your figures you have only given the increase in the value of milk production. You have said nothing about the extra value of this heifer in producing other cows so that there shall be several series of gradings up. There is another thing you have left out, the extra value of this heifer, if you want to sell her. If a man wants to dispose of his cow, how much more would he get for the product of the pure bred sire over the product of the scrub sire?

Prof. Fraser: He would certainly get more.

A Member: You have shown us this picture of these calves that sold for $50 apiece. What would good stocker steers be worth at eighteen months?

Prof. Fraser: I don't know, I am not very well posted. Certainly not as much as $50, and you must keep a cow a year in order to raise them.

Secy. Burchard: At our convention at Waukesha two years ago Ex-Gov. Hoard had that question under consideration, the relative value of raising grade heifers for the market and for their sale value, as compared with raising steers for their sale value. With us these grade heifers are worth at eighteen months old $50 apiece. I guess every one will agree that beef steers not finished for the market but costing the same to raise, and in the same condition as the heifers, would not be worth as much.

A Member: They would be worth about $25.

Secy. Burchard: Now a question that is often put to us, especially by our dual purpose friends, is to this effect, half the calves of these cows will be steers, and we want to raise the steers to get money out of them. Why don't these people think

a little bit and raise the heifer calves and sell them for twice as much money at eighteen months old?

Prof. Fraser: These calves were not sold for that. The man was offered that and refused it. He said he had been buying cows and he didn't know where he could replace those heifers for that amount of money.

Ex-Gov. Hoard: In your travels around through the dairy districts, Elgin, for instance, you have spoken of, what is the number of men who are grading up their cows?

Prof. Fraser: The number is greater, Governor, of those who are not grading up their cows.

Ex-Gov. Hoard: What percentage of these farmers in Illinois who are keeping cows for profit, keep a pure bred sire, in your experience?

Prof. Fraser: I don't know, I wouldn't want to answer that without giving it some more thought than I have, it is exceedingly few; I would say not over one-fifth.

Ex-Gov. Hoard: And that is in the old dairy districts, among farmers who are supposed to possess at least a thimbleful of brains.

Prof. Fraser: Yes, at least that much.

Ex-Gov. Hoard: Oh, they are a hard lot.

The Chairman: Isn't it a fact that dairymen around in the Elgin district are not breeding to any great extent?

Prof. Fraser: It has been true around Elgin, but out in the Marengo district it has not been true so much. Around Marengo they are raising calves every year on pretty nearly very farm. I know of only one case where the man has used a pure bred sire on common red cows for fourteen years. He has a herd that you can hardly distinguish from pure breds in color. He has paid in that fourteen years $212 for his sires and he hasn't done as well as he could. He has not paid any attention to the selection of the dam of the bull. He has sold $2300 worth of cows to his brother dairymen and has a herd of 57 head left and they are pretty good looking cattle. I have a picture here of a place where a man who started in twenty years before this picture was taken and he said that at that time he would have been glad to have stepped out of the farm, which he owned, with his clothes on his

back and his debts all paid. He went to town determined to get rid of it and he talked to the lawyer and he advised him against that course and in twenty years from that time that man was worth $66,000 and there was not much of that due to the increase of the value of his real estate either.

Ex-Gov. Hoard: I want to give a little bit of personal experience in regard to the value of the sire.

I have in my herd to-day a sire six years old. I have any number of old German farmer neighbors, good men, too, who come into my barn and talk to me about how they can't afford to buy a good bull. Now, Fritz and Chris and Hans and Carl all pretty nearly agree, and they say to me, "You throw your money away." But I bought this calf and I paid a long price for it. One old German said, "You tink I put all that money in one calf's hide? Not much, no, it vas humbug. I know not a man all my life who is so easy for humbug as a Yankee." I said, "You wait, I will show you whether it is humbug or not." I bought him because I knew he had splendid blood in him and he was a good individual. Now, up to to-day, I have sold and am keeping at a moderate valuation over $6,000 worth of stock from that bull. Now, cut it right in two and give the mothers credit for half, and he stands with $3,000 to his credit for the price I paid for him. But then Chris says, "Oh, well, you may do that, but I couldn't do it. You got some reputations. I got none, I be only farmer back here in the country." Old John Zeigler actually said that to me, but I answered, "I didn't get it, John, by saying 'I couldn't do it.'" "No, that is so." Now, as I said, give the cows one-half credit and there will stand $3,000 to the credit of that bull and I am offering him for sale today, as I think I must dispose of him, and I will get a good fair price for him; I will get pretty nearly half what I paid; there are plenty of men who stand ready to take him. Now, Prof. Fraser has just touched on the shore of this question.

Another little thought. I sold to a man by the name of Miner ten little Guernsey grade heifers and ten thoroughbred heifers; the twenty were raised together in one bunch and fed just alike and I got $250 for the grades and $1,500 for the pure breds and they were all seven months old. I could sell a thousand

such grade calves today for $25 apiece if I could find them, at six and seven months old. I will guarantee to find a market for a hundred times the number and they can't be had, and why? Because the man back on the farm don't see it. He don't see the value of good blood, he don't see the market. A farmer came into my office one day and he was lamenting that for the Guernsey bull that he paid $80 for as a calf he could get today for him only $40, down at the stock yards. I said, "Heaven bless your soul, what are you taking a pure bred animal down to the stock yards for? You wouldn't think of taking goose feathers to a pig iron market, would you?" "There's no goose feathers about this business," he says. "Well," I says, "what are you taking him there for?" "Well, that is all the farmers around are giving." "But they are not the market." "Where the devil is the market?" "Why," I says, "it is in the men who want this stock and they are scattered all over the country. Stick a little advertisement in the Dairyman, just say that you have this bull, his age, and give reference as to who you are." Now, there is a little bit of commercial wisdom and a little wit in this thing. I said, "Say in your ad that the first man that sends you $70 for that bull can have him." Tom stopped and he says, "What will it cost?" "It will cost you $5.00." "Danged if I'll pay it." "No, I know you won't, Tom, you belong to that class of men that wouldn't give 50 cents for a dollar bill; I know plenty of them." "You try me, and see whether I would or not." But there he stood, you know, holding $5.00 so close to his eyes he couldn't see the $70 behind it. Well, I coaxed him; it was like teaching a baby to walk, but I finally got him to do it. In about a week he came in and he says, "Well, my gorry, where does your danged old paper go to?" "What now, Tom?" "Well, I can't be answering all the letters that come to me. There's as much as a hundred men writing to me. I didn't suppose there was that many men in the world that wanted a Guernsey bull." "Why don't you think a little bit? Can't you go down to the post office and buy a hundred post cards and pay a dollar for them and sit down and answer these people? You don't know where your customer is. Answer them, answer them, have some common sense." Away he goes and in about a week he comes in.

"Well, well, well, for the love of the Lord, what will I do now? A man out west says for me to take my bull down to Whitewater, and here is your money! I wouldn't think any man would be sending me money like that." "Well, now, that's all right, Tom, do you see." The next week he came in, and in a worse flutter than ever. "What is the matter now? "Well, for the love of God," he says, "do you mind. Here are four drafts, $280, and I haven't a horn or a hoof for it. I have got to send that money back, and it just breaks my heart." "Yes, Tom, no living man on earth can afford to be dishonest. You send the money back, but now will you learn your lesson, which is this, that there are men all over the country looking for that kind of good stock wherever they can find it, and if they had any kind of chance to exercise the common confidence there is in human nature they would be glad." Why, don't you know, my good neighbors and friends, the greatest luxury in the world is to be able to trust men, the greatest luxury on earth is to be able to trust your fellows. I am glad Professor Fraser has brought out this idea to us at this time, and I only wish we had more of Green county here and its farmers. We have Germans over in Jefferson county too. This thing has been pounded and pounded and threshed and talked into those men and more thoroughbred bulls are kept in Jefferson county today in proportion to the number of farmers, I believe, than any county in the west and the money pours in for stock until those men hardly realize what they are making; and yet we have men right there with those things going on right before their eyes who had rather keep a scrub bull today than to keep a thoroughbred sire, and you cannot teach them. The country has no hope of these men except a funeral. Many times boys have come to me with tears in their eyes and have said, 'Father won't let us do a thing. Father won't let us go to the Short Course. Father won't let us have a book. Father won't let us read.'" I tell you what, it stirs my old heart when I hear those boys talk.

The Chairman: They will be the fathers of the next generation.

Ex-Gov. Hoard: That is the only hope the country has.

Thank God, that is true. Those men are so completely settled down in the muck and mire that they can't see over the rut.

But, I tell you, good people of Green county and all of Wisconsin, we can take heart; all the indications show that. Up in Barron county they have three associations among the farmers, they have a Holstein Association, a Jersey Association and a Guernsey Association. Why, those farmers up in Barron county are a thousand times as enterprising, alive and keen today to what they are about, as the farmers in the southern part of the state; they have not got rutted down, and you will see the whole country going up into Barron county in a few years after good cattle.

JUDGING THE DAIRY COW.

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

Mr. President and Ladies and Gentlemen: What I say to you today will be in an extempore manner.

It is a number of years since I began lecturing on this topic, but it is only yesterday or more properly today since I quit thinking about it. I have given this talk in one form or another in almost every state in this Union and in all the provinces of Canada, from Manitoba to Nova Scotia; in one case for instance, talking on dairy temperament in cattle, in another talking upon the dairy outlines of cattle and so on.

Now, I want to start in by saying that there are two great ruling temperaments in cattle; one is a flesh-making temperament, and the other is the milk-making temperament; that all cattle, even those of the flesh-making temperament, have the power to give milk to a certain extent. They must do this for the sustenance of their young and after these two temperaments travel along the road up to a certain point, they begin to diverge.

Now, you start at the pinnacle of a pyramid and the widening of the two lines is very slight at the starting point, but when you get to the base of the pyramid they are far apart. So,

with cattle of the flesh-forming temperament, their inheritance is along the line of making flesh. If cattle have the dairy temperament, the milk-making temperament, their inheritance is along the line of making milk.

The point with the dairy farmer is this: Can I afford to spend my time, use my labor, preparing feed and taking care of cows, taking their product to the factory and all the expense that comes to the farmer, can I afford to do that with anything but a decidedly milk-making cow?

You heard today what Prof. Fraser told you how down in Illinois there are a great lot of farmers who are keeping cows and keeping them at scarcely any profit. If you could go back and look into the mind of the farmer that owns those cows, you would see they are hazy, they are in an indistinct state of mind. You would find that man, just as likely as not, saying to himself, "the kind of cow I want is a cow that will make steers," while all the time he is subjecting himself to a dairyman's expense.

What is that expense? It is the feed of the cow, the stabling of the cow, the care of the cow, the milking of the cow, taking her milk to the factory, and all of that amounts to a large sum. Now, then, I believe, and I think my belief has been borne out, that we need to divide right here and that men who keep cows need to have a clear, sharp judgment as to the character of the cow. Now, comes the question: I can't go out and buy cows and test them all, but I must have a sharp judgment and I must have some knowledge in me, some way of judging a cow.

I have been trying to tutor myself to that end for over fifty years. I started with a father who was a good judge of a cow. I had to leave the little district school when I was sixteen years old and go to work on a farm by the month, and it was fortunate for me that I was taken by a man by the name of Simonds, who owned fifty cows, and was the best dairyman I ever saw in those days. He said to me, "Come and work for me and I will teach you to make butter and cheese, and I will try to show you what there is to be known about the cow." And he knew more about a cow than any man I had ever seen. I worked for him until

I was twenty-one years of age, when I left and came to Wisconsin, fifty years ago.

Now, way back there that man Simonds had clearly in his mind the dairy development in cows, and he tutored me and the last two years that I worked for him I carried on his farm, handled his herd, made his butter and cheese. So you see when I approach you I do not come to you and have not come to any set of men, a mere newspaper talker. I have tried to study this thing out, and on my farm to-day I am working out this problem, just as every man can work it out.

What is this question of temperament in cattle? It is hard to define. About 1886, when I tried to put this thing into shape I could get no word that would satisfy me, and I used that word "temperament." As I studied the biology and the physiology of cows, I found that one cow had a specific heredity for one thing and another cow another. Where does it come from? I don't know. Nobody knows, but all through history, heredity has been a powerful thing.

Now, then, we have been preaching the wisdom of selecting thoroughbred stock for breeding purposes, and why? Because it has been kept true to one purpose for hundreds of years. Go to-day to the Island of Guernsey and Jersey, and you will find that they have not allowed other cattle to come upon those islands for a hundred years, and so they have kept that breed pure. Go into Holland and you will find that those old Hollanders have been careful to keep their blood pure.

What does this temperament, which is the bottom thing in the cow, way down in the foundation, what does it do? It creates function. What is function? The power to do in a certain direction. For instance, the beef cow has the function of making flesh. She gives it to her calf; she is bred to a sire that has the same function and so the beef-making function and the beef-making temperament is established, goes on and on down.

Another cow has the function of making milk. Temperament has decided that.

Now then, what will function do? It creates form. To make

that thing clear to you, let me stand up two machines here, a sewing machine and a mowing machine.

A writer in the Breeder's Gazette the other day, Mr. Miller of Ohio, ridiculed the idea of the dairy form. I thought to myself when I read his article, how little that man knew what he was talking about.

We have a mowing machine and a sewing machine. What is the function of the sewing machine? Sewing cloth. What is the function of the mowing machine? To mow grass. Are they the same form? Could you take your sewing machine out in the field and mow grass with it, or could you take your mowing machine into the house and sew cloth with it? No. Function decides form in every piece of machinery on earth; therefore whatever the thing is made to do it has a corresponding shape in the majority of instances; every machine has a form and a shape in accordance with the function that it is called on to perform, and so you see function creates form.

Now then, you come to the last step in the matter, you and I stand here in the field, or in the barnyard, and look at this cow and try to decide from her form what her character and function are. I will try to show you to-day some of the things that distinguish a dairy cow in her form and according to her function.

On this chart is the Holstein cow Tritomia; defective somewhat in outline. This slope of the rump is caused by the extra height of the backbone at the pelvic arch, giving a slope to the tail head, but she was a great cow. I first saw her at the Minnesota State Fair when I was a judge of Holsteins. They got into a fight among themselves, the Holstein breeders, and they asked me to come and judge their cattle, and they had 347 Holsteins, and I did the judging, and they had forty-eight aged cows in this class. This cow and a number of other Holstein cows, and Jerseys, all of them, were going through a three-days' test. When I came to look this cow over, I was struck with her at once, and the more I studied her, the more I was impressed with her power, and finally I gave her the blue ribbon. At once a great howl rose up from those Holstein men; they said I did not know the first principles of a Holstein cow. There was a cow owned by the same man, Mr. Ames, named "Mink," and

she was a beautiful cow, and those men said, "Why, that cow is worth a dozen of the other," and they stormed at me tremendously. I held my temper, kept still until I got them quiet, and then I said, "Gentlemen, I am going to do a dangerous thing. This cow, along with a lot of other cows, is in the test, and it is within a day and a half of being declared and I will risk every bit of reputation I have got on earth that this cow will justify my judgment when she comes out of the test. Now, shut your mouths and wait and see what this cow will do, and if she does not justify me, I will never open my head again on the cow question." So they said they would wait. When this cow came out of that test, she had beaten the whole of them, Jerseys and Holsteins and everything else, the whole bunch. Then these Holstein breeders came around me, and asked me to tell what I saw in the cow.

Now, there was the trouble; all the Holstein men looking at cows from the Holstein standpoint, and not from the cow standpoint. All the Jersey men looked at their cows from the Jersey standpoint and not from the cow standpoint, and there is the difficulty in this whole cow question; men are not looking at these cows from the mother standpoint.

Let us study this cow for a few minutes. You see over the whole cow a strong feminine look, don't you? You don't see anything of a steer character in this cow, nothing masculine, she is feminine; you see it in a minute, and that is at the bottom of things. Nature constructed her for her work as a mother.

Let us look first at the head, and let me tell you, gentlemen, that here is a tremendous great battery at work here, carrying clear through the whole machinery of this cow down to this udder, the nerve supply, the force that will enable her to do her work. Here is a cow long from the poll to the eye; a great full eye, sticking right out of her head. What does that indicate? It indicates abundance of nerve supply. What has nerve supply to do with it? The brain must support the spinal marrow, the channel through which all the nerve energy must flow through the body. The cow must have a large brain; the dairy cow needs more brain, a great deal, than the beef cow, because she has to supply an enormous amount of nerve force to this great organ

here, the udder. What is it and how is it conducted through her?

Now, see, a man judging this cow, looking at this question of the brain and the back always, he should study closely the structure of the cow's back for these processes set like my knuckles, and each one of these knuckles indicates somewhat the character of the backbone, and in studying the character of the backbone in the dairy cow, we see that it needs to be rugged, strong, large and full, and it indicates, somewhat, as much as you can indicate from the external, the power of the spinal marrow in this particular. The cow needs to give you evidence right here of a large, active brain.

Another thing, the cow should have a great nostril, a wide nostril. Why? Because the cow vitalizes the blood from the air; she must have great breathing apparatus, she must take in lots of air, and nine farmers out of ten to-day, being sinners before God and the cow, don't know that this question of air is of wonderful importance to the cow; she must have lots of pure air, because she must secrete the milk from her blood and she must vitalize her blood from the air she breathes, and if she can't have plenty of oxygen, if she is shut up in a badly ventilated, filthy stable, she cannot give that blood the vitalizing power that is necessary.

An old German said when I built my barn and put in the King system of ventilation, "How much did that cost you, Hoard?" "It cost me $350 extra." "Oh, mine Gott in Himmel, you can't afford $350 for air; you have it all around you." "But I haven't it here. I must keep the cows warm and if I shut up the cows tight to keep them warm, you know yourself that the air must be pure or else something is wrong." I went on to show him, I asked him, "What does the cow live on?" "She live on what she eat and what she drink." "And one thing more, what she breathes. If you take away her breath, she will die quicker than if you take away her feed or her drink, won't she?" "Yes," he says. "Well, the cow must have pure air, pure feed and pure water."

I wish I could show you how this circulation of blood goes to the udder. You would see a great big artery run-

ning inside from the heart and branching down from other arteries and veins on down to this udder. The milk is secreted from the blood and it takes an enormous amount of blood, and if you want to know something about it, look at these great veins here upon the belly. We call them milk veins, but they are not; they are the veins that take the blood back to the heart. Do you know of any such veins on a steer? No. Do you know of any such great big veins on a beef cow? No. Then why has Nature made those great veins? Because she sends an enormous amount of blood here to the udder and it must be sent back to the heart, and then to the lungs. How does it look when it comes from the udder to the heart? Dark in its color, it has taken up all the vile things in the body. How look when it comes out of the lungs and goes on again to the udder? Bright red. Now, what has happened? Oxygen has been imparted to it, it has been vitalized, been strengthened by the lungs. The lungs throw out this vile product that we call carbon dioxide and throw out other humors. Now, what becomes of them? What do they do? They vitiate the air. And what do we do? We shut the cow up, tight in the barn and refuse to give her any pure air, and then we stick our thumbs in our vests and say, "Behold, oh Lord, what smart men Thou hast made."

Go through the dairy districts of Wisconsin today and see how the farmers are shutting up their barns and not giving their cows pure air, and tuberculosis is going over the country and we are killing our cows and doing nothing to prevent it and calling ourselves intelligent men.

So I come back to the proposition that the cow must have a great big, wide nostril, because she must use up lots of air.

Look at the race horse. The old adage is that a race horse must have a nostril that you can put your fist into. And why? Because nature calls on that race horse to use an enormous amount of air and if the horse has to use a great deal of air, Nature provides him with a big nostril, and it is so with a good cow. If she has a small nostril, she is shut down in supply and just in that proportion is the cow injured.

She must have a strong, wide muzzle. That indicates that she

has large digestive organs. She must have a good, clean head, with a strong jaw. I do sometimes see good cows with a heavy neck, but a man is going to get left in this world if he takes exceptions for his rule; you must take what in the majority of cases is true, as your rule, and in the majority of cases a good cow shows a feminine neck.

The cow needs to be lean in the make-up of the shoulder and the brisket, a dairy cow should not be wide between the legs. I hear men talking about cows showing large lung and heart room by being wide between the legs, that is not true. I have followed hundreds of dairy cows to the butcher's block and weighed the heart and the lungs, and I did not know till I tried it, but it is true that a good dairy cow's heart and lungs will weigh more than the biggest beef cow's you ever saw, and why? Because Nature makes her use blood and lungs both more than the beef cow does.

Now then, a dairy cow needs a lean shoulder; I like to see cows with a pretty middling sharp shoulder, but I have seen fine cows that had not a sharp shoulder. So in all these things, the great broad proposition must be taken.

Then I want to see a cow with the ribs wide and spaced wide between. All these things indicate that a cow is of the milk temperament and not the beef temperament. If we had a picture of a beef cow here, I could show you that the beef cow's ribs spring out like this (indicating) so that Nature can lay a large loin, a fine lot of meat right next to the backbone, a big, heavy, fleshy loin.

Now, how is it with the dairy cow? Her ribs spring more like that (indicating) and the ribs are wider, the cow is built more open and relaxed.

Now, you come back here toward this great business end of the cow. When you come back here to the pelvic arch, right there, gentlemen, are the great processes of motherhood. Here lies the womb, where life is generated, and here the udder and tying this womb and this udder together is a great network of nerves called the sympathetic plexus, a wonderful set of nerves, and these two organs are connected indissolubly together. Disturb one and you disturb the other. They go to the spinal mar-

row, and connect with this great battery of the brain, and here comes the nerve supply down into the womb and into the udder. It is a wonderful piece of machinery.

I want the udder well constructed, I want this cow with wide hips; I want to see her with this in-curved thigh, cut out in here. Why, if she was a beef mother, she would be of thick blocky shape. I want to see the cow thin in her ham inside so there is a lot of room for this great milk-making udder.

Then I want this backbone rising high and strong and so continued clear to the tail head.

Another thing I prefer is a well formed tail, for the tail is a continuation of the backbone and is strong just as the backbone is strong, and consists of a series of joints in the same way and so the bony portion of the tail is an important feature.

We are going to have at the College of Agriculture at Madison some day a great department for the study of the domestic animals on the line of structure, as relating to function, and we are about commencing to see if we cannot establish it. I believe that, when you dissect this cow—and I would like to have obtained her skeleton,—I believe that you would have found that the spinal marrow that went through those processes of the backbone was unusually large in that cow, and I believe you will find that in every great cow in the world, that the hole through which passes the spinal marrow is large, indicating a great spinal marrow, a great channel.

When you come to the constitution of the cow, a lot of men tell me to see what her heart room is, her lung room. That does not indicate it; if it did, the great big width between the legs of the beefy cow would mean more than the little Jersey cow shows. I wish you would go to the block and find out what these cows show. If you take a big, beef cow, weighing 1,600 pounds, you will think, of course, you have got larger lungs and larger heart than you will find in a little dairy cow weighing nine hundred pounds, but the dairy cow has the largest lungs and the largest heart, for she has to use her blood and her breath a great deal more than the big beef cow.

Where should you look for constitution in the structure? In the abdomen. Constitution is the power to endure under the

function that the animal has. Take the race horse; his function is to run a mile or two miles on the race course. Is that race horse wide between the legs, is he wide-chested? No, and yet he uses more lung power and more heart power in running a mile than a draft horse would use in a week. Therefore some of these things that have been said to us are misleading.

What is the function of the greyhound? Speed. What is the function of the bulldog? Is it speed? No, and he isn't built that way, is he? No. Whatever the function is, you have a certain build. Now then, that won't tell you all the story, and no man can by the words of his mouth tell it to you; you have to have a judgment that words do not indicate.

There is a way of judging constitution, and I will tell you how I first learned it. I was a soldier, and I was ordered to go with an English surgeon to examine men for the draft. He found out that I had read medicine for a couple of years and he had me detailed to go along with him. I found out that he had a peculiar judgment of men in examining them. The men were stripped. I remember one splendid, six-foot chap, fine shouldered, loin, and limbs, and he rejected him. I asked him why, and he said, "No constituiton." "Why he looks to me as though he had the best constitution in the world." "Yes, you judge him by his build. You think strength of build is constitution. It is not. Constitution is something else. You and I have seen horses that could kill other horses. Very likely, if you look at them you can't see what it is." But the doctor said to me, "You will notice that among soldiers, some of very slight build will tire the big, strong men in the march. Now, I will show you where the secret is." And he brought me around and said, "Look at that abdomen." The moment I looked at the man's abdomen I saw something was wrong, though I couldn't tell what. He asked the man, "Don't you tire very quickly?" and the man said, "Yes, I can't work much. Some of my neighbors call me lazy." That was because he was a husky, strong looking fellow, but he had to be exceedingly careful, the doctor told him, because he had no vitality. The doctor explained the thing this way: "Constitution means vitality, ability to resist disease, to stand up and do your work, and that is some-

thing that is given by the mother and the mother supports the fœtus through the umbilical cord. Any physician that has ever taken note will have seen that when a babe is born with an umbilical cord that is thin and weak and spindling it is almost impossible to raise that child. On the contrary, if the umbilical cord is strong and thick, there has been a full strong channel between the mother and the fœtus, the child comes into the world husky and strong, ready for all the world has to give it.

So he said the structure of the abdomen was an indication of what the umbilical cord was, and when you examine a cow or a horse or anything else, if you are looking for constitution, put your hand down under like that, and with the end of your finger press up against the abdomen all around the navel and clear out from the navel and note whether the abdominal walls are strong, thick, heavy, and it is almost impossible to make any indentation into them. If you find that that is done easily, the walls are thin, look out for that man or that animal.

I used to be a breeder of foxhounds. A man brought me a pair of foxhounds, brother and sister, and asked me what I thought of them. I said, "I think the dog has a very keen nose but I don't think he will run an hour on the track, but I think the bitch will run all day and you can't pull her off at night." He laughed, and asked me how I judged, and I said, "By their abdomens. This dog's abdomen is thin, weak, like paper, while the bitch has an abdomen that is heavy, full; strong, muscular walls."

Now, this is my guide in judging constitution. I look at the structure of the abdomen and then I know that that is not an indication of capacity, but an indication of endurance. The cow that is giving forty pounds of milk a day is drawing on her constitution more than a horse that is plowing all day, and yet many men forget that the work of motherhood is severely exhaustive and that they ought to know something about motherhood, and if they do not they are unfit to have wives or cows. I do not class the two together, except in the one great generic proposition that both are mothers and both are drawn upon severely for the functions of motherhood, and I say that men in judging cows ought to study them from the standpoint of tem-

perament and then function, and finally form, and when you undertake to find what temperament and function are, go back from form to function and from function to temperament.

There are some things I cannot tell you that I know; I cannot put them into words. Let me illustrate to you. My hand, as I feel of a cow, conveys to me a wonderful sight. Let me tell you how I proved it in one case: Professor Haecker, of the Minnesota Experiment Station, had been carrying on an experiment with fourteen cows for a year, with a wide ration and a narrow one, one ration 5 to 1, another up as high as 8 or 9 to 1. He wanted to see whether the wide or narrow ration was the best thing, and so he worked on these cows for a year. He then asked our Professor Henry to come up and look them over and also asked me to come up. He asked me to tell from my judgment which of those cows had the wide ration and which had the narrow. I said to him, "Why, Professor, I can't judge this; I have nothing to go by, I don't know how I can do it." He says, "There ought to be some difference in their appearance and in their condition and you ought to be able to tell." "Why, how can I tell?" "Well, go out and see, see how close you can get to it." Then I bethought me of my old trick of feeling of the hide; it used to tell me so much toward whether the cow was just the right temperament or not. So I went over the two lots. They brought out one of each kind, and I saw there was a decided difference in the feel, but I couldn't tell which way the thing pointed. Finally I made a stab at it, and said, "Well, I think that one is the one fed on the wide ration, and the other on the narrow." He said, "You are wrong, it is just the other way." "All right," I said, "now, bring on your cattle." He brought on the cattle and from that time I didn't make a miss; I told him which one had the wide ration and which one had the narrow, by the feel. He was thoroughly puzzled, said he couldn't understand it, and there were others present, and they said to me, "Tell us how you get at it, describe that 'feel'." Why bless your heart and body, whoever heard of a man describing a "feel"? Who ever heard of a man describing a "smell"? Whoever heard of

a man putting taste into words, except to say that it tastes sour, sweet, or bitter?

We need to go into our stables and study these cows, and study them from the standpoint of all that we can find out about them, and if a man studies he begins to find that the "feel" of his cattle will bring light to his mind, but he can't put it in words.

Now, gentlemen, I have given you a hasty little talk about some of the foundations of judgment in cattle. I want to say to you that if you go into the development of the cow toward making her a specific dairy cow, she takes on more and more the dairy shape; if you go on developing the cow into more of a beef temperament, she takes on more and more the beef shape, and so this form is an indication whether this cow belongs in the category and class of dairy cattle or not.

She may have a perfect frame and be an imperfect animal. I have a cow in my herd to-day, the daughter of the poorest Guernsey cow I ever owned, and that cow is one of the finest in my herd. Sarah of Jefferson was a well bred cow, but for some reason or other she couldn't make over 225 pounds of butter, no matter what I did. I bred her to a sire by the name of Espanore II., and it brought me this beautiful heifer Bernhardt. I was advised not to keep her, but I said, "She has great power." When she came to her two-year-old form, she gave me not quite 300 pounds, and then she gave me over 400 pounds of butter fat the next year. Now, from whence did she get her power? She got it from her father largely, because sons take from their mothers and daughters from their fathers; that is an old principle in breeding.

And there are many farmers who lose out on the proposition that the mother will convey her good qualities to the coming daughter.

Gentlemen, I might talk all night and you wouldn't be any wiser nor I either, so I better stop.

DISCUSSION.

Mr. Everett: Can't you make it a little more clear as to why a cow cannot be highly profitable in both directions? Explain a little, why the two functions are at war and they cannot both predominate in one cow.

Ex-Gov. Hoard: Sure. There is a great fallacy existing among our farmers, and a certain class of breeders that are very anxious to have it exist. We have a class of men today that are breeding beef cattle and are telling you that they belong to the milk strain. Do you think a man would bring you a draft horse and tell you he belonged to the speed strain, and if he did, what it would it be worth to you? I don't think you would buy him to make a race horse out of him. Suppose a man brought you a bulldog and told you that he belonged to the greyhound strain. Oh, the world is full of inconsistencies. Now, the beef temperament is just as distinctively by itself, as it can be and the milk temperament is just as distinctive. You undertake to unite them and they begin to war with one another. Now, that doesn't say that Nature, once in a while, doesn't make a sport. Once in a while you will see a beefy cow that is giving an abundant amount of milk, but take them through, by and large, see what you can get out of a thousand or five thousand cows, and you will find that the beefy bred cow is a disappointment and a snare when it comes to doing dairy work.

Mr. Goodrich: I want to tell you about Rose. She was a pure bred Shorthorn, and had been bred for thirty years in one line. Her owner selected those that were the biggest milkers; the grandmother of Rose, the woman that owned her said they used to call "Old Bones," because she never would grow any flesh.

Now, I want to say something on this question of judging cows, because it is a very important question. There are a whole lot of us that want to buy cows and we want to know by the looks of the cow whether she would be a profitable dairy cow or not. Governor Hoard has told us a lot of things, but I want

to ask him, is there a difference in the bony structure between the dairy form and the beef form, or is it just in the covering that is over the bones?

Ex-Gov. Hoard: Well, I am very strongly of the opinion that there is a difference in the shape and form of the structure of the bones.

Mr. Goodrich: If that were not true, see what would happen; all we would have to do to make a dairy form out of a beef animal would be to feed it poor enough and reduce its flesh to simply covering of the frame. Isn't that so? A great many years ago, when I was young, I was called on to judge dairy stock at different fairs. Five years ago, I went to Michigan in the Farmers' Institute work and when I reached Lansing, Professor Smith telephoned me in the morning before I got up to come down to the Agricultural College. When I arrived at the college he said, "Come right along," and he led me into a room there that had three cows in it and there were a lot of students, some of them owned farms and some had been in the dairy business a good while. He said to me, "I want you to talk to these boys about these cows and judge them, put each in its proper class." Well, I did the best I could and then they began to shoot questions at me, and I tell you they were sharp, and they shot this same question at me: Is there a difference in the bony structure of animals or is it all in the covering? Prof. Smith and Prof. Shaw were both teachers there of those dairy students, and I noticed that every one seemed to hold his breath while I was considering just what to say. I said, "Yes, I think there is." And such a shout went up, it really frightened me, I didn't know what the matter was. Prof. Smith said, "Don't be scared, they won't hurt you." But it came out that Prof. Smith had told them it was all in the covering, that nobody could tell by the bones of the animal whether it was a beef animal or a dairy animal, while Prof. Shaw had talked differently, so I was on Prof. Shaw's side.

Prof. Smith told us then, "We are going to know about this." And he told us that Bell Sarcastic had been a magnificent dairy cow, she was tuberculous, and they were going to slaughter her, and a beef cow, and they were going to find out. I asked

him when they did that to write to me and tell me if there is any difference. He hasn't written me anything about it yet. Now, I suppose you want to know, as those boys did, what is the difference. It is one of the things the Governor spoke of; it is the spring of the ribs just as true as you live. A beef animal's ribs come out in this way, (indicating with his hands) and it leaves a broad place to pile on meat, while a dairy cow's ribs come down in this shape more, come sloping down. Well, these boys pressed me, they asked me what should make that. Well, it is hard to tell sometimes what causes it but I have a theory, and I give it to you for what it is worth. The work that an animal does, does affect that animal's form. The work that a man does affects his form; the work that I did when I was a young man has affected my form and I know it. The work that a cow does affects her form; the cow that is a good milker is of course a very heavy eater. She carries a large amount of feed, besides the young. Well, somebody says, "But the beef cow does the same thing, doesn't she?" Yes, but the beef animal has a lot of muscle right along here that acts as a brace to hold those ribs. The dairy cow is without those muscles, at least so large, to hold up that weight, and the tugging down year after year and generation after generation has modified the form.

Then here is another place where you can see the difference between the beef and the dairy animal, this backbone here. You can see the bend of the ribs here on this cow and how high it is between. With a good Shorthorn cow you can lay your stick from one hip across to the other and it will barely touch the backbone and sometimes it doesn't.

The Chairman: We will find out more about these things at the University pretty soon.

Ex-Gov. Hoard: We hear a great deal about "nicking." Suppose that you have a sire of strong, decided dairy temperament, like a Holstein or Guernsey, and you have a female of strong, decided beef temperament. In mating them, what are you doing? You have warring elements there, a "nick" that is in constant warfare, one of these elements with the other, and that is not right breeding. What is the average farmer in

Wisconsin doing? He will start first by breeding his native cow to a Shorthorn, because he wants size. Then after a few years he will breed to a Holstein, in order to get quantity of milk; then he will breed to a Jersey to get richness; then he will breed to a Guernsey to get color and after fifteen or twenty years, what kind of cattle will he have?

A Member: Hash.

Ex-Gov. Hoard: Yes, that's it, and I have found thousands of farmers doing that very thing.

There is a certain vigor that comes from crossing; for instance, I never have seen any such pigs as I have been breeding for the last three years, thoroughbred Berkshire sire for two years and then they were bred to Poland-China for two years more. But of course they are allied breeds, there is no war between them, and I have had wonderfully strong pigs.

But in the dairy we are breeding for one specific product which is milk, and our farmers must breed in straight lines.

I have been taking cow censuses for twelve years, I have spent over $4,000 in trying to get at this judgment from the broad standpoint and there are altogether too many farmers in this country who pay no attention whatever to the dairy heredity of their cattle.

Mr. Everett: Gov. Hoard spoke of the circulation of the blood. The wise men who breed beef animals, know that it is expensive to develop certain qualities in them. She has a small udder, because she has no use for a large one; the dairy cow hasn't a broad back, it would cost money to keep all that warm. The dairy cow must be protected; the beef cow stands out in the blizzard and don't care very much about it. She doesn't require the same big circulation that the dairy cow does. A cow cannot give thirty or forty pounds of milk a day and put beef upon her back at the same time, the two functions are at war, but men cannot see it. I got a letter the other day from one of our subscribers who took me to task severely, because I advocated better cows and the growing of larger crops. I said that I had made more money farming by growing larger crops and by making more milk from my cows, but he said I was all wrong; he didn't want to work his family to death growing

bigger crops. What he wanted was not bigger crops but more money for what he grows.

Mr. Luchsinger: There is one indication of a good dairy cow that dairymen pay a good deal of attention to, and that Gov. Hoard did not touch on, and that is the so-called large vein on each side of the body.

Ex-Gov. Hoard: They are called milk veins, but they are not milk veins.

Mr. Luchsinger: I understand that, but do not those veins really indicate something?

Ex-Gov. Hoard: They indicate a very large circulation of blood in the udder, and the milk being secreted from the blood you get your judgment secondarily. The large milk veins indicate very large circulatory action of the system toward the udder, because milk is secreted from the blood and these veins carry the blood from the udder, not to the udder. I shall publish in a few weeks cuts illustrating this whole circulatory system of the cow. A great big artery starts from the left ventricle of the heart and runs along up here and branches out, and then from that again a great many veins run to the udder. Of course the blood that is carried to the heart must be taken back. There is more circulation to that udder than to any other portion of the cow's body, proportionately, except to the heart and lungs.

Mr. Goodrich: You notice a cow that has never given milk and these veins are not prominent. But what do you think of the milk wells, the openings through which the veins pass back into the chest? Doesn't that indicate that Nature has provided for a large circulation there?

Ex-Gov. Hoard: Sure; Nature has built the frame to suit the form. She has large holes there where the veins are large and she has made small holes where the veins are small. In all these things, Nature builds in proportion as she calls on the animal for a function to perform. Nature has wonderful constructive power when you give her a decided function to work upon, but go and mix up her functions and see what she will do.

Mr. Ellsworth: I come from a locality where we must of

necessity depend upon the sire we can get, but I want to ask what class of cows, presuming we use pure bred sires, will produce the best results? I have heard men say that their mares were an excellent breed of mares, because they produced colts like the sire, and that always satisfied me that the mares were scrubs. Many of our men think they are raising the best dairy cows by using pure bred dairy sires and crossing upon such animals as our friend here calls "hash." I would like to have some light on that proposition.

Ex-Gov. Hoard: You are up in that community in Barron county. You have to use what the farmers have. My observation is that a native cow, a mixed sort of a cow but pretty fairly good milker, coupled with a pure bred dairy sire, will produce a great improvement on the mother, because she has not an opposing prepotence in her tendencies; consequently she is more receptive. Here comes in this strong, prepotent tendency in the sire and takes possession of her blood, and gives to you a much better result than if you took for the mother one that had a strong prepotent tendency toward beef. That stands to reason, because then the two prepotencies would be warring all the time. You would not get so large a proportion of improvement in the subsequent crossing as you did in the first. You take a first cross, and you see a wider distance between the mother and the daughter. Then breed the same daughter again right along in line with the same line of blood, and then weed out, and you have a well graded up herd. With all strong heifers I would inbreed once with grade cattle, then you get a three quarters in-bred. Then, that mother would be almost as responsive to the sire's blood as though she was a thoroughbred. She could not be registered, but she would be wonderfully responsive; there would be no warring tendency between the mother and the father. The real science of breeding is to harmonize and put like with like. Now, you take an ass and a horse and you get a mule. But what does Nature do in this case? Stops right there, she denies any further procreation. In breeding, men should stay right by one breed, all the time breeding with a prepotent sire, and do not stop for a few

dollars, stay right there. Don't go and mix them up. Mr. Goodrich started with Jerseys, weren't they, Mr. Goodrich?

Mr. Goodrich: They were grade Shorthorns, most of them, but my best grade cows came from an Ayrshire.

Ex-Gov. Hoard: Ayrshire mixes finely with pure bred Jersey or Guernsey. What was your average production, Mr. Goodrich?

Mr. Goodrich: The first year I kept account there were 150 pounds of butter per cow. I went on till I got 366, and one-third of the herd was two and three-year-old heifers and finally I reached a production of 400 pounds or over.

Ex-Gov. Hoard: And that came from grading and weeding out.

A Member: What would be the matter with changing sires from one breed to another, say, Guernseys and Jerseys?

Ex-Gov. Hoard: The Guernsey and the Jersey are what might be called kindred cattle, but the Holsteins are so widely away—suppose I am going to have a Holstein grade mother and I take a Guernsey or Jersey father, so as to get the quantity there is in the Holstein and the richness there is in the Jersey. That is a very fine thing to hope for, but they are rarely produced. The result has been by those who observed it, that the resulting progeny are no where, because there is no harmony between the prepotency of the mother and the prepotency of the father. Between the Guernseys and Jerseys there is much more harmony, both having been bred for butter, but I would not advocate mixing them as a rule.

A Member: What about the Berkshire and the Poland China?

Ex-Gov. Hoard: You know the Poland China came from Berkshire, and the Chester White; the original Poland China goes back to Berkshire blood, and so they harmonize very well when you bring them together. Now, the Berkshire has an exceedingly great vigor, he has the strongest bone, he is very muscular. The Poland China has a tendency toward excessive fat and besides that the Poland China sow is apt to be too refined. I only breed to turn them over, you know. I was not breeding

for purity of blood at all. I knew that with hogs you must be careful about inbreeding, at least I thought so, and so I said I will buy a Poland China sire, use him for two years, then a Berkshire for another two years; and I have got a very fine lot of pigs in that way, but I think it is partially due to the fact that every single one of the mothers, from the time she was bred until she farrowed, was kept on alfalfa hay, nothing else. By crossing, I have helped the vigor of my pigs. When I first started in I kept my nine brood sows on alfalfa hay until they farrowed, nothing but that and their drink. My foreman said they would starve, but they went through the winter in fine shape and brought me seventy-eight pigs, and I fattened and sold seventy-five.

Mr. Luchsinger: How does the Governor explain the fact that in Green county the Holstein dairy breed is the favorite, or becoming so, while in Jefferson county it is Holstein or Jersey?

Ex-Gov. Hoard: Now, Mr. Luchsinger, can you tell me why a large part of the farmers in Green county married Swiss women?

Mr. Luchsinger: They were looking for wives and married Swiss girls.

Ex-Gov. Hoard: Isn't that a very good answer as far as it concerns Green county? In Jefferson county you won't find men marrying Swiss girls, they marry Germans. When it comes to the question of the taste men will exercise, their taste in women anyway, all the talk in the world won't stop them, and in cattle it is the same thing, when it comes down to the proposition of choice, it is a matter of taste. It is a matter of taste with me; I like the Guernsey from the standpoint of my taste, but I believe the Holstein cow is one of the finest cows on earth; I am bound to believe that, because she proves it. I know that my wife is one of the finest women that ever bore children to a husband, and I have three handsome boys to prove it by, too—they look like their mother. I haven't had a chance to show what my daughters could have done.

The following gentlemen were named by the chair to serve on the various committees:

Committee on Nominations: C. P. Goodrich, C. L. Hill, S. J. Stauffacher.

Committee on Resolutions: J. Q. Emery, C. H. Everett and W. W. Chadwick.

Auditing Committee: C. L. Hill, J. T. Atwater and U. S. Baer.

Convention to meet at 7:30 P. M.

EVENING SESSION.

At the evening session, which was in charge of S. J. Stauffacher, after a few words of welcome by that gentleman and prayer by the Rev. W. Auser, the following program was enjoyed:

Music by the orchestra, in charge of Mrs. Nettie Booth Wegg.

Vocal solo by Miss Gardner.

Recitation by Col. C. S. Young.

Milk-Maid Chorus by the high school girls in charge of Miss Gardner.

DAIRY MAIDS' SONG.

We have come to you tonight,
With our shining milk pails bright.
U Rah Wisconsin!
To sing your praise and fame,
And the glory and the gain
To every farmer in Wisconsin.
And if the grand advice you've heard
You'll write on Memory's slate.
U Rah Wisconsin!

'Twill double up your business
And will glorify the state.
You bet your life it will.
We come to you tonight
With songs and with music bright.
Good times, bright times
Follow in the wake of milk and cheese.
For Hoard has come to tell us
The things we ought to know,
To profit by his counsel wise
You surely won't be slow.

O'er the milky way he's traveled
Years thirty-six or more.
And every farmer in the land.
Has gained in wealth and store.
The future gleams bright and true,
May it bring luck to you.
Honor and praise is due
The man that brought the cow.
Ring, ring, ye cow-bells, ring,
Sing, sing, ye milkmaids, sing,
We'll raise our chorus loud and strong
For gallant Tom.

You must be nice, you must be neat,
Keep your shining milk-pails sweet,
Clean the rubbish off the ground
When Marty marches round.
Ring, ring, ye cow-bells, ring,
Sing, sing, ye milkmaids, sing,
And raise our chorus to the breeze
For milk and cheese.

ADDRESS.

HON. W. D. HOARD, Fort Atkinson.

Ladies and Gentlemen: I am no more fit to make an address than I would be to court all those beautiful milk-maids. Their inspiring presence, their dainty ways, their beautiful music has put all sober enunciation out of my head, and I am a boy again, after the girls. I did not suppose, Gen. Burchard, that there was so much of the old time inspiration left in the sober and prosaic dairy business, as we have listened to tonight.

I have attended every meeting of this Association but one since it was organized, thirty-six years ago, and in all that experience,—the Wisconsin Dairymen's Association has never had presented to it as graceful and pretty a compliment as we have received tonight. I am surprised. I was not prepared to believe that in this little city of Monroe there was as much genius and sentiment as I have seen and listened to to-tonight, and the idea of asking an old fellow like me, full of recollections of his youth, to make a speech,—why, I simply can't do it. I have a good notion to cut loose and tell a story, and if I do, I want you to understand there will be neither rhyme nor reason in what I say.

(After delighting the audience in his inimitable way, with a number of "stories", the Governor continued.)

I want to say one sober thing before I close. I wish that the good people of Monroe could see in one clear, straight presentation what the meaning of this convention here is. I wish the good people of Monroe could understand what part this great dairy interest plays in the destiny of the state of Wisconsin. Last year we passed through a great panic, one which has not been equalled since 1857 in some particulars, and yet let me say to you that the great agricultural interests of the state of Wisconsin do not know it to-day. The dairy industry of the state did not know it in 1893 when the manu-

facturing and the commercial interest of the county were suffering severely; all of those sections which had been devoted to the cow sailed as calmly and as serenely through the storm as though they had been an argosy freighted with flowers. Not a single tremor passed through the districts devoted to dairying.

Again in 1907 came a great paralysis all over the body politic, profoundly affecting all the industries of the country, but every dairy district of Wisconsin has stood like a rock; the commercial interests of Monroe, of Fort Atkinson, of Sheboygan, every district in the state, where there was a strong cow population, sailed along steadily as they are doing to-day.

What does this mean to the schools? What does it mean to the social conditions? What does it mean to those things we call the civilization of our day, and which are built solidly and serenely as upon a rock? That is the reason why we come together year after year and have been doing so for thirty-six years, and struggle for the dissemination of knowledge, striving the best we know how to get the farmer to understand the meaning of his own salvation, and to-day Wisconsin assumes a proud place. The ladies who sang to us tonight about Wisconsin had in their utterances, almost, I might say, the gift of prophecy. Her College of Agriculture stands to-day without a peer in all of the United States; no such work is being performed anywhere in promoting agricultural culture as is being performed in Wisconsin by the College of Agriculture.

Last winter I had the pleasure of standing in Madison and addressing six or seven hundred young men belonging to the Experiment Station; young men who have graduated from the Short and Long Courses of the College. The other day I asked Dr. Russell to come before the Board of Regents, because I wanted him to present a graphic picture of what the college was doing, and he brought in a map dotted in such a way as to show where every young man is located who is engaged in the experimental work on barley, alfalfa and corn. That map showed that there are to-day over 1,000 young men in Wisconsin engaged in experimental farming under the leadership of the college, and each one of them is a culture center in his own locality, disseminating by example and by precept and in all

manner of ways the knowledge he has gained at the College. Think what that must mean to the agriculture of Wisconsin.

Then again Wisconsin is becoming a wonderful stock-breeding state; my own little county of Jefferson twenty-four miles square, last year sold over a half million dollars worth of dairy cattle besides two million dollars worth of dairy products.

Let me take you, in imagination down to the old township where I was reared in New York and where I saw farms once sell for $100 an acre. I can buy them today for $30 and $40 an acre. A farm of 358 acres, with $50,000 worth of buildings on it, was offered to me by the Bank of Syracuse for the face of the mortgage, $10,000.

Now, what makes the difference? Why is Wisconsin to-day with a constant appreciation in the value of her farm lands, and what is the matter down in New York and New England where such farms are abandoned? It has been stated on good authority that the state of New York in the past thirty years has lost over $130,000,000 in the decline of the value of her farm lands, while Wisconsin has been constantly appreciating. The Yankee farmer has been truthfully said to be a destroyer of forests and fertility. From the time he started on the Atlantic Coast until he reached the Rocky Mountains, the Yankee farmer has been constantly going west to destroy another country, but fortunately for the nation the German, the Scandinavian, the Swiss or the Bohemian farmer has come in and taken his place, and wherever those men have settled you see at once a growing appreciation of the price of farm lands. And do you know the reason? Let me tell you; go back to the homes of these men, back to Switzerland, to Scandinavia, to Germany, go where you will on the continent in Europe and you will there find every government teaching its little boys the elements of agriculture in the common school.

It was not taught to me, no, nor to my father; those foundation things have been forgotten, overlooked, and New York has suffered in consequence to the extent of $130,000,000, and so I preach to you tonight, the people of Wisconsin, that this is one of the things we must do. It is written in the destiny of our state that we must take hold of the school in the country, the

school in the city, in the village, the high school, everywhere we must begin to teach these people the elements of agriculture.

In my little paper, we have a department of inquiries and answers. We there construct rations, give advice and answer questions concerning the life of the people to whom the paper goes. We have to use scientific terms sometimes; for instance, there is no equivalent for the word "protein," and so we must use that word, and the same with "carbohydrates," and we found that if we were going to use these terms in making up rations, that some of our readers would not understand them, and we had to go to work and construct a little dictionary, called a "Glossary," putting these terms into as simple words as possible. Now, if the state of Wisconsin had done rightly by these people and had taught the meaning of these things in the schools, that would not have been necessary.

We need to change our methods and give our people, our children, a practical education, so that men will be enabled to understand the literature of their business. The trouble with our schools is we are trying to give a fifteen cent education to $1,500 boys and girls; too many of them have crammed into them, things they can never make use of, while they are sadly lacking in things they need every day of their lives. Knowledge that no man can use is without justification, either by faith or works, and so I say tonight that we must take hold of this proposition and begin to teach the elements of agriculture in our common schools.

Selection by the Harmony Club.

THE RELATION OF THE FARMER TO THE PUBLIC SCHOOLS.

A. F. Rote, Monroe, Wis.

What I have to say upon this question this evening will be but a few words strictly from the standpoint of the school teacher.

The farming community of this country comprises considerably over half of our population and is an exceedingly substantial body of people and certainly the form of public school education that they have, should be thoroughly up-to-date and equal to that which we find in existence in our cities.

The public school system that we have today is quite largely an American institution, especially that feature of it by which it derives its support by means of general taxation. It started in the eastern part of this country, and I think Horace Mann, who has been given the greater part of the credit for originating the idea, his idea was to provide by general taxation for the general education of the young people of the city in which he lived. That city was accordingly divided into districts and a common school course of study was inaugurated, which is very much like our present district school system. That has spread as the people have immigrated from the eastern states until it has covered all the northern part and a great deal of the southern part of this nation.

At the same time the higher education that was given in the towns was partly through a system of schools called academies, and as these people moved west and spread over this country and new cities grew up, towns and villages, they immediately provided that education for their children, but they had no way of providing for higher education, and consequently after a time there rose the high school, as we have it.

Now, the growth of the high school system in this country has been phenomenal, and taken together with the rest of our public school system, gives us one of the most perfect systems any country can have.

There have been several changes which have taken place in comparatively recent years, and they are of two kinds, the first, as the cause of the second. The course of study followed in the old academies was a good deal such as to give general culture and prepare a man to become a minister or a lawyer or physician, but the high school academy, as it passed into the high school, passed under the control of the public altogether, changed its course of study, and turned it into a more practical trend. In the first place they became more scientific. I can remember when the elements of science were first taught, and now they are teaching various kinds of practical knowledge.

The State Universities grew up likewise, giving us a complete system of schools.

The State University, when I attended it, was largely a college; the scientific side of it has grown enormously, expanded in a great many ways, and it also carried just two lines, on the one side that which is purely theoretical, and on the other, putting theory into application, and subsequently along with the instruction of sciences has developed the practical work, the machine shops and laboratories.

That idea has come down into the high schools, and the high school courses have been modified accordingly, and in the last fifteen or twenty years you will find all over this country, all the high schools nearly have been replaced and new buildings built to meet the new demands of the new courses of instruction.

One of the most remarkable changes in the university has been the expansion in the courses of agriculture. When I attended there, there was one lone student in agriculture, and he was the butt of a good many jokes.

The point of what I am trying to say is this, that the cities, aggregations of people, have been able to carry out this common school which has taken the place of the Eastern Academy, and they have comparatively little trouble in raising the necessary funds. The farmers, in the country, scattered as they are, have nothing but the district school, and I can't see how they can get anything else unless they lay aside the district school system. There has been a great deal of thought expended upon this subject by very capable persons, and the legislature, at its last

session I believe, passed some laws looking to the betterment of the rural schools.

Now, one of the methods to which a great deal of attention has been turned of late is the idea of consolidating them and providing teams to carry pupils to and from school, those who live more remote. The idea is to bring enough districts together and furnish property and teachers enough so that you may have a school which is adequate to the needs of those children and one adapted to the teaching of agriculture.

Agriculture has a great many departments, and I am not going into that this evening. The farmer is so related to this public school question that if he wants to get higher education than the three "R's" for his children, he must either send them to some city school and pay their board, and I don't think that is altogether the best thing for a child that is not old enough to turn away from home for four consecutive years, or else he must put a tenant on his farm and move to town himself if he wants to give them the advantages of a more liberal, a higher education; or they must consolidate their districts and build a joint high school and provide the means. The latter, a great many think, is the most feasible. This idea is taking hold in other states, and it is the burden of what I have to say this evening on the relation of the farmer to the public school. I might say that in Ohio, where my brother lives, this question came up. A certain gentleman had acquired a competency and he came back to this town where he was a boy and built a $25,000 high school building and equipped it with the proper machinery, etc., so that there was taught there, cooking, sewing, manual training and all other branches that they have in high schools. The children are transported quite considerable distances to this school and it doesn't cost much more than it cost the government to run a couple of mail wagons. When this question was first brought up, a great many people scouted the idea of hauling the children to school, but it is being done, just as the mails are being hauled by the government, and it has been found to be a practical, good thing.

Musical selection by the High School Glee Club.
Music, the orchestra.
Adjourned to Thursday morning, at 9 A. M.

Convention at 9 o'clock, Thursday morning.
President Gillett in the chair.
Report of Secretary was offered as follows, 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 Tomah last winter to the present time.

The report of the Treasurer, as published on p. 189 of the convention proceedings for 1907, shows a balance of $8.12 in his hands. He has since been charged with $5,000.00 received from the State Treasurer and $202.00 received for memberships, making a total to be accounted for of $5,210.12. I have drawn orders against this sum to the amount of $4,066.25, which leaves a balance of $1,143.87 in his hands according to the books of the Secretary.

A summary of the purposes for which the expenditures were made follows:

Convention expenses of 1907.....	$554.63	
Convention premiums paid.....	48.00	
		$602.63
Dairy Inspector, H. C. Searles, 354 days, organizing cow testing associations	$1,062.00	
Expenses	818.84	
		$1,880.84
Dairy Inspector, H. K. Loomis, 49 days	$245.00	
Supplies	1.63	
		$246.63

Expenses of the members attending meeting of the Executive Board...		$31.40

SWISS CHEESE PURPOSES.

Instructor Peter Zumkehr, 245 days..	$1,225.00	
Printing report	75.00	
Supplies	4.75	
		$1,304.75
Total		$4,066.25

There still remains to be paid as a part of the legitimate expenses of the year, the salary of the secretary, $250.00, the expenses of his office $65.30, W. D. Hoard Co. for stationery, programs, etc. $30.80, and several outstanding accounts for traveling expenses of several officers while serving the Association. When these several accounts are presented and paid, the expenditures for the year will be in the neighborhood of $4,500.00.

There remains with the State Treasurer to the credit of the Association $5,000.00. Of this sum $1,797.23 is held in trust to be expended under the direction of the Southern Wisconsin Cheesemakers' Association for the benefit of the Swiss cheese industry.

As it is expected that Dairy Inspector, Mr. Searles, will submit a report covering his work for the year in organizing cow testing associations I forbear to enter into the details of that subject.

I am satisfied, however, that Mr. Searles has been doing a very valuable work, more perhaps in the way of sowing good seed than in reaping the harvest. It has been my effort to have him visit as many different localities in different portions of the state as possible, and the reports which I have received from various sources show that he has been very earnest in his work, has aroused a good deal of enthusiasm in the matter of organizing cow testing associations and recent demands for his services have been more than could receive attention. It is my

opinion that this work should be carried on and if possible enlarged. Other states are taking up the work and Wisconsin certainly does not wish to be left in the rear in anything that will tend to the development and improvement of our dairy industry.

I am persuaded that my duties to myself and my family, and to other imperative engagements, compel me to tender my resignation as your Secretary; or, perhaps more properly, to say, that I do not wish nor can I consent to be re-elected Secretary for another year. There are others who can devote more time to the office and the infusion of a little new blood and ambition will, I am persuaded, make for the wider influence of the Association. My heart is full of gratitude to all the members of the Association with whom I have been associated and especially to the members of the Executive Board.

Respectfully submitted,

GEO. W. BURCHARD,
Secretary.

TREASURER'S REPORT AND REPORT OF AUDITING COMMITTEE.

MONROE, WIS., March 12th, 1908.

To the Wisconsin Dairymen's Association.

Gentlemen: The Auditing committee appointed by your body to audit the accounts of the Treasurer of your Association, begs leave to report that we have examined the accounts of the Treasurer, comparing the vouchers with the book, and find same correct.

CHARLES L. HILL,
J. T. ATWATER,
U. S. BAER.

(Adopted.)

MILK FROM THE PRODUCER'S STANDPOINT.

JOSHUA KLASSY, Monroe, Wis.

Mr. President and Gentlemen of the Convention: My theme on which I am to speak to you today is the subject of milk from the view of a producer. It is not necessary for me to say that I am no speaker, and not used to addressing meetings of this kind, for you will all find that out long before I am through; but a producer of milk, I may truly say, I have been all my life. As far back as I can remember, I was taught to handle the teats of the cow, and as I am getting near the danger line of age, I may say I have seen and done my share of it.

Now, I am no theorist, although I will admit that theory is a very good foundation for practice to build on, but I have always been what is called a practical dairy farmer. As far back as forty years ago we used to milk cows and derive more or less benefit from them, usually less than more, for with butter at six to ten cents, it was not a very paying business, and at that time we did not care so much whether a cow gave a large amount of milk which was thin, or a smaller amount containing more butter fat; in the end it amounted to the same thing anyway. But very soon cheese factories sprang up about us, milk became of some value, it was something that was marketable, although far from the point that it is now at, but when we commenced to realize two hundred and fifty to three hundred dollars annually from our dairy, from which we derived hardly a hundred dollars before, we thought we had struck a bonanza, and, as is generally the case, decided to make the most of it. Now the question became a vital one, we commenced to figure that a cow yielding four to six gallons of milk a day was a more valuable animal than one that only yielded a gallon or two, and such were relegated to the rear and reserved for beef, and from the mother cow, that was a good milker, we would save all the calves we could, while the others died untried. More and more the dairy continued to give the farmer good returns, more cows

were kept, larger compost heaps were accumulated to be hauled out and spread on the land, to return to it some of that which was taken from it, and very soon we began to realize that the dairy business not only gave us larger returns in dollars and cents every year, but our land became more productive and hence more valuable as the years rolled by, so that our hard hilly farms became as valuable as our bottom lands.

Now, the question came very naturally, how to keep and increase this business, which we found to be so profitable, sixty and sixty-five cents per hundred pounds of milk worked wonders with us, and we strove hard to increase our product from our cows, and also were able because of the better condition of our land, to increase the size of our herd. We commenced practical researches, as how it was best to keep our pastures in such shape that our cows could have fresh grass during the season as long as possible, and when the frost set an end to that, we helped out nature with what she generously provides us with, if we took care of the opportunity she offered, and late planted corn-fodder, either green or already in shocks, were fed to our cows to keep up the flow of the milk. In those days about six months was the cheese factory season, commencing with the first of May, seldom earlier, and lasting until November, and if the weather was favorable, we would continue for a while until the flow of the milk was so much reduced that the delivery did not pay any more. Not so much attention was paid to hay and other feed, as we naturally do now, under changed conditions, for I deliver my milk now to the condensing factory, and as the factory pays the highest prices in winter, it is to our best interest to keep up the flow of milk during that time, as well as in summer, and as pasture is wanting, and the cows have to be stall and barn fed, other conditions had to be met, and we have to see to it that something else is added to the dry hay to increase the flow of milk. Of course, I am very careful in the selection of my hay for the milk cows, as I have a large amount of hay to cut; the first cut is very young and tender, and when well dried and cured is an excellent feed for milch cows. Then, again, the second crop if taken before the frost takes it, is the finest thing that can be had in the shape of hay. And that is all set apart

in the barn to feed my milk cows. If that does not suffice, or if we do not have enough of that kind of hay, we feed a little grain, oats and corn, or bran mash, and find that it pays very well. In the summer time we are as careful as ever to change our pastures as often as possible, never letting the grass grow too long and rank in any one, before we drive our herd into it, for when cattle have eaten over a pasture for a few days as cattle will roam over the entire area at once, it is better to have smaller and more pastures, and the oftener it is changed, the better it is for the flow of the milk, for the pastures and the cattle. One great consideration is very often lost sight of by the farmers, cows should have free access to fresh, clean, pure water, not too cold and neither too warm. Stagnant pools where the water in the hot sun gets warm and forms green scum and turns black from stagnation are to be avoided. Not only does it injure the natural flow of milk, but it injures the milk and also the cow, and more milk is and more cattle are spoiled and ruined through scanty or poor water than through poor feeding and lean pastures.

Another great consideration is to keep your cows warm, but not too warm, with plenty of good air. A cow which is compelled to breathe the cold, chilly, untempered northwind, or the foul air of an unventilated warm barn, cannot thrive, nor can she give her natural quota of sound, pure, healthy milk, and hence these nuisances should be disused and abolished.

Above all, whether you send your milk to cheese factory or condensing plant, the utmost cleanliness should prevail. The condensing plant has established certain rules for its patrons, who at first thought they were too rigid, severe and unnecessary, which should be enforced everywhere among the dairy men, for this is the greatest consideration of them all. You cannot produce good, healthy, clean milk, unless you keep your barns, your cows, your milking apparatus, including the persons who attend to the milking, conspicuously clean.

As far as the kind of a cow to keep, which will give the largest yield, and is the most profitable, the opinions are as variable as the persons themselves. Some of our dairy farmers think that the Holstein-Freisian is the best, and others prefer

the Jersey, the Ayrshire, and some like myself the Brown Swiss. This may be more or less a fad with us Swiss people, out of pure love and affection for the country of our birth, so that we have something to remind us of it. Although I was a boy of tender years when I came to America, I still preserve a sort of loyal remembrance of my birth place, Switzerland. And it may be one of the reasons that my herd consists largely of Swiss cattle, and grades, although I still have some of the old Durham stock among them, and I may say that I am satisfied with the yield they give me. Now, my herd being so large, I cannot give my especial attention to each cow, and have to depend a great deal on my employes, but still from time to time I make a personal inspection of each animal to see to it that they are properly cared for, and above all, properly milked, for this is a source of great evil, for hasty and not sufficiently thorough milking has spoiled many a good cow, for if a cow is not milked clean, that is, that the udder and teats are not entirely evacuated, the milk remaining can never be brought out again, and the flow will become less and less with the same process of milking, and the milk spoiled in the udder.

There is no question whatever that good care and judgment should be used in the selection of a proper breeding animal, or in case of a large herd, several. Where farmers are situated as I am, that is, are patrons of the condensing plant, where milk is needed all the year through, and not only through the summer months, it becomes necessary that your cows should come in all through the year, and great care has to be exercised in that particular. There are a number of dairy farmers, patrons of the condensing factory, who simply turn off a cow for which they have paid from fifty to sixty dollars when she begins to run behind in her flow of milk, for thirty or thirty-five dollars as the case may be, and buys another fresh cow at the former figure of fifty or sixty dollars. It is easy to conceive that a loss occurs and I believe this loss is not accounted for in the cow census when they show what their income is from twenty-five or thirty cows, which they may have; their yield or income will naturally be larger, and the income greater, but if they also bring in the losses of trade as it happens in this change of cows

amounting to two or three hundred dollars, their average yield and income will be much smaller. But every one to his own notion. I would rather raise my own cows, and then I know what I have, than go and buy at every farm and cow sale, strange cows. Some may see profit in it, I do not. All I can say is that by proper care, and such judgment as I possess, I have made a fair success of the dairy business, and although I bought my land at a high price at the time I bought it, it was a paying investment, and I believe, if I wished to sell it, I could double the price on it, but I do not care to do so at present, and these conditions were all brought on by the dairy industry and due attention to the same.

I thank you for your attention.

DISCUSSION.

Ex-Gov. Hoard: Do you keep a record of your cows so that you know what they do individually?

Mr. Klassy: No, I don't.

Ex-Gov. Hoard: We would like to know about your Swiss cows. Do you know of any one who has kept a comparative record so as to know what their merits are?

Mr. Klassy: No, I don't keep any record. They give good, rich milk. I understand from all these talks and papers that there are not so large a number of them in this country as of others.

Secy. Burchard: It is worth stating, perhaps, that the Brown Swiss Association of America has definitely determined that they will class their cattle as dairy animals and not as dual purpose animals, and that they will from this time on cultivate the dairy temperament in that breed of cattle.

Mr. Klassy: Yes, they came to that conclusion, I guess about a year ago or so.

Secy. Burchard: And everybody is delighted to know that they have taken that stand; that is, every dairyman is.

Mr. Goodrich: Mr. Klassy, you spoke about giving your

cows a good supply of water in the pasture. How many times a day do you water them in winter?

Mr. Klassy: In the winter time I water my milking cows twice a day, in the morning, about eight o'clock and in the afternoon about four.

Mr. Goodrich: Are they watered before they are fed or after?

Mr. Klassy: They are fed before watering and fed right after, or, when it is very nice, they are watered and fed at the same time; that is, I feed in the barn some, and then turn them out, and if it is nice, feed them some shock corn.

Mr. Goodrich: I never knew till I got to be an old man just when a cow ought to have her water, and I will tell you how I found it out. My son put in his stable, where he had seventy-six head, the Buckley watering device, where a cow could drink whenever she wanted to, and I think the cow knows when she ought to drink better than anybody else does. We found that invariably they wanted to drink immediately after eating. If they were fed three times a day, they would eat their feed and then drink afterwards. I believe that we should follow nature. I do know those cows did better than they did before we put in those watering devices.

Mr. Klassy: Yes, and you want to arrange it so that they do not have to stand and wait, a cow wants to get to her water right after she has finished eating.

Mr. Luchsinger: I have known Mr. Klassy ever since he was a child. He is the largest dairyman, at least furnishes the greatest amount of milk to the milk condensing factory in this country, and what he says about feeding and watering and milking is absolutely of his own practical experience; he has been the most successful dairyman that I know of. Now, referring to the Brown Swiss cattle, it may be that there is a good deal of love for the Fatherland that causes him to have all of his cattle Brown Swiss, but I take it he is a practical man, he knows how to figure, and he knows at the end of the year that his receipts are fully as large, if not larger than those of his fellow patrons who have cattle of other breeds.

I have kept Brown Swiss cattle myself, and I want to say

that if there is such a thing as a dual purpose breed of cattle, which I am not sure about, those are the cattle. We have speakers here who say that there cannot be any such thing. In Switzerland they have been breeding those cattle for centuries right along, both as to color, as to form, and as to milking qualities. They are bred for dairy purposes mainly, but Switzerland being a country which produces little or no grain, nothing which you can feed cattle except grass and as the people do need some beef, they have used this breed of cattle, both for beef and for milk-producing qualities. It may be that when they are brought to this country and are fed the amount of grain that a great many dairy farmers feed, that that beef quality that has been bred in them predominates, and perhaps makes the milk-producing quality somewhat less; I think that is a fact, at least that has been my experience, and I think it has been Mr. Klassy's, that they respond very readily to feeding grain, and the steers of that breed make very good beef; they are a good form for beef, the hind quarters are large and they put good meat on them. But they are a hardy race of cattle and well adapted to this climate. The grades are also very valuable animals. We have bred them upon so-called common cattle of this country and the product is very valuable, both as to constitution and as to milk-giving qualities. Their milk is not so rich as the Jerseys or the Guernseys, but it is good, rich milk, and I think will certainly average higher than the Holstein. I would like to ask Mr. Klassy, knowing that he hauls milk every day in the year, Sundays included, to the milk condensing plant, if he has any record of what his cows average per year.

Mr. Klassy: Yes, I have for several years back, and of course it varies quite a little. You may have a dry summer and if you have you will run quite a little behind a summer that is wet. My cows, since I have been hauling to the condensing factory, are averaging me from $60 to $70 and $75, and I keep on an average about a hundred cows, all my own breeding.

Mr. Luchsinger: I notice you speak about feeding corn and oats.

Mr. Klassy: Yes, but I don't feed very much of it. These

last few years I have been feeding what they call ground wheat screenings.

Mr. Luchsinger: I was figuring up the other day in our town—after talking to some of the farmers coming in, hauling in their grain, and I said to them, "How can you feed oats?" They said, "Why, they are the cheapest feed we can get, because we grow them ourselves." I couldn't help but smile.

Mr. Klassy: I can't understand that. I am selling what oats I have to spare. I can sell them for seventy-five cents a bushel, and I have to get cheaper feed than that.

Ex-Gov. Hoard: I should say so. At present prices a man would be feeding at the rate of over $30 a ton, and yet some of our farmers seem to be bewitched with the idea that if they raise the stuff that it must be a great deal cheaper than what they buy. I bought cotton seed meal the other day in Milwaukee for $30 a ton, and cotton seed meal contains the largest amount of protein of any feed we have. Sometimes I wonder if we are doing as much thinking about the economy of different kinds of feed as we ought to do.

Mr. Goodrich: The milk condensing factories do not allow their patrons to feed cotton seed meal, do they?

Mr. Klassy: I think they do.

A Member: I have one of Borden's contracts and that is permitted amongst other things.

Mr. Klassy: I have read the contract over, but I am not sure whether it states that or not. I remember that it prohibits slops, silage, turnips, cabbage and a lot of other stuff, but cotton seed meal has slipped my mind if I have read it.

Mr. Hill: In lieu of silage do you feed your cows any roots?

Mr. Klassy: No, sir; there are no roots in this part of the country to speak of.

Ex-Gov. Hoard: Do the condensing people forbid the feeding of roots?

Mr. Klassy: I don't think they do. How is that, Mr. Church?

Mr. Church: No, they don't, nor cotton seed meal.

Mr. Everett: Why do they forbid the feeding of silage?

Mr. Church: Well, they find that they can't use milk made

from it and make a product that will keep. They have tried it and have not had good success.

Prof. Henry: I think the records will show that about twenty-five years ago the Borden people in the eastern factory had some objections to the milk produced from silage fed cows. As near as I can find out they are living on that tradition and all the factories in the country are following that old time action and rule.

Mr. Goodrich: In Michigan they don't.

Prof. Henry: The Michigan condenser at Lansing had its experience. They were very short of milk, they couldn't get what they needed and make it profitable. They had one patron that drew a bigger load of milk than anybody else and they had several times praised him for his milk, and they talked about putting up silos, praised the milk from a man that was producing milk from silage fed cows and they have advocated the use of the silo in that milk condenser. I have sent a letter within a week to that company, asking if they are keeping that up.

Ex-Gov. Hoard: That milk that Mr. Gurler sent to Paris, that went all the way from Illinois to Paris and was good for a week after it got there, was produced from silage. It is hard to square some of these things and get the condensing people's view point, and our view point and all these view points together.

Prof. Henry: I drank some of that milk in the city of Paris that was produced on H. B. Gurler's farm in De Kalb, Ills. It was sweet milk and it had nothing but refrigeration to keep it sweet. It was properly drawn and then kept cold all the way to Paris, and I tasted that milk myself. When they put experts on that milk—those gentlmen with black coats and silk hats, about seventeen of them, when they came around, these learned gentlmen, and this milk was shown them—they said, "That is very nice milk." But when Major Alvord said to them, "That milk has never been treated in any way whatever, it is just as it was brought from the cow," they said, "You can't fool us, Major Alvord." He said, "All right, put your chemist on it. If it has been cooked or treated in any way, the chemist

will find it out." But even that didn't satisfy them; they simply declared that milk couldn't keep that long.

Ex-Gov. Hoard: Milk from Mr. Barton's farm, went to Japan and back again.

Secy. Burchard: And that was Swiss milk.

Mr. Church: They claim they don't care to buy milk made from silage, from the average farmer, the way he takes care of it; can't take the chances. Any one who has had experience with silage, knows that it makes a good deal of difference how it is put up, how it is handled. Because our company had the experience that Prof. Henry spoke of in the east, and we concluded it was best not to take any until the farmers have learned how to handle their silage better.

Ex-Gov. Hoard: You prescribe certain rules for these farmers, don't you?

Mr. Church: Yes, sir.

Ex-Gov. Hoard: Why can't you prescribe some rules regarding silage and regulate it?

Mr. Church: We could. Of course if your silage is not right and a man is depending upon that particular herd, you can't get away from it if the silage isn't right. Too much of the silage in this country spoils. We even have trouble where men are feeding shredded corn. They are apt to shred too much of it and leave it piled in a heap and it spoils, and that is not proper feed, but the farmer wants to use it. We have trouble enough with careless feeding of that kind.

Ex-Gov. Hoard: The farmer is debarred by your action from a very valuable and a very cheap feed, a feed that will help him produce milk at a wonderful reduction, because you make him produce his milk in the most expensive manner possible; you take away his profit. Now, it is a question with me whether there couldn't be some way of coming together on this common ground. I approve most heartily of the rules that the condensers establish among the farmers for the care of their stables and their milk; I think the condensers have done more to put sanitary notions into the farmers' heads than any other factor in the country, but it seems to me on that question that they could take the initiative and say to the farmers, "We want

you to build silos about a certain size"—in proportion to the character and size of the herd—and you could do a lot of immensely helpful work in that way and benefit the farmers.

Mr. Church: Where it is produced properly, we have no objection to taking silage milk.

Mr. Marty: What are the possibilities of uniform quality of silage under general conditions? Doesn't it vary largely from one year to another?

Ex-Gov. Hoard: I speak mainly from my own experience and say this, so far as my experience is concerned, that with my silos they have run wonderfully close, year after year, more so than any other form of feed that I have prepared. Hay is often damaged greatly by the weather, but your corn comes along at just such a period, and you can proceed to put it into your silo, and you put it in and it goes through a process of preservation, it is held there and nothing injures it, and it comes out even in its grain and its quality as feed, more so than any other feed, comparatively speaking. I think Mr. Church is correct in saying that they would have some difficulty with shredded corn. It is too often that farmers go ahead and prepare a lot of fodder and pile it into a big bin, or up into heaps, and it is damaged; it molds. Now, good silage does not mold; it may heat and to a certain extent ferments, but the heat itself kills the germ of fermentation finally and it is preserved. Good silage, I submit to be one of the sweetest, most wholesome foods that a man can feed a cow, and my observation is that it greatly helps the condition of the cattle, their health, their thriftiness and the amount of milk they give. Why, I can make milk with ten pounds of alfalfa hay and thirty pounds of corn ensilage, the cheapest of anything I ever saw. It almost closes the circle, is almost a complete ration. All I have to do is to drop in as keystone up there in the top, about fifty per cent of the amount of grain that I usually have to feed, and I have closed up the circle, and my cows are at their maximum flow.

Mr. Marty: There has been considerable said about silage feed. There is no question in my belief that silage is a great feed for cows producing milk, it reduces the cost per cow; but why is it, if it is as claimed the milk from silage is absolutely

pure, sweet as grass feed, that we cannot use silage milk in the manufacture of Swiss cheese? That has been demonstrated right out here with heavy loss to an individual not nine miles from here, a man with thoroughbred Holstein cows. He had to switch over from the manufacture of cheese to the manufacture of butter, and if, as it is claimed, the casein is higher in Holstein milk, it seems to me very poor policy for a man to turn over in that way when the price of cheese is such as it is. He is a man who keeps records and he found out from actual experience.

Ex-Gov. Hoard: Did you have more than that one man's experience?

Mr. Marty: The best experiment that was carried out was by that one man, because the records were kept there. He is a graduate of the Agricultural School; he learned to feed silage and he was determined to carry that through, and he finally gave it up because he had a loss.

Ex-Gov. Hoard: There may be something in the making of Swiss cheese that interferes with silage milk. Does anybody know what it is?

Mr. Marty: No. I wish to say further that when I was going to the University Dairy School at Madison, we carried on experiments along that line, I worked for my own satisfaction. We took milk where we knew silage had been fed, and with the very worst results in every case. There is a fermentation there which will go on in that cheese. It is hard enough to bring about the right kind of fermentation. What we are after is a very slow fermentation, and it does not come for about two or two and a half weeks, and if something else gets ahead of it, that cheese is spoiled.

Mr. Everett: Before we close this subject, I want to cite an illustration on this feeding of ensilage to cows, the milk of which goes to the condenser. I presume that those of you who are conversant with the products manufactured at Horlick's malted milk factory at Racine know there is no finer product made in this world. There is no milk manufacturing concern in the world as large as that institution or making as much money. The barns and herds are inspected regularly by Dr.

Evans, and they are very particular about the cleanliness, the health of the cows, etc., but they allow their patrons to feed ensilage. That is pretty strong evidence to me that this matter of not feeding it to produce condensed milk is a sort of ghost in the closet.

THE POSSIBILITY OF INCREASING THE PRODUCTION OF OUR COMMON COWS BY GOOD FEED AND CARE.

Prof. D. H. Otis, Madison.

A man engaged in the dry goods, grocery, or manufacturing business always stops to consider the cost. He figures on paying a certain amount for rent, for stock, and for machinery. His success in the business will depend largely upon his location, the quality and quantity of the goods he handles, the efficiency of his machinery, and upon intelligent management. He must exercise executive ability in order to secure his raw material in the lowest market, consistent with quality, and purchase them at such points and in such quantities as to reduce the transportation charges to the lowest notch.

In a similar manner successful dairying must be considered as a business proposition. Money invested in the cow should bear a fair rate of interest. The cow is looked upon as an animated machine, which has for her purpose the conversion of feed into dairy products. We know that in the manufacturing world, machines vary greatly in their efficiency and the cow is no exception to the rule. The quality and especially the quantity of the foods the cow handles will have much to do with the size of the profits. The raw material (feed) for this cow machine must be procured in the cheapest market and at the lowest cost for transportation. This is usually found on the farm. The cow machine, like any other machine, will turn out the largest profit when taxed to its optimum, if not to its maximum capacity. In any machine a certain amount of energy is needed

to run it before any product can be turned out. With the cow this is estimated to be about 60 per cent of the energy contained in the food she can eat and this brings us to our first proposition.

THE COST OF KEEPING A COW.

During the year ending June 30, 1907, the average feed consumed per cow of the dairy herd of the Wisconsin Experiment Station was hay, 1,110 pounds; silage, 7,329 pounds; soiling crops, 1,148 pounds; bran, 545.2 pounds; oats, 464.4 pounds; corn, 259 pounds; oil meal, 81 pounds; molasses beet pulp, 180 pounds; gluten feed, 64.7 pounds; cotton seed meal, 38.3 pounds; distillers' grains, 382.3 pounds; brewers' grains, 29.8 pounds; total, 2,044.7 pounds.

The cost of this ration was $36.65. Investigations among creamery patrons in Wisconsin and New York showed the cost to be approximately $35.00. The average cost of feed for 1,062 cows in the Iowa Cow Census, 1906, as given by *Hoard's Dairyman,* was $28.23. A number of tests conducted at various experiment stations shows the cost of feed to range from $30.00 to $35.00 per cow.

In addition to the feed cost, other items must be considered. The Ohio Experiment Station has summed this up as follows:

Interest and taxes to apply on cow.....	$3.50
Depreciation in the value of cow.....	8.00
Interest and taxes on dairy buildings.....	3.50
Labor	12.00
Total	$27.00
Less value of manure.....	6.00
Net	$21.00

In these figures the cow is valued at $60.00 and it is estimated that her period of usefulness is six years and at the end of that time she will be worth at least $12.00 for the butcher. This leaves a depreciation of $8.00 per year. Putting these

various items of cost together we find that the cow must produce $50.00 to $55.00 worth of dairy products in order to pay for the cost of keep.

We should credit the cow with the value of the calf at birth. This may run all the way from $1.00 up to $50.00 or even more. We will assume that the average price is approximately $5.00. Assuming the feed cost to be $30.00, and other items of expenses $20.00, and the value of the calf $5.00, the cow must produce at least $45.00 worth of dairy products before we can expect her to turn out any profit. With 3 per cent milk and 20 cent butter fat, this would be 7,500 pounds of milk. With 4 per cent milk and 20 cent butter fat, 5,625 pounds of milk; with 3 per cent milk and 25 cent butter fat, 6,000 pounds of milk; with 4 per cent milk and 25 cent butter fat, 4,500 pounds of milk. If it were possible to reduce the cost of keep to $30.00, the amount of milk that she must produce to cover the cost of keep with 3 per cent milk and 20 cent butter fat, would be 5,000 pounds. With 4 per cent milk and 20 cent butter fat it would be 3,750 pounds. With 3 per cent milk and 25 cent butter fat, 4,000 pounds; with 4 per cent milk and 25 cent butter fat, 3,000 pounds. We assume that the skim milk will pay the cost of separating and hauling the cream or milk to market. These figures will give us an idea of how much a cow must produce before it will be possible to milk her and convert her products into butter or cheese.

Of course, the cost of keeping a cow varies in different localities and in different years in the same locality, but any farmer can take the above calculation and adapt it to his own conditions at any given time of calculation.

WHAT OUR COWS ARE PRODUCING.

Mr. C. B. Lane, of the Dairy Division of the United States Department of Agriculture, reports that the average cow in the United States is producing approximately 3,646 pounds of milk and 155 pounds of butter. In the last year book (1906) published by the United States Department of Agriculture, the

statement is made that a large percentage of the cows in the north central states are yielding only a trifle more than 100 pounds of butter per annum. The Illinois Station, from records of a large number of creamery patrons, which are probably above the average of the state, reports that the average cow among these patrons is producing 4,721 pounds of milk and 173 pounds of butter fat, equivalent to 202 pounds of butter. *Wallace's Farmer,* in discussing the subject of dairying in Iowa, estimates that one-third of the cows are eating their heads off, another third are barely paying for their feed, leaving only one-third producing dairy products at a profit and these, like Pharaoh's fat kine, are being consumed by the poor kine.

These average statements, while they are eye openers, do not begin to tell the whole story. It is indeed interesting to note the differences between net income and profits realized by various creamery patrons. These results are forcibly brought out in the following table:

Comparison of the herds of creamery patrons

	Number of cows kept.	Milk produced per cow.	Butter per cow.	Returns from creamery per cow.	Cost of feed per cow.	Total income including calf and skim-milk.
Wisconsin: (100 herds.)		Lbs.	Lbs			
Best five herds	15-35	6,657	313	$58 32	$31 20	.....
Poorest five herds	12-40	3,472	161	30 27	24 80	.....
Difference	....	3,185	152	$28 05	$6 40	.....
Kansas: (82 herds.)						
Best five herds	3-20	5,476	253	$33 74	Ab't $20	$45 13
Poorest five herds	3-2.	1,644	74	9 44	" 15	23 59
Difference	.....	3,832	179	$24 30	Ab't $5	$21 54

A study of these figures for the Wisconsin herds shows the milk, butter and cash returns per cow are nearly twice as much for the best five herds as for the poorest five herds, while the cost of feed is less than a third more for the best cows. The investment of $6.40 in feed produced an increased income of $28.05 or 438 per cent interest on the investment. After de-

ducting the cost of feed the profits for the best five herds amount to $27.12 per cow and for the poorest five herds, $5.47 per cow. In other words, as far as dairy products are concerned, one cow from the best five herds is worth as much as five cows from the poorest five herds plus the saving in labor and stable room. Comparing the profits above cost of feed of the best herd with next to the poorest herd (the poorest herd was fed at a loss) we find there are $31.41 for the former and only $5.38 for the latter, making the products of one cow from the best herd worth nearly six cows from the other herd.

The differences with the Kansas herds are in some respects more striking. The average cow in the poorest five herds produced only 74 pounds of butter for the year. The figures show a difference of $5.00 in the feed bill as contrasted with $24.30, difference in profits above cost of feed. After crediting the cows with the value of the calf and skim milk, the best five herds brought an income of $45.13 per cow and the poorest five herds, $23.59 per cow, or a difference in favor of the best herds of $21.54 per cow. After deducting the cost of feed, the best five herds have a profit of $25.13 per cow and the poorest five herds, $8.59. In other words, one cow from the best five herds is worth as much to a man as three cows from the poorest five herds, including the value of the calf and skim milk. Comparing the best herd with the poorest herd, we find that one cow from the former is worth as much as eleven cows from the latter, including the value of the calf and skim milk.

If there is such a difference in the herds, how about the differences between individuals in the herds? The Illinois Experiment Station has collected some interesting and instructive figures along this line. They have found the best cow from the records they have obtained to produce 619.9 pounds of butter fat, equivalent to 723 pounds of butter, and the poorest cow produced 78.3 pounds of butter fat, equivalent to 91 pounds of butter. Of 478 yearly records of individual cows, comprised largely of common and grade stock, they found 59, or 12 per cent, that produced less than 150 pounds of butter fat; 203, or 43 per cent, that produced from 150 to 250 pounds; 158, or 33 per cent, that produced from 250 to 350 pounds; 43, or 9 per

cent, that produced 350 to 450 pounds, and 15, or 3 per cent, that produced over 450 pounds of butter fat per cow per annum.

To show what can be done with our common or native cows, two of our experiment stations, namely, Kansas and Michigan, have purchased herds representing approximately the average cows of their respective states. These cows were well cared for and fed liberally on well balanced rations, and all had an equal opportunity to show results. The record of the 28 Kansas cows is summarized in the following table:

Best and poorest cows compared.

Kansas Experiment Station.	Products.		
	Milk.	Average test.	Butter test.
	Lbs.	Per cent.	Lbs.
Averages of the best five cows	8,255	4.24	350.1
Averages of the poorest five cows	3,043	3.92	119.5
Differences	5,212		230.6
Best cow	9,116	4.21	383.7
Poorest cow	2,463	3.54	87.2
Differences	6,653		296.5

The best five cows, which produced an average of 350 pounds of butter fat per head, show some encouraging possibilities even with common cows. That the poorest five cows, with equal opportunities, produced only 120 pounds of butter fat per head shows just as conclusively that there are some cows, in this instance over 25 per cent, that have not the capacity to convert feed into milk at a profit, no matter what the quantity or quality of the feed.

The Michigan Experiment Station purchased a herd of grade cows in 1904. A summary of the results obtained is shown as follows:

Best and poorest cows compared.

Michigan.	Products.		
	Milk.	Average test	Butter-fat.
	Lbs.	Per cent.	Lbs.
Average of best five cows	7,393	4.3	321.2
Average of poorest five cows	4,400	4.1	180.8
Difference	2,993		140.4
Best cow	7,607	4.8	368.1
Poorest cow	1,205	3.4	41.1
Difference	6,402		327.0

The difference in the annual production between the best five cows and the poorest five cows is marked, though not so great as with the Kansas herd. The difference between the best and poorest cow is greater than in the Kansas herd.

The retarding influence of one poor cow.

Cow.	Products.		
	Milk.	Average tests.	Butter fat.
	Lbs.	Per cent.	Lbs.
Kansas—			
No. 20 (best cow)	9,116	4.21	383.7
No. 7 (next best)	6,936	4.8	334.5
Average	3,041		359.1
No. 61 (poorest cow)	2,463	3.54	87.2
Average of the three	6,182		268 5
Average of the herd	6,288	3.99	251.2
Michigan—			
No. 17 (best cow)	7,607	4.84	371.1
No. 13 (next best)	88.113	4.45	331.7
Average	7,860		366.4
No. 16 (poorest cow)	1,205	3.43	41.1
Average of the three	5,642		258.0
Average of the herd	6,259	4.08	255.6

This table shows some remarkable results. With both the Kansas and Michigan herds the poorest cow when compared and averaged with the two best cows in the herd will lower the average of the three to the average of the entire herd. In other words, the one poor cow lowers the average production of the two best cows practically 100 pounds of butter fat per head. Is it any wonder that with many of our dairymen the profits are scarcely visible to the naked eye?

The figures of the different herds show the great variation that takes place between herds. The figures of the individuals in the herd show the great variation that takes place among individual cows of the herd. Together, they show the possibilities of greatly increasing the average annual income per cow. That the need of such work is imperative is shown by the fact that Wisconsin cows, 1,365,000 in number on January 1, 1907 (according to the last year book published by the Department of Agriculture), had a value of $31.00 per head.

In *Hoard's Dairyman* for August 25, 1905, we find the record of a herd of twenty-eight cows that ran its owner in debt for $127.00 for the year. Another herd of seven cows brought the owner a profit of $245.00 or $35.00 per cow. The latter herd not only showed the profit but required less labor and less feed.

Another contrast in cows and cow owners is recorded by Buff Jersey in a visit made to a dairy district near St. Louis. He found one herd of fifty-seven cows (cared for by four men) whose average daily production was four gallons of milk per head. On the same railroad, at the same time, there was being shipped to St. Louis the products of 250 cows which were cared for by twenty-two men, but the production of these 250 cows was less than one-half of the daily production of the 57 head mentioned. At the Kansas Station it was found with a test of common cows that it was possible to secure an average of 270 pounds of butter as the result of good feed and care. The average of the state at the same time is said to have been only about 72 pounds and the average of the eighty-two patrons in one of the best dairy districts of the state was only 123 pounds. In spite of these good returns from common cows, which only cost

$30.00 apiece, it was found that five of the best out of twenty-eight produced dairy products worth $28.89 above the cost of feed and that another five with equal opportunities produced $6.35 above the cost of feed, or a difference of $22.54 per cow, which figured in another way amounts to 455 per cent better income for the best five cows. With this herd it was found that 14 per cent were running the Station in debt for their feed, to say nothing about their care. Had this 14 per cent been eliminated from the herd at the start, it would have increased the average production of the herd 411 pounds of milk and 17 pounds of butter fat, or the income per cow would have been increased 23 per cent.

A study of the causes of these variations in herds and individual cows reveals some interesting facts. First, there is a difference in men. There are men milking cows today who have no business ability along dairy lines. No matter what kind of cows or what kind of feeds they have, they will not make a success of the dairy business. Second, there are cows which are being used for dairy purposes that never ought to be milked. Many of these cows cannot and will not convert feed into milk at a profit. They lack the dairy temperament.

On the other hand, there are many cows which, given the proper feed and care, would return their owners better, if not handsome, profits. A large majority of these belong to what we call common or grade cows. While it is desirable that dairy farmers get into pure bred cattle as rapidly as possible, it must be admitted that for a long time to come the common cows will be with us. At the present time we are absolutely dependent upon them as the production of the pure bred animals furnish only a small fraction of the dairy products demanded by our increasing population. The question which confronts us today along with the question of grading up our herds, is how to get the utmost out of these common or grade cows.

The best results must come through good care and feed. The dairy cow is a sensitive animal. With her thin coat of hair, her thin hide, and comparatively little fat beneath her skin to keep her warm, she feels the cold blasts of winter much more than the beef steer with his thick coat of hair, thick hide, and

an abundance of fat beneath the skin. Our dairy cow must be well sheltered. She must have plenty of fresh air and water from which the chill has been removed, which is as much a part of her food as the grain and hay.

Results with the grade herds at Michigan and Kansas, as well as reports from various papers of the country show conclusively that many of these common cows fail to yield their owners a large or as large a profit as they should because of the lack of sufficient food. A good dairy cow should be fed, first of all, liberally. Investigations carried on in Canada show that the herds which bring in from 5,000 to 6,000 or 8,000 pounds of milk per annum, contrasted with those that bring in from 2,000 to 2,300 pounds per cow per annum are fed generously, while the others are being fed barely enough or very little more than to keep them alive.

A few years ago Cornell University made a test to determine the effect of feed on increasing the per cent of butter fat. Among the herds visited, they found one man who was willing to let the representative of the Station stay at the farm and make records of the feed given and the dairy products produced. The results obtained showed that the cost of feed was $28.00 per head and the cows produced dairy products worth $24.50 per head, or a loss of $3.50 per cow. The owner, being confronted with these figures, was induced to sell the herd to the College. At the end of the second year each cow in the herd had produced dairy products worth $38.00 per head. The cost of feed amounted to $33.00 per head, leaving a profit of $5.00. It will be noticed that the increase of $5.00 in feed made a difference of $13.50 in favor of each cow.

Another experience illustrating the value not only of liberal feeding but of judicious feeding is given by Mr. J. H. Grisdale of Canada. He took a herd of twenty-five cows and fed them all they would consume for one year, with the result that the herd averaged 5,400 pounds of milk per head. The next year he weeded out two of the poorest animals and started in to feed not a more generous ration but a more suitable one, figured out according to our best knowledge along feeding lines. This year he realized 6,500 pounds of milk per cow or an increase

of 1,100 pounds for each animal in the herd. At the same time the cost of food was reduced $2.00 per head. This illustrates that it is possible to feed an animal liberally and yet not judiciously. Some cows will eat from 15 to 20 pounds of meal and give no better results than when fed 8 or 9. The writer had an experience in over-feeding cows on alfalfa hay at the Kansas Experiment Station. The boys doing the milking were competing with each other as to how much milk they would get from the cows, and in feeding them they kept increasing the amount of alfalfa hay until they were feeding 43 pounds of hay daily per cow. This amount was reduced to 33 pounds and later to less than 30 with no difference whatever in the yield. Ordinarily we can give a cow all the roughage she will eat, and with the possible exception of alfalfa and clover, there is no danger of her eating too much.

In order to realize the largest profits we must raise all the roughage and as much of the grain as possible on the farm. I assume that we realize what the cow needs in the way of digestible nutrients to produce the best results. The question which then confronts us is what feeds will give us the largest amount of nutrients per acre? Of all the nutrients needed by the cow, protein is by far the most important. Our carbohydrates and ether extract are supplied in the ordinary feeds grown on the farm, but the greatest concern to the dairyman, in order to properly balance his rations, is to get more protein. The value of some of our different crops from the protein standpoint is shown in the following table:

Yield of digestible protein.

Roughage.

Feed.	Yield per acre in tons.	Digestible Protein.	
		Per ton.	Per acre.
Timothy	1.5	56	84
Mixed hay	1.5	118	177
Corn silage	10.0	18	180
Red clover	2.0	136	272
Alfalfa	4.0	220	880

Grains.

Feed.	Yield per acre in tons.	Digestible Protein.	
		Per ton.	Per acre.
	Bushels.		
Corn	33	158	146
Barley	29	174	121
Oats	35	184	103
Soy beans	15	592	266
Bran		244	
Linseed meal		586	
Cottonseed meal		744	

From this table it will be noticed that timothy hay yields only 56 pounds of protein per ton and only 84 pounds per acre, the lowest of any of the feeds mentioned. Corn silage, which is considered more as a carbohydrate and succulent feed than a protein feed, yields only 18 pounds of digestible protein per ton, but on account of the larger yield shows more digestible protein per acre than mixed hay. Red clover yields nearly 100 pounds more digestible protein per acre than mixed hay or corn silage, which accounts for the high regard in which this roughage is held by progressive dairymen.

Alfalfa is a comparatively new crop for Wisconsin, but thanks to the persistent efforts of Governor Hoard, the farmers of this state are beginning to grow this valuable forage. It will be noticed that this crop yields 220 pounds per ton, or 880 pounds per acre of digestible protein, making it practically equal to bran pound for pound. Feeding experiments demonstrate that it can, in a large measure though not completely, take the place of grain in the ration of the dairy cow.

In comparing the grain feeds it will be noticed that corn is a carbonaceous feed, containing only 158 pounds of digestible protein per ton, while bran contains 244, linseed meal 586, cottonseed meal 744 and soy beans 592 pounds per ton. When the feeder is short on protein, it is well for him to consider if he cannot economically supply this lack by raising soy beans or purchasing some highly nitrogenous feed as linseed meal,

cottonseed meal, Ajax Flakes, etc. When the dairy farmer grows an abundance of nitrogenous roughage, like clover and alfalfa, he will need to buy very little of these high priced nitrogenous concentrates.

To make the most of our common cows, it is necessary, first of all, to weed out those cows that do not have the capacity or temperament to produce milk at a profit for feed consumed. This should be followed as soon as possible with the elimination of those that can produce only a small profit. The remainder should be fed first liberally and such feeds and combination of feeds that will enable the cow to produce the maximum yield with the least expenditure of energy and the least waste of feed nutrients.

Even though good results are obtained with common cows, every dairyman should realize that they are simply the means to an end. In other words, they are the crutches that enable us to live and move until we can get better stock. The herd of common dairy cows, no matter what their record, should be headed by a good pure bred dairy sire that will enable the dairyman not only to maintain but to materially increase the average production of his herd. No dairy farmer who has good judgment in the selection and improvement of his cows and in the growing of well balanced feeds for their use need be without a good sized check regularly every month that will make him happy, contented and prosperous.

DISCUSSION.

Ex-Gov. Hoard: I want to know if, in your judgment, you think the Wisconsin cows are 146 pounds of milk below the average of the United States?

Prof. Otis: No; in Wisconsin we have simply taken a total production and the total number of cows and tried to figure out the average production. In the case of Illinois cows they have taken simply that cow census and they themselves say that they have in some of the better herds in that state which is probably

considerably above the average; so I do not want any one to think that these are to be compared with each other. All I present these for, is to show that even though they take the best of them, and assume that Wisconsin runs even above the best, we still have a very low production per cow.

Mr. Luchsinger: You have used the word "protein" a good many times, and stated its value in feeding cattle. I wish you would make a short explanation of the particular part protein plays in the production of milk.

Prof. Otis: You analyze milk and you will find it contains in the neighborhood of four per cent casein. Casein is a nitrogenous ingredient. Now, the feed that goes to the animal must be of such character that will make that kind of product and it takes protein to produce it. It takes protein to produce lean meat. The cow is constantly called upon to turn out these protein products and she must be fed the material from which to produce it.

The Chairman: The protein in casein and the protein in feed are substantially the same product.

Prof. Otis: Similar, yes.

Mr. Luchsinger: If she does not get it in her feed, she either fails in the quantity of her product, or else it must be supplied in some other way and it wears on the constitution of the animal.

Prof. Otis: Yes, a dairy cow will continue to give milk for the calf even though she has to do it at the expense of her own body, and you feed a cow, for instance, on corn, and corn stubble, and you will supply her with sufficient protein to keep her system going and a little bit over, but in any machine we want to tax that machine to its capacity, and in order to do that we must supply more raw material. In other words, you must supply a cow with more protein in order to get her to do her best. It will take sixty per cent of what the cow eats to keep up her animal system. If you feed ten per cent more you will get ten per cent profit, if you feed twenty per cent over that you will get double profit. When farmers try to save on feed, they are doing the most extravagant thing they can do.

Ex-Gov. Hoard: Provided they have a good cow to put it in.

Mr. Luchsinger: Which do you call the better feed, soy beans fed as grain or as hay?

Prof. Otis: The composition of the hay is practically the same. Soy beans can be raised as a grain feed. I would not think it would pay to feed cow peas unless they are cracked grains or grains not fit for planting as seed. You can supply the amount of protein necessary easier from alfalfa or clover than from your soy beans. The soy beans may be used as an intermediate crop or a catch crop, when your supply of protein is short, or when your clover or alfalfa happens to kill out.

Prof. Henry: Some one spoke of buying cotton seed meal here at $30 a ton. That is an exceedingly low price for cotton seed meal, and the merchants of this town ought to have it on sale. The Illinois Central runs right down to the factories where the cotton seed is changed to oil and cotton seed meal. The Illinois Central ought to give a very reasonable rate on cotton seed meal to Monroe and the farmers ought to know about it and be able to feed it profitably, and the milk condenser ought to be interested in that. The farmers here ought to know that when it is low in price, it is very advantageous to use.

Ex-Gov. Hoard: When you compare the amount per pound you pay for your protein, just look at it. Supposing that you paid $20 a ton for corn and you got 158 pounds of protein in a ton, and you paid $30 a ton for cotton seed meal and you get 744 pounds of protein in a ton. Just see the difference. You can figure out what you are paying a pound for protein in corn and other kinds of feed and it is a great deal more. You come down to cotton seed meal and you are paying a little over four cents a pound for protein at $30 a ton for the meal.

Prof. Henry: You are at one of the points here where you ought to be able to get cotton seed meal cheap. Two years ago this spring I rode through eight miles in the tobacco country and I passed eight wagonloads of cotton seed meal going out in the country, and they were not feeding it to the cows either, they were spreading it on the tobacco fields. Now, if tobacco growers feel that they are justified in using that expensive article as they do manure, it shows that they must understand its great value.

THE PRESENT STATUS OF OLEOMARGARINE IN WISCONSIN.

J. Q. Emery, Dairy and Food Commmissioner, Madison, Wis.

Section 4607c, Statutes of 1898, as amended by chapter 151, laws of 1901, provides that any person who "shall by himself, his agent or servant, render or manufacture, sell or solicit or accept orders for, ship, consign, offer or expose for sale, or have in possession with intent to sell any article, product or compound made wholly or partially out of any fat, oil or oleaginous substance or compound thereof, not produced from unadulterated milk or cream from the same, and without the admixture or addition of any fat foreign to said milk or cream, which shall be in imitation of yellow butter, produced from such milk or cream with or without coloring matter," shall be punished as therein prescribed. "Nothing in this section shall be construed to prohibit the manufacture or sale of oleomargarine in a separate and distinct form and in such manner as will advise the consumer of its real character and free from coloration or ingredient that causes it to look like butter."

This statute was first enacted in 1895. The amendment of 1901 simply made those who "solicit or accept orders for" the product amenable to the law. To the ordinary dealer, as well as to those who were interested in framing the bill and securing its passage, its meaning seems plain and unambiguous; but a law in this state, as well as in every state, is not necessarily what the framer of the law intended it to be, but means just what the supreme court, or the court of highest appeal, says it means. It has been interpreted by the dairy and food commissioner to mean that the sale of oleomargarine which in its color could be taken for yellow butter is prohibited. It seems to have served the purpose of manufacturers of oleomargarine to challenge this view of the meaning of the statute.

It does not come within the scope of the subject assigned me to speak of the struggles of the dairy and food commission in the enforcement of that law.

A decision of the supreme court was handed down on January 8 in a case involving the interpretation of the law we are considering. The case was brought against Nowack and Meyer of Watertown for selling a compound, described in the terms of the statute and as in imitation of yellow butter. As the penalty exceeds $100, such cases cannot be tried before a justice of the peace, but must be brought in the circuit court. The defendants were examined in justice court and were held for trial in the circuit court of Jefferson county, before Judge Grimm. The case was tried in February, 1907. The defendants were found guilty and fined $50 and costs. An appeal was taken to the supreme court and the decision of that court was rendered January 8. The complaint in the case was drawn by L. E. Gettle of Edgerton. The case was conducted by Mr. Gettle and the district attorney for Jefferson county until it reached the circuit court. John M. Olin of Madison was then brought into the case as counsel for the state. He was aided by Mr. Gettle and the district attorney.

The limitations of time preclude any detailed description of the trial of that case in the circuit court for Jefferson county; but to understand the present status of oleomargarine in Wisconsin a knowledge of some features of that trial is absolutely necessary.

The professed theory of the oleomargarine manufacturers and of their legal representatives was that the law must be so construed that if oleomargarine contained no artificial coloring its sale was not in violation of the law, however yellow it might be. One of the witnesses, acknowledged to be the manager of the oleomargarine department of one of the Chicago oleomargarine manufacturers, was reckless enough to swear, in another case brought before Judge Clemenson, that oleomargarine of necessity varied in color with the change of seasons, just as the natural color of butter changes with the change of seasons, and also that if the law were construed to prohibit the sale of oleomargarine of the color of yellow butter, the law thus construed would be prohibitive of the manufacture of oleomargarine during some seasons of the year. It would be both interesting and astonishing to consider some other phases of the testimony of

that witness in that trial; but the limitations of this paper do not permit.

Being forewarned by such remarkable testimony, the dairy and food commission, in the case of the State vs. Nowack and Meyer, made investigations as to how the yellow color in the oleomargarine is produced. We purchased tallow from different butchers from grass-fed animals and from grain-fed animals as well. We manufactured oleo oils from the samples of the beef tallow we had purchased, and neutral lard from the leaf lard purchased. We were enabled to procure from a reliable source samples of different kinds of oleo oils ranging in color from white to a golden yellow; three distinct different grades in all in relation to color. Practically white oleo oil is manufactured from the best grades of grain-fed beef cattle, and is the best quality of oleo oil. Dark yellow oleo oil is manufactured from old cows, grass-fed cattle, etc., and in quality is the poorest grade of oil. There are intermediate grades of oleo oil based upon color between these two.

Since the enactment of the oleomargarine law of 1902, it has been a favorite course of procedure for the oleomargarine manufacturers to endeavor to convince the public, courts and juries, that the yellow oleomargarine which was manufactured without the use of artificial coloring is of necessity yellow. We were able to overthrow this contention in the trial of the case herein referred to. Dr. Richard Fischer, chemist for the dairy and food commission, commonly known as the state chemist, was able to establish the fact that the oleomargarine in question was produced by the use of about 65 per cent of very yellow oleo oil, 20 per cent of neutral lard which is practically white, and 15 per cent of cotton-seed oil. He was able to establish by his testimony that the yellow color of the oleomargarine in question, which was in resemblance to yellow butter, was secured through the selection of the darkest shades of yellow oleo oil, of which a very high percentage was used.

In its decision, the supreme court of Wisconsin holds that the sale of oleomargarine "which shall be in imitation of yellow butter" is prohibited by the statute. It holds that the words "yellow butter" require no definition to explain their meaning;

that they define themselves and are used in the statute in the popular, rather than in any trade or technical, sense. It holds that whether the prohibited product is in imitation of yellow butter is a question of fact to be determined by the jury and that the article is to be compared with yellow butter by direct testimony of any person who is able to testify on the subject, which will include all ordinary witnesses except those who show affirmatively their lack of knowledge or some degree of color-blindness.

The court says that the question whether the article sold by the defendants was the identical thing which is contraband by the statute must be determined by the testimony of witnesses who have seen it, or by the testimony of witnesses aided by the inspection of the article itself, and that its resemblance to yellow butter is a factor in such determination. If the article is in imitation of yellow butter, it matters not whether such imitation is brought about by the addition of a dye or by the selection of ingredients. The court declares that there is no distinction so far as producing color is concerned between imitating or producing color by the addition of an ingredient known as a dye and added for the purpose alone of producing a given color, and the selection and addition of an ingredient which performs the same coloring function, but at the same time adds other qualities to the compound.

The court holds that the words "which shall be in imitation of" used in describing the contraband compound, imply a conscious imitation in the manufacture thereof. The court explains the meaning of conscious imitation as follows: "If one forming a compound of several ingredients knowingly select and use an ingredient which imparts to the compound the color of yellow butter, he having choice of ingredients, he will have made his compound in imitation of yellow butter just as well as if he selected a dye." "There is, however, this difference, viz., proof of the presence of the dye, which can have no other function than that of producing color, showing the conscious imitation quite clearly, while proof of the selection of the ingredients which produced the color of yellow butter, the person selecting having the choice of ingredients, is a fact from which the jury

is authorized to infer a conscious imitation notwithstanding such ingredient so selected has other qualities or is in one of its forms or in one of its colors a necessary ingredient of oleomargarine. Whether or not the article in question is in imitation of yellow butter cannot be determined alone by its resemblance to yellow butter, but resemblance aided by the evidence of the existence of a dye as one of its ingredients, or resemblance aided by evidence of the existence of available necessary ingredients which will not impart to the compound the color of yellow butter and of the existence of other available ingredients which will impart to the compound the color of yellow butter, may be considered by the jury as establishing or tending to establish conscious imitation by the selection of ingredients. What is yellow butter and whether the article in question is in imitation of yellow butter are questions of fact."

The supreme court expressed the opinion that there was evidence before the trial court from which the jury was authorized to infer conscious imitation in the manufacture of the compound as described in its decision and because there was evidence tending to show that the accused had knowledge that the compound in which they were dealing was not butter but oleomargarine and that it resembled yellow butter.

The court further says: "Resemblance to yellow butter, together with knowledge that the compound is not butter, with proof of the fact of selling, shipping, etc., will constitute a prima facie case." But, says the court, it will be necessary to cover by the proof both branches of the inquiry as set forth in the decision.

From this it plainly follows that where oleomargarine is being sold in resemblance to yellow butter, a prima facie case exists and renders the seller of such a product amenable to prosecution. In the trial, the state must establish by proof that the compound was in imitation of yellow butter and that that imitation consisted of resemblance to yellow butter aided by the presence of a dye or by the selection of material, other material being available. In this connection, let me repeat that the court expressed its judgment that such proof was before the trial court in the case, State vs. Nowack and Meyer.

The contention of the oleomargarine people has been that unless the compound contained an artificial color, described by the court as "a dye," there was no conscious imitation, but our supreme court holds that the selection of material is just as much a conscious imitation as the use of artifical color. And let me repeat again that the court held that there was evidence before the trial court warranting the jury to infer a conscious imitation; that is to say, we offered evidence warranting the jury to infer the selection of material. The offering of this evidence was strenuously objected to by the oleomargarine people and an exception was made, but the supreme court overruled their contention and held that the evidence was properly admitted.

The Dairy Food Commission has contended that imitation as used in the statute did not imply conscious imitation, but that its meaning was substantially the same as though the law had prohibited the sale of oleomargarine "which shall be of the color of yellow butter," or "which shall be in semblance or resemblance of yellow butter." While the state in that case held that the word "imitation," as used in the statute, did not imply conscious imitation, it furnished the same proof as though it had conceded that the imitation means conscious imitation as described by the supreme court. Most of the contentions of the state in the Nowack and Meyer case were sustained by the supreme court.

The statute as interpreted by the supreme court places the burden of proof on the state to furnish evidence of the presence of a dye or that there has been selection of material. If instead of the words "which shall be in imitation of yellow butter," the statute read "which shall be of the color of yellow butter," or "which shall be in resemblance or semblance of yellow butter," the interpretation of the statute by the supreme court remaining otherwise the same, the furnishing of such proof would not seem to be required.

Because of certain irrelevant testimony that was admitted despite objection and because of one instruction of the trial judge to the jury, held to be error, to the effect that the lightest shades of natural butter as well as the darkest shades of colored

or uncolored yellow butter and all intermediate shades were protected by the statute, the case was remanded for a new trial. The attorney for the oleomargarine people has informed me that the defendants in the case will, before or at the next term of the circuit court for Jefferson county, appear and "confess that they did it and pay their fine." That is to be the ending of the Nowack and Meyer case, according to the statement of their attorney.

Reports of dairy and food inspectors from all parts of the state indicate that since the decision of the supreme court the law, as interpreted by that court, is being very generally complied with. Violations have been found, but the number is comparatively small. They report as a general rule that the local dealers manifest a law-abiding spirit; that they express themselves as desiring to handle only the lawful product. Cases are reported where the local dealers have returned the yellow oleomargarine to the shippers. Not a few dealers have been so much annoyed by the questionable character of the goods shipped them that they have quit the business. The manifest determination of local dealers to be law-abiding is a recognized aid in the administration of the law. The attitude of the oleomargarine manufacturers, as expressed to me by their attorneys, has been that when they could know what the law is by an interpretation of the supreme court, they would comply with the law as thus interpreted. It is gratifying to state that the manufacturers of oleomargarine who have most perfectly met the requirements of the statute in the oleomargarine furnished the Wisconsin market have the great bulk of the trade at the present time.

DISCUSSION.

Secy. Burchard: I regret that Prof. Emery did not say that when this decision of the supreme court was announced all the leading daily papers of the state came out in quite flaming headlines, saying that the oleo law of Wisconsin had been annulled

practically, and thereupon a good many people chuckled, a little hastily. A more careful reading of the decision of the court satisfied Prof. Emery and myself even before we had made a study of it, that that was not the case, that in fact the dairy and food commissioner had won a very decided victory for the law and for the dairymen of the state.

Prof. Emery: The newspaper reporters in sending out that first report stopped short at a certain point where they said it must be in resemblance to yellow butter aided by the presence of a dye, and the whole pith of the decision was left out. The attorney for Swift & Company, who was in my office only a few days ago, said that the first part of the decision was very satisfactory to him. "If they had only stopped where I wanted them to, I would be satisfied with that decision, but they didn't." But the newspapers stopped just where the lawyer would have been glad to have the court stop, in making their reports. Now, I have had representatives of three of the largest manufacturing firms of Chicago in my office in the past ten days, and each of these has assured me—I am only giving you their word for it, gentlemen, but I have their word for it—that they propose to send into Wisconsin only such product as will pass inspection and meet the requirements of this Wisconsin statute. That they are doing that now is practically true; there are a few exceptional cases.

Mr. Everett: Keep your eye on them.

Prof. Emery: Yes, we will. Gentlemen, when a lawyer representing a great firm having millions of capital back of it will come into an office and tell a public officer charged with the enforcement of law, that these corporations are in business to make money, they are there to sell their products, we certainly will have to keep our eye on them. More than that, they have said to me that they will sell it unless the law is so enforced that the fines imposed will make it to their disadvantage to sell it under those circumstances. I knew their position before, but I did not expect lawyers would admit it. I tell you that the people of the state of Wisconsin and of this country have got to understand in the matter of food products that they have something to do to defend themselves against these pirates that are

upon them. The farmer that is producing pure wholesome food and wants a market for it has to contend with those people who are producing fraudulent imitations, because of the great wealth that those manufacturers can control in putting sellers and lawyers out in the country. For nearly six years I have been engaged in this work and I want to tell you that I believe that if the people of this state, this country, knew only one-half of what is true in this respect, they would rise in their might. But they are asleep, they don't understand it. The people of this country have something to do to protect themselves in their own rights, not to be robbed by people who are putting upon the markets spurious imitations and fraudulent foods.

Ex-Gov. Hoard: I can't say anything that will pound this into you any harder than Prof. Emery has. He is a man deadly in earnest, he is a good deal like a loaded gun, you don't want him to turn around the wrong way or you may get shot. I would like to have every farmer, when somebody throws out the usual sneer "I would rather eat oleomargarine than ordinary butter," or something of the kind, I would like to have him say one thing to this man that puts up that argument, and that is this, butter always advertises itself. Butter never acts under false pretenses. If there is anything the matter with butter, it tells it to the people, doesn't it? Can't you tell in a minute when it has lost its flavor? Not so with oleomargarine. You can juggle your oleo, you can flavor it, you can fool with it, you can blind the consumer with it, you can adulterate it tremendously, and you have no way of detecting it, except by the chemist. In the oleo fight in Washington, we found oleomargarine with eleven per cent paraffine.

You come to put the food of this country into the hands of interested capital, and where are you? Go right back to the farm. The farm is the only proper source of food in this country. The farm is the source of food and clothing, but in between the farmer and the consumer, stand a whole lot of these interested dishonest men who propose to juggle and sophisticate, and we need a great, big, strong, absolute public opinion to work against them. The farmer needs to stand up and understand what he is about; he needs to read and be posted. Just as likely as not

he will listen to some demagogue who may come along, and because he can raise a hue and cry against the man that is enforcing the law, he will vote in some unworthy man and let the good man out of office.

We have had a good administration of the Dairy and Food Commission; we have had a man striving against that combination in Chicago of $150,000,000 capital to down that agent who is trying to enforce the laws, to put in place of this genuine article of food, a fraud and a counterfeit, and a humbug.

During the last campaign, men were attacking the Dairy and Food Commission, trying to humbug the farmers into voting against the prosecution of this question, because, forsooth, it costs $30,000 a year. Great gods, what does that mean to a state with a dairy interest of $60,000,000? Men will talk this stuff, as though we should not stand up and support these institutions. I went through an awful hard fight, my dear friends, to get this Dairy and Food Commission established, and I helped draw the bill when I was occupying an official position in Madison, and I know that there were men at that time holding high positions in both parties under pay from Phil Armour in Chicago. One man confessed to getting $5,000 a year from Phil Armour to help overturn the dairy interests here in Wisconsin.

Prof. Henry: And where did Phil Armour get his $5,000 to pay him? From the Wisconsin farmer, wasn't it?

Ex-Gov. Hoard: Yes, sir. Now, I tell you, my good friends, we need to stand up and advocate the purity of our farm products the same as we would advocate the purity of our wives and our mothers. The purity of our farm products are in exactly the same relation to us, and when the farmer himself forgets that great law, in Green county or any other county, becomes dirty and slovenly, takes his milk to the creamery or the cheese factory or to the condenser, and it is uncleanly, that man is playing right into the hands of the fraud and the counterfeiter and destroying the value of the product in the hands of the consumer. The farmer wants to look on this question in a broad way and when Prof. Emery goes after him for being dirty and slovenly, they mustn't think that Prof. Emery is their

enemy. It is a good deal like it is with our child, once in a while we have to take him across our knee and tell Johnny he needs a little spanking and Johnny gets mad and says that father or mother is his deadly enemy,—and they are not, you know. Johnny simply needs a spanking.

The Chairman: A little over a year ago the Wisconsin Dairymen's Association conceived the idea of doing a little missionary work through the establishment of cow testing associations throughout the several sections of the state where they had any encouragement. It was done for the purpose of building up better knowledge and a keener appreciation of the conditions found in average herds throughout Wisconsin. It was done to give wisdom to the dairyman with reference to his own conditions in his own herd, and plans were formed by which different herds were tested at a nominal cost per cow, records kept, and a system of bookkeeping, as it were, that would show to a greater or less degree the profit or loss made on the cows that were kept for dairy purposes in those herds that were tested. Mr. Searles has had charge of that work and I am glad to say that fifteen cow testing associations have been established. I believe he has been doing good work and that it is a thing to be very highly commended by this Association, one worthy of the patronage of every cow keeper in the state of Wisconsin. That subject will come up this afternoon and I am sure we will all be much interested.

Recess till 1:30 P. M., March 12, 1908.

Convention met at 1:30 P. M., same day.
President Gillett in the chair.

A LOCAL COW CENSUS.

FRED MARTY, Madison, Wis.

Some time ago I was informed by our secretary, Mr. Burchard, that I was to take up a "cow census" in Green county of a certain number of dairy herds and report the result at this convention. The purpose of the "cow census" or an investigation among our patrons of Swiss, Brick and Limburger cheese factories and general dairying of Green county was to compare the results with similar "cow census" and investigations of dairying in other parts of the state taken some years ago, and as dairying in this section of the state has always been considered in a class by itself and differs so much from the general dairying of other parts of the state, it therefore no doubt will be of interest to the dairymen who are here with us from other parts of the state to learn what the Green county dairymen are doing and compare results with that of your fellow dairymen.

The difference in dairying in Green county, and especially in this southwestern section of the state where the Swiss, Brick and Limburger are manufactured and dairying in other parts of the state consists chiefly in that the period of lactation in the herd here begins in the spring, say during the months of March and April, and lasts until the latter part of December. While in other parts of the state the cows are coming in at all times of the year, and in many cases it is practiced to have the whole herd fresh in the fall of the year and milked during the winter, and when spring comes they are turned out on a pasture. The dairyman in this case claims that the cows will earn him more per year than the cow that is fresh in the spring of the year. In the former case the cow as a rule is worked longer, and during the winter months the cost of feed is higher as more concentrated feed is fed, which is absolutely necessary to keep the cow in good condition during the winter.

While the cows in this section and surrounding counties are fresh in the spring of the year, and when the flow of milk is

highest, nature has provided sufficient feed for them to run on and satisfy their own wants; everyone helps himself, and no doubt the amount of feed that every cow should have in order to do her best is measured out in more equal shares than when she is in stanchion and at the mercy and judgment of her master. And when the winter months come she is at rest, as our dairymen term it, and is very easily kept in good condition on coarse forage, such as we have here, good timothy, clover hay, mixed with some shredded fodder, and after freshening, a little grain.

The investigation of this winter was carried on in Green county amongst some of the best dairymen and best cheese factory companies, also by some dairymen who had contracted their milk for the season, so you will see that I have not only selected the best dairymen for this report but have taken as near as possible an average of existing conditions. From this report you will see that we have dairymen who are up to date in their management and in selecting a dairy herd, and men who are away behind time, and as a rule I was greeted accordingly; the one who made his cows net him a nice income would supply me with all the information wanted and in many cases it was hard to break away, while the one who hardly netted enough per cow to pay for cost of feed would size me up for some schemer and thought his information too valuable to give away.

Upon my investigation I would call on the proprietor and from him I would ascertain the number of cows he kept; look over his barn, note the breeding and type of cattle, find out the kind and amount of feed the cows had, which in many cases was a very difficult proposition, as no account whatever was kept. But many of them gave me a pretty fair idea of the amount of grain their cows had. The coarse forage was easily ascertained by every one of them, and as many of them fed no grain at all, it made it so much easier. Those that fed grain could tell by measure, kind, and how long it was fed; some could tell by number of bushels they had ground, and also bought by ton, which I charged with running market price. Mixed hay, timothy and clover at $8.50 per ton, corn fodder at $2.50 per ton, pasture at $6.00 a head, a uniform price was charged for pasture, and all other kind of feed for each herd.

I have given all these facts in tabular form, giving the patron's number, number of cows, kind of cows, cost of feed per cow, returns from factory per cow, pounds of milk per cow, average price of milk per 100 pounds. Value of cheese for one dollar's worth of feed and net profit or loss per cow over cost of feed.

From the above you will see that the calves have not been credited to the earning of the cow, which no doubt duly belongs to the credit of the cow, but in order that this request will compare with former cow censuses, and as the calves have not been credited, I have also left it out, but have kept an account of what was received for calves, and found that prices ranged on an average per cow in the different herds from $5.50, $6.00, $7.00, $20.00 and $50.00 per cow, the latter being two full blooded herds. As this table will be published, I therefore will not take the time to give the whole of it, but will make some selections of it, which will serve to illustrate the most important points.

COWS FED NO GRAIN.

No. 2 had 21 cows, Holstein grades, some common red cows, and some Brown Swiss, good dairy type, fresh in March and April. Feed was mixed hay, timothy and clover, corn fodder, 80 shocks of poor corn with shocks in the fall worth $17.34, pasture $6.00, making a total cost of feed per cow $23.34. Return from factory $59.86, net profit per cow $36.52, pounds of milk per cow 4,267, average price of milk per hundred, $1.40. One dollar's worth of feed brought $2.56.

No. 3 had 35 cows, Holstein grades, good dairy type, fresh in March and April. Feed was timothy and clover hay mixed, shredded corn fodder, 40 shocks of light corn, worth $15.85, pasture $6.00, making a total cost of feed per cow, $21.85. Returns from factory, $51.78, net profit per cow $29.93, pounds of milk per cow 4,184, average price of milk per 100 pounds $1.25. One dollar's worth of feed brought $2.37.

COWS FED GRAIN LIBERALLY.

No. 4 had 50 cows, Holsteins, one full blooded, balance grade; good dairy type; fresh September, October and November. Feed was alfalfa and timothy hay worth $12.75, ground corn 9 pounds a day in winter worth $14.30, and pasture $6.00, making a total cost for feed per cow, $35.55. Return from factory $91.49; net profit per cow, $55.94; pounds of milk per cow, 7,383; average price of milk per hundred pounds, $1.22. One dollar's worth of feed brought $2.57.

No. 5 had 90 cows, Brown Swiss, 6 full blood, balance grade; fresh February to May. Feed, timothy and clover hay, corn fodder worth $12.75, whole corn and wheat meal worth $10.36, pasture $6.00, making a total cost of feed per cow $29.11. Return from factory $71.90; net profit per cow $42.79; pounds of milk per cow, 6,168. Average price of milk per 100 pounds, $1.16. One dollar's worth of feed brought $2.47.

These are both patrons of the same factory, and certainly a good showing. In this case it would seem as if No. 4, who had his cows fresh in the fall, had the advantage of No. 5, whose cows are fresh in the spring. This seems very reasonable, as the average price for winter milk ranges on the average 40 cents a hundred higher than that of the summer months, making in some months, when the highest price is paid in winter and the lowest in summer, a difference of 65 cents per hundred.

SMALLEST AND LARGEST RETURNS PER COW.

I will now compare the patron who received the smallest returns per cow with the one that received the largest returns. No. 15 had 8 cows, mixed breed, rather poor dairy type, fresh, March and April. Feed, timothy and clover hay mixed, corn and fodder, worth $12.75, ground grain, corn, barley and oats worth $6.04, pasture $6.00, making a total cost per cow for feed, $24.79. Return from cheese factory, $31.12; net profit per cow, $6.33; pounds of milk per cow, 3,193; average price of milk per 100 pounds, $.975. One dollar's worth of feed brought $1.25.

No. 8 had 35 cows, full blood Holstein-Friesians, fresh March and April. Feed, timothy and clover hay, shredded fodder worth $12.75, bran and corn worth $10.55, pasture, $6.00, making a total cost per cow of $29.30. Returns from cheese factory per cow, $100.57; net profit per cow, $71.27; pounds of milk per cow, 7,857; average price of milk per 100 pounds, $1.28. One dollar's worth of feed brought $3.43.

You have noticed that the difference in price per 100 pounds of milk between No. 15 and No. 8 was 30.5 cents, which, with other conditions, makes a difference in the returns from the factory of $69.45, and a difference in the net profit per cow of $64.94 in favor of herd No. 8.

Facts learned by the Green county cow census investigation—the dairy herds of 40 patrons from various Swiss, Brick and Limburger cheese factories, for the year ending December 31, 1907:

Cow Census of Green County.

Patron's number.	Number of cow.	Cost of feed per cow.	Return from factory per cow.	Pounds of milk per cow.	Average price of milk per 100 lbs., cts.	For one dollar's worth of feed.	Net profit or loss per cow over cost of feed.	Kinds of Cows.
1	29	$23 36	$59 76	4,808	$1 24	$2 56	$36 40	Holstein grades, fresh March, April.
2	21	23 34	59 86	4,237	1 40	2 56	36 52	Mixed breed, good dairy type. March, April.
3	35	21 85	51 73	4,198	1 25	2 37	29 93	Holstein grades, good dairy type. March, April.
4	50	35 55	91 49	7,383	1 22	2 57	55 94	Holstein, one full blood, balance grades. Sept., Oct., Nov. Good dairy typ s.
5	65	29 11	71 90	6,168	1 16	2 47	42 79	Brown Swiss, 6 full blood, balance grades, fresh February to May.
6	40	26 56	67 00	5,327	1 25	2 52	40 47	Holstein grades, "high grades," good dairy cows, fresh March, April.
7	32	26 75	71 87	5,187	1 38	2 67.6	45 12	Holstein grades. (Mch., April, fresh.)
8	35	29 30	100 57	7,857	1 28	3 43	71 27	Full blood Holstein Friesian, fresh February, March, April.
9	53	28 05	47 81	3,703	1 29	1 63	19 76	Ayrshires, 44 full blood, balance grades, fresh Feb., March.
10	30	27 24	46 36	4,804	96.5	1 70	19 15	Shorthorn and Swiss grades, fresh March, April.
11	24	23 31	59 01	4,766	1 23.8	2 53	35 70	Common red cows, fresh March, April.
12	21	23 87	49 83	5,045	97.3	2 09	25 96	2 Holstein grades, Shorthorn, good dairy types, fresh April, May.
13	13	21 17	50 12	5,084	98.4	2 36	28 95	Shorthorns (2 full blood Ayrshires), 1 half blood. Ayrshires fresh March, April
14	17	21 25	38 62	3,977	97.0	1 80	17 37	Holstein grades, red cows, fresh March, April.

Cow Census of Green County—Continued.

Patron's number.	Number of cow.	Cost of feed per cow.	Return from factory per cow.	Pounds of milk per cow	Average price of milk per 100 lbs., cts.	For one dollar's worth of feed.	Net profit or loss per cow over cost of feed.	Kinds of Cows.
15	8	24 79	31 12	3,193	$97.5	31 25	$6 33	Mixed herd, poor dairy types, fresh March, April
16	15	25 37	40 64	4,177	97.2	1 60	15 27	Shorthorn, some Holstein mixed breed, fresh March, April.
17	16	25 37	33 86	3,516	96.3	1 33	8 49	Mixed herd, poor dairy type, fresh March, April.
18	15	25 37	48 48	5,033	96.3	1 91	23 11	Grade Holstein common red cows, fresh March, April
19	13	25 37	49 70	5,152	96.4	1 95	24 33	Common red cows, some Holstein grades, fresh March.
20	43	29 43	41 95	4,2 4	99.83	1 42	12 54	Holstein high grades, fresh March, April, June.
21	16	21 25	46 78	4,662	1 00	2 20	25 53	Holstein grades, fresh April, May.
22	25	26 00	53 80	4,173	1 29	2 06	27 80	Holstein grades, fresh March, April.
23	25	26 80	70 64	5,474	1 29	2 63	43 84	Holstein grades, fresh March, April, July.
24	28	23 25	60 14	4,864	1 23.6	2 58	36 89	Mostly Holsteins, fresh March, April.
25	23	23 25	64 21	5,139	1 25	2 76	40 96	Common mixed herd, fresh March, April.
26	18	22 75	56 97	4,758	1 19.7	2 50	34 12	Holstein grades, fresh March, April.
27	20	24 75	61 00	4,963	1 23	2 46	36 25	Common dairy types, fresh March, April.
28	26	23 25	59 65	4,604	1 29	2 56	36 40	Holstein grades, fresh March, April.
29	28	24 25	56 28	4,363	1 28	2 32	32 03	Holstein grades, fresh March, April.
30	28	24 00	47 50	3,933	1 20.7	1 97	23 50	Durham grades, fresh March, April.
31	37	25 25	58 62	4,4 9	1 32	2 32	33 37	Durham grades, some Holstein grades, fresh April, May, June.
32	28	$24 00	$38 22	5,299	1 28	2 84	44 22	Holstein grades, fresh March, April.
33	22	30 00	64 13	4,937	1 29.8	2 13	34 13	Durham, Holstein mixed, fresh March, April.
34	15	24 00	40 00	3,202	1 24.9	1 66	16 00	Holstein grades, fresh March, April.
35	5	23 00	69 97	5,687	1 23	3 04	46 97	Mixed herd, fresh in spring.
36	25	24 00	63 52	5,102	1 24.4	2 64	39 52	Mixed herd, good dairy types, fresh in spring.
37	18	24 00	50 53	4,063	1 24	2 10	26 53	Common herd, fresh in spring.
38	44	24 00	49 27	3,957	1 21.6	2 05	25 27	Holstein grades, fresh in spring.
39	50	24 00	46 76	3,771	1 24	1 94.8	22 76	Holstein grades, fresh in spring.
40	61	24 00	54 70	6,253	87 4	2 27	30 70	Holstein, 30 full-blooded, balance grades, fresh March to May.

Some Averages.

	Green Co., 1907.	Waukesha Co, 1905.	Difference
Total number cows kept by the 40 patrons	1,145	556	589
Average number cows per herd	29	14	15
Average cost of keep per cow	$25 05	$30 00	$4 95
Average earnings per cow	56 33	41 29	15 07
Net profit per cow	31 30	11 29	20 01

DISCUSSION.

Prof. Emery: On what do you base your $6.00 for pasture for the season?

Mr. Marty: That is the same basis taken by the census in Waukesha county. I hardly think it is enough; I think $10 would not be too much, but in order to make the two reports comparable, I put it at that.

Mr. Goodrich: In Waukesha county they have the skim milk left on the farm.

Mr. Marty: In Green county they have the whey left.

Mr. Goodrich: What is the difference in the value of whey and skim milk?

Mr. Marty: It is a hard thing to state, it depends so much upon conditions. I have worked upon a farm where the skim milk was delivered from the creamery to the farm and it was my chore to feed the hogs, and when it came to feeding time for the calves and hogs, I have had to take a stick and work the skim milk out of the can into the trough. We have whey that never gets into that condition, but on the average I must say that we have poor whey that has developed too much lactic acid; for the feeding value, it would be hardly anything. The milk sugar that it originally contains, I should say is destroyed.

Mr. Chadwick: Perhaps the whey in Green county is worth more than the skim milk in Jefferson county.

Mr. Marty: You see we have one man here that makes $100 per cow, and we have the books and everything to prove it, and we have some only $31 per cow, three or four averaged between $31 and $35.

Mr. Goodrich: In Waukesha county I took the census of all the patrons that patronize one particular creamery so they had all taken their milk to the same market, and I think that would make a little better comparison.

Mr. Marty: I couldn't have done that here, Mr. Goodrich. If I went to any other factory in the county outside of company factories, my average would have been higher. Those who, for the last ten years, have worked up their own milk were way ahead of those that sold their milk; anybody will admit that.

They have had the benefit of the booming cheese market for the last year, while those that contracted their milk did not get the full benefit of it, so I have taken ten patrons out of forty with the contracted price, so you will see I have not made an effort to get only the best patrons, but I believe I have an average of the existing conditions.

Mr. Goodrich: I took a cow census in Fond du Lac county a few years ago, and I couldn't use the best dairymen, because they did not patronize a creamery. For instance, Mr. Gillett and Mr. Hill and Mr. Scribner, if I could have put them in, just think where my average would have gone to, but I had to take their neighbors who had some good cows but did not care for them and did not feed them so well.

Mr. Marty: There are fifteen patrons in that factory, but I have only taken two so as not to pick out the best. I have been to the extreme northern boundary of the county and also way south of Monroe near to the state line, picked them out from different parts of the county.

Mr. Chadwick: In your judgment, if you had all the cows in Green county, would you average up higher or lower than the average you have here?

Mr. Marty: That would be a very hard question to answer, but taken from these facts that the majority of farmers of Green county have worked up their milk for the season and the percentage is so much larger than those that have sold their milk, I would take it for granted that the average would be higher.

Mr. Goodrich: Now, to get the most value out of this to the people of this community, they ought to know what those numbers refer to. I took a cow census down in the state of Indiana, I selected out some of the best and some of the poorest, and I had a table printed with the numbers, and you know they besieged me on all hands to find out what those numbers represented. A man would say, "This is mine, isn't it?" "Can't you pick it out," I says, and invariably they picked out somebody that had a big record, where the number of cows was the same; no man picked out the poorest one. I was very much amused at it, but I insisted I would not give it out until after the meeting, and then I would give it out to the whole meeting;

that is, I would let each one know that called on me how his cows stood; I did that, and I tell you there were some men there that were awfully astonished to know that their records were so low, men who really believed that they were doing better than anyone else; they couldn't see themselves in their true light, and that is what a census like this will bring out. A man can see himself as he is, see himself as others see him, and if that won't start up his ambition, I don't know what in the name of God will.

Mr. Marty: The understanding between me and these forty patrons is about like what Mr. Goodrich has stated. Any one can find out about his own record, and of course he can't find out about his neighbor's. I could not have got the information if I hadn't made that arrangement.

Prof. Emery: Will you give us the highest and the lowest figures again?

Mr. Marty: The smallest and the largest return per cow in two herds of the forty. No. 15 had eight cows, mixed breed, rather poor dairy type, fresh March and April; feed, timothy and clover hay mixed and corn fodder, worth $12.75; ground grain—barley, oats and corn—worth $6.04. Pasture, $6.00, making a total cost per cow for the year of $24.79. Returns from the cheese factory, $31.12; net profit per cow, $6.33.

No. 8 had thirty-five cows, full blood Holsteins, freshening March and April. Feed, timothy and clover hay, shredded fodder, worth $12.75; bran and corn worth $10.55, pasture, $6.00, making a total cost per cow of $29.30. Returns on this factory number are $100.57; net profit per cow, $71.27. There is a difference in the returns from the factory of $69.45 and a difference in the net profit per cow of $64.94, in favor of herd No. 8. As to the figure charged for the hay, grain and fodder at $12.75, I have taken a sort of an average, after I had seen all the farmers. There was a wide variation from one ton to three tons of hay per cow. One man told me it was three tons per cow; I investigated closely, and taking everything into consideration, I knew that he was not right. I took the figures largely from a good dairyman who had kept a record of the pounds that he feeds per cow and so I tried to average the thing

up. I have charged the cows with a ton and a half of hay at the rate of $8.50 per ton; that makes $12.75 for the hay. Then I have tried to get the price on shredded fodder; some say it is hardly worth the price of hauling it; I have taken a price of $2.50 per ton on the farm, so I have given two and a half tons of roughage, coarse feed per cow, every herd of these forty.

Mr. Goodrich: I used to figure corn fodder worth about half as much as hay and nearly half of it is waste in such hay as they would feed.

Mr. Marty: I noticed that Mr. Goodrich had figured three per cent of the animal's own weight per day for two hundred days. That seemed to me a good deal.

Mr. Goodrich: I haven't had any occasion to change my opinion of that.

Mr. Marty: I have asked an authority on this question and he says 15 pounds for 200 days will carry any cow, with grain feed of course, but you all understand that the farmers in this section here make no effort whatever to push their cows. When they have finished making cheese, their aim is to dry them up and give them at least two months and a half rest, and they claim with good timothy hay, or timothy and clover mixed hay, and corn fodder, that is about all the cows, as a rule, in this county got through the winter months,—a very little grain in the spring of the year after parturition. You must not forget that these are figures that I have received from every individual farmer according to his estimation.

Mr. Legler: How much did the cows that gave 7,000 pounds of milk receive of grain, besides the fodder?

Mr. Marty: I got those figures from the man himself, $10.55 per cow for the year, for grain alone.

The Chairman: In other words, about half a ton per cow.

Prof. Emery: Does that expense cover simply nine months and a half or twelve months?

Mr. Marty: That covered the feed for the winter months and the pasture for the six months made up the rest of it. Those cows during the winter months are practically dry.

Secy. Burchard: The point in this cow census is that some herds made a wonderfully good return and other herds did not

make a very good return, although they made some profit. The lesson to be drawn from it is that those who made a small profit should endeavor to make a larger profit, and that they can do it has been proven by their own neighbors. That is the reason this cow census was taken. Prof. Fraser told us yesterday and Prof. Otis this morning that there is a very great variation in herds, in cows and in the care that they have. The comparison of this county with Waukesha county is perhaps a little bit of self-glorification that is to be excused; the same conditions, however, existed in Waukesha county that exist here; some of the herds there made good money and some of them didn't make any. I am much obliged to Mr. Marty for the way he has handled this matter. I knew it would be a difficult thing here in Green county, more so than in any other county where we have operated, but I think he has done splendidly, and on behalf of the Association, I tender Mr. Marty thanks.

Mr. Everett: I cannot refrain from commenting upon this paper and adding, if possible, to what Mr. Burchard has said. In the first place, it is not a test of counties, it is a test of individuals. A test has been made by Mr. Marty, has been as honestly and correctly made as can be made, the returns being taken from the creameries. Now, it is the most valuable thing that has occurred at this convention for your Green county dairymen, if you will use it. If I lived in Green county and was conducting a dairy, I would find out, if I had to hunt day and night, who the man is that got $70 per cow, and I would try to do the same thing he did. It wouldn't be a matter of jealousy, but I would try to find out how he is doing it. Just look at the difference between what these men received per cow, neighbors in the same county working under the same sun, hauling their milk through the same snowbanks, conditions all the same, except the man and the herd and the feed and the cow, and one got $71.27 profit and the other $6.33.

I said yesterday that the problem of dairying is the problem of selling feed, and that is all there is of it. A bushel of oats is worth so much in the market, and oats are worth just that price to feed to the dairy cow. I have seen a man haul a load of hogs four miles from home because he got five cents a hun-

dred more for them. Now that is intelligence, isn't it? We all know enough to do that. But why, in thunder, don't we know enough to sell our feed to a cow that will pay $3.40 for a dollar's worth instead of to a cow that will only pay $1.25 for a dollar's worth of feed? That is the only problem in dairying. Sell your feed intelligently, as you do your hogs; sell it to cows that will bring a big price for it. Get after these men that are making good returns and find out how they do it and do it yourself. You can all do it just as well as he can.

Mr. Davis: Did I understand Mr. Marty to say in regard to the poorest herd that he had the account of that herd for only six months?

Mr. Marty: No, the contracts run as long as there is any milk.

Mr. Chadwick: Aside from what milk was sold to Borden's factory, most of that milk was manufactured into cheese, not butter, isn't that so?

Mr. Marty: Yes. I found out this, which is against cows in this section, and that is, that there is too much waste on the average on both ends of the season, especially in cheese factories. In the spring, one farmer's cows are a little earlier than some others, and he is compelled to wait until his neighbor farmers are ready so they have enough milk at the factory to warrant starting the making of cheese. Consequently a man that is three or four weeks earlier with his herd is perhaps a loser, because he very seldom is equipped so that he can make butter at a profit. Then in the fall of the year there are the same conditions existing, sometimes the same man has milk at both ends of the season in that way, so that there is considerable loss to the dairymen of this county on that account. When it comes to making butter, the dairyman of this county is way behind as a rule—he doesn't make the butter that he ought to make.

Mr. Stauffacher: This cow census is a very interesting thing to the community, and I think that we as a community and the dairymen of Green county should take advantage of anything of this kind. I know we go to many places in the county and the dairymen tell us that all this is theory, they say

it is all right for those fellows up at the Agricultural College, they have got money, but it is theory for us. But here we have a cow census that is actual fact. These men say, "Give us facts and we will listen to them." I think Mr. Marty has gone around among our men and found out this and put it to us as a practical matter about our neighbors, so we cannot say any longer that it is a theoretical thing, and I think we should try to find out where we are at, all of us, and study up on these lines. I was raised on a farm and I know that we had cows that certainly did not pay their board; we simply kept them because they were good looking cows. It seems to me this county has too many cows. I know of a farm of a hundred and twenty acres keeping thirty cows and I know of other farms with the same number of acres keeping about twenty cows. Of course that would make a difference in figuring on the pasture, whether there were twenty or thirty cows. I believe Green county has more cows than can be taken care of properly. The people have been so energetic taking care of the dollar that has come in so rapidly during the cheese boom, that they have bought any kind of a cow. There ought to be five times as many farmers here as there are, but I hope those who are here will go back to their homes and investigate their herds and interest their neighbors. This is one of the best articles in this convention so far and I hope we will profit by it.

Mr. Zumkehr: This No. 8 is known to me, and he is a student; he is a graduate of the college at Madison and he studies his business all the time. There is not one cow in his herd I dare say that is not tested. He has got a Babcock test on his farm and every so often he makes a test of each cow's milk. If he finds one cow that does not do as well as he thinks she ought to do, she is taken from the herd. This gentleman has kept up that practice for a number of years, weeded out the poor ones and bred up to better cows, and therefore he has been able to show this record. I think it is very easy for any farmer to keep a record of his cows; it doesn't make much work if you are onto your job, to keep a record, not only for the weight of the milk, but also for butter fat. You can discard your poor cows you can breed up better, and in a few years you can make

a better showing, and if you farmers would go to work and keep a separate record of every cow, you would be surprised to find how many cows you have in your herd that don't give you any profit.

Mr. Everett: That is the story in a nutshell.

Mr. Marty: Mr. Stauffacher referred to this man here that only netted $6.33 for his herd. This of course is an average of that herd, and you can readily see that he must have cows in there that are worse than boarders.

A Member: Wouldn't it be well to give the name of that man, No. 15?

Mr. Marty: No, sir.

The Member: It seems to me it would be well for us to know.

Mr. Marty: You wouldn't think so if I should say it was you.

COW TEST ASSOCIATIONS.

H. C. Searles, Inspector, Fond du Lac, Wis.

In making a report of the work accomplished among farmers of Wisconsin, in the organizing of Cow Testing Associations, will say it has created great enthusiasm, and much interest is being manifested throughout the state.

We have organized fifteen Cow Testing Associations, which are located as follows:

Pioneer "Cow Testing Association,"	Eldorado,	with 400 Cows.
E. Fond du Lac "Cow Testing Association,"	Malone,	with 600 Cows.
Cottage Grove "Cow Testing Association,"	Dane Co.,	with 134 Cows.
Ash Creek "Cow Testing Association,"	Richland Co.,	with 100 Cows.
Tomah "Cow Testing Association,"	Monroe Co.,	with 205 Cows.
West Salem "Cow Testing Association,"	La Crosse Co.,	with 215 Cows.
Omro "Cow Testing Association,"	Winnebago Co.,	with 220 Cows.
West Bend "Cow Testing Association,"	Washington Co.,	with 343 Cows.
New Franklin "Cow Testing Association,"	Brown Co.,	with 175 Cows.
Wales "Cow Testing Association,"	Waukesha Co.,	with 100 Cows.
Rock Lake "Cow Testing Association,"	Jefferson Co.,	with 140 Cows.
West Depere "Cow Testing Association,"	Brown Co.,	with 266 Cows.
Medford "Cow Testing Association,"	Taylor Co.,	with 146 Cows.
Colfax "Cow Testing Association,"	Dunn Co.,	with 249 Cows.
Galesville "Cow Testing Association,"	Trempealeau Co.,	with 122 Cows.
Total		3,415 Cows.

It is to the interest of every creamery or cheese factory management, to co-operate in the organizing of cow testing associations, among their patrons. If each one would put a shoulder to the wheel, it would be possible to organize a large number of associations this year. These organizations properly carried on, mean better cows for the farmer, more milk for butter and cheese, hence, lessening the cost of manufacturing. While cow testing associations in Wisconsin are practically in their infancy, the reports received from the various organizations are very satisfactory.

A letter received from Mr. Wm. Brennen, Secretary of the Tomah Cow Testing Association, says: "The farmers are becoming more interested as the work advances, and they have seven new members with others contemplating joining.

H. W. Griswold, Secretary of the West Salem Cow Testing Association, reports their association as being in a flourishing condition, with an addition of three new members and others to follow.

A letter from Mr. J. W. Benson, dated February 10th, in part says, "In accordance with your request, am sending you a brief report of our "Cow Testing Association" at Cottage Grove.

I wish to say at the outset, that this will be a statement of impressions and opinions and not a tabulation of facts, necessarily so, as our Association was only organized last July, and it is too early to present any definite deductions from the figures so far obtained.

I wish to say also that we have accomplished more than would appear from a statement of the number of cows tested; and the number of times they were tested. Cold figures cannot convey an idea of the enthusiasm, and the changed view point that this work has wrought among a few of our patrons.

Mr. D. W. Reynolds, President of the Cottage Grove Cow Association, is very enthusiastic in regard to the enlightenment it has given him. He says that he thinks it is the best thing ever taken up among the patrons, and he would not sell what he has learned in this test for any sum of money.

Mr. J. E. Killian, Secretary of the Association, says that this test has caused him to sell one cow which was shown to be of

poor stock. He also says the weighing and testing of each cow's milk is the only way of telling whether the cow is working for the farmer, or the farmer for the cow."

A farmer of Fond du Lac county, who is keeping daily records of each cow's milk, said he was more than paid for the time taken in weighing, by the extra amount of milk they secured. Also said they never recorded the weight of a cow's milk without noting the amount of milk produced the milking before, which stimulated them to feed and care for the cows much better.

Another farmer in the same county with a herd of ten cows found that the best cow produced 417 pounds of butter fat per year while the poorest one produced 133 pounds, and consumed within $4.00 as much food; a difference of 284 pounds of butter fat equivalent to $71.00.

The poor cow will tramp down and consume as much grass as the good one; in the stable she takes as much room, and when fed, will eat as much, but fails to recompense her owner.

Out of another herd of eight cows, the best cow produced 189 pounds butter fat per year, while the poorest one produced 71 pounds. Four cows of this herd failed to come to the 100 pound mark. This is a case where one-half of the number of cows are eating the profits made by the other half.

These vast differences can be shown in nearly every herd where farmers failed to keep proper records.

Time cannot be spent to a better advantage by farmers than keeping records of their cows, also treating them with kindness, and giving them good care, goes a long way toward making the dairy business a success.

Work carried on by the Wisconsin Dairymen's Association commencing May 1st, 1906, and continuing one year revealed the average amount of butter fat produced by four hundred cows, which was 199 pounds; two of this number produced over 400 pounds butter fat each, twenty-seven produced over 300 pounds each, one hundred and twenty-four over 200 pounds each, one hundred and ninety-nine produced over 100 pounds each, while forty-eight failed to make 100 pounds. As a result of this work, nearly 100 cows were elim-

inated from the farmers' herds. If this work could be carried on with every herd in the state, it would be the means of adding many thousands of dollars to the farmers' income.

A member of the East Fond du Lac Cow Testing Association headed his herd with a thoroughbred sire of a dairy breed, seven years ago. Two years later he began weighing and testing each cow's milk; at the close of the first year he found his cows averaged 210 pounds butter. The fifth year's work of testing was carried on by the Wisconsin Dairymen's Association which found that his cows averaged 352 pounds of butter per cow. This change was brought about by breeding and eliminating unprofitable cows, replacing them with profitable ones. You will note the great difference between the first and fifth year's production per cow, which is 142 pounds butter, equivalent to $35.50, allowing 25 cents per pound for butter. Does it pay to look well to the production of each cow in the herd? This man is a very enthusiastic worker for the upbuilding of the dairy industry, and has done a great deal toward making the East Fond du Lac Cow Testing Association a success.

If all farmers could realize the benefits derived from cow testing associations we would have very little trouble in getting them together to organize.

The dairy breeders' associations located in different parts of Wisconsin, as a rule, furnish excellent material from which to organize cow testing associations. One can very easily see why this is true, for these farmers have taken the first step toward the upbuilding of their herds. They are the most enthusiastic members we have to carry on such associations. We find so many men who think it occupies too much of their time to weigh and keep records of their cows; some of these men are keeping twenty cows while ten good cows would produce more butter than the twenty, yet these men are perfectly satisfied to work for the twenty poor cows, finding no fault with the time wasted on them.

Dairying is profitable if we will only meet the demands of the dairy as we should. We must discontinue keeping cows that are not fit for the business.

DISCUSSION.

Mr. Loomis: Why is it that there seems to be more interest among the patrons of creameries than among the cheese factory men in establishing these testing associations?

Mr. Searles: I would say because they are paying on the butter fat basis. The Swiss cheese factories and the brick are paying by the 100 pounds of milk.

Secy. Burchard: The same thing is revealed by the weights of milk, isn't it?

Mr. Searles: Yes.

Mr. Goodrich: Is the milk weighed of every cow the whole year around?

Mr. Searles: We had twenty-six patrons that year. Twenty out of the twenty-six weighed their milk every day, after the first two or three months.

Mr. Goodrich: How often did you test?

Mr. Searles: Once every month; we take two milkings, night and morning, and I would say that comparing that with the creamery test, when the year was up, we came within .04 of the creamery.

Mr. Chadwick: Which had the more butter fat, the night's milk or the morning's milk?

Mr. Searles: I found there was more in the morning's milk than in the night's.

Mr. Goodrich: Did you find that the case at all times of the year, or was it in the summer when the period of time between the night's milking and morning's milking was shorter?

Mr. Searles: That was in the summer.

Mr. Goodrich: Didn't it go the other way in the winter time?

Mr. Searles: Sometimes it did.

Ex-Gov. Hoard: How did you find the sentiment of the people where you were trying to introduce this testing system, how did the farmer feel about it?

Mr. Searles: In some places they are very enthusiastic over this work and take hold of it readily without much work on my

part. In other places, it is impossible to start them; they don't seem to have any idea what it is for. I have even been asked if it was a tubercular test.

Ex-Gov. Hoard: Where it is impossible to start them, do you find that they have been doing any dairy reading of any kind, informing themselves?

Mr. Searles: Well, from sizing the men up, I should judge they did not.

Ex-Gov. Hoard: In your opinion what is the most needed among this class of farmers?

Mr. Searles: Well, they need to get after their herds and find out what they are doing. If they could realize something of what they are doing, I think they would wake up. The trouble is they do not realize really what they are doing and they are satisfied not to.

Ex-Gov. Hoard: In the cow censuses that we have taken we have covered over two thousand herds, and about forty-five per cent of the farmers we found do no dairy reading whatever.

Mr. Searles: I have seen lots of them that take a dairy paper but never read it.

Ex-Gov. Hoard: There seems to be a great indisposition on the part of the men who are keeping cows in Wisconsin and everywhere else, against making themselves intelligent and I can't understand it. I don't see why the dairy business should make a man contented to be ignorant.

Mr. Searles: We find that when they once get started on finding out what their cows are doing then they will go right along.

Ex-Gov. Hoard: Do you in making this report allow each man to see what his neighbor does?

Mr. Searles: Yes. I figure out and show them and tell them how their neighbors were managing and taking care of their herds and what returns he got.

Ex-Gov. Hoard: Don't you think that it would stimulate the farmers of Wisconsin tremendously if in every cheese factory and creamery a test was made of that character and put up so that A could see what B was doing and what C was doing and all the way down, a monthly report? A had so many cows

and got so many pounds of milk worth so much at the cheese factory; B had so many cows giving so many pounds of milk worth so much at the cheese factory. There are thousands of men who don't believe but what their cows are doing just as well as their neighbors, when very likely they are not doing half as well, and the reason they stick to that belief is because there is nothing to show them. The cheese factory and the creamery have the knowledge, but they don't give it to the patron, and it seems to me it would be a great thing if every patron could know exactly what is going on, not only in his own herd, but in those of the other patrons.

A Member: About ten years ago I tried that myself in a creamery, but I found the farmers, for some reason, were so constituted, at that particular place anyway, that it lost me about ten or twelve of my patrons, because it started a jealous feeling among the patrons, and they got the idea that we were giving one man a better show than the other. In fact, I tried it in two different places, and I found that it takes a lot of nerve and hard work to overcome that feeling among the farmers. We had their numbers on our sheet, and also the name.

Ex-Gov. Hoard: Yes, I know how weak human nature is. In my cow censuses you will notice that the men's names are not given. The numbers appear from 1 to 100, but if every creamery and every cheese factory would take just such a census every year and give the patrons by number on the sheet, then these men could see that there was a wonderful difference in the different herds in that creamery.

A Member: I even went so far as to take a test machine and go out among the people and show them, and I would often take my buggy and go to a man that I thought needed a little information and took him to his neighbors, who were doing better, but I found it wouldn't work at all.

Ex-Gov. Hoard: It might not work in your factory, but that very thing showed that it ought to work.

The Member: Of course we had strong competition among the creameries, and that was bad, and if I had a patron that he thought I didn't treat him just right he would go over to the

other fellow and maybe that would have been a good thing in the long run, because it would weed out the poor factories.

Mr. Hill: Gov. Hoard speaks of the fact that in taking our cow census last year, each man thought his cows were doing a little better than his neighbors. Prof. Fraser and I were just looking over the figures of last year's census, and I remember that in one case in taking that census a man's own estimate of the butter fat from his cows was 275 pounds, and it turned out to be 88.2 pounds; he came within 190 pounds of it. Another man got 89 pounds of butter fat and he estimated he was getting 150. I remember another man Mr. Searles spoke of that got out of the test association because he found he was cutting out so many cows that he made up his mind that if he stuck to it he wouldn't have any left.

Mr. Chadwick: This is a question of education that has got to come.

Prof. Fraser: Gov. Hoard asked for a solution of this question, why dairymen do not read more. I would like to ask Gov. Hoard if he was taking care of that herd we had out on the chart yesterday how much time he would have to read, to improve his mind. That is the trouble with the dairymen in Illinois, that they do not read more. It is certainly a most lamentable fact. You go to the Elgin region and visit those dairymen most any time and they are very glad to see you, and if they had time they would be glad to stop to talk, but they simply have not time, they are so everlastingly busy milking those poor cows. On the other hand, if they would read and study the situation they would have more time.

Now, what is to be done about it I don't know. It is a question in my mind if we are not going to get men with more business ability, a more general understanding of business principles to go into dairying and produce milk, and a lot of these people that will not read will simply be driven out of the business.

Ex-Gov. Hoard: Prof. Fraser is right; there are so many men working with poor cows and they have to work so like blazes to keep them, that they haven't any time to read. Oh, there's an awful lot of poor cows in the country. I have tried

to figure up this thing with some of my neighbors. I can't make one of those men believe but what I am losing a great lot of money on my farm. They come to me and say frankly, "Now, Hoard, you keep four hired men and you pay out $2,000 a year for help. How, in the name of sense, can you come out?" Well, I say to them, "Do you think I am doing business for nothing? I keep all the help I want, that is the cheapest thing in the world for me to do, that is, to keep plenty of good, hired men. I have fifty people in my printing office, and I am hunting for a chance to keep fifty-one, fifty-two, fifty-three, fifty-five. I can't make any money on one pair of hands; no man ever got rich on one pair of hands, did he? If he is going to get rich in this world, he is going to employ a whole lot of pairs of hands." There is a farm of one hundred and ninety-three acres, and is worth a lot of money, $30,000, and there are a lot of men around me don't believe I am making a cent, and I know better. When a man will make a $30,000 investment and pay out $2,000 a year in the prosecution of the farm, he is going to get nine or ten per cent out of it if he can, and I have got a herd of cows there—why, a friend of mine came into my stable the other day and looked at them, an old German, and he says, "Hoard, if I had such a lot of cows as that I think I would be just as big a fool about them as you are." I said, "You would have a right to be. They are a good herd of Guernsey cows; they fill my eye, and they fill my heart. I look at them and I feel as though I ought to thank God for those beautiful animals that are doing so well for me; they are doing so well that they gave me 7,499 pounds of milk last year, and they made 425 pounds of butter per cow and they earned, skim milk that figured in, for me $117.17 per cow, and yet I have neighbors who tell me they don't believe I make it pay. They earned over their cost of keep about $80. Now, it is not a difficult thing for a man to go to work and stick right to it and build up a herd of cows like that; it is all in the possibilities of what can be done.

Prof. Henry: Do you get an extra price for your milk sold at retail?

Ex-Gov. Hoard: No, sir. I do get the price, but I am reck-

oning here on the creamery basis. I put it in butter, don't you see? Making 425 pounds of butter you can reckon it yourself by the average price at Elgin last year, $101.00.

Prof. Henry: Where do you sell your milk?

Ex-Gov. Hoard: I sell my milk in town and I am making a lot more money than I told you about, a good deal more. I sell that milk for six cents a quart, which is about $3.00 a hundred. But it is 5 per cent milk, and I have sixteen babies on my hands at one time. The women that had babies wanted the milk and the doctors were just pushing me hard, sent baby after baby to me after this milk, because the barns, the cows, everything are kept right. The milk was good and the babies found it out.

I tell you one thing, my friends, sometimes it makes me mad to think how little the average farmer knows about the value of skim milk. Let me tell you what I get out of skim milk. I feed it in two ways. I know a fellow that fed $12 worth of corn to pigs last year and then sold them for $9, and he said he couldn't see where it went to. I told you yesterday about selling ten grade calves to a man for $25 apiece. Now, those ten grade calves I kept a regular account of what they consumed. In seven months they consumed a little short of 3,000 pounds of skim milk and I fed them fifty cents' worth of blood-meal, just dried blood that you get from Swift & Company or Armour & Company in Chicago. It is a splendid mixture to put into milk for your calves. I fed them fifty cents' worth of blood meal, a dollar's worth of oats, and a dollar and fifty cents' worth of alfalfa hay, that made $3.00. I counted the carcass worth $3.00 more, and that made $6.00. I sold them for $25 and I credited the balance to the skim milk, and that made 3,000 pounds of skim milk bring me $19, and that is 63 cents a hundred. I heard my good friend, Mr. Clawsen, say here that in the old days they thought they were doing first rate if they got 60 or 63 cents a hundred for their good milk. I got 63 cents a hundred for my skim milk, turned it into a calf like that. What I got from my thoroughbred calves I couldn't tell you. When I sold those grade calves to that man I sold him ten registered calves, reared in the same way, for $1,500,

$150 apiece, so you see that when turned into a registered calf the skim milk went way up, but when put into a grade calf, just such as any common farmer can produce, I got 63 cents a hundred for my skim milk. That same man gave as high as $30 for such grade calves. He came on from New York and wanted a carload, and he couldn't get them from me, so he picked them up from the neighbors round about. I have one neighbor, a German farmer, one of the brightest we have in our country, a keen, sharp fellow; he took a 170 acre farm on shares, and got $2,000 for his share, the net income of the whole was $4,000. That man sold calves to this Mr. Minor for $30 apiece, and yet there are plenty of men who will say, "You can do it, Hoard, but I can't." They are feeding their calves anything and everything, and when a calf is six or seven months old he is stunted, he is driven back, and you never can make up for that as long as you live. I tell you this, as true as there is a God in heaven, that a heifer is made or unmade the first year of her life, very much. If she is well nourished the chances are that she will make a fine cow. You crowd her down and push her back and stunt her, and if she would otherwise have made the finest cow in the world, she falls back and never gets over the atrophy of those organs which have been reduced by starvation.

Now, I have developed in fifteen years a good many cattle, sold a lot of stock, grade stock and registered stock, and I have had but one heifer that I have developed in that length of time that I could not make produce 300 pounds of butter a year. She was a Guernsey, and while I believe in blood and I believe you want to give a heifer the best kind of father you can find for her, at the same time there is a wonderful sight more than you think of in the way a heifer calf is reared and nourished and kept going. I am very fond of oats for feeding calves; I am buying oats and grinding it with a little corn for my calves, and they get it right straight along, and a heifer will cost me something like $35 when she is two years old; but when she comes in with her first calf she is right up and a-coming. I have got one today with her first calf and I can't dry her up; she is giving sixteen pounds of milk today and she looks as if

she is going to give 400 pounds of butter fat. If I had taken that heifer and used her as fifty per cent of the farmers use their calves, she would have been a failure, I believe, even though she has got the best blood in her.

Mr. Everett: I am going to tell you something about Gov. Hoard. He doesn't know that I know it, but I do know it, and I am going to tell you about it. I have been on the governor's farm a good many times at Fort Atkinson, and all over it; I watched his cows, noticed the way his barn is built, been out into the hog pen, seen him throw corn over in to the Berkshires, and then throw them some alfalfa, and I have time and again seen them leave the corn and go for the alfalfa hay. Everything he has told you is true; his is one of the most intensely practical farms that I know of; everything is absolutely within reach of every common, ordinary, everyday farmer. He hires everything done, everything goes like clockwork there, although the governor does not work there himself, but his brain directs everything that is going on. The last time I was there last summer, there were several of us, Mr. Hill was there. But with us was a young man who keeps the governor's books, covering all the operations of the farm. I said to him, "How much money is the governor making out of that farm?" He says, "I have no right to give away such information, but I will tell you that he did make last year, after paying for all the help, taxes, everything, he had a net profit of $2,700." That is my little story. If the governor doesn't like it, it is out and you have got it anyway.

Prof. Emery: I have been impressed today as never before with the value of the sessions of this association. They seem to me so valuable in bringing out the necessities if we succeed in handling cows, and I have been wishing that every young man in the state of Wisconsin who is to be a dairyman could have been here at this session this afternoon.

I apprehend that the real, the main reason why so many dairymen in Wisconsin and elsewhere are not making the most of their opportunities comes first from habit. We are creatures of habit. The schools, the common schools and the high schools and the normal schools and the universities, do their work sim-

ply in the fixing of habit, habit of mind, habit of muscle, habit in forming ideals and habit in executing them, and so I think that our reforms cannot come about as revolutions, but they will come about through evolution; they will come about through the education of young men, through the training of young men, having these young men who are to be dairymen form new ideals, better ideals than those old ones which can be greatly improved. If they could have been here, every one of them, if they could have seen the strong force that is working here, and if it could have worked upon their minds to give them some new ideas, some new purposes.

Brother Everett told you that one of the reasons why Mr. Hoard succeeds on his farm is because he is using his mind there. He told you just one-half the truth, and I will tell you that in my judgment there is another reason why he is succeeding there; it is not simply that he is using his mind, but that he is using his heart in that establishment, and when he stood before you this afternoon and told you how he looks upon his cows—and if any one had ever visited that farm with him and seen how he looks upon that plant, you will understand that his heart is in that plant, and that is the main reason why he succeeds, and I tell you the reason that some of us do not succeed as well as he does is because our heart is not in our business; that cow that we have is not regarded as an animal that should receive our highest interest, but it is made a makeshift and we find our interest, not in the care of that cow, in watching her, in the development of her calf, we do not find our enjoyment there, but we find it off somewhere else, perhaps in the corner grocery or—shall I say—in some saloon. The old saying is that where our treasure is there is our pleasure, and until we can find our pleasure on our farm in carrying out these ideals, we shall never reach the highest contentment.

There is one other thought I would like to leave; where I am living there is a young man, a very keen, bright young man. He left the University of Wisconsin, pursuing the literary course, and entered a machine shop in the city of Madison, one of the largest machine shops in the state, and he went into that shop because he was fond of mechanics, he liked to work. It

seemed strange to me, because I knew he was a young man who delighted in cleanliness, but he evidently likes it. He began at the very foundation, took the first work, and he worked away there until he knew all the work of that vast shop, knew it thoroughly, and finally when he had become a master workman, his employers paid him extra, and turned him loose to go through that shop, and for what purpose? For the one purpose of reducing expenses, trying to find means here, there and everywhere, in little ways and large ways, to reduce expenses in that great establishment, and he has made himself so valuable in that work that those men could not afford to part with him.

But by and by there came another story; he married a lovely girl and his father-in-law has a large department store in one of the cities of Iowa, and he wanted some one who had a personal interest in that establishment to keep track of all that was going on and help reduce expenses, and so he has been putting out inducements to that young man to leave this establishment and come over to his department store for the simple purpose of going around that store to study and carry out plans here and there to reduce expense.

There is not a farm in this country that doesn't need just that kind of oversight to bring out greater profits, and we have seen in many of the suggestions thrown out at this meeting how expenses can be reduced in many ways on our farms.

Mr. Legler: I wish Gov. Hoard would please give us the rations of those calves of his, the amount and kind of feed, from the time they are dropped until they were sold.

Ex-Gov. Hoard: That would be rather difficult to do. We start in feeding a calf after the first day or two. He gets about four quarts of milk a day for two or three weeks, being careful not to overfeed him. I like to satisfy him but not to overfeed, in order to avoid stomach troubles. That is one reason I put in this blood meal. A calf is first fed four quarts of his mother's milk and he is gradually reduced to skim milk, he slips over to skim milk say from the first four weeks to eight weeks. Great care is taken not to overfeed him, but the calf is kept growing right along. This one thing we must always remember about a calf, and that is, that the calf is a baby, and must be

kept dry. Every intelligent mother will tell you that a baby will sicken unless it is kept dry and clean, and that is just as true of a cow's baby as it is of a human baby, and so a large amount of bedding is used in the calf pen. It is an earth floor with cinders renewed every year and a great abundance of bedding which is shavings or straw. It is renewed every day and then it is sprinkled with disinfectants all the time. The aim is to keep that little calf barn just as pure as can be. It is not all in the feed; it is in this protection against infection. You crowd a lot of calves together like that and they spread infection to one another, you have to watch and keep the little fellows free from vermin, all the time look out for them. Now, they begin to thrive and when they are six weeks old, they are taken off of all new milk, they get nothing whatever but warm skim milk, fresh from the separator, clean, warm, fresh skim milk with a little of this blood meal in it, and they are kept clean and everything is done to keep those calves healthy. We start in with a very small amount of this blood meal, half a teaspoonful, never running as high as a tablespoonful, I should say about two and a half teaspoonfuls in a day. I begin feeding that along when they are about a week old and I feed it twice a day. I take the calf from the cow after nine milkings; I keep the cow with the calf until she passes the milk fever stage. While I do not dread the milk fever any more, as I used to, I keep the calf with her that long. If such a thing develops as a case of milk fever, I cure that cow up quickly with the air treatment.

Mr. Legler: You have got as far as eight weeks old with your calf.

Ex-Gov. Hoard: Then I go on carefully, enlarging the feed as fast as I think is wise, increasing the amount of skim milk and gradually carrying him over until he commences to chew the cud, which he will do at the end of six or eight weeks. Now then, there is a transformation in the stomach, from what I call the rennet stomach over to the ruminant stomach. As long as the calf is in the rennet stomach—and that condition is determined by the fact that it will coagulate milk—as long as that exists, you must be exceed-

ingly careful about putting solids in his stomach, but as soon as the calf begins to chew a cud, begins to eat, it wants a small amount of solids. I watch him and if I think I am coming along too fast for him, back I go. The calf is fed ground oats and a little corn meal and grain feed. At the beginning, if you feed too much alfalfa he will scour very badly, so be very careful about that. Those three things stand there, Mr. Legler, the three points, that is, feed—but the care of the feed and the care of his condition and all that I believe is worth more to him for the sake of his thrift, or as much at least, as his feed. You are one of the best raisers of Holsteins in the country, what is your opinion?

Mr. Legler: I have fed about the same. The only point I wanted to get at was about the amount of grain and the amount of skim milk that the calf got at three or four or five months old.

Ex-Gov. Hoard: There is such a difference in calves.

Mr. Legler: I know, but the average. I was at your place and I saw about fifteen or twenty calves. The average breeder would probably have that many or more.

Ex-Gov. Hoard: At about three months of age the calf is getting about from eight to twelve pounds of skim milk a day, according to its condition.

The Chairman: Do you think that that furnishes that calf drink enough?

Ex-Gov. Hoard: No, he has water right there all the while. There is a tub of fresh water standing in his stall. Let me tell you how my calf pen is made. Here are low stanchions on three sides and the feeding alley right behind. The calves are all put in stanchions and they are held there and given their milk in pails and then they are kept there until they get over that sucking mania which they have got. You know calves that get only skim milk are perfectly frantic to suck something. Then they get to their grain ration and then the alfalfa is spread before them and they are opened out and allowed to run loose in this place. They work around in there and every day that is fair they are turned out and let skip and run in the

barnyard and take a little exercise. I commence very lightly with the grain; I feed them not to exceed a quart a day up to the time they are three or four months old, but with the alfalfa and the grain and the skim milk I have managed so that it takes about a dollar's worth of oats when a calf is seven to eight months' old, and it takes about $1.50 worth of hay for the whole length of time, counting hay worth $10 a ton. It is worth more now. A calf is put in a little 4 by 4 pen when he is first born. It is raised up from the floor so that whatever liquids there are will leech right through onto the main floor. There is a doorway and a little rack for that calf, and it stays there until it is five or six weeks old and then he is put in with the rest and they run together. I think I am not doing right in just one particular, and that is I think I ought to grade them more according to their size. When they all get together, after four weeks this hay is put before them. I think I spend more thought on my calves than I do on my cows, and I have had pretty good success.

Mr. Goodrich: Will you dare let me talk a little?

The Chairman: You may.

Mr. Goodrich: We have had splendid lessons showing the difference in cows, the difference in breeds, the difference in feeding and the difference in care, but there is one part of this cow business that has only just been touched on a little bit, and that is in the milking. You may have the best bred cows in the world; they may be cared for in the best manner and fed in the best manner, and the milkers may knock the profit all out. This getting milk from a cow is a wonderful thing. Do you suppose that Mr. Gillett would have dared to let anybody else milk Colantha 4th's Johanna when he made that test? There isn't a man on earth that could have done as well as he did if he had changed, isn't that so, Mr. Gillett?

The Chairman: I don't think so. I didn't dare chance it anyway.

Mr. Goodrich: In the first place, milk is a product of nature whereby the mother feeds her offspring, and there is love and maternal affection goes with this act of giving milk, and unless the milker can, in some measure, take the place of the

calf in the affections of the cow, he never can be really a successful milker. You know cows sometimes hold up their milk. Why? Did you ever know of a cow or a heifer holding up her milk from her calf? No. She wants to feed the calf. If she doesn't like you, if she hates you, she won't give down her milk, that is sure. I have had experience with that. The first cow that I ever had didn't do well the second year I had her, she didn't produce only about half what she did after that, and it was because I had a milker that she didn't like. We must have the good feeling of the cow. If a cow hates you, I tell you she is not going to do much for you.

I was going to say something about the milking machine, but perhaps I hadn't better. I visited a barn last summer where they had three milking machines and I am awfully afraid that the cows won't fall in love with the machine as they would with a good milker; maybe they will. When I see a cow like a machine so well that she would follow it around and lick it and moo and ask for it to milk her, then I will think it is just as good as a good milkman or a good milking woman.

Secy. Burchard: Mr. President, I would like to have you resign that chair to me for a moment or two. I am one of the past presidents of this association and I think I am entitled to it. I now take great pleasure in introducing to you Mr. Gillett of Rosendale, who is about to be displaced as president of this association, but he had the distinguished honor during this past year to own and personally care for and feed the cow that holds all the world's records for economic feed and milk production. Mr. Gillett, will you get up and let the people see you?

Mr. Gillett: Mr. Chairman, Ladies and Gentlemen—I am taken somewhat by surprise and I am feeling a little bit weakened just now. This dairy question is something that has appealed to me ever since anything appealed to me. The subject of fine stock of whatever description has been a part of my life in which I have always felt a deep and intense interest. I can remember when I was a little boy when I was out of school on Saturday, we used to have a herd of Shorthorns in our village. I used to tease my father on Saturday to go to Rosendale, and

when I got there I would go on the mile and a half farther and spend the afternoon with Mr. Mattison's herd of Shorthorn cows. So I have always had a fancy for fine stock.

My father established a herd of Holsteins thirty years ago, and I have had active charge of this herd for twenty-one years. The second year of my father's breeding operations, he went east and selected the old imported cow, Johanna, then some ten or eleven years old; she was owned by Garrett S. Miller of New York, and was bought on a special order from Holland as being one of the finest cows of the Holstein-Friesian build from Friesland at that time. It was from this cow that we built our foundation herd, and later we purchased Colantha, another imported cow, for which we also paid a very large price, and it is the cross of this Colantha upon the Johanna family that has produced the great cow Colantha 4th's Johanna. Colantha 4th's Johanna is in my estimation as perfect in type, conforms as closely to the ideal conformation of a Holstein-Friesian cow as any animal I ever saw. I have always entertained great hopes of her capabilities, as I also entertain great hopes of the capabilities of other cows now in my herd from which we hope to hear later and which are of similar breeding.

Colantha 4th's Johanna, unfortunately, and on the other side perhaps fortunately, did not breed for a term of three years. At the age of four years she showed such wonderful development, and freshened on June grass, and not knowing of the present system of treating milk fever and having lost so many of our valuable cows with milk fever, I did not dare to again breed her to come in on an older form of grass, consequently we intended to carry her over, and have her come in again next fall. I think through this management she failed to breed, and she consequently did not have a calf for three years. I will say, however, that during her four-year-old form, she milked with us nearly 20,000 pounds of milk, making nearly 700 pounds of butter fat. The year previous, the third year, she milked over 15,000 pounds, and the first year, at two years old, she made over 12,000 pounds.

Secy. Burchard: How do you know?

Mr. Gillett: Because we weighed the milk and tested it.

Now, it would be a natural supposition that this cow had a long rest during these three years that she did not have a calf, but she did not. The first year of that time, as I said, she milked nearly 20,000 pounds of milk. She kept right on milking unceasingly, and at the end of 370 days, from her freshening as a four-year-old, we made an official seven-day record with her in which she made over 15 pounds of butter. She continued right along and to such an extent that I was fearful even at four weeks before she had her calf that we were not going to get her dry, but we did, and she came in in very fine condition, with the exception that as she turned out to exercise two weeks before freshening, she accidentally broke through the stable floor and broke one of her ankles, so that when she freshened she was very lame, but in other respects was in very fine condition and did nicely. We started her on a grain ration of about twelve pounds a day, and the first seven days of her test she showed 24 pounds of fat. Her feed was made up of gluten and bran, two parts by measure, with one to three pounds of oil meal, according to the conditions and the advance of period. She came right on, gradually increasing, and as we increased on her rations she responded very readily. I remember when she had reached 24 pounds of fat in seven days, I wrote Superintendent Gardner, and when I told him what she had done, I mentioned that she had been having about 16 pounds of grain a day, and he wrote back, "You are starving your cow," but I assumed, being on the ground and having had some acquaintance with her, that I was as well qualified to judge of the situation as Mr. Gardner was at long range. So we went on and I guess the results are pretty well known to the dairymen of the state of Wisconsin. This cow milked for a period of 365 days, an average of 75 pounds and a little over per day. She showed an average of 3.71 pounds of fat per day during this entire period. She was not bred during this time, but is now, I hope, safely in calf, and the day before I left home she milked over 55 pounds and it is sixteen months since she calved, so that even if she does not have a calf within the next year, I feel pretty confident that in the second year of her period of lactation she will produce over 15,000 pounds of milk.

Now, if there is anything in regard to the handling and the details of the feed of this cow, I shall be glad to explain.

Mr. Everett: What is she worth?

Mr. Gillett: All I can get.

Mr. Everett: Will you take $10,000 for her?

Mr. Gillett: No, sir.

Mr. Everett: What did you sell her son for?

Mr. Gillett: Eight thousand dollars cash, and I have another son that that would not buy.

Secy. Burchard: That is because you want to keep him, isn't it?

Mr. Gillett: It is because I propose to try at least to make Gillett's name and herd still more famous by the use of that sire.

Prof. Henry: How long have you and your father been breeding these cattle?

Mr. Gillett: My father established the herd thirty years ago, and I have had the management for twenty-one years.

Secy. Burchard: Who milked and fed this cow?

Mr. Gillett: I did.

Secy. Burchard: That accounts for it.

Mr. Gillett: And I noticed that when I didn't do it that she didn't do it either.

Mr. Goodrich: The milking, you mean?

Mr. Gillett: Or the feeding either. I spent one week at the National Dairy Show, and when I came back I found that cow down twenty-five pounds a day on her milk.

Mr. Goodrich: Did she recover it?

Mr. Gillett: Yes, she recovered within four days after I got home, but it was due to a little mismanagement that I was not there to correct, and the minute I saw her I knew what was going on. But there is one thing in the management of dairy cows, and it is this, it is the sense of perceptibility, the sense of conception.

Ex-Gov. Hoard: Seeing things.

Mr. Gillett: Yes, seeing things. To be able to detect things in a dairy cow, in her condition, in her surroundings, in her feed, all that goes to make up a favorable environment, that the

man must know. There is something about it that I can't tell you, neither can anybody tell you; it is an intuition born, I believe, with the man.

Secy. Burchard: You weigh the milk at every milking. Now, does that give you any indication what the cow ought to eat or ought not to eat?

Mr. Gillett: Not always. I don't know that I ever saw a cow vary so in her milk yield as she did during the first sixty-five days of her test. Some days she was up and down as much as ten pounds a day and she would have periods of going along just like a clock.

Ex-Gov. Hoard: She did not settle to her work for about sixty-five days?

Mr. Gillett: She didn't seem to. Still there was not that variation in the fat product. There was great variation in the percentage of the total fat.

Mr. Everett: What was her greatest milk yield for any day?

Mr. Gillett: One hundred and six pounds.

Secy. Burchard: And when you got that what did it indicate to you?

Mr. Gillett: It was so wonderful that I got pretty nervous, I expected an explosion of some kind, but it didn't come. It did not seem to me possible that a cow could produce four pounds of butter fat a day and be in her normal condition, but she did it and she went right on, kept right on doing it.

Mr. Hill: I want to tell one or two things about that cow that Mr. Gillett won't. He has got a boy home that is just as much interested in those cows as he is, that is, considering the boy's age. Along in the middle of the test, sometimes the father would have to be gone for a milking, or for a day or two, and that boy would take care of the cow and he would feel just as bad as his father if things didn't go all right. He would say he didn't know what papa did to that cow that made her give five or six pounds more than she did for him, but later on, when they came to test another cow, Mr. Gillett himself admitted the boy could do as well as he.

Mr. Gillett: And that is true; he got "next" to that other cow in a way I did not.

Prof. Emery: This just illustrates what I was saying a while ago of the effect that interest in a man's business, interest in his cows has. I don't believe any one of us can doubt that Mr. Gillett took a great deal more pleasure in taking care of that cow than he would have taken in some carefully planned amusement.

Ex-Gov. Hoard: Playing "seven-up", for instance.

Prof. Emery: I don't know much about that, but I know he found his interest, his pleasure in that work, and then he had faith in that blood; faith enough to stick to it for twenty years, using his intelligence in trying to improve his herd and to benefit it. This same pleasure is open to some degree, indeed a very large degree, to the young men of the state of Wisconsin if they will go into the dairy business, select their cows intelligently, and put brains into every branch of the business, and they will find it is a life of pleasure and happiness, for pleasure and happiness always come with success.

Prof. Henry: I wish to call the attention of our citizens to the honor that has been brought to our state through this work of Mr. Gillett. Wisconsin has been advertised all over the world by the work of this man. It has increased the value of every farm and every cow in the state.

Now, don't forget, when you are asked to support the state institutions, or asked to come to a convention or asked to help in forwarding any work of improvement, don't forget that you can't escape these things. Men are coming a long distance to this state to buy cows. We had a Japanese boy who came and studied with us eighteen years ago. He came into my office one day and handed me a letter of introduction from H. B. Gurler, and that letter said, "Professor Henry: This young man has come to study dairying with you. You will find him a splendid young man. He has no money; can't you give him work?" I did give him work enough to pay his board and clothe him, and he studied cows, kept studying cows. Well, I supposed he was like those Orientals I have heard about. I doubted about his

being very energetic, but he did good work and kept at studying cows. At the end of five years I said to him, "If you will stay with us and work for one year, I will give you good wages." "No, I can't do it. I study one month more, I study cows, then I go to Illinois to study cows." And he went to Illinois, he studied there and got money enough to go back to Japan. Nearly eighteen years later, Sen came to see me. I said "God bless you, you have come to see me. Tell me, Sen, about yourself." "Well," he says, "when I go back to Japan, I had no money, but I got a dairy." I said, "How did you start a dairy?" "Well, I borrowed a cow, I gave $25 one year, one cow. I borrowed some pasture and I feed her a little bran and I sell milk." I said, "And what have you got now?" "Why, I got forty cows now, two cows Holstein and Jerseys, pure bred." He told me all about it, twenty grade cows and those cows were worth from $200 to $400 apiece, and he owned fifty acres of land worth $150 an acre. Well, I said, "Sen, what do you come back to America for?" "I come to study more in the school with you, then I buy some cows." And before that boy went back, he left $7,000 in Japanese money in the state of Wisconsin for cows, and some of our boys were saying, "By George, I believe I will go over to Japan to make money."

Now, here is a man who has made a reputation throughout the world right here in Wisconsin and there are others who are making a fine reputation for the state. There are other boys in this room doing that very thing. We want the fathers of this state to bring up their boys so that the boys will love the farm and love cattle, because they are good. Those boys that talked about going to Japan to make money were foolish. There are just as good chances around here as in Japan. We have all the conditions for success right here if we will only get together and use them. One of the most foolish things that can be done in this country is to use a scrub bull, and the man that does, shows his lack of intelligence right there. Gov. Hoard can get $25 for a grade calf, and it isn't because he is Governor Hoard, but it is because some man is willing to give that amount for that kind of a calf. At Lake Mills year before last they shipped out $140,000 worth of cattle; men came here from

all over this country. It takes from thirty to fifty thousand cows to supply the districts south of us for shipping milk into Chicago and St. Louis. Now, we are selling those cows from $10 to $40 a head, cheaper than we could get for a better kind of cows fed on practically the same feed if they were better bred. Don't you know that a nice looking grade cow of any of the dairy breeds will bring from $10 to $25 more if she shows style in her breeding and it costs but very little more to feed her.

There are gentlemen here now from Barron county; they are working up next year's convention already, and I will guarantee there will be a thousand men in that hall if the weather is all right. We have had farmers who have chartered trains and come down from Barron county for two days' work at the Agricultural College, and those farmers have gone home and organized breeders' associations, they are testing their cows for tuberculosis,—we had to send a professor up there to travel around with some of their men when they went around to buy pure bred stock and they are buying pure bred bulls by the dozen up there.

The southern part of the state is not up to its opportunities, considering its market possibilities for stock. Our students the other day formed a Guernsey Breeders' Association at the Agricultural College, with sixty members; they formed a Holstein Breeders' Association with sixty members, and they have an Ayrshire Breeders' Association. There is a boy in this room now who is going to breed Ayrshires; six or seven boys in one neighborhood are going to breed one kind of cattle.

In this region you ought to be breeding nothing but one kind of cattle so that when a man from Elgin or any other place comes around and says, "I wonder where I can get a nice carload of cattle of a certain breed," we can tell him, "Why, go up to Monroe; they have a splendid lot of grade Holsteins up there at $80 a head." These men won't stop at $100 for the kind of cow they want, but they want a certain kind. Now, in Wisconsin, if we use pure bred registered bulls and kill every scrub bull in the state, it will raise the value of property in the state millions of dollars. Over in England, even the dogs are well

bred. In this country the dog that comes out and barks at your wife as she drives by, look what a cur he is.

Ex-Gov. Hoard: He would be ashamed of his grandfather if he knew who he was.

Prof. Henry: A boy came to the Agricultural College the other day and I asked what brought him, and he says, "I was graduated from the Fond du Lac high school, and it was my intention to take the engineering course, but father bought a Holstein bull a few years ago and the calves are all black and white and they looked so nice I began to take an interest in them and father was down attending the Farmers' Course and he heard you preaching against the scrub bull and he got kind of ashamed of himself and we looked over the herd and we said, "The red cows have all got to go, we will have nothing but black and white. I am going home to be father's partner, and I would rather be a farmer than a civil engineer." When boys begin to talk that way, it counts. We have four boys that have been in our college four years studying agriculture; I went to each one of these boys and said: "If you want a position as teacher in the college starting at the bottom, I can give you from $500 to $800 or $900 the first year you go out. Now, do you want me to look up such a place?" And each one of those three boys said, "No, Professor, I can't do it." Three of those boys are going to breed Holsteins and one is going back to breed Guernseys, all on Wisconsin farms, and they can't afford, as they say, to go out and take such salaries as I offered them. One of those boys has only a small interest in a farm and another has to go out and take a farm on shares, but they know what they are after; and when a boy would rather be a good farmer than a teacher in a college or a breeder of cattle than a civil engineer that is certainly hopeful for this state.

A Member: Bully for the boy.

Prof. Henry: Bully for the boy, so say I, and there are a lot of them coming right along that same line and what a splendid thing it is for our young men to be doing some work out of doors that they love.

Not so many years ago nearly all of our young men were rushing for the cities, but now the tide is turning, the city men

are becoming very anxious to live upon the farm, to be breeders of cattle or carry on some agricultural work, they are concluding that it is better to do that than it is even to be a lawyer or a doctor or to follow any other profession.

Adjourned to 9 o'clock, next morning.

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

The report of the committee on Resolutions was received and adopted as follows.

To the Wisconsin Dairymen's Association,

GENTLEMEN: Your committee on resolutions begs leave to report the following:

Resolved, That the accommodations furnished by the citizens of Monroe, for the convenience, comfort and entertainment of this association have been all that could be asked or wished.

Resolved, That the splendid banquet furnished by the Woman's Relief Corps was a credit to that organization, and to the city of Monroe, and was highly appreciated.

Resolved, That the thanks of this Association are hereby extended to the retiring officers for their efficient and painstaking services.

WHEREAS, General George W. Burchard, for eleven years the Secretary of this Association, positively declines longer to serve in that capacity,

Resolved, That his long, faithful, very efficient and enthusiastic services as secretary of this Association, merit our highest appreciation; and that he bears with him our highest esteem and heartiest good-will.

Resolved, That this Association appreciates the honor conferred upon it by its retiring President, in the record made by

his Colantha 4th's Johanna, a record that excels that of any other cow for seven days, thirty days, sixty days, ninety days, six months and a year, and a record that adds luster to our state that has given to the dairy world a Brown Bessie, a Loretta D and a Yeksa Sunbeam.

WHEREAS, The Board of Regents of the University of Wisconsin at the suggestion of its president, Hon. W. D. Hoard, is considering ways and means of conferring some mark of honor upon farmers who have gained distinction and renown as such,

Resolved, That we are in hearty sympathy with the movement and urge its early adoption.

Resolved, That this association regards with a feeling akin to paternal interest and pride the splendid work of the Wisconsin Agricultural College and Experiment Station, established and brought to such a high degree of excellency, efficiency and usefulness, under the peerless leadership of that pioneer in agricultural education, Prof. W. A. Henry, and that his successor, Dean H. L. Russell, merits our confidence and will receive our cordial support.

Resolved, That the state and the nation owe it to the producers of honest food products and to the great consuming public to protect them against the evils of deleterious, adulterated, imitation, misbranded and fraudulent food products; and that dairy and food laws should be enacted and enforced with the purpose and with the effect of uprooting those evils and not with the effect of legalizing and condoning them.

Resolved, That it is the earnest conviction of the Wisconsin Dairymen's Association that the coming legislature of the state should enact a law making it compulsory on every creamery and cheese factory in the state to thoroughly pasteurize its skimmilk and whey in order that the spread of tuberculosis among calves and pigs from untreated skimmilk and whey may thereby be prevented; also that a law be enacted requiring breeding and dairy stock to be tested with tuberculin before being sold and transferred except for immediate slaughter.

Resolved, That the Wisconsin Dairymen's Association desires to repeat its utterances in the past years in favor of the making

of the Dairy Division in the Department of Agriculture an Independent Bureau and we call on our representatives in congress to take hold of this most needed work. Respectfully submitted,

J. Q. Emery,
C. H. Everett,
W. W. Chadwick.
Committee.

HISTORY OF THE SWISS CHEESE INDUSTRY IN WISCONSIN.

Thomas Luchsinger, Before the Wisconsin Dairymen's Convention, Monroe, Wisconsin.

Mr. President, Ladies and Gentlemen of the Convention:—The subject that I have for my theme this morning is not so interesting to the people of Green county as it might be to others who have never heard of it, or if they have heard of it, never had a clear idea what it is. Certainly, if the history of the state of Wisconsin should be written, one of the most interesting chapters in that book would be about the foreign cheese industry of Wisconsin. When I say the "foreign" cheese industry, I mean especially the Swiss cheese, Brick and Limburger. We do manufacture in this country other kinds, the Brie, Neufchatel cream cheese and others too numerous to mention, but not in such masses as the Swiss, Brick and Limburger.

In order to give you a clear understanding of the origin of our Swiss cheese industry in the state of Wisconsin, I will have to go back to the old country where it originated thousands of years ago in Switzerland.

In Switzerland they have what you call the Alps. We call them the Alps in a more common sense, that is, for the reason that there are pastures on what we would call in this country the foot hills of the mountains. Way up, about four, five, six, yes, twelve miles from a village, up on the slopes of those foothills there are pastures. They contain perhaps from four hun-

dred to six hundred acres of land, some of it pretty nice land, but too far away for tilling and some of it is hilly, stony, and affords good pasture, some of it better for goats than for cows, for a goat will still jump where a cow cannot walk.

Now, those pastures every year are put up at auction by the community—they are communal property, and they are put up at auction to the highest bidder, and generally three, four or five men form a partnership and they bid at this auction and rent those pastures, and when they have not cows enough of their own, one of them perhaps owns four or six cows, another three and another perhaps two, and a good many own but one, but they go about during the winter and rent those cows at a certain rental, and then about the middle of May they go on what they call the first terrace of the Alps. These Alps are in terraces, one above the other, the first terrace, the second and the third. The lower one is called the third, then the next is called the middle and the other the upper. Up to these mountains they go during the summer, bring those cows and milk them, and the evening's milk is slightly skimmed.

Their factories are usually built over a cold spring; they always find a place where they can put one of their cheese factories' huts, as they call them, over a spring or a water course if near by. In this they put their evening's milk to stay until morning, then in the morning they skim it very slightly and take that and the morning's milk home to manufacture cheese. The cream is manufactured into butter. These things have to be carried down four, five, six and sometimes twelve miles; these men have something like a peddler's pack on the shoulder, made in the form of a chair. On that they load two, three and four loads of milk; one on top of the other, weighing sometimes 240 or more pounds. It is wonderful to see them with their sticks in their hands jumping from one stone to another. You would think an ordinary man's legs would break, but they jump from one block to another with a load of 240 to 250 lbs. on their backs, and go to the village and unload themselves and take back what little they need, and that little they need is not coffee, not sugar; it is merely some bread and some flour; that

is about all they carry back along with some of the things that they need for cheesemaking, and that is their life.

In the fall of the year, about the middle of September, about six weeks during the year they are on the upper terrace; then they come back to the middle terrace and toward fall they come to the lower terrace and very often they have snow, but they always have a little hay to feed the cows if the ground is too much covered with snow, and then later on they come down to this ground and are there for the entire winter.

Now, some of these people, who were doing this thing, settled in 1845 in New Glarus, a town about eighteen miles north of here, and those of you who know that country will realize that they were looking for some mountains. I believe they would have died if they had got out on the level prairie, although some of them have got used to even that. In that country they could have their hills, their water and there were about 140 of those persons and among them were a few cheesemakers. They were poor men, who did not own cows, but they were industrious. They came there and after awhile they would get one cow, and then after another while they had two cows, and a little while longer three cows.

A man would go and work for an American until he could buy a cow, and so, after a while, every one owned at least one cow, and sometimes two. In 1846 and 1847 more of them came and they had a little money especially there were two men by the name of Elmer, they came from Elm, and they were practical cheesemakers. They came to New Glarus and they found everything all right for their undertaking, and they began to work and began buying cows, and by the way, let me remark without any disparagement of Gov. Hoard or anybody else, they were as good judges of a dairy cow as anybody need to be. Those men certainly knew their business as anybody will tell you who knew them.

They went to work and bought a few cows and kept adding to them, though I think the highest number did not exceed ten, but very soon they began to hanker after the fleshpots of Egypt, or rather the cheese of Switzerland, and they commenced to manufacture it. They had no utensils, but they utilized what they

had and fixed up other things, and they made a rather large cheese weighing from twenty-five to forty pounds.

Very soon they manufactured more than they could use, more than they could sell in the market there at New Glarus, and they naturally began to look around to find out whether there wasn't anybody in the towns around who ate cheese. You all know that Swiss cheese is a very nice cheese, but still it has a peculiar odor about it, and the Americans didn't know what it was. It was a good deal like a hickory nut; the outside is sometimes bitter while the inside kernel is sweet. But soon their neighbors found out what the cheese was and they bought it to eat, but not to any great extent. It was mostly the German people who knew what Swiss cheese was from way back in their own country. There were more of these people down at Madison and they went to the Freeport country, and even as far as Milwaukee for their market, and finally there was quite a little market.

Now, there was only a small sprinkling of men who were able to make that cheese, for Swiss cheesemaking is an art. A good many Limburger cheesemakers tried to go into it, but I have never seen yet a Limburger or Brick cheesemaker that could make a success of the Swiss cheese business unless he took an apprenticeship in it. It is an art and it has to be learned. There is some mystery about it and those men were experts, some of them, and others became experts, and they made good goods, fully as good as we have nowadays. Still there were very few of those men that were making money; they sold their cheese for 15 or 16 cents a pound and their neighbors were making butter out of their milk, and some of them became wealthy. I doubt if those men realized more than from $8 to $12 per cow during the summer, while others got from $30 to $35 and even $40 per cow out of their herds. They saw that, but they couldn't help themselves, they didn't know how. It was not until 1873, when the great panic came and we had such a tight money market, a heavy, strong crop of chinch bugs and everything else—it became imperative for those men to do something else and when the misery was at its height, help was seen. Two men came from the East and proclaimed to these

people the gospel of the dairy business. These men said to these cheesemakers: "Here, you, who have ten cows, or eight cows, or six, why don't you get together and build a factory, and we will buy this milk of you and manufacture it into cheese." Those men wanted to see the money; they hadn't the confidence then that they have now in the dairy business, but they were told: "We will pay you from 55 to 60 cents a hundred for your milk, for all you will bring to our factory, and we will make it into cheese and we will turn it off and return you that money when we sell the cheese."

All right, it was done and the people commenced to see that there was money in it. Those who did not go into it saw that these people that sold their milk at 55 to 65 cents were getting money; they were wearing better clothes; they were commencing to pay off their little debts and everybody else wanted to go the same way, not only because there was some money in it, but they saw that their neighbors' land, by keeping more cattle upon it, was getting more productive and they could naturally keep more cattle. Factories sprang up at every corner.

Now then, we have a panic again, I think it was in 1877. The production of this foreign cheese—and I am speaking of foreign cheese,—by 1877 or 1878, had grown so strong that the supply exceeded the demand, almost twofold. Cheese accumulated on the hands of these milk buyers; there was competition, and a good many of them went to the wall. A good many have reason enough never to forget those years. When those men went to the wall, the farmers commenced to see that they had to bear the loss, they could not get from the cheesemakers any money for their milk and by and by they commenced to argue, if that is the case we can just as well go to work and keep our own milk. They had found out by that time that when there was a gain, the milk buyer did not divide up with them, he didn't go down in his pocket and say, "Here, gentlemen, I have made a dollar out of this milk, and it is nothing but fair that I should give you your share," but when the loss came the farmer had to bear it.

You will all agree with me that the man who keeps his own milk as well as the man who buys it has an interest in taking

care of it, and so in co-operative factories that same rule holds good. The cheesemaker dares to turn back milk from the factory to a man who has dirty cans and in a co-operative factory they would insist on his doing it.

I don't know whether folks are getting more honest than they used to be since we had the Dairy and Food Commission, but I think a lot of us have found out that it doesn't pay to be found out. Nobody likes that.

Now, a lot of factories were started up, co-operative and otherwise. We have now in almost each corner of a section, and sometimes in two corners, a cheese factory in this county. It is hard to give you any kind of an estimate of how many cheese there are and harder still to say how many Swiss cheese factories there are, for the reason that what may be a cheese factory today may be a Limburger factory tomorrow, and we can't keep track of them unless we keep a regular cheese census.

It is just as hard to get at the number of pounds that they have manufactured, unless we do that very same thing. I tried very hard for years to get some kind of approximate idea and the best I could find out was that the territory which is covered by our Southwest Dairy Association, which comprises pretty near the entire foreign Swiss cheese industry—that in that territory we have somewhere in the neighborhood of 400 factories of all kinds, and that the income from those factories is about in the neighborhood of $4,250,000; if anything, that estimate is too low. There is an industry that brings in that much money and I think it would not extend 30 miles either way, from a central point.

The income of Green county for every man, woman and child is $108.17. We have about 23,000 inhabitants in this county; we have more cows, by the way, than we have inhabitants, and—I don't know—perhaps it is a good thing. We have 23,000 inhabitants and each of them gets $108.17. Anybody can readily see that there is no business which pays better, in this county, at least, than the dairy business.

At that time we handled all round hoops; Swiss cheese in any other form was not to be thought of, but a few years back they commenced to manufacture what you call block Swiss cheese.

The block Swiss cheese is manufactured exactly the same as the other, out of the same milk and in the same press, I think. The block cheese can be made in a vat, but the round, globe cheese must be made in a kettle. The block cheese, instead of putting it in a round hoop, is put in molds, the pressure is a little different, a great deal similar to the brick cheese process. It is a handier cheese, though it is not quite as good a cheese; it is handier for the family and for small dealers. We are now manufacturing cheeses that weigh 150 to 200 pounds and over. If you want first-class, genuine A No. 1 Swiss cheese, you must go to New York and ask for cheese that was made in Green county, Wisconsin, a year ago, and they are not good in less time than that. They will give it to you all right but they will say it was imported cheese. You just turn it over and you will see the brand of some man here in Green county. They will sell it to you for imported cheese and you can't tell the difference. I don't know why we can't do that in this county. Perhaps it is because the cheese factories are small, the cellars are smaller than they ought to be and they can't take care of all the cheese they manufacture; they haven't sufficient room, and besides they need the money, and for that reason the cheese must go before it is fairly ripe. That is where the one great drawback is for our cheese industry that we sell our cheese before it is in proper condition.

Ex-Gov. Hoard: That is true of all the cheese made in Wisconsin.

Mr. Luchsinger: But it is more true of Swiss cheese than any other cheese, because Swiss cheese is absolutely not fit to eat until it gets up to a certain point of ripeness.

Ex-Gov. Hoard: When is Limburger ripe?

Mr. Luchsinger: Most any time, and the worst of it is when it is too ripe it is worthless. But Swiss cheese ought to have a certain time to ripen and that is what we do not give it; I will say at least four months from the time that it is first made. It does not become ripe enough for shipping until then, and it ought not to be cut before it is at least eight months old, and the longer you keep it from that time the better—of course there is a certain limit. A year or a year and a half is better.

Now then, we have shown you how it originated, how Green county got its first start in this direction. Other counties are now also making Swiss cheese; Winnebago county is a close second.

Ex-Gov. Hoard: They have one started in Barron county.

Mr. Luchsinger: Yes, people have gone all over the state from this county of Green trying to make cheese elsewhere. When these people came from Switzerland, these old Swiss folks had no idea that they would ever be their competitors, but they are to some extent. Switzerland has no greater competitor than its own children, here in Monroe and in the surrounding counties, and they are afraid of them; they can manufacture it as well; they have the country to do it in; they have the same conditions in the soil. Swiss cheese must have a lime rock foundation soil. They have tried to make it where there was no foundation at all, and they have tried to make it on gravel lands, Rock county and through Jefferson; they have to have that certain kind of soil which this country has. Those barren hills up in New Glarus and Electa, all through out to Burlington and Lafayette county is the kind to make Swiss cheese in. They do not know what they have; they don't appreciate for a minute a meeting like this and what may come of it to them, or there would be more of them here.

Ex-Gov. Hoard: I want to know if there has been any attempt made by you farmers here to study or determine the effect of the shipping away of all this fertility from their soil. The old cheese districts of New York have gone down tremendously in their fertility, and about five dollars of nitrogen is taken off the farm in the milk of every cow that makes 4,000 pounds. Has there been any attempt here to study that question, to know whether the old farms are still as fertile, are retaining their fertility or increasing their fertility?

Mr. Luchsinger: This is the very point I was going to make before I got through, and that is, that it has increased the number of cattle that we have here, but there is another condition attached to it; we don't want to let the compost heap lie in front of the barn. You must put it out where it belongs, and one of the clauses in every lease which I draw is that they must

haul out their compost and spread it where it is most needed. That is just as imperative as paying the rent. We know, because it has been demonstrated, that the land that would not yield anything thirty years ago will now bring the heavy crops of corn, while some of it is too heavy for oats, or some of the small crops. They have to plant it in corn, year after year, in order to keep the fertility down, it is too fertile.

Ex-Gov. Hoard: In Herkimer county, New York, I can buy land today for $25 an acre which fifty years ago was worth $70, because the fertility has run way down.

Mr. Luchsinger: In the Brick cheese manufacture we have strong competition, but as to Limburger cheese we compete with the world; we not only manufacture the most, we manufacture the best.

Ex-Gov. Hoard: It is a very strong industry here.

Mr. Luchsinger: Well, it is naturally strong; we have got so used to it that we like it, and when we go elsewhere and the odor of Limburger comes to our nostrils, we think of one dear Green county and it brings home to our hearts. Before five years ago Limburger was an unknown quantity in the United States, but now, out in the Panhandle district down in Texas, up in Maine, and way out in Washington and south to Florida, you will find our Limburger cheese today in every delicatessen place and in every high class saloon (so I am told), and we have no reason to be afraid but that we will keep right on, but the Swiss cheese industry is absolutely our own. Limburger has been and will be made elsewhere; Swiss cheese may be made elsewhere, but it cannot be made and will hardly be made by any but Swiss or the descendants of Swiss.

ADDRESS.

EDWARD H. WEBSTER, Chief of Dairy Division,
Washington, D. C.

Mr. Chairman, Members of the Wisconsin Dairymen's Association:—Your Secretary asked me to come here and say something about the work of the Department of Agriculture and the connection that our work has with the great dairy industry of this country.

You have heard a good deal about the Swiss cheese industry, and know what it is from practical close contact with it here, but that is only one of the many other great branches of dairying in this country. When we come to consider dairying as a branch of agriculture, I think we can all feel proud of the position it holds, practically exceeded by none (unless it is the grain crop of this country) in total value, every year. It does not measure by any means the value of the dairy industry when we say that the milk production approximates $800,000,000; that isn't nearly all of it; that is indeed only one part of it; it does not take into consideration the yearly addition to the value of dairy live stock by better breeding, and the enhanced value of our farms. That value is probably greater than the $800,000,000, the amount that we get in cash from the products sold from the farm. So, I believe that we need not place dairying second to anything; that it is the greatest industry on the farms of our American people today, and it will remain so, as our country becomes more thickly populated and the land becomes higher in value. We will find that we need more herds on the farms in order to produce larger crops for our people, and other people who come to us for supplies. So the dairy industry is paramount, above everything else in agriculture, and I am glad to have some part myself in helping along the advancement of this industry with you.

It is only a few years ago that the Department of Agriculture recognized the dairy industry at all, and the Department of Agriculture has been in existence since about 1840.

Now, the Department of Agriculture is one of the greatest departments we have for internal improvement in this country, and is now employing about 8,000 people who are working under Secretary Wilson's supervision. These 8,000 people are engaged in everything which may be connected, directly or indirectly, with agricultural pursuits. It is only about twelve years ago that the dairy industry of this country was recognized at all in that department, and then it got in through a little bit of a clause put in the appropriation, stating that the secretary of agriculture had authority to collect and summarize information regarding live stock and dairying. Now it covers almost everything we can conceive of, from going out and asking a farmer about his herd of cows, to investigating the most intricate problems of dairy production from a scientific standpoint, and the dissemination of this knowledge.

The Department disseminates knowledge in various ways. In the first place we have our farmers' bulletins, specially provided for by congress, and the information gathered up by the workers of this Department and disseminated through this means is very valuable. Sometimes the writers of these bulletins are unable to present their scientific knowledge in a simple way and give it to us who have not had the advantage of scientific training. It takes a pretty big man to take a big scientific problem and so explain it that everybody can understand it. That is one means we have of disseminating information, and a good many reports have been published along dairy lines.

Then we have the scientific bulletins of the Department. These are distributed mainly through the colleges and libraries and scientific organizations of the country, although they are furnished to any one who wants them. These bulletins are not given absolutely free as are the farmers' bulletins. The scientific bulletins are limited in their distribution to any one working along the same scientific lines, but you can get them by paying a small fee or through your congressman; many of them have been put up for their special use in their own district.

Another means we have for disseminating information is attending meetings of this kind, and the Department has many

men out attending conventions of all sorts, many speaking on scientific problems and some on general problems, and that means bringing in closer touch with the people we meet in this way, the problems on which we are working. Too many men will not read bulletins, no matter how simple or how well written they are, indeed it is very few really that are reading literature of that kind; it is very few of the people on our farms that take agricultural or dairy papers which are the great disseminators of information in this country; altogether too few people take these papers or get any literature for use in their homes, and too few of us are taking that information and applying it on our own farms at home, and so there is a great tendency to put out men in the field who can come in direct contact with men on the farm, carry the information that the Department or the college or the university has to disseminate out to the farm. In our work we are attempting that in some ways. Take the dairy industries of this country, they have been more or less localized in certain sections throughout the country; and as we find out more about the conditions of the production and manufacture of these things, we realize that there is not any place in this country where dairying cannot be carried on in some form or other, and we are trying to spread this gospel of the dairy all over the country, because every section needs its help. When I speak of taking this work directly to the farm, we are doing that particularly in the South. In the South there are many miles of land that have never grown any crop but cotton, and their lands are worn out and produce much less than they used to. They have got to do something to build up that soil again, to return the original fertility or make it better, and those southern people are anxious to learn what they can. They know they need a change in their farm system and they are asking for help along that line. They want information concerning dairy and all live stock interests.

In our part of the work we have now fourteen or fifteen men working in the South, going right to the farmers and working with them. They go right to a man's farm and find out if he is interested in improving the condition of his farm, and we talk up dairying to them.

You must not be frightened for a minute, thinking that the work we are doing is going to cut out your profits; those people are not producing one tenth of what they consume. That country is developing at a wonderful rate; they have great opportunities and great markets to be built up, and that is true all over our country in regard to the home markets for our dairy products; we are not consuming what we could by any means of butter or cheese or milk, but the time is coming when we are going to eat more of the dairy products than we do. When we go to such men we make them keep records, we won't work with them unless they do, and they are anxious to do it. There are hundreds of farmers keeping accurate records all through the year, and they know approximately how much feed their cows are consuming. They are getting high prices for their products, eleven and twelve cents a quart for milk, and twenty-five to thirty cents a pound for butter the year round. They have also found they can keep a few cows on a cotton farm, and grow more cotton than they ever did before. The greater production they can have, the more money they can make, and the cheaper will be that production.

There is one question that is of great interest all over this country in the improvement of the conditions on the farm and in dairy circles, and that is the test associations. Some of the state dairy and food commissions are taking that up, but they are not doing one-tenth of what they ought to do; every community in this land should be organized into some sort of test association, putting it into a form to fit the conditions of each place, so that in some way you would get the benefit of those organizations as they are getting it in Denmark and Germany and Holland, and even over in Ireland where we are in the habit of thinking they are not advancing very much. There are several hundred test associations already organized there and they are becoming quite a competitor there in the manufacture of butter. They are beginning to get the right sort of stock on which to build their dairy industry.

We are hoping that we can extend our work in the different states along this line, and all the help that we are able to give we shall be more than glad to give.

There is too much poor butter on the market. Many buttermakers don't know how poor their butter is when it gets to market, and that is a condition that ought to be looked into. So we place men on the market to find out about this. The commission men, the creamery men, are asked to help to raise the quality of butter because it means raising the value of a product, so we are making this inspection. Our Chicago inspector, for instance, is called in by a commission man, because he has received a poor shipment of butter from Wisconsin. He goes in and looks over the butter, examines its faults; he writes out his criticism, and he sends a copy of that to the buttermaker or the secretary of the creamery, and a copy is sent to our office in Washington and a copy goes to the dairy commissioner of the state, and as soon as Mr. Emery gets that he will send a man to see what is the trouble.

Prof. Russell: A copy should be sent to the Agricultural Station.

Mr. Webster: I will see that it is. We have been able, on the money we have had, to put only five or six men on this work, but they are taking up the worst cases and going to the creamery and helping as they can.

Prof. Emery: Then I understand Mr. Corneliusen will go to the Chicago market and from there to the creameries where that butter is supplied to the Chicago market.

Mr. Webster: That is the idea. These men have instructions to work as closely as possible with the state dairy and food commissions. We all must work together as a unit for the advancement of this interest. We have calls from the Pacific coast for that kind of men. In fact, we find it very hard to find men enough to do this kind of work.

Ex-Gov. Hoard: There are two causes for poor butter—first, poor workmanship in the creamery for which the operator is solely responsible; and, second, poor management on the part of the man who produces the milk as to care, proper food, cleanliness, etc. Now, does your agent decide this thing so that it is possible that these two responsibilities may be traced back to the man?

Mr. Webster: We do; we have done so in many cases and it is our plan to follow this up. We try to get in behind the operator and get to the farmer, if it is necessary, so that every farmer in the community will know what is the trouble. Of course we will be limited in our field of operations, we must be, but our idea is to cover the cases that we undertake thoroughly.

Prof. Emery: There is one difficulty in this matter, and that is, that the buyers do not make a difference in price between good and bad butter.

Mr. Webster: That is one thing we are working after. This year our Minnesota people are buying their butter on the basis of quality. They are paying so much for butter scoring 95; so much at 92 and so much at 90, and making a considerable difference in price; and just as sure as the world, some of these days all the butter sold on the market will be sold on the basis of the score, and when that comes we are going to have another thing come in, and that is, that the federal government, or somebody with authority, will do this for him, so that it will be taken out of the hands of the men that buy the butter. So much for that side of it.

In our gathering up information we find that there are a whole lot of things we don't know. One of the things that has struck us with more force than anything else is that we know less about the secretion of milk or the changes in milk than anything else connected with the whole dairy subject. If we can find any way that we can throw light on the inside of the cow, that is what we are after.

A Member: One great trouble in this matter of the quality of butter is that the groceries make no distinction, they give the same price for all kinds.

Mr. Webster: The grocer doesn't buy it because he wants the buttter; he buys it because he can sell the farmers' goods. I know, because I have been there, and we never told a woman if her butter was bad; if we did, she would never come near our store again. The grocer loses money on every pound he takes in that way.

Speaking of this question of milk secretion, we have a number of men working on the question of milk variation, variation

in the composition; I don't know how long it will take, they are getting a good many interesting facts, but they haven't answered the question yet. But we hope to be able some day to answer a good many of these questions that are asked.

One question we have been working on for two or three years is the question of fishy flavor in butter, something that means losses to our commission men of hundreds of thousands of dollars every year, something that nearly every fellow has a theory on, and I don't believe any of them know much about it; we are very much in hopes that we have a pretty close solution, because we have some very marked results from recent work along that line, though we haven't gone far enough to tell what they are, and we don't want to have to take anything back.

Another great big question is the milk we drink in our cities. That is a question that both producer and consumer are vitally interested in, and where we have to work from both ends of the line, because we go to the farmer and tell him that he has got to produce better milk and he says, "I have got to have more money for it." And the consumer says he won't pay it. It is true, the farmer must have more money for his milk; it will certainly cost him more to produce it if he is going to take better care of it than he has been doing in the past. There was an international conference held in Europe awhile ago on that question of producing milk for cities. People are beginning to realize that they must have better milk; the death rate must be cut down. It is said that fifty per cent of the deaths of infants in our cities is due to the vicious milk they consume.

At the call of the Chamber of Commerce in Cleveland last week they got together three hundred farmers, who sat there ten hours to listen to talks on clean milk. They came in and asked questions and gladly listened, and they did it because they had been shown that it was necessary, that they had not only a financial but a moral interest. I think there will be a report of that meeting. Write to Dr. Sherman, Chairman of Sanitary Committee, Chamber of Commerce, Cleveland.

Mr. Chadwick: No milk is sold in this city without the cow is subjected to the tuberculin test. We have had such an ordinance for two years.

Ex-Gov. Hoard: But that doesn't stop the dirt.

Mr. Webster: No. Perhaps the first and most important thing is to have a healthful animal, and next, to have careful people handle the milk, and then to have clean, sanitary conditions, which means clean water as well as a clean place to handle the milk. We in our work have several men working right along this line to-day. The people ought to demand more rigid inspection, but they are not demanding it and they get all they pay for. However, the people are waking up on these questions and are going to demand better things, better inspectors and inspection.

Mr. Marty: The way the demand has been going in this part of the country for years it has hardly been considered worth while to try to make fine points in our dairy products. The demand of the market ought to be more uniform. I don't understand why there should be so many different kinds of markets for the goods that they can get out.

Mr. Webster: I see Mr. Marty's point, that is, the great variation in the products and the demands of the markets do not seem to correspond with each other. We must do a whole lot of education of the consumers of cheese and butter and everything else. We have got to educate the consumer up to the point that he will demand good Swiss cheese, good Brick cheese and good Limburger cheese and know what these are when he gets them and be willing to pay the price for them. It is a commercial proposition; in other words, while we are talking to the farmers about better conditions we must spend just as much time talking to the consumers.

Ex-Gov. Hoard: Hoard's creameries supply 2,000 families, and we had to instruct the wives of those families how to care for their butter after they got it.

Mr. Webster: Any amount of good butter and good milk is spoiled right in the house. They stick it in the refrigerator with a lot of vegetables, so it is no good by the time it is used. That is simply because of lack of proper information on the part of the wife, or many times of servants to take care of these things. The question of taking care of good food after we get it is just as important as the question of producing it.

One of our discussions in Washington this winter has been on the question of better milk supply in the city of Washington, and everywhere we found that necessity of teaching the housewife how to handle milk when she gets it. The same is true of cheese and all food products that come from the dairy farm.

This is a big problem; there is plenty of room for all of us to work together for the general uplifting of this great industry of our country and the subject as presented by Governor Hoard this morning in a resolution is simply an indication of what is going on all over the country. Our citizens everywhere are asking that the work be placed on such a plane that we can reach these various problems. We are doing it in a way now, but we could do it much more fully if we had better facilities. We want to employ more competent men to do the work as we want it done, and pay salaries adequate for the work they are doing. Just recently I lost one of the best men we had on the production of butter, simply because the Department could not afford to keep him. That man is worth more to the dairy industry of this country from a butter standpoint than he is worth anywhere else, because he had the knowledge, the practical experience, coupled with a good education, but he was offered very much more salary than we could pay and he had to take it of course. He was working for your interest; he is now working for the interest of one concern.

REPORT OF MILK AND CREAM EXHIBITS.

U. S. Baer, Assistant Dairy and Food Commissioner, Madison, Wis.

Mr. Chairman, Gentlemen of the Association, Ladies and Gentlemen.

It has been observed in some of the previous meetings of this Association, by reason of the fact that the buttermakers

and cheesemakers have formed themselves into associations by themselves, that the exhibits of butter and cheese grew smaller from year to year and but little interest was taken in them from the fact that the great majority of the delegates, who attended the convention, were only concerned in producing milk or cream for city market, or which was sent to the creamery or cheese factory. In view of these conditions the executive committee of this association, at its March meeting in 1906, passed a resolution which was in substance, that premiums should be offered for milk and cream and that premiums on butter and cheese should be discontinued. Through the persistent efforts of your Honorable Secretary, a milk and cream contest was held under the auspices of this association at its annual convention at Tomah, about one year ago.

It became a matter of great importance to know just how milk and cream could be judged, and personally I am free to confess that it was with a good deal of reluctance that the judges last year were induced to attempt the work on the occasion named, but Secretary Burchard told us that it was useless in his judgment for us to harangue about delivering good milk and cream unless there was some way devised by which the buttermaker or the cheesemaker could form some sort of an approximately correct judgment as to the quality of the milk or cream when it came to his intake. After careful thought, consultation and considerable experimental work on the subject, under Commissioner Emery's instructions and counsel, together with other members of the dairy and food commission, we found that by the use of various tests, the trained nose and taste that we were able to tell, with a fair degree of accuracy, the condition of milk and cream.

In order to make these contests perfectly fair, the percent of butter fat and milk solids not fat in the milk and cream must be ignored in these reports, however, I wish to state that every milk and cream sample entered has been tested for butter fat, specific gravity, acidity, fermentation and preservatives.

We, as inspectors of the Dairy and Food Commission, would naturally do that. We wanted to know whether they complied with the state laws or not.

Mr. A. E. Kundert, Asst. Chemist of the Dairy and Food Commission, subjected all samples submitted to us to his tests for formaldehyde and for borax, finding no trace of either just as he anticipated.

Mr. J. D. Cannon, Mr. Fred Marty and your humble servant were the judges. We found all entries to be far above the standards fixed by state law so far as butter fat and milk solids not fat were concerned. None of the milks indicated any treatment by heat or otherwise as rennet action in the application of the curd test was normal in every case.

I want to say right here that your exhibitors put up a very hard proposition in fixing this duty upon your judges. The milks and cream, though few in number, were exceptionally fine, far above the general average of market milks and your judges were put to a severe test in the determination of who was to get 1st, 2nd, 3rd and 4th places.

The scale for judging embraced the two essential items of flavor and condition. Flavor was subdivided into taste and smell and for milk 25 points and for cream 30 points were assigned to each. In the class for milk, condition was subdivided into, results of curd test, 25 points, cleanliness, 15 points, acidity 10 points. It being impracticable to apply the curd test to cream, condition was determined from cleanliness, 20 points, acidity 20 points. Total, 100 points in each case.

The judging was done on the basis of a numerical score card, each of the three judges scoring independently of the others.

The appearance of the packages or bottles containing the milk and cream was all first class.

No dirt or sediment whatsoever was found in the bottoms of any of the bottles.

The exceptionally high scores of all of the exhibits entered indicates, that all of the contestants were very successful in their efforts to produce a pure, clean, wholesome and high class milk.

I will now read you the average of all the scores made:

Milk.

Name of Exhibitor.	Address.	Flavor.		Condition.			Score.
		Taste.	Smell	Curd.	Cleanliness.	Acidity.	
		25	25	25	15	10	
J. G. Hickcox.....	Whitefish Bay...	25	25	24.5	15	10	99.5
John Waelti.....	Monroe	24	24	25.0	15	10	98.0
H. F. Ora	Manawa	24.5	24.5	23.5	15	10	97.5
Dallas Davis.....	Monroe	24.5	24.0	24.0	15	10	97.0
L. P. Martiny.	Chippewa Falls .	24.5	23.5	23.5	15	10	96.5

Cream.

Name of Exhibitor.	Address.	Flavor.		Condition.		Score.
		Taste.	Smell.	Cleanliness.	Acidity.	
		30	30	20	20	
L. P. Martiny.....	Chippewa Falls..	29.5	28.5	20	20	98.0

THE ECONOMICAL ASPECT OF BOVINE TUBERCULOSIS.

Prof. H. L. Russell, Dean, Agricultural College, Madison.

Mr. President, Members of the Convention:—A few weeks ago I received a letter from a man in Iowa, and in it he said: "Last month I bought a pure bred Holstein bull, paying $235 for it. I took the animal home, tested it for tuberculosis and found that it re-acted." He says, "Can't you tell me somewhere that I can go and buy a pure bred animal that is free from disease?"

A few weeks before that I got another letter from a man in Iowa, saying: "You people over in Wisconsin are doing

something with reference to tuberculosis. I am coming over there after my cattle. I am sick of trying to find the right kind of stock and to find it healthy; I am coming to Wisconsin."

That represents, gentlemen, the condition of affairs that is to be found in this state. Wisconsin is a great breeding place for dairy stock. There is no other state that has reached a higher pinnacle of success with reference to the breeding of dairy stock, and it is, therefore, incumbent upon us, above all things, that we see to it that the stock which is sent out from this state shall be free from this scourge of tuberculosis. When we have built up a reputation for breeding stock, and reached the degree of success which we have, we certainly want to have that accompanied by a further statement that not only have we got good stock, but that it is healthy stock, and a reputation along these lines means everything in the further development of the dairy industry.

If Wisconsin should develop the reputation that its stock was badly affected; that it was almost impossible for a man to buy a herd without introducing tuberculosis, our good name as breeding state will go just as it has gone in other directions.

See what, for instance, it cost the state of Wisconsin some years ago in regard to the matter of cheese. This state stood at the front, so far as quality of product was concerned, and then fell a victim to the fraud of making "filled" cheese. In a desire to obtain large returns, an illegitimate amount of returns, "filled" cheese, poured into our markets and away went our reputation as a state. It took years to win back this reputation as a producer of first class quality of goods, and was from every point of view a most expensive proposition.

The same thing is true with reference to the reputation of our stock. We must have it, not only good stock, but healthy stock. By eradicating tuberculosis from our midst we are bringing people to this state from all over the country and even beyond the bounds of the country—Mexico and Japan.

This disease was introduced into our state years ago; it came in from the East as a great many of the good things that

we have gotten in this world have come, but this is one of the bad things.

This disease has been introduced from some of the best herds that they had in New York, Pennsylvania and other portions of the East. The first herds to become involved in this state were probably those into which pure bred and high grade cattle were brought. In the laudable attempt to build up and improve the quality of Wisconsin's stock, they unknowingly introduced into our state the seeds of this scourge.

The Experiment Station herd went through a similar experience. When I came to the University of Wisconsin in 1893, we had a fine herd of dairy stock which had been carefully selected. In these early days practically nothing was known about bovine tuberculosis. One of the first things we took up was to give instruction to our Short Course students with reference to the application of this test. Four or five animals in our herd were tested as an experiment and every one of them responded to the test. Previously to that time no suspicion had been attached to the herd. This condition led to the examination of the entire herd, and of thirty animals, twenty-two were found to re-act at this time.

At the present time the breeders are in advance of the general public with reference to the consideration of this question; they have gone through the mill on this matter, many of them have learned from sad experience that when the disease once gets into their herds it is a scourge which is sure to cost them to eradicate an immense amount of time and trouble and money. A great many of them have, however, stamped it from their herds, so that at the present time, I presume that the condition of our breeding stock is better on the average than that of the general stock.

At the present time we find that not only individual breeders are strongly in favor of the tuberculin test, but Associations are taking hold of this matter and are using their best efforts to see to it that the entire number of animals represented in the Associations are subjected to the test. This idea is reaching proportions that extend outside of the state.

I have a letter here from one of the prominent Holstein

breeders of the state, saying that at the next meeting of the Holstein-Friesian Association, he is going to introduce this matter before that organization of making it compulsory that every animal that is sold by any member of that Association shall first register its condition as to whether it is affected with tuberculosis or not. If that measure passes this great Association of Holstein breeders it will do more to give a reputation of health to our pure bred stock than anything else that they can do, and naturally the results which will come from that kind of work will redound not only in honor and credit, but in dollars and cents from a purely advertising point of view.

At the present time the rank and file of the dairymen are taking hold of this matter in a far different way than they did a few years ago.

This year the subject of tuberculin testing has been introduced into the Farmers' Institutes. There have been eighty or ninety of these Institutes held throughout the entire state, and Superintendent McKerrow has had some one talking bovine tuberculosis at every one of the Institutes held, and he tells me there has been no subject which has attractd as much interest as this question. This is reflected in the applications we are now receiving at Madison asking for information relating to this subject; also demands for tuberculin for the testing of herds, and asking how it shall be done.

We are sending out a much larger amount of tuberculin than ever before. Within the last three or four months from the Experiment Station alone over 33,000 tests of tuberculin have been distributed.

Dr. Roberts, the State Veterinarian, is also dispensing large quantities of tuberculin; in many instances the stock owner himself is purchasing these materials in the open market, for the reason that he does not want anybody to know that he is going to apply the test to his own herd. I have no doubt but that there will be over 50,000 tuberculin tests made upon our Wisconsin herds this year. This represents the interest and enthusiasm which speaks well for the rank and file of the dairymen of this state.

But we find that this interest is not uniform throughout the state; that it is localized here and there in certain counties; that localization comes about in large measure by reason of the fact that our post mortem demonstrations have been the most convincing way in which the people have been shown the actual condition of affairs and wherever these post mortem demonstrations are held, we immediately see the response in the large numbers of applications for tuberculin from that particular district.

As indicating the irregularity with which this movement passes from one portion of the state to another, let me show you the results in two counties. For this purpose I have taken this county (Green), and one of the north counties (Barron). Up there they are new in dairying, having begun only a few years ago, but they propose to start right. Compare this new dairy region in Barron County with this old dairy region, Green County, and see about the interest that is manifested in this direction.

We have returns from 131 herds in Barron County; ten here in Green County. Nearly 1,600 animals have been tested in that one little county and but twenty-nine out of the 1,600 re-acting, or 1.8 per cent affected with tuberculosis. These people have taken hold of this matter at an early stage, before their herds have become thoroughly affected with the disease. By the expenditure of a few dollars and the elimination of twenty-nine animals at the present time they have saved thousands of dollars to that new dairy region within the next ten years.

In this county (Green) one herd alone not far from this city had twenty-three animals affected, and out of the whole number, 209, there were twenty-six.

Of course there are many other animals than here reported that have doubtless been tested; the application of the local milk ordinance in Monroe has undoubtedly resulted in the testing of a good many. The figures I give here are simply those that have been received from tuberculin which the Experiment Station has sent to these two respective regions.

The suggestive matter is that these new dairy regions of

the state are realizing the importance of taking hold of this subject in time, and in order to show the results based upon the examinations that have actually been made, I have charted our records on this dairy map.

(Here the speaker presented a map showing the distribution of tuberculosis by counties).

When we take, for instance, the tests which have been made in the northern portion of the state and compare them with those made in the southern portions of the state, we find that we would have in a line drawn across the state in this way and confining these tests to those particular regions where we have the largest number of tests, that on the average they have 8.6 per cent of tuberculosis in these counties represented here in this way. I have that expressed in another form in these counties.

Take the counties of Dane, Walworth, Columbia, Jefferson, La Fayette and Rock. Those are the counties in the southern portion of the state where the largest amount of testing has been done. We have tested 650 herds in Dane County, with 324 re-acting; the percentage of animals averaging 11.3 per cent. Fifty-one per cent of all of the herds which were tested in Dane County showed the presence of tuberculosis but only 11 per cent of all the animals tested showed presence of the disease. The results of the tests in Walworth, Columbia, Jefferson and Rock are indicated upon this map.

Now, there are two things I want to point out particularly on that chart. Eight and six tenths per cent on the average of all the animals tested in these six counties re-acted in the test, but 37 per cent of all the herds tested.

Now, you go up North and see what the condition is. These yellow lines here indicate the particular regions of the state in which this testing work has been carried on most extensively. But here in Barron county, up among the stumps, we have nearly 1,400 tests with 1.8 per cent of the animals reacting. Take it down in La Crosse County we find that there is only between 2 and 2.5 per cent. In La Crosse county the total number of re-acting animals were 27 out of 863. In Monroe county it is 2 per cent; in Outagamie it is less .03 of

one per cent out of 300 animals. In these newer dairy regions only 2.4 per cent reacted, but what is more important is that nearly one-fifth of the herds were affected.

You will notice then in comparing the condition in the North with that of the South that there is from three to four times as much tuberculosis in the southern portion of the state as there is in the North, and over double the per cent of herds.

That means, gentlemen, this one thing, that unless we take a hold of this matter and take a hold of it now, the North, in its condition at the present time, where it has only one quarter as much tuberculosis as we now have farther South, will have in a comparatively short time an increasingly large percentage. Here are one fifth of the herds into which the disease has already been introduced, but the extent to which the disease has developed in those northern herds is not as yet as great as it is in the southern portion of the state.

You see at once what this means to the great business of dairying; the importance of taking hold of this matter and doing it early enough so that the losses will be trivial, as they are at the present time. This work can now be done at a cost which is relatively insignificant in comparison with the expense which will be required in later years.

The southern counties need to take hold of this matter and agitate it, educate the people, because if we do not do that, the percentage of infection is going to increase, because this disease never dies out of itself.

When you look at the percentage of affected herds, you will see the significance of this statement. Disregard, for a moment, the percentage of affected animals in which you find a range of from 3.2 up to 11.3 as in Dane County, that is bad enough as it is, but when you look at the last column and see that from 30 to 50 per cent of all of the herds that have been tested show the presence of re-acting animals, this is a very much greater significance than the percentage of re-acting animals.

Now, bear in mind, that these tests are not from suspected herds, these are only the cases that have come to the Experi-

ment Station and asked for this tuberculin without any suspicion whatever that the herds were affected. I have eliminated from these statistics all of the suspected herds; those go to swell the report of the State Veterinarian. When a man knows that he has got tuberculosis, the chances are he would call in the veterinarian and that reduces very materially the numbers coming through this channel. When a man becomes convinced that it is advisable for him to learn what is the actual condition of his herd, he seeks to obtain that knowledge usually from the Agricultural College, so that our statistics combined with the figures we give would represent very much nearer the average conditions in the state than if we took the suspected herds.

Now, note the significance of this. In some of our counties, one half of some of our herds have got the seeds of the disease introduced into them. Now, how do they get there? For the most part those herds have become infected by those men buying in animals from outside sources. The necessity of taking hold of this matter at the present time is still further emphasized by the fact, that unless we do this and do it now, the disease is going to spread more rapidly in the future than it has in the past.

Why do I know that it is going to do that? I can show that in a most conclusive way by showing you the statistics of what has actually occurred in some portions of the state. The condition is this, gentlemen: When you have got a herd of animals in which the disease is present, the disease travels from one to the other of those animals until a larger and larger proportion of the herd becomes involved. Suppose now that you take the milk of that herd to a creamery; suppose in the beginning that your herd was the only herd that contributed infected milk to that creamery, the chances are that in that district sooner or later other herds will begin to contribute milk from infected animals to that same creamery.

Now, the tubercle bacillus does not thrive and grow outside the body of the animal, so there is no danger of the growth of the germ after the milk is drawn from the cow and one cow's milk diluted with hundreds of other cows' milk would

reduce the infection to where the disease will not be produced, but if you add to that one cow another cow's milk that is infectious, you finally reach a point where the milk of that creamery becomes so infectious that when the skim milk goes back onto the different farms, you spread death and destruction throughout the whole radius of that creamery. That is exactly what happens and what will happen in Southeastern Wisconsin with the continued progress of this disease.

Last year we found the condition of two creameries in Dane county to be such that when these herds were examined that out of 1213 animals tested in two creameries, 30 per cent of all those animals were found affected with the disease, and we found moreover that it was the young stock that were affected. That man who, for instance, only took his cream to the factory and did not take back any skim milk, we found he was free from the disease.

When we went outside of these two creameries to the surrounding creameries and examined their herds we found that the percentage of affected animals in eleven surrounding creameries was reduced to eight per cent in 1467 tests and almost every single case showed that the infection was attributable to the fact that each person had bought in from some outside source an animal affected with this disease.

That will hold in every creamery; the moment the skim milk becomes capable of spreading infection that is just what happens.

Now, notice on this map. There are those two creamery districts, Medina and Oak Park.

Every one of those red dots means a tubercular animal; the black dot means healthy animal. Within that red line showing boundary of creamery district thirty per cent of those animals responded to the test, outside of the red line the percentage was reduced to eight. Every particle of skim milk which went from that creamery contained the seeds of this disease to such an extent that it was capable of producing it in anyone's herd. That herd might have been free from tuberculosis, but he brought home tubercular skim milk, fed it to

the young calves and hogs and so introduced this disease in this way.

Gentlemen, that is what is bound to happen in Southeastern Wisconsin. It is not likely to happen in Northern Wisconsin for several years to come, because they have not enough tuberculosis there at the present time to produce this concentrated type of infection, but it will happen and is happening in Southeastern Wisconsin to-day. There is one creamery down near Burlington that is in that same condition. We found three creameries last year where this disease was being spread through the medium of the skim milk. We simply happened to stumble onto these cases in making tests that were made in the way that I speak of.

Now, it is entirely possible for us to stop this. All you have to do is to pasteurize the skim milk; that will effectually destroy the tubercle bacillus and so prevent the distribution of the disease in this way. This should be made compulsory by law and this was asked for of the last Legislature, and denied. The Legislature said, people will not stand for this and we are not in favor of doing anything that is compulsory in its nature.

Our surrounding states are doing this. Minnesota and Iowa have sense enough to see that they can accomplish the necessary object to some extent by compelling the skim milk of the creameries to be pasteurized before it is returned to the farms. The cost is merely nominal, the use of the exhaust steam makes no heavy demands from the standpoint of expense and the improvement of the quality of the milk itself which is brought to the factory is enough to pay for the whole process. Our most progressive creameries are doing it voluntarily, because they find it is worth while to do so, regardless of the question of tuberculosis. This should be made compulsory by law, that our creameries, especially in the portions of the state where tuberculosis is known to exist, should pasteurize their products. Denmark and Germany have done this for years.

I am not very much of a believer in legal enactment when we can get moral suasion to work and make it effective. There are some places where it is better to go slow and build up public sentiment so that that public sentiment backs up a

law, than it is to go rushing ahead and not have your public sentiment behind you, and consequently, from the standpoint of compulsory legislation, I have so far opposed the proposition of making the tuberculin test compulsory throughout the state at large. We are not yet ripe for that matter, but we can help along toward the taking of certain advancing steps, and I would like to see this State Dairymen's Association put itself on record as favoring certain legislative measures which will be brought before the Legislature this coming session, and one of those is this question of the compulsory pasteurization of skim milk.

The other, and the most important thing that we can do toward the further restriction of this disease in this state is to have stock, which is sold from one party to another, tested, in order to find out whether it is free or not. If we could secure at this coming session of the Legislature the enactment of this one law, that when a man sells stock it must be known to be free from this disease, it would do more to restrict the spread of the disease in this state than anything else that we can do. This spreading is being done most efficiently at the present time through public auctions and through private sales. Men are buying animals supposedly free from the disease only to find that when they do apply the test that they are affected with it.

We have been accumulating data along this line in connection with our work, and when the bill was put before the Legislature last year we put up there 200 cases, positively proved, where men had bought this disease by buying an animal and bringing it in from outside sources. This was not sufficient to convince the members of the Legislature; they had to recognize that there were positive cases but they didn't dare move in this matter until they could see that the people wanted it. So we have continued in this work of collecting data and we have a long list of cases, eighty-eight more cases are to be added to the 200 that we already had showing where men have bought tuberculosis and introduced it into their own herds in this way.

It is absolutely impossible for any man to go out and buy

animals at the present time in any considerable number without running great chances of buying in this disease unless you use the tuberculin test in order to determine their condition.

Now, this campaign which has been carried on in Wisconsin has largely been educational. The laws, which we now possess, have not been very radical. We have drawn a line around a state and we are not permitting any animals to come into the state until they are first tested, hoping thereby to be kept from being a dumping ground for infected animals from outside sources. But what are we doing with reference to the cleaning up of the condition of affairs within our own state?

If you as a breeder have tuberculosis in your own herd and want it there, I don't know as the law can prevent you from doing that, but the law certainly ought to be able to prevent you from disposing of that disease to some one else, that is, spreading it from your herd to some other herd through some innocent purchaser. We have statistics which show that certain herds in this state have spread the disease to four northwestern states. One case in Southeast Wisconsin we have the positive records showing that sixteen other herds in the Northwest have become infected through one herd in exactly that way.

How long can we continue to bear this kind of a burden and allow the fire to spread indefinitely in this way? The campaign that is being carried on in Wisconsin is being managed in my judgment in the most economical manner. The state is paying less for the eradication of this disease here in Wisconsin than any other state that is attempting to handle this question at all.

You may be interested as tax payers to know something about what it has cost for condemning animals. The way which we do in Wisconsin is to test the herds and then the animals which are found to be infected are shipped to Milwaukee or some place provided with a Federal Inspector, and the animal is examined and if the meat is satisfactory for use; that is, if the disease is only in the beginning stages, found in a single gland, for instance, in the throat or lung, where the muscular portion of the body is not involved, that meat is

sold and so there is turned back into the State Treasury some return from these animals affected in the early stages. I show here the net cost which has been paid by the state deducting these amounts, for the last five years. In 1905 it was $8,150; in 1906, $16,600; 1907, $17,700; that is to say, at an outlay of less than $20,000 a year, we are getting on top of tuberculosis in Wisconsin. Massachusetts spent a quarter of a million and covered only three counties. New York spent hundreds of thousands of dollars and there was a revulsion of public sentiment against the continued application of the test, and they abolished the law of New York and are just again beginning to give attention to it. You can't go down into New York state to-day to buy stock in any quantities without running the danger of buying tuberculosis. I have known a good many cases to have come from there.

If you have a fire smouldering in your barn, gentlemen, you don't wait until that fire bursts out into flames before you do something to stop it. A pail of water in the beginning will do more good than a whole troop of fire-fighters later on. What we want is the pail of water in Wisconsin and we want it right now to dump it on that fire at this present moment. We don't want to get into the condition that some of the older countries did. Denmark let this thing go until they had forty per cent of all their herds involved; then they were obliged to take it up and deal with it in the most heroic manner. We can save this state hundreds of thousands of dollars if we will continue this method we have had in operation the last two years, voluntary testing by stock owners themselves and the spreading of information through every possible source so that the stock owner may realize the nature and gravity of this proposition and deal with this question largely on an educational basis. The cost of such method of campaign will be merely nominal in comparison with what it will be worth and with what will happen if we simply shut our eyes and say that this is all a fad.

I leave it to you to draw your own conclusions as to whether you, as stock owners and raisers, will go on longer regardless of the condition of your herd, not knowing whether you have

got tuberculosis in it but simply taking your chances trusting to luck, hoping against hope, that you haven't got it, but not knowing.

This is an economical proposition that is before you; you cannot afford, gentlemen, to longer ignore the fact that this is the most insidious, but the most important animal disease that we have to combat in this state and a "stitch in time will save nine" without any question; it will save you dollars as growers and breeders of live stock and as dairymen, without any question.

DISCUSSION.

Prof. Emery: What is the relation of bovine tuberculosis to tuberculosis in man?

Prof. Russell: My talk was on the economic aspect of this question, and purposely I refrained from going into that phase of the question, but the answer to your question is this: There is a direct relation in this respect, in that the disease from the bovine can pass over to man through the medium of infected milk. The danger is probably much greater in the case of children than it is in the case of adults. There is now no question but that the disease can be transmitted. Prof. Koch, some few years ago, asserted that in his judgment the two types of tuberculosis were two separate diseases, and that there was little or no danger of transmission from one to the other, and that statement in itself did more to induce scientific effort. As a result of carefully controlled studies, the German commission has reported against these conclusions; the English and French commissions have done the same. A large amount of practical evidence has now been accumulated, which conclusively shows that a considerable percentage of the disease in the human race is to be ascribed to diseased milk.

Today we are considering the subject purely from the economic point of view, leaving, for the moment, this sanitary or hygienic point of view. If you have tuberculosis in your herd, you wouldn't want to use such milk in your own family.

A pertinent question is: Will you sell it for somebody's else child.

Ex-Gov. Hoard: We have a law preventing the shipping in of tuberculous animals, haven't we? Into this State?

Prof. Russell: Yes.

Ex-Gov. Hoard: Have we any law to prevent the shipping out?

Prof. Russell: Yes, the Federal regulation prohibits this under the interstate commerce law.

Ex-Gov. Hoard: This case arose in Jefferson County; a breeder of thoroughbred Holstein cattle had his herd tested. Ten of his best cows re-acted. A man who was buying Holstein cattle for shipment into Mexico went to him and offered him $50 apiece for those tuberculous cows; he said they were good-lookers and good enough for what he wanted. The matter rested on the honesty of the Holstein breeder, and it is a credit to the State that he refused to take the money. But there was a man right there buying animals and shipping them out of our county, and he said he didn't care a tinker's damn, as long as they were good-lookers. We must realize, more and more, gentlemen, how impossible it is to tell anything about the internal condition of an animal by its external appearance.

Prof. Russell: The one thing that has done more than anything else to agitate this matter in this state has been the public post mortem examination at State Fairs and County Fairs. The farmer has thus had a chance to come close to the proposition.

Last week up at Winneconne at an Institute held there we had two herds from Winnebago County which we used in a post mortem demonstration. One of them belonged to a prominent Jersey breeder, who is one of the directors of the Oshkosh Pure Milk Company, which is doing all that it can in a public way to show the community the necessity of using proper protection in this matter. He had used the tuberculin test on his own herd several years ago, and a number of his herd re-acted. He had paid the penalty by wiping out a large part of his herd. Three or four years ago he went down to Tennessee and bought a bull from a supposedly healthy herd and

placed it in his herd. He tested his herd a few months ago and found that about one third of them re-acted; some of these animals we killed at this post mortem demonstration. From the history they were animals that ought to have been in the early stages, because they had only been in contact with the disease for a few years. We found them in the early stages as we expected, though they looked physically bad.

The other animals were taken from a herd in which the disease had been present for six or eight years. Individually they were better looking animals, and everybody said it was a perfect shame to kill such animals.

Upon opening them, the lungs were found adherent to the ribs, the whole interior of the animal being rotten with the disease, so that when we stuck a knife into the lungs, the pus squirted out all over the table.

The tuberculin test will enable you to pick out an affected animal, regardless of the amount of infection in the system.

Ex-Gov. Hoard: A test was made out in Whitewater and several cows found affected, but I think that some of the animals sent to Milwaukee disclosed no tuberculosis finally. Now, I understand, do I not, that the federal officer does not carry out the test as you do?

Prof. Russell: I happen to know the details of that test. When temperatures were taken, it was found that they ranged from 103° to 105° before the tuberculin was injected. Under our rules the herd never should have been injected by anybody; it was not fit to be tested, in the first place, as they had a fever temperature to begin with. These animals were shipped to Milwaukee, and on examination by federal inspection failed to disclose any result of the test, and there was a great hue and cry that the state was killing animals that were perfectly healthy. Governor Hoard wrote me about that particular case, I looked up the facts of the case, and they were as I have stated, the animals had a fever temperature before the injection.

Another thing, when those animals go to Milwaukee or Chicago they are not examined to test the accuracy of the tuberculin test; they are tested to find out whether that meat

is wholesome, and only that. If the muscular portions have not been affected by the disease, the meat is perfectly safe for use, and the federal inspector passes it on that basis, so that if you go to Milwaukee and find that this animal or that animal has passed, it does not mean that it is not infected. You must bear in mind that the federal inspector is there for the purpose of determining the edibilty of the meat and not the accuracy of the tuberculin test, because the experience is that a number of cases have been found where tuberculosis has not been found in an animal which has re-acted theretofore, or found in such small quantities as to be practically negligible. I have handled several thousand head of this sort, and I never have seen but two cases where the disease was not found upon a critical examination after the test had been made. I remember one case where an examination of the carcass disclosed that it looked perfectly healthy and when the carcass was cleaved down the middle, there was an abscess right at the end of the spine. You may have it in portions of the body where it is not normally to be found. You can easily see that a casual examination made by a man who stands and watches a carcass go past him is no criterion of whether that animal is infected with the organism or not. You can go down to Chicago and examine stock as it comes from the ranches and you won't find one case in ten thousand that is affected with tuberculosis from that kind of an examination, or you can go to the slaughter houses and examine as carefully as you may the carcasses of animals that are killed for meat and you won't find the presence of the disease except in a small percentage of the ranch stock. Of course those animals are not tested before they come in.

I have a lot of bulletins here and they will give you a good deal of information on this subject.

BREEDING AND REARING THE DAIRY COW.

G. C. Humphrey, Professor of Animal Husbandry, Madison, Wis.

With something over twenty-one million milk producing cows in the United States, nearly one million one hundred forty-five thousand of which are in Wisconsin and no evidences of a milk famine at hand, we may question in our minds the necessity of discussing how to breed and rear the dairy cow. It may appear that there are as many milk producing cows in the country as we have need for. It is true, however, that there never was a time when the dairy cow was more popular and in greater demand by parties from all over the world than at the present time. Since January 1st, 1908, inquiries have been received at my office for a total of 196 dairy animals. This undoubtedly represents only a small number of the inquiries which have been received by all the breeders of the state, and indicates only in a small way the demand for Wisconsin bred dairy animals.

For the benefit of every Wisconsin farmer, who may have milk producing cows, I wish to emphasize the fact that the above inquiries received for dairy animals did not call for ordinary milk producing cows, but for high grade and pure-bred cows of some one of the distinct dairy breeds. They call for dairy cows in the strict sense of the term, *dairy cows,* and it is the cows of this class and not the common ordinary milk producing cows that are so popular and in so great demand.

From statistics which have been gathered, the valuation of milk producing cows in Wisconsin ranges from $21 to $31 per head, and the average production from 3500 to 4000 pounds of milk and 150 to 200 pounds of butter. Cows of this character and capable of no higher production are not dairy cows. They are common native scrub cows maintained at a loss, and better it would be for the farmer, if they were not maintained at all. There are many high grade and pure-bred cows which are producing annually from 8,000 to 12,000 pounds of milk and 300

to 400 pounds of butter, to say nothing about the choice pure-bred cows, which are producing 800 to 1,000 and even 1,200 pounds of butter, as a maximum yearly production.

When we make a distinction between the ordinary native milk producing cow and the strictly dairy cow, capable of economically converting the raw products of the soil into large quantities of milk, we begin to appreciate the importance of studying and discussing the matter of breeding and rearing the dairy cow. To the thoughtful studious mind, this subject should never grow old. It furnishes a broad field for investigation and contains many an unsolved problem, which we can only hope to solve by means of long continued work in scientific investigation.

In discussing the subject at this time, the writer will attempt to discuss only the fundamental principles which have become recognized as important factors entering into successful breeding, and which are adhered to by practical men who have achieved success in breeding and rearing dairy cows. They are principles which should be practiced by every dairyman who hopes to breed and rear dairy cows that shall prove profitable under the existing conditions of high priced land, high priced labor, and high priced feed.

To clearly bring before your minds what may be considered profitable cows, I call your attention to four animals of the University of Wisconsin dairy herd, whose productions and feed consumption I am able to quote. These cows belong to a much more ordinary class than do many of the more widely known cows, which we read and hear so much about, and my quoting their records will in no way lessen the respect and esteem we hold for cows like Colantha 4th's Johanna, Yeksa Sunbeam, Loretta D and a score of others, we might name, which are owned in Wisconsin. In considering the four cows and the profits, which have been yielded in a year's time, the following schedule of prices for feeds has been used, which are the average prices we have had to pay at the University Farm during the past winter.

SCHEDULE OF PRICES.

Mixed hay (per ton)	$12.00
Alfalfa hay (per ton)	14.00
Corn silage and soiling (per ton)	2.50
Sugar beets (per ton)	2.50
Dried beet pulp (per ton)	16.00
Wheat bran (per ton)	24.30
Dried distillers grains (per ton)	30.00
Oil meal (per ton)	30.00
Cotton seed meal (per ton)	30.00
Gluten feed (per ton)	26.00
Oats, (per bushel)	.535
Corn (per bushel)	.64
Pasture (per season)	5.00

In crediting the cows, the price of 26.8 cents per pound for butter fat has been used which is the average price we have received at our University Creamery during the past year. The price of 15 cents per hundred pounds for skim milk has been used and is as low as any farmer would consider it worth, although I am satisfied it is worth at least 20 cents per hundred to grow good well bred dairy calves. The calves produced by these cows have been valued at $100 per head when six months old, at which age they are marketable. In one instance we have received this price for one of the calves and could readily have received the same price for any of the others had we cared to sell them.

The first cow to which I call your attention is an Ayrshire cow, Christina, which at the age of 8 years and shortly after being imported from the state of New York, freshened November 3, 1906, and dropped a nice heifer calf. She produced 8,920.2 pounds milk, testing 4.5 per cent, and 361 pounds butter fat, equivalent to 421 pounds butter. Shortly after the expiration of her year's production, she dropped another pure-bred calf, which is to her credit as a profitable dairy cow. For the year Christina is credited as follows:

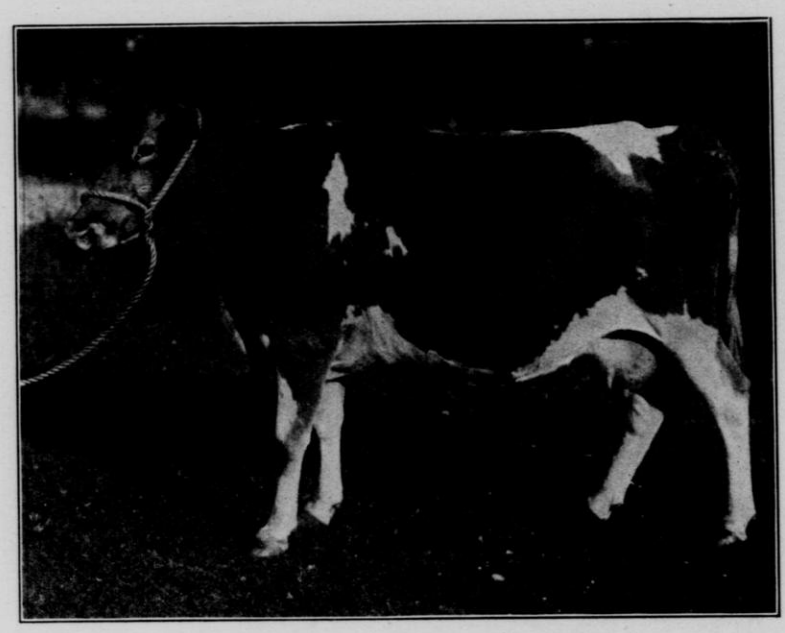
361 pounds butter fat at 26.8 cents	$96.75
7582 pounds skim milk at 15c per hundred	11.28
1 calf at six months old	100.00
Total value of products	$208.03

AYRSHIRE COW, CHRISTINA.

Year's record: milk, 8920.2 lbs.; test, 4.5 per cent; fat, 361 lbs.; butter, 421.0 lbs. Owned by the University of Wisconsin.

The second cow considered is Queen, a Guernsey, which bred and raised at the University Farm, dropped her first calf, February 7, 1906, at the age of 27 months. Her production for last year, was 7702.9 pounds milk, testing 5.12 per cent, and 394.7 pounds butter fat, equivalent to 460.5 pounds butter. Her second calf, a bull, was dropped October 7, 1907, and has been sold to be delivered when six months old for $100. Her first calf was equally as good an individual, and thus we credit Queen for her year's production as follows:

394.7 pounds butter fat at 26.8 cents ..	$105.86
6542 pounds skim milk at 15 cents per hundred	9.82
1 calf at six months old	100.00
Total value of products	$215.68

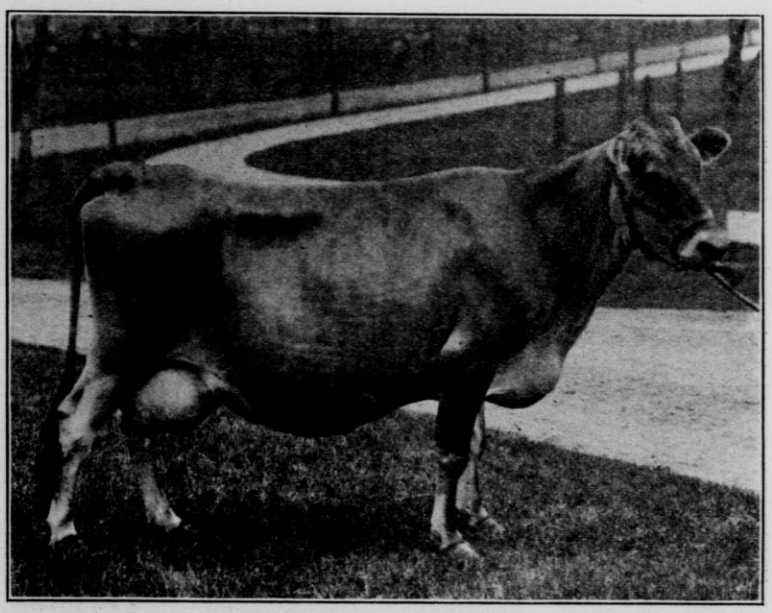


GUERNSEY COW, FAIR COZIES QUEEN.

Year's record: milk, 7702.9 lbs.; test, 5.12 per cent; fat, 394.7 lbs.; butter, 460.5 lbs. Owned by University of Wisconsin.

The third cow, to which I invite your attention is Macella, a Jersey, which at the age of 7 years, freshened October 3, 1906, and dropped a nice heifer calf. Her year's production was 9074 pounds of milk, testing 5.74 per cent and 521.2 pounds fat, equivalent to 608.1 pounds butter. Macella should also be credited with having produced another calf shortly after the expiration of her year's production. For the year considered Macella is credited as follows:

521.2	pounds fat at 26.8 cents	$139.63
7709	pounds skim milk at 15 cents	11.55
1	calf at 6 months old	100.00
	Total value of products	$251.18



JERSEY COW, MACELLA 3RD.

Year's record: milk, 907.47 lbs.; test, 5.74 per cent; fat, 521.2 lbs.; butter, 608.1 lbs. Owned by the University of Wisconsin.

The last cow I shall call your attention to is a Holstein cow, Johanna, bred by our Honorable Chairman, Mr. Gillett. Johanna as a 4-year-old produced 14,856 pounds of milk, testing 3.65 per cent, and 542.4 pounds butter fat, equivalent to 632.7 pounds butter. She has been a regular breeder and we have at the present time three of her progeny in our herd, a heifer calf, a yearling bull, and a two-year-old heifer. We have not priced any of her calves but have refused $300 for the yearling bull. To be conservative, which I think we have been in all cases, we value her calf at the age of 6 months at the same price as the others and credit her as follows:

542.4	pounds fat, at 26.8 cents	$145.26
12627	pounds skim milk at 15 cents per hundred	18.90
1	calf at 6 months old	100.00
	Total value of products	$264.16

HOLSTEIN COW, JOHANNA CLOTHILDE 4TH.

Year's record: milk, 14.856 lbs.; test, 3.65 per cent; fat, 542.4 lbs.; butter, 632.7 lbs. Owned by the University of Wisconsin.

The following tables show the kind, amount, and cost of feed consumed by each cow, the estimated cost of feed for raising the calf to the age of six months and the annual net profit per cow over and above the cost of feed.

Kind, amount, and cost of feed consumed by each of the cows.

	Christina.		Queen.		Macella.		Johanna.	
	Lbs.	Cost	Lbs.	Cost.	Lbs.	Cost.	Lbs.	Cost.
Mixed hay	1,032	$6 19	939	$5 63	910	$5 46	1,094	$6 56
Alfalfa hay	.....	.....	.....	.....	360	2 52	455	3 19
Silage and soiling	8,028	10 03	6,493	8 12	7,517	9 40	8,351	10 44
Wheat bran	666	8 32	535	6 52	960	12 00	584	10 67
Oats	440	7 35	696	11 64	543	9 07	773	12 90
Corn	532	6 27	179	2 11	105	1 23	139	1 65
Distillers' grains	434	6 51	349	5 03	673	10 10	483	7 25
Oil meal	84	1 26	115	1 73	450	6 75	308	4 62
Gluten feed	.....	.....	173	2 08	224	2 91	390	5 07
Dried beet pulp	.....	.....	.....	.....	214	1 70	270	2 16
Cotton seed meal	.....	.....	.....	.....	33	5 03	11	16
Pasture	.....	5 00	.....	5 00	.....	5 00	.....	5 00
Total cost of feed for cows	.....	$50 93	.....	$47 81	.....	$36 17	.....	$69 67
Cost of feed for calf	.....	15 00	.....	15 00	.....	15 00	.....	15 00
Total cost of feed for cows and calves	.....	$65 93	.....	$62 81	.....	$81 17	.....	$84 67

Annual net profit on production of cows, including their calves, over and above the cost of feed.

	Christina.	Queen.	Macella.	Johanna.
Value of products (milk and calf)	$208 02	$215 68	$251 18	$264 16
Cost of feed (cow and calf)	65 93	62 81	81 17	84 67
Profit (milk and calf)	142 10	152 87	170 01	179 49
Profit (milk alone)	57 10	67 87	85 01	94 49

Such cows as Christina, Queen, Macella, and Johanna, yielding annual net profits of $142.10, $152.87, $170.01, and $179.49 respectively, when credited with their calves, or $57.10, $67.87, $85.01, and $94.49 respectively when their calves are left entirely out of the question, are dairy cows in the true sense of the term and are the class of cows I urge upon every dairyman to have in mind in attempting to breed and rear dairy cows.

Breeding and Rearing.

The terms, breeding and rearing, as they relate to the existence of all forms of life, have a significance attached to their

meaning, which should be better realized. As we study life and think about it, we find it a strange mysterious thing. To think of how life exists in our own peculiar bodies and in the plants and animals about us causes us to ponder over problems and to feel and acknowledge the presence of some great supreme mind and power that controls the universe. Man, however, should feel himself highly honored by being permitted to have power and control over many living things, which exist. Scientific agriculture, which simply means thoughtful agricultural practice, or farming, teaches that man may become responsible for the care of many plants and animals and by working in harmony with nature makes wonderful improvement in their development. To become successful therefore, in breeding and rearing, one must study to know as much as possible about nature and nature's laws. Any violation of nature's laws on man's part is sure to result sooner or later in his defeat. Nature alone can produce the average cow and if left entirely alone, I believe can produce much better cows than many which we see penned up in yards and housed in barns throughout the country—which deprives them from getting the things which nature insists most upon their having,—namely, pure fresh air and water, and plenty of sunlight and exercise. The man who may consider himself the successful breeder by reason of this success in producing cattle of excellent type and performance, as well as the man who ignores and indifferently makes no attempt to improve the animals entrusted to him must bear in mind the power and limitations of nature's laws. All may not be able to succeed with the same degree of success in breeding dairy cows, but practice proves that men are usually successful in proportion to the knowledge which they gain concerning the subject, and to the extent that they religiously apply themselves to putting their knowledge into practice.

Standard of Excellence.

The first essential thing for man to have in mind is a correct standard by which to measure the dairy cow. Our time could more profitably be spent in discussing what should be incor-

porated in a standard for dairy cows. Written standards, commonly called score cards, which refer to the points of size, form, quality and temperament of a cow, have been adopted by various breeders' associations and are taught to students studying the dairy cow. As we apply these score cards to the individual animal they are supposed to indicate the value of the animal as a dairy cow, but men have found that they are apt to be mislead by placing all of their faith in the score card, and for this reason definite standard milk productions for given periods of time have been adopted as a means of providing a more accurate method of measuring the merits of cows. The best breeders of dairy cattle are working for a still broader standard of excellence than any we have written. It is the writer's opinion that dairy cows will soon be measured by written standards, which will call for individual excellence as regards all the points in a score card, a standard production of milk, fat and offspring ancestry noted for long continued service in the production of milk and off-spring, immunity from disease and economy in the utilization of feed. However good a type and however good a producer of milk a cow may be, if she is short lived, and not economical in the use of feed, she is not the kind of cow we can consider as being profitable. Cows capable of consuming feed economically into a considerable quantity of milk for a period of ten, twelve, or more years, and producing annually strong, healthy off-spring, which will develop into animals equally as good as the parents, if not better, are the kind of cows we should like to see bred on every dairy farm in Wisconsin.

Selection of Animals.

Having a well-established standard in mind as regards the ideal cow, one is ready to proceed with the selection of animals with which he can hope to make improvement or at least maintain a standard of excellence which may already have been attained. A pure-bred dairy bull must be selected in every instance, if there is to be any assurance of success. The common native scrub bred bull is responsible for more unprofitable

cows than is the system of feeding practiced on many farms. The scrub bull has one redeeming point to which I am glad to call your attention and one, which I trust you will bear in mind for the sake of your own success and the success of your fellow breeders. I have indicated it on my chart by means of a red star. This is the place to hit him and put him out of existence.

The sire to be used for getting the dairy cow should not only be pure-bred but of distinct dairy breeding. Good beef bulls or bulls from breeds having beef tendencies will not insure the production of dairy cows. The dairy cow is a dairy cow by virtue of her having been selected and bred for many generations for dairy performance. Continued selection and breeding for this purpose has fixed in her a temperament that compels her to be a dairy cow, the same as the German, the Irishman, and the Yankee and men of other distinct types and characters are forced to possess characters peculiar to their respective nationalities.

Select the pure-bred dairy bull, which comes from the best pure-bred cow you can find, as such a bull, it is believed, gives the greatest assurance of producing good daughters. If you have the money to afford it and feel that you cannot make progress otherwise, do not hesitate to pay some of the long prices paid for bulls richly bred. High values placed upon good sires are not fictitious values when one understands the worth of a good sire. The sire should fulfill all the requirements incorporated in the standard of excellence for the cow in so far as full size, character, vigor, health, longevity, prolificacy, and dairy temperament are concerned. These will insure his living to a good old age and proving a most useful dairy sire.

In the selection of cows for the breeding herd, I feel that little can be said at this time for the reason that there is such a scarcity of pure-bred and even high-grade cows in the country. To see so many parties, inquiring for well-bred dairy heifers and cows, unable to find what they want seems discouraging, but the farmer should not be discouraged. The best thing that can be done under existing circumstances is to select the best cows of the herd and mate them with the pure-bred dairy bull and thus make progress in the breeding and improvement of the

herd. In a few generations one can greatly inprove the production of his herd and as pure-bred animals become more numerous, introduce them to take the place of grades and thus reach the highest point of success which may be obtained. The rule to govern the selection of heifers and cows where one is fortunate to find them is found in the true standard of excellence mentioned above, which I trust each will study to have in mind. The cow usually proves the value of the sire, consequently the better the sire, the better the cow. The beginner with his common native herd will have an opportunity for making more marked improvement than will the man who has been in the work of breeding toward a distinct standard for several or more years. The man with the improved herd, however, must be constantly selecting the cows of his herd which promises to improve or at least maintain the excellence he has achieved. In both cases it should be the practice to select and retain the best producers and discard the less desirable animals.

The great power of heredity, or the law that like produces like, is underlying principle which emphasizes the importance of giving the most careful attention to the selection of breeding animals. To attempt to mix breeds or to mix opposite temperaments, such as milk and beef, and to depend upon animals for breeding purposes, which do not possess specific dairy temperaments, will beget disappointment in the way of marked variations, which detract materially from the value of dairy cows as they are put into the herd and milked. There are many mysteries associated with the law of heredity, which only puzzle our minds, unless we enter into a most thorough study of the subject, but we can accept it as the foundation of all successful breeding of plants and animals. The distinct type of our beef producing animals as compared with the equally distinct type of our dairy animals, the distinct size and color markings of our Holstein cows as compared with the distinct size and color of our Jersey cows, and the marked milk producing capacity of our specific dairy breeds as compared with the lack of milk producing capacity in our beef-bred animals is evidence that animals possessing purity of blood and marked dairy temperament will reproduce themselves in their off-spring. With the herd of

good cows, the use of a superior bull insures improvement and profit, and the use of an inferior bull, deterioration, disappointment and loss.

MATING ANIMALS.

The writer is of the opinion that more significance is attached to the matter of mating animals than perhaps any of us appreciate. The ordinary practice of many farmers of allowing bull to run constantly with the herd is not to be recommended. Such practice tends to overtax both cow and bull and create disturbance among the other cows, which is apt to result in serious difficulties. The bull is best cared for in a paddock, provided especially for him. Thus secured he is safe to handle, does not become highly excited and if properly cared for is in the best of condition to give most satisfactory service. It is a serious mistake to allow any bull to be put into service at a young immature age or to allow a mature bull to be overtaxed. It is considered best not to give any bull any service until he is at least fifteen months old and then a limited amount until he reaches his normal size and state of maturity. Properly matured he has an opportunity to prove himself a most useful sire until he reaches an age of twelve, fifteen or more years. The heifer should not be mated until sixteen to twenty months old thus dropping her first calf at the age of twenty-five or thirty months. Some of our best breeders have recommended that the first calf be dropped at the age of thirty to thirty-six months, which is undoubtedly better than to have them drop their calves at any age under twenty-four months. Heifers mated to drop their first calves at the age of eighteen or twenty months, which is undoubtedly better than to have them drop tution and made irregular or unreliable breeders for the remainder of their life time.

The offspring of young immature heifers are apt to prove very disappointing, which is not the case if the heifers are allowed to mature to the age of twenty-four months. It is the common belief among many farmers that calves from heifers are less valuable than heifers from cows of mature age. It is

the writer's opinion that there is little difference in the quality and usefulness of a mature heifer's offspring and that of a mature cow. But if the heifers are bred too young we can readily see how the idea has become prevalent that the offspring of heifers are less valuable than that of mature cows. To mate most successfully, both the bull and the cow should be in a healthy, normal, physical and mental condition and handled in a manner to avoid excitement and fatigue so far as possible. In general practice, it is not possible to have all cows freshen in the fall, but it is believed that mating at a time to enable a cow to get the benefit of the summer pasture and plenty of outdoor exercise during her time of gestation, insures a more vigorous offspring than is otherwise produced. The writer has observed that the most prolific cows and those which give the least trouble in mating, are those which produce their offspring annually with a marked degree of regularity. This emphasizes the matter of avoiding, if possible, letting cows run over or pass by their usual time of mating.

REARING THE DAIRY COWS.

The time of mating the cow marks the commencement of rearing her offspring. Breeders are often much disappointed in the offspring, which their cows produce after having given most careful attention to the selection of their cows and bulls. Marked or slight variations cause this disappointment. In many cases these variations are the result of a poorly nourished foetus. The idea may be a theoretical one, but it is a safe rule to follow that if we are to expect our cows to produce a most satisfactory offspring, they must be well cared for and well nourished during their time of pregnancy. Plenty of sunshine, pure fresh air and water and a well balanced ration supplied by the hand of a thoughtful feeder, who counts as much upon the calf as the milk produced, will insure the greatest success. Over-feeding and over-taxing a cow in the production of milk, does not tend to enable her to produce the most satisfactory offspring.

Our barn plans as they exist, will undoubtedly have to be changed in many instances before we can supply all that is necessary to breed and rear the dairy cow successfully. I do not hope to see the day when all shall devote themselves to the breeding and rearing the dairy cow as religiously as it might be desired. I am encouraged, however, to note in different parts of the country improved barns and in them cows which are being cared for by men who are exercising as much pains and thought in their work as it is possible for them to exert. The idea of putting careful thought and one's best efforts into the breeding and rearing of dairy cows is gradually becoming more prevalent and we hope to see the growth of the idea continuing.

To complete my discussion on how to rear a dairy cow, I will briefly give the method employed in raising dairy cows in our University dairy barn, where our results during the past four years have been very satisfactory. It may not coincide with the equally successful methods employed by other dairymen, but it is one which I can conscientiously recommend.

It is aimed to give the pregnant cows of the herd, and others as well, the best of care as regards feed, shelter, and handling. Six weeks prior to calving, cows are carefully dried off in order to give them a rest from producing milk, which is to be recommended in all cases. During this time the grain ration is continued of feeding two to four pounds of oats and bran, the amount depending upon the condition of the cow. It has been observed that this practice gives strength and vigor to the cow and to the calf she produces. The first two to four days, the calf is allowed to run with the cow, after which it receives two to four pounds of whole milk of a low per cent of butter fat three times per day until four weeks old. In some instances, if the young calf is small and inclined to be weak we feed a smaller amount four times per day.

During the fifth week the milk is gradually changed to skim milk. The amount of milk is not increased until about the eighth week, when the calf can be fed eight pounds twice per day. A small amount of grain and dried clover or alfalfa hay is placed before the calf after it is ten days to two weeks old.

The feeding pails, stable and calves are kept as clean as possible and plenty of pure air is provided. Up to last fall the calves were kept on a cement floor. At that time inch boards were laid over the cement floor, which proved to be a great improvement since the results and the comfort of the calves was evident in their coats looking bright and sleek and their showing no indications of suffering with the cold during the coldest days of winter.

A small amount of corn silage is fed after the calf is a month or six weeks old. During the first summer the calves are fed regularly in the barn and turned out for exercise in shady paddocks or during nights only.

Up to twenty-four or thirty months of age, the time the heifer drops her first calf, she does not receive more than four pounds of grain per day. From the time she commences to eat grain, as a calf, she is fed as much as she will relish up to this amount, which with skim milk up to the age of six, eight, or twelve months of age, depending upon the supply of skim milk, corn silage and hay, is sufficient to produce a very satisfactory growth. Our grain mixture for calves consists of a mixture of five parts whole oats, three parts wheat bran, one part corn meal, and one part oil meal. Water and salt are supplied daily, as the calf wants it.

By buying a few pure-bred cows as a foundation for a pure-bred herd, using the best pure-bred bulls and rearing the heifer calves after the manner above described, we have been able to produce cows, which, though young, promise to strengthen our herd and make it a very satisfactory one. I invite you to inspect our University dairy herd, where I feel you can much better comprehend the results we have obtained than it is possible for you to comprehend them from what I am able to say.

I urge upon every dairyman to study, to know his best cows whether they be common native, high grade, or pure-bred, persistently mate them with the best pure-bred dairy bulls, which he can secure, and spare no pains in rearing and developing the offspring. It is the only practice that will insure the successful breeding and rearing of dairy cows.

DISCUSSION.

Mr. Webster: Over in Michigan the Agricultural College is sending out a man to the farmers of the state to get one, two, three or four men to come together and buy a bull and he locates the bull, sees that they get the right sort of an animal. The first week that man was sent out he had 1500 applications to buy a good bull and put it in certain neighborhoods where they never had such a thing before.

Prof. Emery: In some of our neighboring states the law gives larger powers to the commission than it has given in Wisconsin; for instance, Minnesota is one that makes it the legal duty of the Dairy and Food Commission to promote the cause of dairying in the state. We have no such legal function in Wisconsin. Ours is almost exclusively that of police work, so that work that Mr. Webster has referred to as being done in Michigan cannot be done here.

REPORT OF SOME OF THE HERDS TESTED.

H. K. Loomis, Sheboygan Falls, Wis.

It is very hard to get an audience interested in a lot of figures and especially is it hard for me to do so. The only way I see for the average person to get anything out of a report of this kind is to take time after the annual report is published and compare what one herd has done with another and one cow with another. Shall try and be as brief as possible. I shall not attempt to discuss breeding or feeding as those are independent subjects, and so much has been said and written on them by men who are far more competent than I that it would be useless for me to take the valuable time of this convention.

In July 1906 I began a year's test of 12 herds of cows in Sheboygan Co. In selecting these herds I tried to get some of those that I thought the best cared for and some I thought received the least attention. In taking samples from these herds

I went to the farm at night and took sample of each cow's milk and again in the morning took sample putting it in bottle with night's sample. I took samples in this way from each herd once each month during the year. The milk of each cow was weighed when sample was taken and an estimate made at the end of the month of the number pounds milk given by each cow during the month. These samples were all tested by the Babcock test for butter fat and a record kept. Every month during the year a report was made of what each cow had done to the owner of the herds, also a report to the secretary of this association.

In mentioning these herds shall refer to them by number.

Herd No. 1 consisted of thirteen cows, Grade Guernsey, Jersey, Holstein, Shorthorn and two we called Natives.

Average No. pounds milk given by this herd during year 4985.2

Average No. pounds fat given by this herd during year 203.87

Two cows were sold during the year and they are not included in these figures.

No. 1 the best cow in this herd gave during year 7594.3 pounds milk; same cow during year gave 300.8 pounds fat.

Cows fresh from Feb. to middle April and freshened again in spring of 1907. They were milked regularly about 6 o'clock in the evening and about 6.30 in the morning. These cows were well cared for. In August, September and October the weather was very dry and pastures very short. In August and September these cows were fed 4 quarts rye middlings per day. In October corn fodder and 4 quarts rye middlings. During winter they were fed corn fodder, hay and a liberal amount of grain. Water was warmed. The barn is comparatively new. One end of the stable opens on to the barn floor and while the stable was warm the ventilation did not seem bad. The cows looked well. A great deal of care was taken to keep milk clean.

Herd No. 2 consisted of 14 grade Shorthorn and Holstein cows. Two having been sold during the year are not included

in these figures. Thirteen of these cows freshened in March and April, one in July.

Average No. pounds milk for year per cow .....5189.5 pounds
Average No. pounds fat for year per cow ..... 187.7 pounds
No. 1 best cow in herd produced in year .....7511.9 pounds milk
Same cow produced in year ... 247.1 pounds fat

Five cows in this herd ranged from 133 pounds fat to 171 pounds for year. This herd was in fair condition. In July and August they received no feed but pasture. During September and October, in addition to pasture, corn fodder and 2 quarts ground rye and oats per day. In November, mangels were substituted for the grain ration. Balance of winter cows that gave milk were fed the ground rye and oats with corn fodder and hay. The owner of this herd was, I think, the most cleanly and particular about his barn of any farmer I know in Sheboygan Co. The barn is new, stone basement with cement floor and Bidwell stalls. The stable is well lighted by large windows that are kept perfectly clean. As soon as the cows are let into the stable everything on the floor is carefully swept into the gutter. After feeding, the floor in front of the cows is swept clean. In one corner of the stable is a porcelain sink connected by pipe to tank in about the center of the basement on north side. This tank is raised so it stands just below the ceiling. Water is pumped into this tank by a wind mill. There is a pipe running from the sink down through the cement floor then to the gutter so the gutter can be flushed out at any time. There are always plenty of clean towels on shelf over this sink and each milker washes his hands before milking. The cows are brushed and cleaned thoroughly before milking and it seems as though every detail was looked after that could be to keep the milk clean and pure. Yet one very important thing was overlooked when this barn was built, and that was ventilation. This farmer had never heard of the King system of ventilation.

HERD NO. 3.

Consisted of 31 cows. This herd was picked up where ever the owner could get them. Many of them were bought at auctions. They are a mixed lot of grade Holsteins, Shorthorns and Natives. Eight of the herd were sold during the year and one died, leaving only twenty-two cows included in the following figures:

Average No. pounds milk given during year, 5215.5 pounds; average No. pounds fat given during year, 192.3 pounds.

Cow No. 24 best in herd gave during year 7767 pounds milk; same cow gave during year 262.3 pounds fat.

The owner of this herd of cows saw by the reports I made each month that he had a lot of cows that were not paying for the feed they consumed so he began selling until he had disposed of eight. He now thinks a Testing Association would be a good thing and is willing to go in with his neighbors and pay his share of the expense. The testing of his cows started him thinking. He now has a registered sire and has bought several pure bred heifers. This farmer has a very expensive new barn. When building it three years ago I talked with him about ventilation. He told me he had that planned. After the barn was finished he one day asked me to ride over to his farm and see the new barn. I did so and was very much surprised to see what he called his ventilation system. The barn is one hundred feet long by fifty feet wide, stone basement eight feet from floor to ceiling. He keeps in this stable four horses, thirty head of cows and a number of young animals. His system of ventilation for all this stock was a four-inch tile laid at the top of the wall, one tile at each corner of the barn. In the winter when the stock was stabled this man found his ventilation was of no account. When the door of the barn was opened in the morning the steam rushed out so that it looked as though the barn was on fire. Everything inside was damp and the ceiling dripping. Mr. Aderhold, state inspector, came to the place about this time and I called his attention to this barn. He went to see it and explained to the owner the King system. He immediately put in four ventilators. There was a great im-

provement but he did not put in as many ventilators as he ought. This herd received no feed but pasture until September, then they received corn fodder. After November 1st a liberal amount of grain, corn fodder, ensilage and hay was fed through the winter.

HERD NO. 4.

Consisted of 13 cows. This man sold his farm in December. The cows were sold at auction and scattered so it was impossible to keep up the test.

HERD NO. 5.

Consisted of 40 cows. On my second visit the owner of the herd had lost all trace of the numbers given the cows and I was obliged to give up the test of this herd.

HERD NO. 6.

Consisted of 25 cows ten of which were sold during the year. The following figures applied only to the 15 cows tested for the full year.

Average No. pounds milk per head during year, 5302.9 pounds; average No. pounds fat per head during year, 203.48 pounds.

Cow No. 6 of this herd gave during the year, 8130.9 pounds milk; same cow gave during the year, 260.51 pounds fat.

Cow No. 5 of this herd gave during the year, 6636.4 pounds milk; same cow gave during the year, 299.95 pounds fat or in other words Cow No. 6 gave 1495.5 pounds more milk than Cow No. 5, and gave 39.44 pounds more fat than No. 6.

This herd of cows was fed green oats during July and a part of August, then corn fodder until December when a liberal amount of grain was added. The cows drank from tank supplied by well. Can't say that the ten cows sold were really culled. The owner divided his farm and rented a part to his son and the balance to his son-in-law and the son-in-law bought the ten head. The barn where these cows were kept was an old

one, basement stable, very poorly lighted and practically no ventilation except what air came in round the doors and through the cracks.

HERD NO. 7.

Consisted of 14 cows. Grade Jerseys, Holsteins and Shorthorns. Two cows were sold during the test so the following figures only refer to twelve cows.

Average No. pounds milk per head during year, 5724.5 pounds; average No. pounds fat per head during year, 202.5 pounds.

No. 10 best cow in herd gave during year 7359.2 pounds milk; same cow gave during year 268.6 pounds fat.

This herd was fed hay and corn fodder from July to middle of following May. In March after cows began to freshen they were fed corn ground with cob, ground oats and bran. Cows drank from tank supplied by well.

HERD NO. 8.

Consisted of 17 cows grade Holsteins and Natives.

Average No. pounds milk per head for year 4716.8 pounds; average No. pounds fat per head for year 168.39 pounds.

No. 14 best cow in herd gave for year 6366.5 pounds milk; same cow gave for year 229.70 pounds fat.

No. 4 poorest cow in herd gave for year 2735.5 pounds milk; same cow gave for year 91.12 pounds fat.

This herd received no feed except pasture until middle of August and from that time until March they were fed on corn fodder and hay. In March owner began feeding corn ground with cob and bran, the mixture being one hundred pounds corn and one hundred pounds bran. These cows were driven about half a mile once daily during winter to river for water. Here was a herd of cows I think naturally as good as herd No. 7 but from lack of feed and the manner of watering them caused each cow to give on an average of over one thousand pounds of milk less

during the year than herd No. 7 and 34 pounds per head less fat. The barn was old and very poorly lighted with no ventilation except through an opening on the barn floor.

HERD 9.

Consisted of 20 cows all grade Holstein. This farm had been rented. An undivided half of the cows belonged to each the owner of the farm and the tenant. October 1st the tenant's lease expired, he having bought a farm near by moved his share of the cows on to his farm and I was able to keep up the test of the whole herd. In the division of the cows it seems the tenant only got nine out of the twenty head. Up to October 1st when the lease expired these cows had received no feed but pasture. After October 1st the tenant began feeding his cows corn fodder and a small grain ration increasing it gradually until the cows had a fairly good feed. These cows were watered from a well.

Average No. pounds milk given by 9 cows during year 6874.9; average No. pounds fat given by 9 cows during year 249.32.

Cow. No. 19, best of the nine head taken by tenant, gave during year 8960.8 pounds milk; same cow gave during year 330.56 pounds fat.

The eleven cows taken by the man who owned the farm were fed corn fodder and hay through the winter. In March as they began to freshen they were given a light grain ration. These cows were driven to the river for water during the winter.

Average No. pounds milk given by the 11 cows left on farm for the year, 4982.1; average No. pounds fat given by the 11 cows left on farm for the year, 180.73; making a difference of 1892.8 pounds milk in the average of the two lots of cows and difference in the average pounds of fat of 68.91 pounds. This is in favor of the cows taken by the tenant. In other words the nine cows taken by the tenant and properly fed and cared for after October 1st gave during the year 17071 pounds milk more than the eleven left on the farm. The barn on this farm is an old one with stone basement. Should think it about 60x40

with seven windows, each having 8x10 lights of glass. On the west side of the barn the straw was stacked covering up two of these windows.

President Gillett: Before we adjourn at this, the conclusion of our program for this meeting and also our sessions of the Thirty-sixth Annual Convention of the Wisconsin Dairymen's Association, on behalf of the Wisconsin Dairymen's Association and its members, I wish to tender the thanks of this Association to the people of Monroe for the reception they have given us in their city. If perchance through these sessions we have dropped a thought or two that may help any among you as dairymen in this community, our efforts will not have been in vain.

Again thanking you for your attention and consideration, as well as your hospitality during our stay here we will adjourn sine die.

FINANCIAL STATEMENT.

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.

H. K. Loomis,
Treasurer.

Receipts.

March 6.	Balance in hands of treasurer	$8 12	
	Membership for 1907	202 00	
March 1.	From state treasurer	1,000 00	
May 18.	From state treasurer	2,000 00	
Nov. 30.	From state treasurer	1,000 00	
1908.			
Feb. 27.	From state treasurer	1,000 00	
			$5,210 12

Disbursements.

March 6.	Hotel bills of speakers at Tomah convention	$49 59	
	H. K. Loomis, expense at Tomah convention	15 36	
	Chas. L. Hill, expense at Tomah convention	11 54	
	H. K. Loomis, cash advanced T. L. Haecker	75 00	
	E. B. Vorhees, honorarium and expense Tomah convention	178 84	
	H. D. Griswold, expense Tomah convention	4 65	
	C. P. Goodrich, expense Tomah convention	8 72	
	H. C. Searles, inspector and expense Tomah convention	115 31	
March 9.	H. K. Loomis, inspector for February	45 64	
	Frank B. Fargo expense Tomah convention	11 96	
	Geo. W. Burchard, expense Tomah convention	8 74	
March 13.	F. W. North, premium on milk and cream	14 00	

March 13.	R. B. Robertson, premium on milk and cream	16 00	
	W. H. Schneider, premium on milk and cream	4 00	
	Wm. Brennan, premium on milk and cream	8 00	
	C. C. Hill, premium on cream	4 00	
	Elmer Hill, premium on cream	2 00	
	H. C. Taylor, expense Waukesha and Tomah convention	18 87	
March 21.	W. J. Gillett, expense 1906	7 16	
	Mrs. A. L. Kelly, reporter	114 29	
Apr. 9.	H. C. Searles, inspector	109 20	
	H. K. Loomis, inspector	50 00	
Apr. 25.	Chas. L. Hill, expense attending executive board meeting	5 08	
	W. J. Gillett, expense attending executive board meeting	5 08	
	H. K. Loomis, expense attending executive board meeting	7 28	
	C. H. Everett, expense attending executive board meeting	6 80	
	A. D. DeLand, expense attending convention Tomah	13 36	
May 8.	H. C. Searles, inspector	119 80	
	H. K. Loomis, inspector	50 64	
	Peter Zumkehr, inspector	98 00	
June 11.	Peter Zumkehr, inspector	135 00	
	H. K. Loomis, inspector	50 00	
	H. C. Searles, inspector	150 30	
July 11.	Peter Zumkehr, inspector	125 00	
	H. C. Searles, inspector	158 70	
	H. K. Loomis, inspector	50 35	
Aug. 7.	H. C. Searles, inspector	160 85	
	Peter Zumkehr, inspector	131 75	
Sept. 11.	Peter Zumkehr, inspector	135 00	
	H. C. Searles, inspector	168 18	
Oct. 11.	H. C. Searles, inspector	157 53	
	Peter Zumkehr, inspector	125 00	
Nov. 7.	Peter Zumkehr, inspector	130 00	
	H. C. Searles inspector	138 95	
Dec. 3.	Thomas Luchsinger, printing report S. W. S. Association	75 00	
Dec. 11.	Peter Zumkehr, inspector	115 00	
	H. C. Searles, inspector	160 78	
1908.			
Jan. 15.	H. C. Searles, inspector	151 75	
Feb. 6.	H. C. Searles, inspector	157 65	
	Peter Zumkehr, inspector	115 00	
Feb. 12.	E. E. Wyatt, taking cow census	30 00	
March 4.	H. C. Searles, inspector	145 55	
	Peter Zumkehr, inspector	120 00	
March 17.	W. D. Hoard Co., printing	30 80	
	Geo. W. Burchard	315 30	
	Balance in hands treasurer	797 77	
			$5,210 12

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