Thirty-eighth annual report of the Wisconsin Dairymen's Association : held at West Salem, Wis., February 9, 10 and 11, 1910. Report of the proceedings, annual address of the president, interesting ess...

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ANNIE LAURIE KELLY
Official Reporter for Thirty Years of the
Wisconsin Dairymen's Association

THIRTY-EIGHTH ANNUAL REPORT

OF THE

WISCONSIN

Dairymen's Association

HELD AT

West Salem, Wis., February 9, 10 and 11, 1910.

REPORT OF THE PROCEEDINGS, ANNUAL ADDRESS OF THE PRESIDENT, 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
1910

LETTER OF TRANSMITTAL.

WISCONSIN DAIRYMEN'S ASSOCIATION,

Secretary's Office,

FORT ATKINSON, WIS., June 25, 1910.

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-eighth 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 Wet Salem.

Very respectfully,

A. J. GLOVER,

Secretary.

OFFICERS

PRESIDENT,
H. D. GRISWOLD,
West Salem, La Crosse County.

VICE-PRESIDENTS,
A. D. DeLAND. Sheboygan, Sheboygan County,
President 1877.

W. A. HENRY, Madison, Dane County,
President 1890.

W. D. HOARD, Fort Atkinson, Jeeferson 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.,
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W. J. GILLETT, Rosendale, Fond du Lac County,
President 1906-7.

F. H. SCRIBNER, Rosendale, Fond du Lac County,
President 1908-9.

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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 —, 1903.

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.

MEMBERSHIP, 1910.

A

Atwood, R. A., Trempealeau.
Aldrich, Howard, West Salem.
Anderson, Math., Holmen, R. 1, Wis
Amborn, F. H., Mindoro, Wis.
Atwater, L. F., Bangor.
Alexander, C. B., Chicago, R. 62, No. 4 Sherman.
Aderhold, E. L., Neenah.
Allen, J. Ford, Chicago, 215 Jackson Blvd.

B

Brandt, Chas., West Salem.
Bartlett, Wm., Barron, R. 2.
Burdick, A. H., Tomah.
Brown, Ed., West Salem.
Boles, F. L., West Salem.
Betz, Geo., Rushford, Minn.

C

Clark, J. D., Whitewater.
Cook, S. A., Neenah.
Cullman, A. C., West Salem.
Crouch, Lewis, Hartland, R. 21.
Cox, C. L., Reedstown.
Cronk, H. M., West Salem.
Corneliuson, T., Madison.

D

Dudley, G. W., West Salem.
Dousky, F., St. Joseph, R. 1.
Dudley, W. I., West Salem.
Dawson, W. J., La Crosse, R. 1.

E

Eggler, Caspar, La Crosse.

F

Freeman, G. A., Sparta, Wis., R. F. D.
Farnam, E. C., Holmen, R. 1.
Fleming, B. F., Jefferson.

G

Goddard, L. M., La Crosse.
Goodrich, C. P., Ft. Atkinson, Wis.
Gollickson, Peter, Mindoro.
Griswold, H. W., West Salem.
Griswold, H. D, West Salem.
Gollickson, O., West Salem.
Gilfulian, J. H., West Salem.
Gloeckler, Theo., Portage.

H

Hember, J., West Salem.
Haus, Enoch, West Salem.
Heider, H. C., West Salem.
Hanchett, W. H., Sparta.
Handcock, L., Tomah.
Hill, C. C., Tomah.
Harris, R. T., Warrens.
Howell, H. P., Sparta.
Hendrickson, Sam, Holmen.
Hodge, R. L., Mindoro.
Hopkins, A. W., Madison.
Halverson, J. N., Holmen.
Hill, C. L., Rosendale, Wis.

J

Jewett, Harry, Bangor.
Johnson, A. A., Onalaska.
Johnson, J. P., Holmen, Wis.
Jewett, H. L., West Salem.
Jacobs, E. C., Menomonie.
Jennings, A. A., Chicago.

K

Keppel, Val., Holmen, R. R.
Kauerin, Chas., Mindoro.
Knutson, Chas., West Salem.
Knudson, J. L., Mindoro.
Knudson, Math., Holmen, R. 1.
Krogsbal, C., Viroqua.

L

Leete, C., West Salem.
Larson, P. A., Onalaska.

MEMBERSHIP, 1910—Continued.

Linse, Chas., La Crosse.
Late, W. W., West Salem.
Linse, Jos., La Crosse.
Leete, J. G., Sparta.
Lewis, R., West Salem
Lawrence, F. W., Bangor.
Larson, L., Bangor.
Lee, M. B., Tomah.
Loomis, H. K., Sheboygan Falls.
Larson, G. P., Holmen, R. 2.
Lawson, W. J., La Crosse, R. 1.
Lemke. L. C., Onalaska.
Lebakkon, M., Holmen.

M

McClintock, Mindoro.
Moran, J. H., West Salem.
Mooney, F. J., Sparta.
Miller, E. D., West Salem.
Miller, W. F., West Salem.
Miller, D. F., West Salem.
Martin, Andrew, West Salem.

N

Nuttleman, F., West Salem, R. 2.
Nichols, W., Trempealeau.
Nason, H. E., Osceola.
Nerhaugen, E. O., St. Paul, Minn., Gilfillan Blk.
Nuttleman, A., West Salem.

O

Ofstidahl, A. O., Holmen, R. 1.
Ora, Mrs. H. F., Manawa, R. 2.
Orn, C. J., Barron, R. 1.

P

Pierce, Art, West Salem.
Paulson, H. E., Hollandale, Wis.

R

Robertson, R. B., Tomah.
Rowlands, R. W., Waukesha.

S

Scribner, F. H., Rosendale.
Shane, D., West Salem.
Sander, L. C., West Salem.
Samuels, E. T., West Salem.
Smith, W. J., West Salem, R. 2.
Storant, G. W., Mindoro.
Smith, Abner, West Salem.
Searles, C. H., Fond du Lac.
Sandman, W. D., Holmen.

T

Thomas, J. W., North Bend.
Thompson, F. S., Eau Claire.
Taylor, H. C., Orfordville.
Trimbell, D., West Salem.
Tuller, E. R., Holmen, R. 2.
Tracy, J. W., Holmen, R. 2.

V

Van Loon, J., La Crosse, R. 1.
Vandervort, R., Tomah.

W

Walker, R. C., Kilbourn.
Walker, J. A., Chicago.
Westerhouse, G., Onalaska, R. 1.
Wells, M. L., Rosendale.
Wege, Theo., West Salem.
Will, E. C., Holmen.
Wyatt, E., Tomah.

TRANSACTIONS

WITH

ACCOMPANYING PAPERS AND DISCUSSIONS

OF THE

Wisconsin Dairymen's Association

AT THEIR

THIRTY-EIGHTH ANNUAL CONVENTION

Held at West Salem, Wis., February 9, 10, 11, 1910.

President F. H. Scribner in the chair.

The Chairman: The convention will please come to order and prayer will be offered by the Rev. Cole.

Prayer by Rev. Mr. Cole.

Address of welcome by Mayor VanZandt.

Responses.

Mr. Goodrich called to the chair.

PRESIDENT'S ADDRESS.

PRESIDENT F. H. SCRIBNER, Rosendale, Wis.

Ladies and Gentlemen and Members of the Wisconsin Dairymen's Association:

The object of the Wisconsin Dairymen's Association ever has been the improvement of the dairy conditions of the state, and as we look back over the thirty-eight years since its organization, a vast improvement surely has been accomplished. We would be presumptuous to attribute all the success that Wisconsin has

achieved along this line, to the efforts of this Association, for indeed many other forces have been at work just as faithfully and persistently. Unquestionably Wisconsin's natural adaptability, her grass resources, climatic conditions, pure and unlimited water supply, has done much toward putting her in the front ranks of this industry.

And yet while much has been accomplished, I am here to predict still greater achievement along dairy lines. Little do we realize the wonderful possibilities that are wrapped up in this wonderful machine, the dairy cow. A few have been permitted to peek in and get a faint glimpse of her productive powers, and this only was accomplished by having a definite aim in view as regards her breeding, her feeding, and care. Little do the masses of so-called dairymen in Wisconsin realize what can be imparted to the offspring, through a good mother, grandmother, and great-grandmother, and seemingly less do they understand the importance of feed and care to develop and bring out their greatest possibilities.

In traveling through the country we find many varying conditions in communities as regards dairy development; some places, no dairy sires, no dairy barns, no dairy feeds, no dairy ideas whatever; while in another locality just the reverse conditions are found, good dairy papers are read, good sires are the rule not the exception, good modern barns with ventilation and light, with good feeds so it may be easy and possible for the cow to do her best. Quite often the cause of such improvement is one, two, or three live men in a community that through their influence and example a good healthy rivalry has sprung up that has made that community a power for good along these lines.

Community breeding associations, such as exist in this locality, tend greatly to create an interest and rivalry which brings out not only the best there is in the animal, but develops the man and sets him to thinking and studying, and when this combination gets together, results follow. A dairy sire is a great educator and as one begins to study his nature, disposition, and development something seems to enter into his nature, that not only makes him more kind towards his stock, but his inner nature is transformed and those characteristics are developed that go to make life worth while.

One encouraging feature of a better condition of things is the constantly increasing number of dairymen that are keeping individual records of their cows. There is no other way that builds up a herd so rapidly as this method. The plan also of taking a one day account each month of the feed consumed by each individual cow, is almost as essential, for there is such a vast difference that cows return to their owners for each dollar's worth of feed, and still one more important thing and that is to know which the regular breeders are. A good, well regulated dairy barn will have a memoranda book, showing date of service and date of birth of calf and sex of same. All these things are valuable data in determining the true value of a cow, for as a rule, these tendencies are transmitted, and if we are attempting bettering the conditions of our live stock, it will pay well to observe the above methods.

Mr. C. P. Goodrich, the veteran dairyman, once made this statement, "It seems singular that dairymen have to be compelled by law to be good to themselves," but such is the case and laws are enacted and put in force to get dairymen to do things that are for their own personal good, sanitary laws to force dairymen to keep their stables and cows clean, to keep the separator in a sanitary place and in a cleanly manner, to make the condition of their stables better in the way of ventilation and light, to have the herd tested for tuberculosis to prevent the spreading of this disease. All these things ought to be foreseen if he is going to build up a good productive herd, and get all there is out of the business.

Never, in the history of this country, were the present and future of the dairy interests so bright, and although the prices of feed, labor and land are extremely high, yet on the other hand dairy products are correspondingly high and as the demand is exceeding the supply, high prices will be the rule for some time, and together with the increased demand for high grade stock, not only from all over our own country, but across the waters as well, it stands everyone in hand to look well to the breeding problem.

It is also of extreme importance that dairymen should feed economically and carefully, and that they try to raise as much of the protein feeds as possible. So many are so narrow minded in regard to the growing of clover, one of the greatest plants

the good Father has favored this country with, and one we should pay especial attention to in growing, not only because of its direct benefits to the soil, but because of its protein nature which aids us materially in balancing a ration for our cows.

The alfalfa plant should also be studied, as without question, aside from the corn, it is the most profitable plant we can grow, and the chemist says is equal ton for ton with wheat bran, and as good alfalfa hay combined with good corn silage practically makes a balanced ration, would be quite an item in the economic production of our dairy products, and while we are not permitted to make prices on our products at the market end, we can, in a very large measure, economize in the cost of production, far more than most of us think. We have drifted into an extravagant condition of feeding rather unknowingly, as the time was when feeds were cheap and abundant, and now, as the reverse condition is upon us, we scarcely realize it, and are feeding in the dark as to the cost. One thing is certain, if we can raise the most of our own feeds, we would know what their composition is, and know there is no adulteration.

I think if dairymen were awake to the fact that oleo men are putting up a tremendous fight to have the Grout bill repealed, they would begin to stir themselves, and let their hired men at Washington know just how they feel about the matter. In many of the farmers' meetings this winter, resolutions have been passed upholding this law, and stating that it gives the dairymen a reasonable protection, by compelling the manufacturer to sell his hog lard, cottonseed oil and tallow for what it is, and not palm it off on the innocent consumer as butter at twice its cost to manufacture, and it is the duty of every creameryman and dairyman to protect himself and the dairy interests by legal regulations against the sale of oleomargarine as butter.

In a recent number of one of our farm papers was a heading that read as follows: "Farmers More Susceptible to Consumption Than Any Other Class of Men," and went on to say, "The ranks of farmers supply more patients to the Iowa State Sanitarium for the treatment of tuberculosis than any other classification of workers, with the single exception of housekeepers. Of forty-nine men admitted to the state sanitarium during the first five months of its existence, thirty-five per cent of the total were farmers. However true this may be in this particular case,

we don't believe it will work out in a general way; the farmer's mode of living, his out-door life, and wholesome, plain food, would naturally bring the reverse condition, and ought to make him the most healthful of any class of people, but this may ring out a warning to farmers and housekeepers, to be more vigilant in the care of the sleeping rooms; sunlight and fresh air retard this kind of germ life.

Many of the country homes have too many shade trees in too close proximity, and keep the sunshine from the dwelling, and the air from circulating. I think the good old song "Let the blessed sunshine in" is just as applicable for our homes and barns as for the Sunday School.

There is an old saying, "it's hard to teach an old dog a new trick". The salvation of our country lies in the young men of today. The teachings of our dairy school, the reading of dairy papers, the experiences of men who have been successful are all helpful to the young man in getting started right.

The Ten Commandments.

(1) Thou shalt call each cow by name, in a gentle and loving manner, for the bos will not hold him guiltless that taketh her name in vain.

(2) Remember the Sabbath day, and do only such work as seemeth necessary.

(3) Six days shalt thou labor and do all thy chores, but the seventh day is Sunday, and the cleaning of the stables and all unnecessary work should be dropped, so that thy son and thy daughter, thy man servant and thy maid-servant may attend church.

(4) Honor and respect the kingly sire, that thy days may be long upon the land which the Lord thy God giveth thee.

(5) Thou shalt not swear.

(6) Thou shalt not scold.

(7) Thou shalt not curry thy cattle with the milking stool.

(8) Thou shalt look well to the comforts of thy cattle.

(9) Thou shalt not bear false witness against thy neighbor's herd, for verily it heapeth coals of fire on thine own head.

(10) Covet not thy neighbor's herd, for verily thou hast made thy selection and verily thou shalt prosper if thou stay by thy choice.

President Scribner resumes chair.

The Chairman: Prof. Woll of Madison will not be able to be here this morning to give us his paper. I think we would like to hear from Mr. Harris, who can give us a good deal of information on the subject of the adulteration of feeds.

Mr. Harris: Mr. President, I have had something to do with the feeding law since 1902, the winter it was enacted. At that time the chief adulteration was in the line of corn, oats, and mill feeds such as shorts. The corn and oat feeds were adulterated with oat hulls from the cereal factories. Just at the time that law was passed, there wasn't so very much adulteration being practiced, but soon after that, it was found so profitable that those who had been engaged in a small way, in mixing feeds with oat hulls and such matters, were unable to continue the business, because the large stores used so much of this offal that the small man could no longer get hold of it at a price at which he could use it with profit.

During the first or second winter, there was also a lot of meal feed shipped into the northwestern part of the state that was very badly adulterated with weed seeds. This came to the knowledge of Prof. Woll who had charge of that feed inspection work and was investigated at once, so that we learned of it in time. The shipment was returned to the parties from whom it was obtained in Minnesota, and since that time we have not found a lot so badly adulterated as that was. There were a great number of different kinds of seeds, and much of it was unfit for feed.

Two years ago we found one lot badly adulterated with mill sweepings. That was the worst we found in this state in the line of mill feed. There was more in the bran than in the shorts although, of course, if anything is mixed in the bran, it is much easier to find than in the shorts.

Soon after the law went into effect, molasses feeds came on the market and have been the source of more or less trouble ever since, although many of the feeds are very good; yet molasses is like charity, it may cover a multitude of sins; when other articles are mixed and molasses put on top it takes considerable time to find out what has been put in. At the present time I think these molasses feeds are in fair condition. Of course new kinds come on the market nearly every year and it takes some time to get acquainted with these, but since the law has been enforced most of them are fairly good.

A few years ago we had a few shipments of rice hulls and rice feed sent up from the mills in Texas and Louisiana. This was widely advertised as something that could be mixed with bran middlings, and it would be impossible to detect it. You could buy them at from $6 to $10 a ton and you can imagine what profits might be made in mixing them with bran at say $20 to $25, and middlings at $20 to $28. A few tried this, and it was tried in other mixtures, but we learned of it in time to give warning to the farmers over the state before the practice had been largely adopted.

We find that in spite of temptations the feed men in this state have fairly honorable intentions; they do not wish to impose on their customers and will not do so under usual conditions, as a class. There are a few large wholesalers that have to be watched continuously, and it has taken a great deal of time to find out where these men are, and when to expect them to put out bad feed, and what to do in case they do put such a feed on the market. Since the law was enacted, no prosecutions have gone clear through, except a test case tried at Antigo to test the law and this case really came to nothing. The offense committed was not serious, and the only reason why it was carried on, was to test a part of the law which the millers of this state objected to, and since that time they have made no objections to that part of the law, and they have given the law active support, because they realize that it protects the honest miller and feed dealer from dishonest competition. It is not the miller so much as it is the man who buys and mixes feeds. If you know who mixes feed, and of what it is composed, you can rely upon the guaranty which is given of the contents, in protein, fat and crude fiber.

The condition of the feed market at the present time is fairly good, in spite of the high prices, and I may say there is very little chance that we will ever get feeds any cheaper. I may say in a way this helps us, because when the farmers realize that feeds are going to keep up to these high prices for a considerable length of time, it makes it more important that they be of the proper quality so that we may get something in return for our money. The farmer cannot get along without these feeds for his cattle and they must be of a good quality.

DISCUSSION.

Mr. Glover: What objections are there to adding rice bran to middlings or wheat bran, or other kind of feed?

Mr. Harris: As to the rice bran, there is a great deal more harm in it than in the rice middlings. The rice middlings have somewhat similar qualities to wheat middlings, but the rice bran has a good deal of silicate in it, sharp fiber, corners, that work into the lining of the intestines and cause trouble right away.

Mr. Glover: As I understand it, the law requires analysis of the feed to accompany it and manufacturers are supposed to live up to the analysis.

Mr. Harris: We had some samples from Tennessee that were supposed to be pure bran and the samples contained a large proportion of corn cobs and corn stalks. A jobber in this state told me that he had a market in Baltimore for many cars right along. They didn't sell it in Wisconsin because this feed business here wouldn't stand for it. Now, that is an adulterated feed. The patent feeds only have to guarantee certain proportions of protein, fat and crude fiber before they can be licensed.

Mr. Philips: What are the ingredients of molasses feed?

Mr. Harris: Almost everything you can imagine. Some have pure straight grains, but usually there are more or less screenings with it and seeds in most of them, some of them germinated.

Mr. Philips: Suppose there was weed seed, would you object to that?

Mr. Harris: Not as far as the sale is concerned; if the farmers want to put them on their land, they are at liberty to do so.

Mr. Philips: There is no way for the farmer to know.

Mr. Harris: Not unless he makes a germinating test.

Mr. Glover: In other words, the law does not protect the farmer from buying weed seed.

Mr. Harris: You never know the variety, that is the trouble. If you wanted to feed pigeon seed and knew you were getting that, it would be all right, but you can't tell most of the time.

A Member: Do you find very much adulteration in straight feeds, like oil meal and bran?

Mr. Harris: In oil meal never, and bran very seldom.

A Member: The adulteration then is in those mixed feeds?

Mr. Harris: Yes, in the mixed feeds. Occasionally in corn and oats.

A Member: What about Ajax Flakes?

Mr. Harris: Ajax Flakes are distillers grains. Some are of a poorer quality than others.

A Member: How about alfalfa meal?

Mr. Harris: That is pure and comes up to the guaranty of the manufacturer.

A Member: Isn't there quite a difference in even that?

Mr. Harris: The analysis has not varied a great deal. It is supposed that some of the alfalfa used has been damaged, but we have never run across any very low grade quality.

Mr. Goodrich: Alfalfa meal is alfalfa hay ground up, as I understand. Now, do they add much feed value to the hay by grinding it?

Mr. Harris: I hardly think so.

Mr. Goodrich: But they charge about twice as much for it as for hay.

Mr. Harris: They are competing with wheat bran,—so the dealers tell me.

The Chairman: Isn't there a difference in the digestible protein?

Mr. Harris: There is more crude fiber in the alfalfa hay than in the bran.

The Chairman: And isn't it the very ripe alfalfa that is ground, as a rule?

Mr. Harris: Yes, it is not the bright colored alfalfa hay. Sometimes they get a good quality and sometimes they cannot obtain it, and they use what they can buy the cheapest. Of course it takes quite an elaborate grinding mill of much power to pulverize alfalfa to a fine meal.

A Member: Isn't it best to mix your own molasses feeds?

Mr. Harris: It is a hard thing to do, though some are successful. You cannot always get the molasses, that is one thing. Molasses is a good thing for cows under certain conditions.

The Chairman: What character of molasses do they use?

Mr. Harris: They use the waste usually; sometimes of cane molasses.

Mr. Philips: At present prices can they afford to furnish power to grind up corn cobs to mix with other feeds?

Mr. Harris: They are certainly making money at it.

Mr. Philips: What is this so-called Schumacher feed?

Mr. Harris: It is supposed to be corn, oats and barley. They say there is nothing else in it, but they take out the best of the kernel, the most digestible part of it. It is a fairly good feed, but costs too much.

A Member: Is there any objection to corn cobs being ground with the corn if the parties know what they are feeding?

Mr. Harris: No, not unless there is an excessive quantity of the cob.

The Chairman: It is a damage to the lining of the cow's stomach, on account of the little sharp point that goes up between the kernels.

Mr. Harris: I never have heard of any serious trouble. If they are feeding enough other grain along with it, it will work all right. Possibly feeding too heavily on corn cob alone where the cob is not ground very fine, might be a bad plan.

Mr. Goodrich: If the corn cob is ground fine it will be all right, but if ground coarse, as it used to be in these cast iron mills, I am well satisfied that it would tend to irritate the cow's stomach.

Mr. Harris: Sometimes they have trouble with their mouths on account of that. The country mills don't like to grind the cob very fine, it costs them more than it is worth. Sometimes they have put in cob crushers and grinders and they have taken them out after a while; it is too hard on the mill, so it doesn't pay a small miller to do that kind of work.

A Member: What about Unicorn feed?

Mr. Harris: That is a good feed.

A Member: What is the law in regard to Minnesota shipping into this state?

Mr. Harris: The feeds must be registered and the percentage of protein, fat and crude fiber guaranteed; that statement must be filed at the experiment station.

A Member: Must that be so if it goes to the consumer?

Mr. Harris: No, he can buy anything if he has it shipped direct to himself.

A Member: Why has not blood meal come into more universal use.

Mr. Harris: Some have esthetic reasons for objecting. They

don't like to feed the blood of one animal to another, and they also have the suspicion that it may not be properly sterilized and may contain germs of tuberculosis, cholera or something else.

Mr. Strauss: How about stock feeds?

Mr. Harris: The less said about them the better.

The Chairman: In a few minutes before the noon hour we will listen to Mr. Hopkins.

Mr. Hopkins:

I believe few influences are doing more for men than just such organizations as this, and this kind of an organization is a matter of co-operation entirely, and can do more to advance the interest of dairying than almost any other form of co-operation. You can create enthusiasm along dairy lines; you can gain inspiration which will surely add enthusiasm in working out your business.

Your business is larger than the mere matter of breeding cattle; you are more than dairy breeders; you are more than farmers, you are men, and consequently have a right to be interested in things beyond your farms and beyond your own neighborhood and by being interested in those matters you are able to give that uplift which we believe farmers are most capable of giving.

I think two or three of the organizations in this state have demonstrated what they can do from the inside. A few days ago at a meeting in Madison, we were talking upon the matter of the Agricultural Department at Washington coming in and inspecting breeding associations, cleaning them up, and I noticed that most of the men here agreed that we could not hope to have this particular association under discussion cleaned up from the standpoint of the man coming in from the outside. The change must be from the inside and must depend upon the character of the men who compose it. I thank you very much.

The Chairman: We have with us this morning Mr. Everett, one of our old presidents and workers, and we shall be glad to hear from him.

Mr. C. H. Everett: Mr. President, Ladies and Gentlemen: This is a milk producers' convention which has come into your midst with a very definite purpose. It is not a convention of buttermakers or cheesemakers, but of dairy farmers. We hold an annual convention every year for the purpose of carrying the

light of better dairying into the dairy sections of the state; for the purpose of enlightening, if possible, the dairy farmers of the state, helping them to see better and to understand better; helping them toward a better appreciation of the power of the mind, for you know that it is the mind more than anything else that brings success, and too many of our farmers seem to be deficient in clear, comprehensive thinking. In years gone by too many have not been good readers and good thinkers. They are reading now, I am glad to say, and they are thinking hard and have solved, during the past twenty years, many of the problems that have confronted the dairymen.

I can remember when we knew but little about the dairy cow, her breeding, the product that she produced, and the growing of proper crops for her feeding. We knew practically nothing of the analyses of milk and of feeds; farmers were feeding most anything and everything they grew. They were feeding rations of corn meal and timothy hay and expected to get milk in large quantities, composed very largely of elements not contained in either corn or timothy hay to any extent. It was almost like putting wheat into a threshing machine and looking for oats at the other end. Later on, our farmers began to study the question of breeding, the question of feeds and feeding, began to understand there was much in the breeding of a dairy cow; began to see there was a difference in the form of cows; that the beef cow and the dairy cow did not resemble each other in conformation, and the more they looked into the matter the more they became convinced that each one of those two animals was created for a distinct purpose; that the dairy cow could not make beef profitably, because she had the wrong conformation; in other words, she had no form upon which to place high-priced beef. They came to understand that she was a manufacturer internally, so to speak, that she was making milk of her feed and that she must have large nostrils, a large heart and large lungs, large digestive capacity, and a large udder. She must inhale large quantities of pure, wholesome air, and that led to the subject of better ventilation of our barns, purer and healthier conditions. We came to learn that the cow must have a strong heart and big lungs, because we soon determined when we began to look into the inside of this dairy cow, that milk was elaborated directly from the blood; that the blood

passes from the lungs to the udder and back through the so-called milk veins to the heart and lungs, and the lungs must be able to purify the blood as it passes through them.

The beef cow manufactures externally; she puts her feed upon the outside of her body, throws it upon the back and the ribs. She has been bred for generations and generations for that one distinct purpose of converting feed into high-priced meat, and the wise breeder has helped her along by making a form better suited, a square form, a form where more surloin and more porterhouse could be stored up.

On the other hand, the dairy breeder, like my friends Scribner and Griswold, men who have made a study of the breeding of dairy cows, don't care anything in particular about size; they are not looking for a large cow, a cow square at both ends or a cow that shows any tendency to make beef out of her feed, to place her feed upon her back, because they know that that feed so placed is lost. You can't get anything for the beef that cow puts on her back without killing the cow. We have what they call the general-purpose cow, or at least we have had; and that proposition has been pretty well threshed out in this state and pretty well killed, because men have been thinking about it, have been reasoning about it, and they have made up their minds that high priced dairy feed is largely wasted when it is put into a so-called general-purpose cow with the idea of making some beef and some milk out of it, and they have determined that it is better to put that feed into a machine made expressly for manufacturing it into milk.

Most of my life has been spent as a dairy farmer and I had to do my own thinking. I found great aid in attending conventions of this character, in reading good literature, and then in thinking and planning for myself. Every man's salvation is up to himself.

Uncle Theodore Lewis who lived in Dunn County, known as the old German swine breeder, was a man wiser than his generation and a deep and studious thinker. I have often heard the old man say that the more we read and study, the higher we rise, and the more we come to understand our own littleness and see our own deficiencies, the further we extend the mental vision which enables the dairy farmer to think clearly, see clearly, to understand the dairy cow and the problems connected with her. Gentlemen, I thank you.

The Chairman: It will devolve upon the association this year to elect some new officers and I will appoint a nominating committee as follows: C. P. Goodrich, chairman, W. W. Leete and Charles H. Everett.

Recess to 1:30 p. m.
The convention met at 1:30 p. m., same day.
President Scribner in the chair.

ALFALFA.

CHARLES LINSE, La Crosse.

Mr. Chairman, Ladies and Gentlemen: You will remember I am here as a substitute for Mr. Hill, but as a substitute is never as good as the genuine article, still I will try to tell you what little I do know about growing alfalfa.

We all know that alfalfa is a great plant. I guess even those who haven't got it will agree to that, because they have read enough about it to make them think it is a great thing. It is one of the best feeds we know of. My first crop I sowed three years ago and I sowed some two years ago. I have a neighbor who sowed alfalfa at the same time and he can tell you just as much about it as I can, but all there is to tell is that we sowed the seed and it grew. We did not prepare the land particularly, anyway we did not inoculate it, probably the better way to do.

I suppose you have all read enough about the clover and the alfalfa plants to know under what conditions they will thrive, you all know that the clover plant, as well as the alfalfa, have these little nodules on the roots which contain germs with the power of transmitting nitrogen from the air into the plant and subsequently into the soil. I sowed this alfalfa seed the same time my neighbor did, and it grew well. The first season it came up nicely and did well for a while, then the leaves turned yellow, but it got better after those first leaves dropped off, and it became green and vigorous so I rather think it was probably

because the proper germs were not in the soil. We cut three crops every year, and my neighbor, Mr. Van Loon, even made four cuttings one year, but it is not advisable to do that, because the summer is so short. The land needs good protection and it is better to leave the fourth crop on the ground. I could have cut the fourth crop and in fact it came so heavy I was afraid it might be smothered out by having too much cover. I have had that experience with red clover; it grew so big after the second cutting that by having a heavy snowfall on top it rotted out, but I suppose this will not be the case with alfalfa.

We have sandy soil, black prairie with a lot of sand, and the alfalfa grew well. But for some reasons there were spots where it didn't come up the first year; whether it was poor seed or not, I don't know. Later on, my neighbor and myself took a notion to sow it on a heavy clay loam, very rich soil, and we had good success.

Every farmer ought to make a trial first with a small piece of ground; not go to work and say "this is a fine plant and we will sow ten acres of alfalfa." Don't undertake to sow a large piece at once. Every farmer ought to be interested enough, if it is only from curiosity, to find out whether this great plant will grow on his farm. Select the best piece of land and prepare, say an acre; work at least one year ahead to enrich this land with lots of manure, and put a crop on it,—corn or potatoes,—to clean it from all weeds, and let the manure and potatoes and working in the land make it rich and fertile. Then plow it in the fall; in the spring take the disk harrow and other harrows and tools, and keep working on that little spot until it is worked two or three times more than it ought to be, and make it like a garden bed. Then sow twenty pounds alfalfa seed to the acre.

If the first season should fail on account of dry weather, or should you not get a good stand, you would have to try it over again, but do not run to another spot, stay right at the same spot and sow it over. Try it the next spring and the third spring, and by and by you will probably make it go, and if you are a stranger to it now, you will get better acquainted and in the course of coming years, alfalfa will be growing in our country just as common and plentiful as red clover. It may not do well on all soils, but neither will red clover.

Come to my barn and you will see that alfalfa is the best feed for dairy cows, especially, that we can get. You have all heard about it in the West, where thousands of tons of alfalfa are grown and made into meal, and I guess it has been sold in this vicinity. A neighbor of mine, from whom I bought several tons of hay, asked all kinds of questions about what I was feeding my cows, and I told him. He says, "You haven't fed ground alfalfa." I said, "No, but I am feeding alfalfa nevertheless." Well, he wanted to know where I got it, and I told him about raising it, it was then in my barn, and he was greatly surprised to know that alfalfa was grown in this country, and he living only two miles away. I hear the price for this ground alfalfa meal is as high as bran, so there must be something in it. It must be pretty good stuff, at any rate I would advise every farmer to try it. That is all.

DISCUSSION.

Prof. Fraser: How many tons did you cut to the acre?

Mr. Linse: I think about four and a half or five tons.

A Member: Mr. Linse, in case you have a partial stand of alfalfa, would you say it was advisable to plow up the field and reseed it entirely, or to fill in those places where there isn't any?

Mr. Linse: Well, you can do both. If alfalfa is started, perhaps it would be a good idea to fill in, leave it and not plow it up.

The Chairman: At what season of the year do you sow your seed?

Mr. Linse: Three years ago I sowed mine about the first week in May, I should judge; I kept watching my neighbor, Mr. Van Loon, right along, and kept saying to myself, "Isn't that man going to sow his alfalfa?" Well, when it came nearly June he sowed it and obtained a good big crop that same fall. He sowed it without a nurse crop.

Mr. Goodrich: Have you, or anybody else in this section, tried sowing it in the fall?

Mr. Linse: Yes, a man that used to be my neighbor. Last

year I visited him, and he showed me a piece of alfalfa which was sowed in the fall after harvest, and it looked well. But I learned afterwards from his brother that that alfalfa killed out during the winter. I think it is not advisable in this country to sow it in the fall.

Mr. Everett: How do you make alfalfa hay?

Mr. Linse: I make it like any other hay, like clover hay. I guess it is a little easier, in fact, to make alfalfa than clover hay; it has a finer stem. We all know what it means to make clover hay, this great big, lodged-down clover. Alfalfa handles more like timothy; it won't shed water like timothy, but it is better than red clover. I never like to cut clover in the forenoon, though I am different from a good many others in that respect. I always start in the afternoon in the clover field, and the same for alfalfa; then I am sure all the moisture from dew is out. The night's dew will not do it any harm, and the next morning just as quick as this dew is off, and this is something a great many of you will object to, I use the hay tedder, and give it a good shaking; just lift it from the ground enough for the light breeze and air to go through and wilt it. Then in the afternoon, about two o'clock, I go to work with my hay rake at once. The hay is cocked quite green. Don't undertake to make your hay in regular Yankee fashion, that is, take the fork and roll it into a bunch and go ahead and make another bunch, but start in the middle and form the bottom of the cock, not too big, and take a forkful from the other side and so keep cocking up and you will get a nice cock of hay and it will shed quite a little rain. But if the rain does come, don't go to work and tear those cocks all to pieces and dry them quickly. After a good heavy rain take those cocks apart in two or three lumps, handle them carefully, not turn them over or shake them up in any way. Just set them apart and before night—it won't take long to dry, a couple of men can cock it up again.

A Member: When you take those hay cocks apart and put them together again before night, are they thoroughly dry?

Mr. Linse: No.

A Member: In case it did not rain on those cocks again would you take them apart before you hauled them in?

Mr. Linse: Certainly.

The Chairman: I have watched the use of the hay cap quite

a little. I live near Mr. Hill and I am sometimes surprised to see the large number of hay caps that stay on in an ordinary rain. Of course a hurricane is a different matter, but in an ordinary rain they will stay on all right.

A Member: What is used to keep those caps on?

The Chairman: Some use part of a horse shoe and some have iron nuts, washers, etc.

Mr. Linse: I think a hay cap is a pretty good thing, but on the other hand we must not forget we have to deal with this labor question, and it takes quite a lot of labor to handle these caps, and where you have only two or three men in the field and have a lot of hay down and you want to hurry, you are glad to get that hay together without fussing with caps.

Mr. Everett: A good many farmers in the state are making hay caps right now for another year, and a good many are making cement weights, a little ball of cement with a piece of wire in each fastened to a string. The string should be the length of a pencil between the weight and the cap, so that it is almost impossible to blow off except in a gale.

Mr. Goodrich: I want to say a little something about alfalfa. I have studied it a good deal, not only in Wisconsin, but in Missouri, Kansas and Iowa,—not for the benefit of these gentlemen who have been raising it, for they have found it out, but to keep some farmers from making an expensive mistake. They want to know about these things.

Alfalfa is a peculiar plant. When it gets about ready to cut, just beginning to blossom, you will find on examination around the roots, a whole lot of little suckers coming up. Now, that is for the second crop, and then is the time to cut it. A great many men raising alfalfa do not look at the blossoms at the right time. Most of us look to see if it is beginning to blossom, but we should examine the roots. Now, there is another peculiarity; if a stalk of alfalfa is cut off, that stalk don't sprout up again, it has to start from the root. So you see if you let the first crop go too long before cutting, till the second crop gets four or five inches or so high, you will not only get a poorer crop because that has grown woody and the leaves are dropping off, but you cut off the little sprouts of the second crop and it has to start again from the ground and your alfalfa will look as though it was dead. What is the matter? You have not only

cut off the first crop, but you have cut off the second crop. So you must be careful to cut it just when these little suckers are up an inch or an inch and a half so that the mower blade will not catch them and your second crop will grow right on.

One of my sons has half of his farm in alfalfa all the time; he uses it in rotation crops, just the same as you would clover; plows up the alfalfa when it is the finest you ever saw, after the field has been three years in alfalfa. Then it is planted in corn for two years. A young man came along one time and said, "Will, what are you plowing up that fine alfalfa field for? That will raise a good crop." "Well", he says, "I want to raise a good crop of corn," and he had the biggest crop of corn that ever grew out there in that country. Two years ago when I was there he made his third crop of alfalfa just twenty-six days after the second crop was cut. The weather had been favorable and it was time to cut it.

Mr. Everett: As good a stand of alfalfa as I have ever seen was sown on rye a year ago last spring by Mr. Bowen of Racine county. Just as soon as the land was fit to harrow, rye was sown broadcast and harrowed.

Mr. Van Loon: I believe the right way to sow alfalfa and clover seed is just at that time. I believe we do not sow our clover and alfalfa early enough, as a rule. Many weeds do not come up until the ground gets warm and the plant has to contend with them, but if you put in alfalfa at the time you generally sow clover seed, you overcome a lot of them and I believe the risk you run in losing the clover plant and seed, as well by sowing it early, is not nearly as great as it is to sow it later, because at that time the alfalfa plant comes in contact with the weeds.

Mr. Goodrich: One of the best stands of clover I ever saw, was plowed up early in the spring as soon as the ground was fit to plow, and then harrowed about every week. The weed seeds would sprout and he would harrow it so as to kill all the weeds. This was kept up until the 24th day of June. Then alfalfa was sown and no weeds grew with it, I never saw any better stand than that.

VENTILATION OF FARM BUILDINGS.

E. L. ADERHOLD, NEENAH.

The ventilation of most of Wisconsin's cow barns is attempted by various means, such as open windows or doors, trap doors in the ceiling, flues running from the ceiling up, openings in the walls, leaky walls and ceilings, etc., and we have read about the use of muslin windows.

Some of these devices are faulty part of the time and others all of the time; for instance, on a mild, still day, good ventilation can be secured by the use of open windows and doors, while on cold or windy days we usually find doors and windows closed, and for good reasons, in which case they do not answer the purposes of ventilation.

Many stables have stone walls with a few four-inch tile stuck near the top. Such openings let out heat and supply very little fresh air, excepting while the wind blows. All the above named flues, openings, etc., as well as leaky walls and ceilings help to ventilate, but not economically, because they carry out too much heat.

I have not seen muslin windows used, but I would consider them, at best, a much modified opening in the upper part of the wall. In my opinion, they do not come anywhere near to filling the bill, excepting where very little ventilation is required.

With lands, labor, feeds and cows at high prices, the sensible dairyman will prevent some of the leaks by providing environments which will enable the cow to do her best. Cows pay big for comfort and it can be had at an extremely small cost. A warm barn is a necessity to comfort in Wisconsin. A cold barn does not furnish it and is a food waster. The heat generated by the cows should be utilized as fully as possible in warming fresh air.

The cow barn is a permanent fixture on a dairy farm, so it will pay to insulate the walls, to have a tight ceiling and, in many cases, to put on storm windows. Having provided quarters that are comfortably warm, we should ventilate as much as possible without making the barn too cold.

In the absence of artificial means this result can only be brought about by using the "King" system of ventilation, because with it only the coldest air is removed and it has advantages aside from that.

This system has been so much discussed that it is not advisable to go into details, however so frequently are mistakes made by parties who are attempting to install it that a discussion of the more common mistakes appear pertinent.

Properly constructed foul air flues of the right size are of greatest importance, but of those that have been built, only a small percentage are thoroughly effective.

When a mechanic builds a dwelling house, he plans a chimney that reaches several feet higher than any part of the roof, and the top end is not covered; let the same mechanic plan a foul air flue for a barn (where the same principle is involved) and he will choke the flue with a cap put close to the opening and the chances are that the barn roof would extend far beyond the end of the flue. Aside from that he has no conception of the right capacity of such a flue and I wouldn't give two cents for ventilators built according to his plans. The majority of foul air flues are too small.

Where foul air flues are to be placed at the side of the barn, if it is not feasible (in many cases it is) to continue them directly upward to the required elevation, I would advise to run them from the eaves to the purline plate, or hip, thence directly upward, rather than follow the roof from eaves to ridge, which would be at the expense of efficiency and material.

It is not advisable to have the flue end up in a cupola and, if capped over, the space under the cap should be nearly equal to the diameter of the flue.

I know of a flue that is a little over two feet square and thirty-six feet long built of galvanized iron roofing nailed on the outside of two by four corner posts. The cost of this flue, including labor, was about twenty dollars. I consider that a good way to build large flues.

Where the lower end of the foul air flue is in the way it may be hinged just below the ceiling and swung up out of the way while cleaning out the manure.

Fresh air flues should not discharge near the foul air flues for, if so, the fresh air will drop and be drawn out in place of

foul air. The fresh air should be made to travel some distance before it reaches the foul air flue.

Probably the best effect is obtained where the fresh air discharges in front of a row of cattle and is removed at the rear.

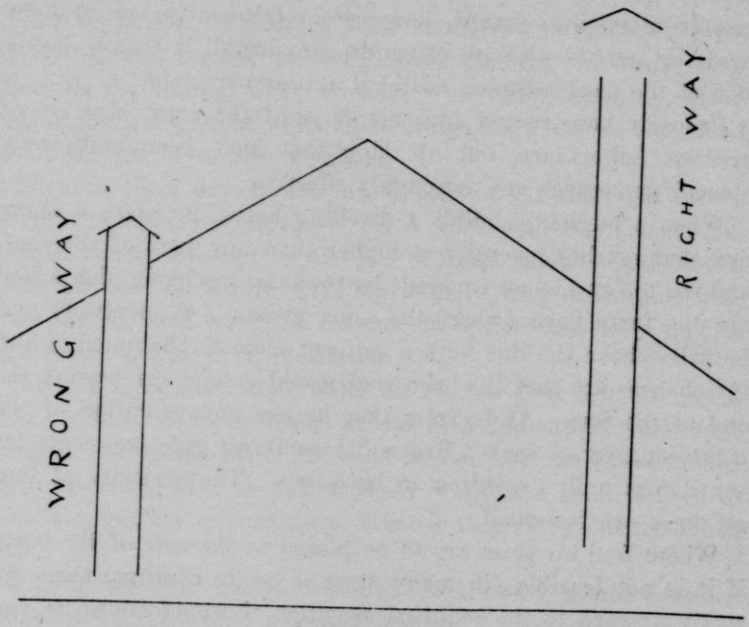


Figure 1.

Figure 1 shows the correct and incorrect ways of capping flues and also the proper elevation of top end of same.

Figure 2 shows a barn arranged for only one row of cows, with the fresh air flues from rear side extending so they will discharge over the feed alley.

Figure 3 shows a barn arranged for two rows of cows facing the side walls, the fresh air discharging over the feed alleys and working toward the rear.

Figure 4 shows a barn arranged for two rows of cows facing each other. The fresh air flues are extended from both sides and made to discharge over the feed alley.

In Figures 2 and 4 all the fresh air that enters the barn, no matter from which side, is fed in front of all the cows.

You know, human nature is not perfect; I have seen an illustration of that very frequently when they go to put up those

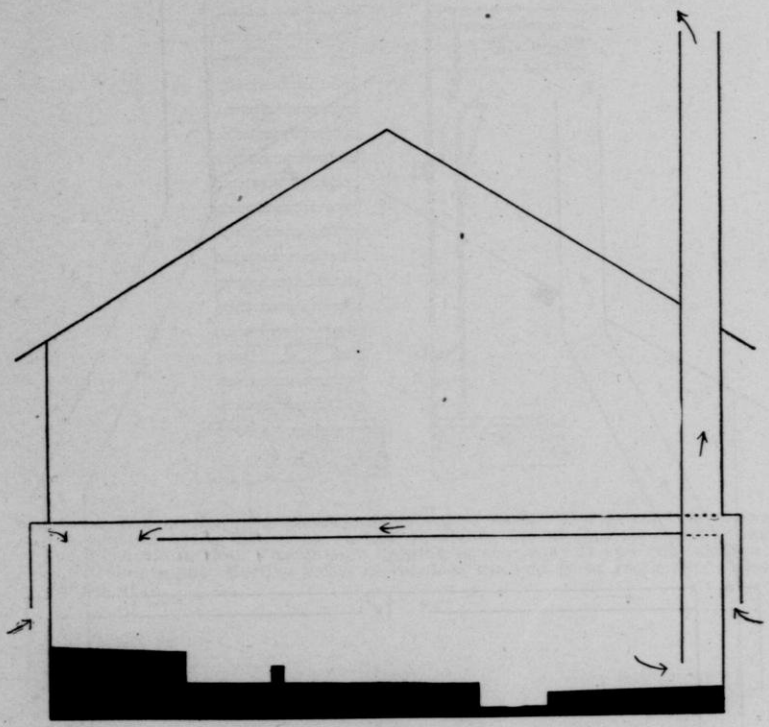


Figure 2.

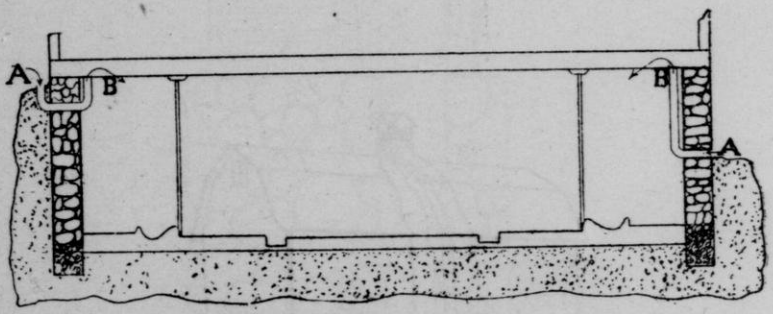


Fig. 3.—Cross section of an old barn with a bank of dirt on one side the entire height of the wall while the other comes only half way up. Flue at the right is constructed by laying a piece of 5 or 6 inch tile in the wall and fitting a stove pipe and elbow or a galvanized iron pipe to the tile. A wire screen should be placed over the outside openings to prevent small animals entering.

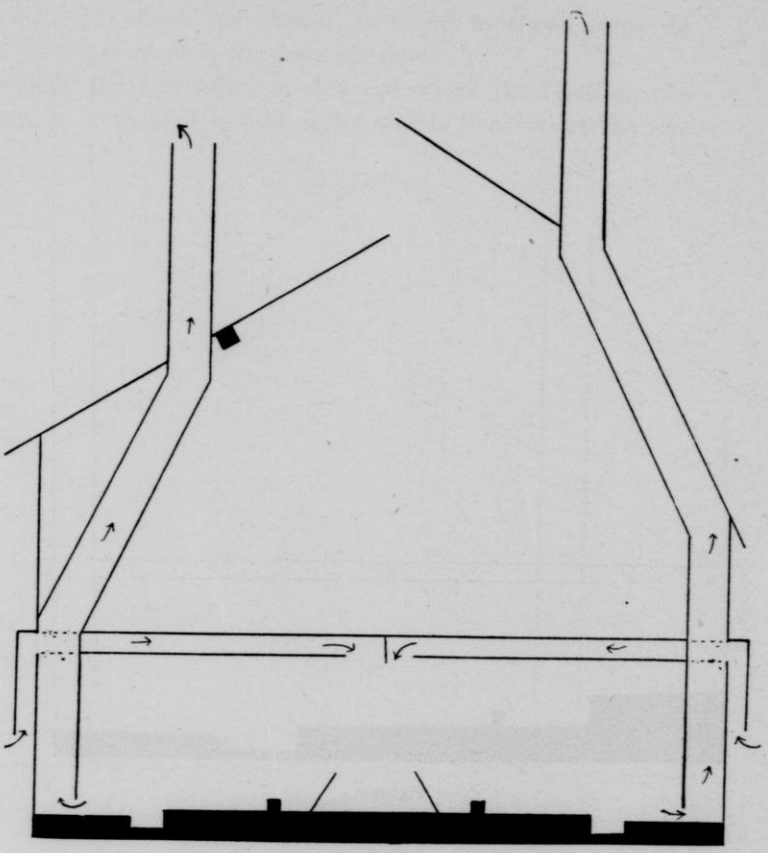


Figure 4.

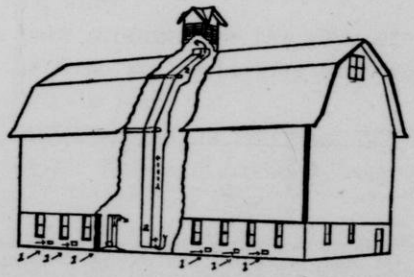


Fig. 5.—The essential features of this system are several inlet flues (1) to distribute the pure air, and one or more foul air flues (2) of adequate size to assure rapid removal of foul air.

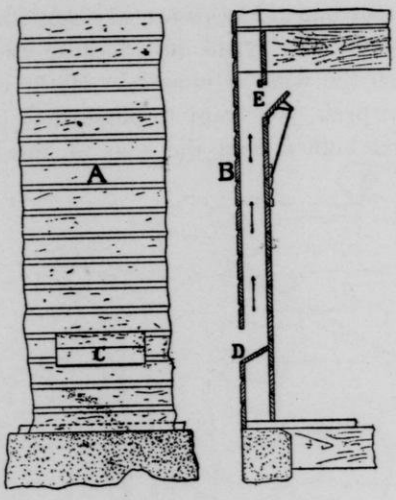


Fig. 6.—A wall section of a stable constructed of wood. The exterior A, shows the opening at C. The cross section B, shows the method of constructing the fresh air intake. The outside opening is shown at D and the inside at E. A simple but effective valve to regulate the supply of fresh air is also shown at E.

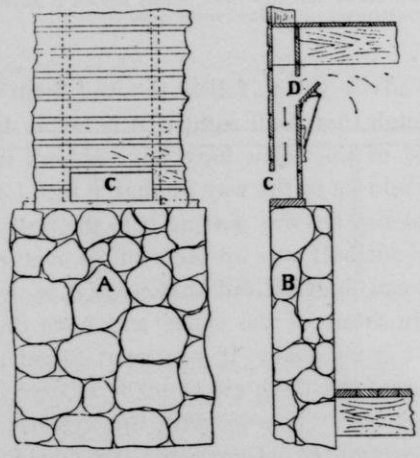


Fig. 7.—Front elevation and cross section construction of a fresh air intake in a half stone or brick wall, A and B. This method may also be installed in an old barn. If an old barn has a full wall, four such openings could be cut away in each wall. The exterior flue opening, C, and the interior, D, near the ceiling are shown.

outlet flues. They should be higher than the ridge of the roof. If they come right out at the peak, they don't need to be much higher than where they come out, because there is always a draft there when the wind is blowing. If the outtake does not come out at the peak, you want to be sure to put it three and maybe more feet higher than the edge of the roof.

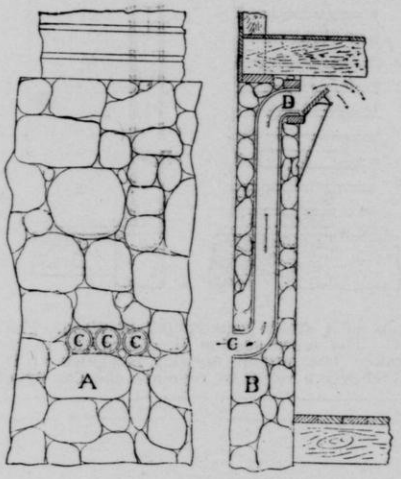


Fig. 8.—Method of installing a fresh air intake in a stone wall during construction. Front elevation A shows openings CCC. Cross section B shows the air intake CD. This intake is constructed of vitrified sewer pipe.

I would not advise you to follow the roof from the eaves up to the peak, although that is all right if it is not in the way of anything, but most of the barns have hay carriers traveling at the peak, and it would be in the way of that. But I wouldn't waste much time or money anyway getting it to the peak if it is handier to have it come out half way up the roof, or even at the eaves.

Now, if you can figure it out that way, it is desirable to feed the fresh air in front of the cattle and have the outtake near the rear, and it is necessary, if you want to get any good from the inlet flues, that the fresh air be made to travel some distance before it can get out. You see with this system, the coldest air being at the floor and the ceiling being tight, cold air is removed, and you can stand a good deal of ventilation. The fresh air is brought in by making it travel upwards three feet or more and discharging at the ceiling. The heat is at the ceiling and we

can make no use of it unless we can get the fresh air through it, and we utilize that heat to warm the fresh air, and by this system the fresh air goes through the heated air and down where the animals get the benefit of it.

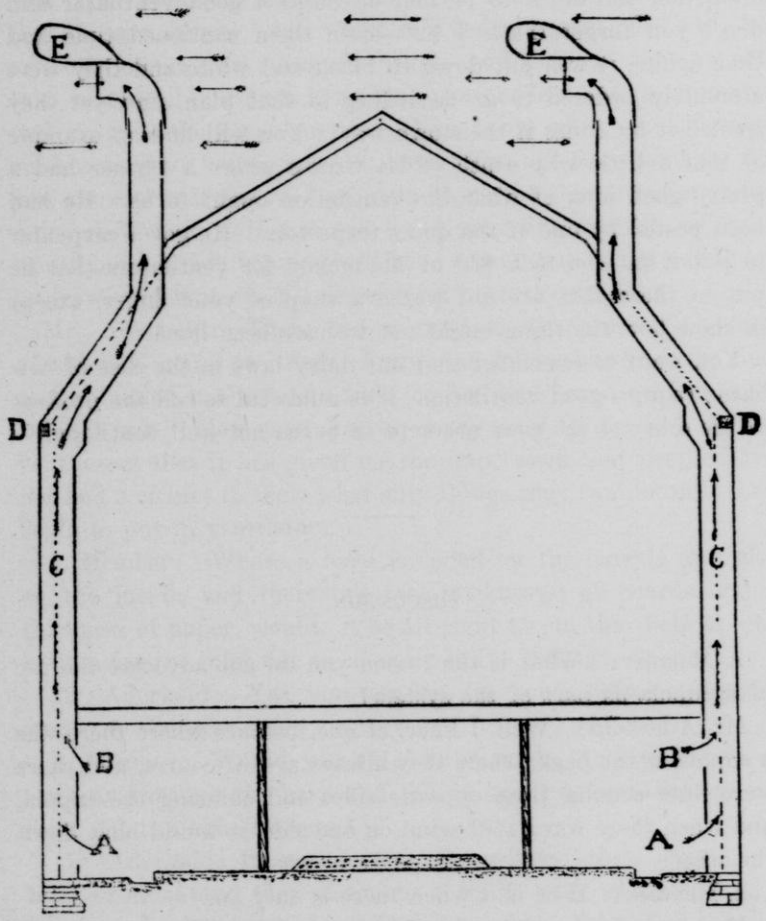


Fig. 9.—Method of constructing foul air flues in a barn in order that they pass through the roof at the gambrel or near the purline plate. This method may be desirable in barns where large quantities of hay are stored, leaving more room from the purline plate to the ridge for the hay carrier to pass back and forth. Installing such flues usually requires the pacing of cowl, E, at the top of each flue. These cowls revolve with the wind as it changes from one direction to another and prevent its entering one flue, passing downward and up the other at the opposite side of the stable. The flue must be enlarged at D. Inlets of fresh air may be constructed in the side walls as in Fig. 1.

I want to caution you about allowing carpenters to put in your ventilators for you. Some carpenters are so allfired smart that if you do not have a plain guide before them and stand right over them with a club, you can make a perfectly safe bet that they are going to spoil the whole thing for you; they know altogether too much to be able to build a good ventilator and don't you forget that. I have seen them cautioned time and time again; it was put down in black and white and they were absolutely ordered to go according to that plan, and yet they spoiled it by doing it their own way. You will find an example of that a little way south of La Crosse where a farmer had a pretty good idea of what the ventilation ought to be. He had been posted by one of the dairy inspectors. He got a carpenter to put it in who took $30 of his money for ventilators that he put in there that are not worth a snap of your finger, except to show how the thing ought not to have been done.

You want to remember that our dairy laws in the case of cow barns require good ventilation; it is unlawful to sell the product of the dairy if the cows are kept in barns not well ventilated.

DISCUSSION.

A Member: What is the reason you do not advocate the use of a cupola as part of the system?

Mr. Aderhold: Well, I knew of one instance where there was a cupola at the peak, where they always are, of course, and there were flues coming from opposite sides and entering the cupola, and when there was a stiff wind on one side, it would blow down the other.

A Member: How is it when there is only one?

Mr. Aderhold: I would keep way from the cupola. I think it will work better without it, it is not part of the system at all, it interferes with the draft. If there is any breeze we want it blowing across there without any obstructions.

Mr. Linse: I have it running into the cupola and I have a good ventilator. Anybody can come into my barn and find pure air in it.

Mr. Van Loon: The ventilation in Mr. Linse's barn is certainly first rate, and so is it in mine.

Mr. Everett: What is your cupola, a wide, slatted cupola?

Mr. Linse: Yes.

Mr. Everett: That would work all right. There is just one point in connection with the outtake ventilator that if any farmer will take into consideration he will be apt to make his flue all right and that is, that an out take ventilator in a barn is nothing more or less than a chimney, and answers the same purpose. You know when a chimney smokes in your house that you have to go out doors and fix it; you know that if the roof projects above the chimney, the chimney won't work, so if you will build your flue exactly as you would build a chimney you will have a good flue. It is put there to draw, and if it doesn't draw it isn't worth anything.

Mr. Aderhold: There are a great many farmers who are afraid it is going to draw. I saw one fellow build a nice flue and he nailed it absolutely tight on top and bored an inch hole on each side. Men have done so many silly things in building ventilators that it has given me the impression that people have not had a chance to show what silly things they can do until they begin to put in ventilators.

A Member: Where a barn is ceiled on the outside and also on the inside, and there are two thicknesses of boards and a thickness of paper, would it be all right to put the hole at the bottom for the inlet flue to come up to the ceiling?

Mr. Aderhold: Yes, you can use the space between the two studs for the inlet flues.

A Member: Would you extend the intake flue two-thirds of the way through the barn and put in small holes to let the air filter out through the barn?

Mr. Aderhold: In some cases. Some have their basements built of stone and they can't cut through very well to get in a number of inlets so they put in a large flue. Of course there is a better distribution of the air if it does not pour in so much at one place.

Mr. Hopkins: It seems to me you have made a good point that many people do not realize, and that is that a good ventilating system, in order to be effective, doesn't have to be expensive.

Mr. Aderhold: It is not expensive. There is nothing to it

but what a man can build himself, and the best time to do it is sometime between now and spring.

A Member: Is there any objection to putting the ventilating flue on the outside of the barn?

Mr. Aderhold: That has to be done sometimes where old stables are already built, and where there doesn't seem to be any place inside without being very much in the way. The Experiment Station at Madison has published a Bulletin No. 164, describing and illustrating this system of ventilation, and it may be had by sending for it.

A Member: Is it absolutely necessary to have those ventilators air-tight?

Mr. Aderhold: Yes, they should be practically air-tight.

The Chairman: I wish we might remember today that one of our veteran workers, W. D. Hoard, is not with us. This is the anniversary of his marriage; he is celebrating his golden wedding, and it has been suggested that we send some kind of a greeting to Governor Hoard.

Mrs. Kelly: Mr. President, I am sure there is one face that we have been accustomed to seeing at these meetings that is very much missed here today, though we have a picture of it hanging over yonder. However, it seems that Mr. Hoard had a previous engagement made nearly fifty years before the time for this meeting was fixed, and I am sure that is a good excuse for his not being here. I am very certain that he is thinking today of the Wisconsin Dairymen's Association, because that is one of the oldest and dearest of the many children of his heart and brain. I therefore suggest, Mr. President, that the following telegram be sent to him and after reading it, will move that the secretary of this association be instructed to forward this message to the governor.

"The Wisconsin Dairymen's Association, in convention assembled, sends heartiest congratulations to Governor and Mrs. W. D. Hoard upon this fiftieth anniversary of their marriage.

"We today wish to express our growing appreciation of those years of usefulness and the indelible imprint that splendid record has left upon two generations, making the name of Hoard

the most widely known and the best loved in the state, and always an inspiration to broader and better citizenship."

On motion, duly seconded, the Secretary was so instructed to send such telegram.

Adjourned to 8 o'clock p. m., same day.

EVENING SESSION

8 p. m.

Secretary Glover in the chair.

Music—Song by High School Chorus, under direction of Mr. C. W. Rand.

Farm Morals and Literature by A. J. Buxton, Racine, Wis.

Music—Song, Girls' Glee Club.

Address by B. H. Rawl, Chief Dairy Division, Agricultural Department, Washington, D. C.

Adjourned till 10 a. m., next day.

MORNING SESSION.

Thursday, February 10, 1910.

President Scribner in the chair.

Prayer by Rev. Mr. McKee.

APPOINTMENT OF COMMITTEE.

Resolutions: A. W. Hopkins, Richard Rolands, Wm. Bartlett.

Auditing Committee: M. L. Wells, H. C. Taylor, G. A. Freeman.

REPORT OF THE WEST SALEM COW TESTING ASSOCIATION FOR YEAR ENDING FEB. 1, 1910.

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

The West Salem Cow Testing Association was organized late in January, 1909; work commenced February 1st, with a membership of 27, representing 367 cows. There has been no lack of interest on the part of the members in making the year's work a grand success. Cows have been found unprofitable in some instances and these have been disposed of. This is in itself evidence of the benefits derived by an association of this sort, as without testing, these cows, which in most cases were good in appearance, would have remained in the herds, their owners not knowing that they were worse than useless. On the other hand a number of cows have been sold at high figures, owing to the fact that the test had shown their true value. One member of the association has refused $160, for his best cow, the test having shown him that he could not afford to dispose of her even at that extreme figure. Cow testing associations of this kind have proven of great value to dairymen in many parts of Wisconsin.

The following list of prices was used in computing the cost of keeping the cows that have been tested by the West Salem Cow Testing Association:

Concentrates.	Per ton.	Roughages.	Per ton.
Oat meal	$24	Silage	$2 50
Corn and cob meal	18	Hay	8 00
Bran	24	Corn stover	3 00
Brewers grains dry	27	Green corn fodder	1 50
Oil meal	32	Pasture, per month	1 00
Gluten feed	28		
Barley meal	24		
Cottonseed meal	30		
Ajax Flakes	31		
Badger Feed	26		
Sugarota	25		
Unicorn Feed	31		

The reports of the different herds and the records of the best and poorest cows in the different herds and the average results of the herd, are as follows:

HERD No. 1 is composed of 16 head of Brown Swiss cows, about one-half of them being pure bred; the balance good grades. Their ages range from four to ten years. The cows are kept in good condition, show first-class care, and a pure bred sire has been kept for several years. The barn is large and roomy but lacks in ventilation and light. I think the owner is meeting with good success in his work. The cost of keeping the best cow per year was $30.60; the poorest cow, $33.88; average cost of herd, $31.23. Feed: 18 to 26 lbs. silage and 8 to 16 lbs. hay was fed daily to each animal, in connection with a 5-lb. mixture of corn, oats and ground barley from February to April, then 6 lbs. bran and barley until turned to pasture May 15th, for balance of year; from November 1st, corn stover and bran were given in addition to silage and hay.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Brown Swiss	Brown Swiss	
Milking period	11 months	10 months	
Milk, pounds	7902	4568	5883
Fat, per cent	4.1	3.8	4.2
Fat, pounds	329	176	250
Gross returns	$99.61	$55.76	$75.90
Cost of feed	30.60	33.88	31.23
Net profit	69.01	21.88	44.67
Returns for $1.00 expended in feed	3.25	1.64	2.43

HERD No 2 consists of 15 grade Jersey cows ranging from two to ten years of age. Cows are well cared for and a full blood sire kept. The barn is not well lighted and ventilating facilities are poor. Feed of best cow cost $31.42; poorest cow, $28.75; average of herd, $29.95. Feed: 14 to 40 lbs. silage and 6 to 11 lbs. hay was fed daily to each animal in connection with 4 lbs. ground oats and shorts equal parts by weight during the spring, until May 15th when cows were turned to pasture. For balance of year from October, 3 lbs. oats and barley and corn stover was fed in addition to silage and hay.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	10 months	9 months	
Milk, pounds	6263	3414	4464
Fat, per cent	4.8	4.8	5.5
Fat, pounds	304	165	230
Gross returns	$95.35	$48.91	$70.06
Cost of feed	31.42	28.75	29.95
Net profit	63.93	20.16	40.11
Returns for $1.00 expended in feed	3.03	1.70	233

HERD No. 3 is composed of 15 cows of a mixed class or natives, ranging from 3 to 8 years of age. Barn is new, fairly well lighted. A grade sire is kept. Cost of keeping best cow was $30.50; poorest cow, $22.46; average cost of herd $30.16. Feed: 18 to 35 lbs. silage, corn stover 10 to 30 lbs. and 4 lbs. hay was fed daily to each animal in connection with a 5 lb. mixture of barley, oats and corn and cob meal during February and March. From April to May 15th when cows went on pasture, no grain was given. In the fall a limited amount of bran was fed. In the winter barley and corn and cob meal was given in equal parts with the silage and stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Durham	Durham	
Milking period	10 months	6 months	
Milk, pounds	6237	2256	5003
Fat, per cent	4.2	4.8	4.1
Fat, pounds	266	108	210
Gross returns	$81.11	$31.60	$62.20
Cost of feed	30.56	22.46	30.16
Net profit	50.55	9.14	35.04
Returns for $1.00 expended in feed	2.65	1.40	2.16

HERD No. 4 consists of pure bred and grade Jerseys. Fifteen head were included in this herd at the start, one cow died, one reacted to tuberculin test, and one was sold for a premium on account of its excellent production. Cows are well kept and show fine dairy form. The barn has the King system of ventila-

tion and is fairly well lighted. A pure bred sire has been kept for twenty years and the high average quality of these cows testifies to the wisdom of its management. Cows are kept in the barn during rough and stormy weather. Cost of keeping best cow was $30.67; poorest cow, $26.43; average cost of herd, $31.14. Feed: 25 to 40 lbs. silage, 3 to 6 lbs. hay and 10 lbs. corn stover was fed daily to each animal. In connection with this, ground oats, gluten, Ajax and oil meal was fed in the spring. Cows went to pasture in May. In the fall, ground oats and barley and for balance of the year bran and barley were given in addition to silage and hay.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	11 months	9 months	
Milk, pounds	6456	3957	4868
Fat, per cent	5.0	5.2	5.3
Fat, pounds	329	208	262
Gross returns	$98.98	$63.50	$79.66
Cost of feed	30.77	26.43	31.14
Net profit	68.31	37.07	48.52
Returns for $1.00 expended in feed	3.22	2.40	2.55

Herd No. 5 consists of seven very good average cows, two of them only two years old. They are of no particular breed but show signs of Durham, Jersey and Guernsey. Reasonably good conditions of barn exist. The report shows one of the largest returns per $1.00 fed of any herd in the association. The small cost of keeping, accounts for the large returns. Cost of feeding best cow was $19.97, poorest cow, $20.45; average for herd, $21.02. Feed: In the spring hay, oil meal, corn and oats were fed daily to each animal until turned to pasture May 10th. In the fall 25 lbs. silage and 4 lbs. bran were fed. Only silage was given the balance of the year. This herd made its record largely on pasture, which accounts for its low cost of feed.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	10 months	9 months	
Milk, pounds	5523	3959	4826
Fat, per cent	5.3	4.6	4.9
Fat, pounds	298	183	239
Gross returns	$87.96	$53.66	$67.34
Cost of feed	19.97	20.45	21.02
Net profit	67.99	33.21	46.32
Returns for $1.00 expended in feed	4.40	2.62	3.20

HERD No. 6 commenced the year with 9 cows, mostly grade Guernseys. Two of the best cows died of bloat early in the season and three were sold as unprofitable, making the results very disappointing to the owner. Cost of keeping best cow $33.84, poorest cow, $34.75. Feed: 6 to 22 lbs. hay and 6 to 30 lbs. corn stover. In connection with this, oil meal and corn and cob meal was given daily to each animal in the spring until May 11, when cows went to pasture. From July to November, 6 lbs. hay and 4 lbs. bran was given. In November the ration consisted of hay, barley, oats, corn and bran. Stover and corn and cob meal was given balance of year.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	11 months	12 months	
Milk, pounds	6172	3598	4923
Fat, per cent	4.5	4.9	4.8
Fat, pounds	278	177	239
Gross returns	$83.47	$53.39	$73.85
Cost of feed	33.84	34.77	35.50
Net profit	49.63	18.62	38.08
Returns for $1.00 expended in feed	2.46	1.53	2.07

HERD No. 7 consists of 15 cows, 9 grade Durhams and 6 grade Jerseys. The larger part of this herd was of a beef type, but was fed a better ration than some of the other herds of the association. A grade sire is kept but the owner is considering the

advisability of making some changes in his herd, and will probably purchase a pure bred sire in the near future. Cost of keeping best cow was $31.42; poorest cow, $26.81; average for herd, $29.60. Feed: 20 to 40 lbs. silage, 9 to 30 lbs. corn stover and 4 to 10 lbs. of hay. In connection with this corn, barley and bran, equal parts by weight, were given daily to each animal in the spring until May 20th, when cows went to pasture. Silage was fed in August and September. In the fall and during balance of year 7 lbs. barley and bran mixed were given in addition to silage and hay.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	12 months	7 months	
Milk, pounds	6058	2408	4539
Fat, per cent	4.7	4.4	4.3
Fat, pounds	286	106	195
Gross returns	$88.08	$30.77	$58.40
Cost of feed	31.42	26.81	29.60
Net profit	56.66	3.96	28.80
Returns for $1.00 expended in feed	2.80	1.14	1.97

HERD No. 8 is composed of 10 high grade Jersey cows of medium size, ranging from three to eight years of age. They are of good conformation, and show the best of care. Three other cows have been tested for a part of the year, and two were sold at a premium on their records, and one was found unprofitable. A pure bred sire has been kept for 18 years. The barn is clean, well ventilated, but not as light as seems best. Cost of keeping best cow was $26.91; poorest cow, $29.93; average of herd, $27.33. The average cost of feeding as given in the report, $27.33, seems to me to be rather low at the present cost of feed. I will say, however, that care goes a long way in connection with feeds in producing good results. Feed: 12 to 24 lbs. stover was given daily to each animal in connection with three pounds of corn and oats ground, equal parts, and corn and cob meal in the spring until cows went to pasture May 15th. In the fall and during the rest of the year eight pounds ground oats and barley were given in addition to corn stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	10 months	10 months	
Milk, pounds	7756	4202	6305
Fat, per cent	5.0	4.6	4.9
Fat, pounds	389	194	308
Gross returns	$115.05	$57.13	$92.18
Cost of feed	26.91	29.93	27.33
Net profit	88.14	27.20	64.85
Returns for $1.00 expended in feed	4.27	1.90	3.40

HERD No. 9 consists of 11 head of splendid type, grade and full blood Guernsey cows in fine condition. No lack of care has been shown this herd by its owner who is a strictly up to date dairyman. The cows are fed amounts of feed according to amount of milk given. Cost of keeping best cow $55.38, poorest cow, $36.81; average of herd $46.22. Feed: 3 to 16 lbs. corn stover, 3 to 7 lbs. hay and 22 to 32 lbs. silage. In connection with this equal parts of bran, barley and Unicorn feed was given daily to each animal in February and until May 20, when cows went to pasture. Bran, barley and silage was given during the summer months as pasture was poor. From August to January barley, corn meal and bran was given in addition to roughage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	10 months	9 months	
Milk, pounds	9506	4423	6613
Fat, per cent	4.5	5.5	4.8
Fat, pounds	428	243	323
Gross returns	$126.41	$76.61	$98.51
Cost of feed	55.38	36.81	46.22
Net profit	71.03	39.80	52.28
Returns for $1.00 expended in feed	2.26	2.08	2.13

IN HERD No. 10 are 15 head of cows of no particular breed, as no pains had been taken to build up along this line heretofore. The signs of Durham and Jersey blood were noticed. A

pure bred sire has however been placed at the head of this herd and three unprofitable cows sold, showing plainly that the owner has derived great benefit from the testing association. There were some very good producing cows in this herd and they would have done a great deal better if they had been fed a heavier ration. Light and ventilation are lacking in the barn. The cost of keeping the best cow in this herd was $30.46; poorest cow, $23.58; average of herd, $25.32. Feed: 4½ to 18 lbs. corn stover and 5 lbs. hay. In connection with this an 11-lb. mixture of corn and cob meal, barley, oats and bran was given daily to each animal from February to May 15th, when cows were turned on pasture. Barley, bran and oats in addition to the corn stover were fed from November to January.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Native	Native	
Milking period	10 months	7 months	
Milk, pounds	5958	2493	4724
Fat, per cent	4.0	4.3	4.2
Fat, pounds	242	108	199
Gross returns	$75.52	$31.29	$59.45
Cost of feed	30.46	23.58	25.32
Net profit	45.06	7.71	34.13
Returns for $1.00 expended in feed	2.47	1.32	2.34

HERD No. 11 is a herd of 12 average sized cows, three of which are grade Guernseys, the rest being natives. Cows were not in first class shape, which would tend to a low production. The barn is not warm and has poor light and ventilation. Cost of keeping best cow, $22.41; poorest cow, $28.17; average for herd, $21.73.

Feed: 5 to 12 lbs. mixed hay and 3 to 6 lbs. June pasture. In connection with this, corn and cob meal and ground oats were given daily to each animal in the spring, until May 1st, when they received a 3-lb. mixture of bran and gluten. Cows were on pasture from May 15th to Nov. 27th. Balance of the year a 5-lb mixture of bran, corn and oats was fed with corn stover.

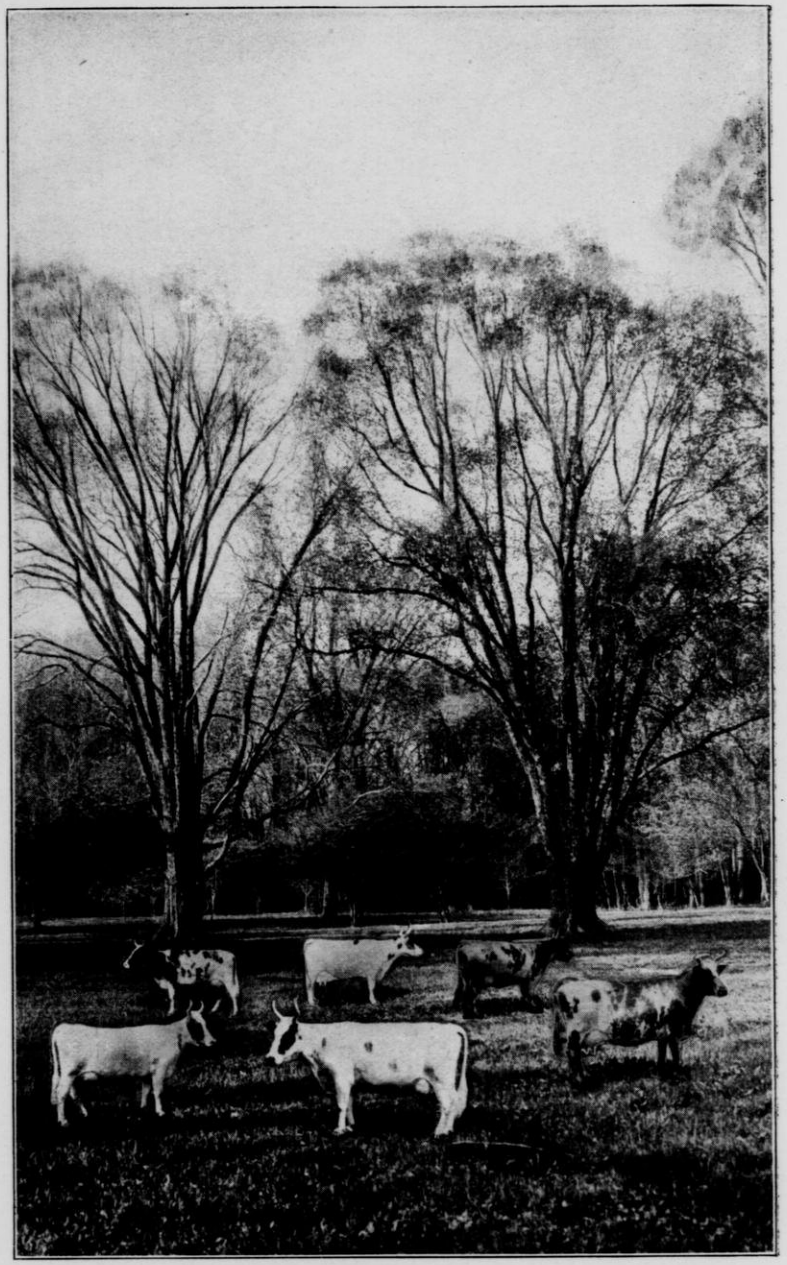
The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Native	Guernsey	
Milking period	11 months	9 months	
Milk, pounds	4522	2,33	3739
Fat, per cent	4.5	4.5	4.4
Fat, pounds	207	123	165
Gross returns	$62.05	$37.09	$49.67
Cost of feed	22.41	28.17	21.73
Net profit	39.64	13.92	27.93
Returns for $1.00 expended in feed	2.76	1.64	2.28

HERD No. 12 consists of 18 cows of which 14 finished the year's work. Of these two are pure bred and the rest high grade Guernseys or Jerseys, with one native. Three cows were disposed of during the year; the year's work of one was not finished at time of report. A pure bred sire has been kept for several years. This herd is in excellent condition showing excellent care and the owner may well be proud of results. Barn is clean, well ventilated, but lacking in light. Cost of keeping best cow was $45.71, poorest cow, $34.56; average for herd, $39.72. Feed: 20 to 40 lbs. silage, 8 to 12 lbs. corn stover and 6 lbs. hay. In connection with this 9 lbs. corn, barley and oats and 4½ lbs. bran and Ajax Flakes were fed daily to each animal in the spring. May 15th cows were turned on grass and received silage throughout the summer. In the fall and rest of the year corn, bran and oil meal were given in addition to silage and stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Native	
Milking period	12 months	8 months	
Milk, pounds	8182	3634	5774
Fat, per cent	4.1	5.3	4.6
Fat, pounds	342	195	267
Gross returns	$103.97	$56.21	$81.12
Cost of feed	45 71	34.56	39.72
Net profit	58.26	21.65	41.40
Returns for $1.00 expended in feed	2.27	1.62	2.04



PROMINENT AYRSHIRES

Auchenbrack Sweet Pea 2d — Netherhall Jean 3d — Drumsuie Ella
Castlemaine's Nancy — Garclaugh Bloomer 2d — Rena Ross

The highest producing cow in this group has a yearly record of 15,072 lbs. milk and 643.2 lbs. fat; the lowest, 10,920 lbs. milk and 433.33 lbs. fat.

HERD No. 13 consists of eight grade Guernsey and Jersey cows from 2 to 7 years of age. The cows show splendid points and have made a good showing. A pure bred sire is used. The barn is in fine condition with good ventilation and fairly good light. Cost of keeping best cow, $35.39; poorest cow, $27.25; average for herd, $30.90. Feed: 15 to 25 lbs. corn stover and 3 to 8 lbs. hay. In connection with this, bran, oil meal, corn and barley were fed daily to each animal in the spring. May 15th, cows were turned on pasture and during summer months green peas and oats were fed. In the fall a mixture of corn meal, oil meal and cottonseed and in the winter, barley, corn and cottonseed meal was fed in addition to silage, hay and corn stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	11 months	9 months	
Milk, pounds	6360	3549	4441
Fat, per cent	5.0	4.7	4.9
Fat, pounds	319	167	219
Gross returns	$94.14	$48.31	$65.04
Cost of feed	35.39	27.25	30.90
Net profit	58.75	1.06	34.14
Returns for $1.00 expended in feed	2.66	1.77	2.10

HERD No. 14 contains 10 cows, of which 9 are grade Jerseys and one is a grade Guernsey. Nine finished the year's work. They show good care and are very good dairy type. A pure bred sire has been used for several years. The barn is new, clean, well ventilated, and has fine lighting facilities. The cost of keeping the best cow was $37.29, poorest cow, $27.01; average for herd, $31.40. Feed: 27 to 35 lbs. silage, 5 to 10 lbs. stover and 3 to 6 lbs. hay. In connection with this, barley, bran and oil meal were given to each animal in the spring. Cows were pastured from May 10th to November and from then on during the balance of year, bran and barley were given in addition to the roughage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Jersey	Jersey	
Milking period	12 months	12 months	
Milk, pounds	8509	4375	6073
Fat, per cent	4.7	4.5	4.3
Fat, pounds	400	197	295
Gross returns	$121.69	$58.75	$87.51
Cost of feed	37.29	27.01	31.40
Net profit	84.37	31.74	56.11
Returns for $1.00 expended in feed	3.26	2.17	2.78

HERD No. 15 contains 15 head of grade Jerseys, Durhams and native cows of fair dairy type. The cows show good care and some pretty good records. Four of them are three years old, which reduces the average production of the herd. A pure bred Jersey sire is used. Barn is fairly clean but poorly ventilated and lighted. Cost of keeping best cow, $29.27; poorest, $24.07; average for herd, $26.32. Feed: 8 to 10 lbs. hay, 12 lbs. corn stover and 10 to 30 lbs. silage. In connection with the stover and hay, 7 lbs. corn and cob meal, oats and bran, equal parts by weight, were fed daily to each animal in the spring. May 4th cows were pastured. In the fall and the rest of the year 8 lbs. bran and barley was fed in addition to silage and stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Native	Native	
Milking period	11 months	9 months	
Milk, pounds	7397	3741	4636
Fat, per cent	4.0	4 2	4.5
Fat, pounds	295	160	213
Gross returns	$90.55	$45.22	$64.01
Cost of feed	29.27	24.07	26.32
Net profit	61.28	21.15	37.69
Returns for $1.00 expended in feed	3.09	1.87	2.43

HERD No. 16 contains grades of Jersey, Guernsey and Holderness breeds, of good average size and fair dairy form. The larger part of this herd are two and three year olds which should

be considered in looking over the records. A pure bred Guernsey sire is used and the record of this herd indicates that the owner is on the right road to success. The barn is new and has a good system of ventilation but the light is poor. Cost of keeping the best cow, $27.71, poorest cow, $27.71; average of herd, $27.71. Some of the older cows would have produced better results had they been fed more judiciously. Feed: 20 to 27 lbs. silage, 6 lbs. hay and 6 to 10 lbs. stover in connection with ground oats, barley and corn and cob meal was given daily to each animal. May 15th cows were pastured. The balance of year bran and corn meal was fed in addition to roughage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	10 months	7 months	
Milk, pounds	5292	3668	4427
Fat, per cent	4.7	4.2	4.6
Fat, pounds	252	155	206
Gross returns	$76.63	$47.75	$63.77
Cost of feed	27.71	27.71	27.71
Net profit	48.92	20.04	36.06
Returns for $1.00 expended in feed	2.76	1.72	2.30

Herd No. 17 has 11 cows, 2 of which are grade Guernseys, and the other 9 natives. Ten of this number finished the year's work, and on an average have done very good work. The amount of feed reported seems rather light; however the cows had good care in other respects. The barn is not a modern one, is poorly lighted and rather cold. A pure bred sire is used. Cost of keeping best cow $23.91; poorest cow $24.15; average for herd $24.36. Feed: 9 to 18 lbs. corn stover and 10 to 18 lbs. hay in connection with crushed corn; barley and corn meal was given daily to each animal in the spring. May 15 cows were pastured. In October and November green corn was fed. Balance of year corn and cob meal with barley was fed in addition to stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	10 months	10 months	
Milk, pounds	6093	4399	5008
Fat, per cent	6.0	4.2	4.7
Fat, pounds	368	188	237
Gross returns	$104.23	$54.22	$69.53
Cost of feed	23.91	24.15	24.36
Net profit	80.32	30.07	45.17
Returns for $1.00 expended in feed	4.35	2.24	2.85

Herd No. 18 consists of 18 head of cows, 3 of which are heifers; almost any breed can be found represented in this herd. The barns are poor, ventilation bad, the care of the stables worse, and yet the man acquires money. The cost of keeping the best cow was $37.47; poorest cow, $34.70; average for herd, $34.74. Feed: 12 to 34 lbs. stover and 12 to 24 lbs. hay was fed daily to each animal in connection with crushed corn, oats, bran, barley and oil meal in the spring. May 1st, cows were pastured. For balance of year, corn, oats, barley and stover was fed. In November 9 lbs. potatoes was also given.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Native	Native	
Milking period	12 months	8 months	
Milk, pounds	6359	2288	4466
Fat, per cent	4.0	4.8	4.3
Fat, pounds	275	109	195
Gross returns	$82.61	$30.93	$57.29
Cost of feed	37.47	34.70	34.74
Net profit or loss	45.14	-3.77	22.55
Returns for $1.00 expended in feed	2.21	.89	1.64

Herd No. 19 consists of 14 cows, 2 grade Guernseys, 1 native and the rest grade Jerseys. The cows are of a good dairy type and have the best of care; four of them are two and three years old, the poorest cow ten years. Barn is well lighted, warm and clean. Cost of keeping best cow $39.62, the poorest cow, $27.60; average for herd, $34.05. Feed, 22 to 28 lbs. silage, 9 to 12 lbs.

stover and 4 to 12 lbs. hay were fed daily to each animal in connection with 7½ lbs. corn and bran in the spring. One-half pound oil meal was given in February. Cows turned on pasture May 15th. In the fall, silage, corn and bran were given. In the winter, barley, corn, bran and Unicorn feed were given in addition to silage and stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Jersey	
Milking period	11 months	7 months	
Milk, pounds	6527	2301	5170
Fat, per cent	4.6	4.2	4.6
Fat, pounds	304	98	240
Gross returns	$96.20	$30.21	$73.41
Cost of feed	39.62	27.60	34.05
Net profit	56.58	2.61	39.36
Returns for $1.00 expended in feed	2.42	1.09	2.15

HERD No. 20 is composed of 15 grade Red Poll cows in good flesh; some have made good records. The record of feeds given for the year shows them to be very easy keepers. A pure bred Red Poll sire has been used for a number of years. Barn is warm, ventilated and fairly lighted. Cost of keeping best cow was $23.44, poorest cow $23.12, average for herd, $24.83. Feed: 9 to 18 lbs. hay, 8 lbs. stover and 11 to 18 lbs. silage was fed daily to each animal in connection with 6½ lbs. barley, corn meal and bran in the spring. Cows turned to pasture May 1st. In the fall and winter, ground barley and ground oats in addition to silage and hay was given.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Red Poll	Red Poll	
Milking period	10 months	4 months	
Milk, pounds	7227	1756	4898
Fat, per cent	4.0	4.3	4.0
Fat, pounds	294	77	200
Gross returns	$88.25	$25.88	$60.08
Cost of feed	23.44	23.12	24.83
Net profit	64.81	2.76	35.25
Returns for $1.00 expended in feed	3.76	1.11	2.42

HERD No. 21 contains 16 good grade Durham cows of average size and are what is generally considered dual purpose cows. They range in age from 4 to 15 years. One cow was disposed of during the year being found unprofitable; cows show fairly good care and a few good records have been made. A grade Durham sire has been kept. Barn is warm but poorly lighted and ventilated. Cost of keeping best cow was $28.48, poorest cow, $24.68; average for herd, $27.10. Feed: 9 to 12 lbs. hay and 9 lbs. corn meal and bran was fed daily to each animal in the spring. May 15th cows were pastured. Balance of year corn meal and bran was fed with hay and stover.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Durham	Durham	
Milking period	12 months	7 months	
Milk, pounds	6566	2247	4919
Fat, per cent	4.3	4.5	4.3
Fat, pounds	289	102	213
Gross returns	$87.00	$31.45	$64.72
Cost of feed	28.48	24.68	27.10
Net profit	58.52	6.77	37.62
Returns for $1.00 expended in feed	3.05	1.27	2.49

HERD No. 22 consists of 26 head of creditable grade Guernsey cows and its owner has reason to feel proud of the high average of its product. The barn is large, roomy, has good ventilation, is clean and well kept. A pure bred sire has been used for several years and a very promising lot of young stock is coming up to still further increase the reputation of the herd. Cost of keeping best cow $33.66, poorest cow $18.01, average for herd $30.74. Feed: 20 to 33 lbs. silage and 3 to 6 lbs. hay was fed daily to each animal in the spring with a pound of a mixture of barley, corn, oats and bran. May 1st cows were pastured, but silage and two pounds grain was given during that month. Same feed was given in the fall and winter as in the spring.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey.	Guernsey.	
Milking period	12 mos.	9 mos.	
Milk, pounds	7483	2750	6023
Fat, per cent	5.0	4.8	4.5
Fat, pounds	378	133	271
Gross returns	$114 54	$38 79	$83 07
Cost of feed	33 66	18 01	30 74
Net profit	80 88	20 78	52 33
Returns for $1.00 expended in feed	3 40	2 15	2 70

HERD No. 23 contains 16 head of average sized native cows, 3 of which are 2 years old; the others range from 3 to 8. A pure bred Guernsey sire is kept and a pure bred 2-year-old heifer was purchased during the year. Cows show good care and good dairy form, several of them showing very good records. Barn is first-class, being warm, well ventilated and pretty well lighted. Cost of keeping best cow, $41.38, poorest cow, $40.77; average for herd, $40.28. Feed: 8 to 16 lbs. corn stover, 10 to 25 lbs. silage and 15 lbs. hay was given daily to each animal in the spring with a mixture of ground oats, barley, oil meal and bran. Cows were pastured from May to August, and 22 lbs. green corn was given with pasture. The rest of year corn, oats and barley was fed with stover and silage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey.	Guernsey.	
Milking period	11 mos.	8 mos.	
Milk, pounds	7214	3994	5287
Fat, per cent	4.8	5.0	4.8
Fat, pounds	351	200	253
Gross returns	$108 39	$60 55	$77 76
Cost of feed	41 38	40 77	40 28
Net profit	67 01	21 78	37 48
Returns for $1.00 expended in feed	2 37	1 52	1 93

HERD No. 24 consists of 12 cows of mixed breeds. A pure bred Guernsey sire is kept and some fine young stock is coming forward. There are some very good producers in this herd.

Barn was warm but poorly ventilated and lighted. Cost of keeping best cow, $34.08; poorest cow, $24.55; average for herd, $32.56. Feed: 22 lbs. silage, 6 to 19 lbs. corn stover and 9 to 15 lbs. hay was fed daily to each animal in the spring in connection with ground oats and barley. May 10th cows were pastured. In the fall silage and stover were fed. In the winter barley, bran and oats were given in addition to the roughage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Holstein.	Guernsey.	
Milking period	11 mos.	5 mos.	
Milk, pounds	8241	2037	4994
Fat, per cent	3 6	4 7	4.4
Fat, pounds	310	97	219
Gross returns	$92 40	$26 66	$65 14
Cost of feed	34 08	24 35	32 56
Net profit	58 32	2 31	32 58
Returns for $1.00 expended in feed	2 71	1 17	2 00

Herd No. 25 contains 20 good grade Guernsey and Jersey cows of average size and fairly good dairy type. A pure bred Guernsey sire is kept. Barn is warm, large but poorly lighted and no ventilation. Cost of keeping best cow $22.23; poorest cow, $19.80; average of herd $21.18. My opinion is that more liberal ration of grain would have been both wise and profitable. Feed, 35 lbs. silage, corn stover ad libitum, besides this a 5-lb. mixture of crushed corn and bran, equal parts by weight was given daily to each animal from February to May, when cows were pastured. In November and for remainder of year crushed corn and oats with silage and stover were given.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey.	Jersey.	
Milking period	8 mos.	8 mos.	
Milk, pounds	5206	2077	3258
Fat, per cent	4.6	4.7	4.8
Fat, pounds	242	99	159
Gross returns	$73 87	$30 50	$49 22
Cost of feed	22 23	19 80	21 18
Net profit	51 64	10 70	28 04
Returns for $1.00 expended in feed	3 32	1 54	2 32

HERD No. 26 consists of 16 cows; 12 are pure bred Red Polls and 4 mixed breeding; 2 were sold during the year leaving 14 to complete the year's work. A very even showing has been made in production. Cows have shown fine condition and been liberally fed, and at the right time of the year to produce the best results. A pure bred sire has been kept for several years. Cost of keeping best cow, $40.72; poorest cow, $33.92; average for herd, $36.90. Feed: 7 to 30 lbs. silage, and 3 lbs. hay was given daily to each animal in the spring in connection with barley meal, bran and oil meal. Cows turned to pasture in early May. Some silage was given in dry season. In the fall and winter an 8½ lb. mixture of equal parts of bran, oats and barley was given with stover in addition to above roughage.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Red Poll	Red Poll	
Milking period	12 mos.	8 mos.	
Milk, pounds	7517	3947	6381
Fat, per cent	4.7	4.9	4.3
Fat, pounds	356	184	273
Gross returns	$106 34	$56 47	$83 17
Cost of feed	40 72	33 92	36 90
Net profit	65 62	22 55	46 27
Returns for $1.00 expended in feed	2 25	1 63	2 25

HERD No. 27 started out with 17 head of pure bred Guernsey cows, 9 of which were withdrawn from the test to be placed in advanced registry work. Of the eight cows which continued in the test 4 were two-year-old heifers and the rest from 3 to 6 years old. These cows are of excellent form and dairy type and show splendid care. A pure bred sire has been kept for twenty years. Barn conditions are ideal in all respects and the cows are kept in the barn from the close of the pasture season till time to turn out on grass in the spring, with fresh water placed in front of them once a day. The cost of keeping best cow was $47.51, poorest cow $33.47; average for the herd $41.29. Feed: 3 to 8 lbs. hay, and 25 to 40 lbs. silage, also corn stover. In connection with this, Ajax Flakes, corn and oats was given daily to each animal during February; in March and April corn meal, alfalfa meal and bran; in May cows were pastured receiv-

ing in addition Ajax Flakes in May, ground corn and oats and bran in June and July and 20 lbs. silage in August and September. In early winter Unicorn feed, ground barley, oats and bran was fed in addition to roughage. In January Unicorn feed was changed to Ajax Flakes.

The following table shows yearly record of best and poorest cows and average of herd:

	Best cow.	Poorest cow.	Average of herd.
Breed	Guernsey	Guernsey	
Milking period	11 mos.	10 mos.	
Milk, pounds	7342	3536	6022
Fat, per cent	5.0	5.6	4.6
Fat, pounds	389	198	291
Gross returns	$115 34	$58 72	$89 81
Cost of feed	47 51	33 47	41 22
Net profit	67 83	25 25	48 59
Returns for $1.00 expended in feed	2 42	1 75	2 17

Discussion.

Mr. Jacobs: I don't understand how that man got $1.50 for a dollar's worth of feed and not feed more than $19.80 per cow. I never have been able to do that.

Mr. Searles: That is the feed of the poorest cow, the best cow was $22.23. The best cow was fed from February 1st to May 10th, silage 35 pounds; stover, crushed corn and bran, equal parts, by weight, 5 pounds, and pasture only during the summer months. In November and for the remainder of the year, silage 35 lbs., stover 7 lbs., and 3½ lbs. crushed corn and oats.

A Member: How much do you calculate for the labor in handling a cow a year?

Mr. Searles: We offset that with the skimmilk, the calf and the manure. There are a good many of these that made their records mostly on pasture.

Mr. Aderhold: And also on the high prices for the product?

Mr. Nye: The prices are all based on two cents above Elgin.

Mr. Searles: You will note there are not many of these herds that have been fed very much above $30 worth.

A Member: Did the poorest cow milk in the winter months?

Mr. Searles: She was milked mostly in the summer and received very little grain.

A Member: What breed was the poorest cow?

Mr. Searles: It was a grade Jersey.

Mr. Jacobs: I believe we have been looking for something for nothing for a long time and as near as I can tell we have found it, because this cow has only been fed enough really to keep her alive and she has kept alive and done something besides.

Mr. Rawl: It seems to me it would throw some light on this question if we were to consider that the rates of all these feeds are very low. I would like to know how the gentleman made those ratings of pasture and silage, etc.

Mr. Searles: A board of directors was appointed when the association was organized and they set the prices on the feeds, taking the commercial value at that time, and they put $1.00 per month on pasture. There are other places in this state where they charge $1.50, and I think that is nearer right.

Mr. Rawl: And on silage?

Mr. Searles: Two dollars and fifty cents a ton.

A Member: What is your land worth around here that you can only charge a dollar for pasture?

Mr. Searles: It is considered worth $100 an acre.

Mr. Goodrich: My idea of fixing a price on anything is just what you can sell it for, or what you will have to give for it when you buy it, and the question is, will the farmers rent their pasture for a dollar a month?

Prof. Woll: I would call your attention especially to two herds, 9 and 10; herd No. 9 produced on the average 323 pounds of butter fat, and the feed of those herds was worth $46, while No. 10 produced 199 pounds of butterfat and the feed cost $59. The last column of the table shows that there was more money produced from the poor herd.

Mr. Goodrich: More per cent.

Prof. Woll: There can be no doubt in the mind of any dairy farmer that No. 9 is the better herd, and yields the farmer more money, so I think that when the last column shows an advantage the other way, it is evidently due to some error in your calculation and especially in figuring pasturage. Will you give us some details as to those two herds?

Mr. Rawl: In that particular case one cow was fed $46 worth of feed and returned a profit of $52. In the other case the cow was fed only $29 worth of feed and returned a profit of $34.

Now, the question arises, is it better to feed a cow $46 worth of feed and get back $52, or to feed her $29 worth and get back $34. In the case where you get back $34 it costs you 14 cents a pound to produce and in the other case it costs you 13 cents, but the question comes down to this, is it better to produce 300 pounds of fat at 14 cents a pound, or 200 pounds at 13 cents? Now, the smaller margin on the larger number is done in that particular case, the vital point is that where you feed $46 worth of feed you get $52 clear profit, and where you feed $29 worth of feed you only get $34 profit, and I believe if you analyze that more carefully, you will find more actual dollars profit, even if the cost is higher at the end of the year.

Mr. Searles: I ought to say with respect to No. 9 that pasture was poor and the owner said he fed heavier feeds than perhaps he ought to have fed through the summer months.

Mr. Nye: Isn't that an indication of lack of judgment in the man who feeds too much?

A Member: There is another suggestion, that man that fed $46 worth of feed got more returns in the shape of manure, a very important proposition.

Mr. Goodrich: And he didn't do but a very little more work, and that is a point overlooked to a certain extent. The man that only fed the $29 worth to his cow had to take care of her, he had to stable her, had to do almost as much work as in the other case, milking and taking care of the milk, etc., and the profits right through were very much smaller.

A Member: Why don't you figure in the depreciation of the animal in giving the net profits of the cow?

Mr. Searles: I am afraid if we got any more figures that the average farmer would not grasp them. Of course to be absolutely correct these figures would be necessary.

REPORT OF COW CENSUS.

H. W. Griswold, West Salem.

When I began the cow census, I was at once filled with deep curiosity, for though I was born and brought up in the same community, I had no idea how my neighbors fed their cows. To be sure, I knew they fed hay and corn stover, but aside from that I knew nothing. So it was with much interest that I got the facts which gave me the accompanying table. Each farmer that I visited is given a number which appears in the first column.

The first question I asked was how many cows the herd averaged for the year and how many heifers. I thought it best to make a little distinction, as a heifer is not as good as a cow, and a large percentage of heifers would make a difference in the yield per cow. You will notice in the case of Nos. 12, 13 and 20 that one-third or over were heifers with first calves. I think every man gave me the honest number he had but when no account is kept, it is hard to make a correct mental estimate of a period of a year. In some cases, as in the larger herds, it might vary a cow or so one way or the other. Most of the farmers let the bull run with the herd and the cows calved at any time during the year. A few had fall cows and a few winter cows. The bulls that were used by these patrons were an inferior lot. Only one used a pure bred animal, the rest used a grade or a scrub, which, in some cases, was descendant of beef cattle. One of the questions asked, but not in the table, was, what farm papers were read. Many took two or three farm papers, two Hoard's Dairyman, and one depended on the local paper for agricultural information.

Now as to the feed. Every farmer had pastures and on the average this was charged at $1 per month per cow. A few fed grain or silage during the summer but most of them depended entirely on the pasture for the summer feeding. Now winter feeding—and here is where I got the variations. Most all fed hay and all a cow wanted. Number 2, however, is an exception as his cows had no hay whatever. Others had hay only part of the winter. When the cow had no silage, but was given what

hay she wanted, I figured she would eat about 20 pounds a day and at the rate of $4 a ton for the six months winter feeding this would come to $7.20. In most instances the hay was made part clover and part timothy. Almost every herd had shredded corn stalks. Number 2 depended entirely on this for roughage. A large amount of the stover fed was wasted and was used for bedding. I tried to get at the amount the cow ate and charged her at the rate of $3 a ton for it. This made a small feed bill, seldom over $2. Only five had silos. Number 1 fed in winter 35 lbs. a day and 20 lbs. a day in the summer. Number 8 fed 35 lbs. in winter. Numbers 18 and 19 fed 30 lbs. a day during winter. Number 20 said his cows ate 50 lbs. a day, and he weighed it, and that they ate all the hay they wanted which was very little.

The grain fed was mostly home grown but in a few instances bran was used. It was with some difficulty that the amount was found, as none of the farmers had ever weighed their feed. In many places a four or six-quart pan was used and by that could be judged the number of quarts, which were later converted into pounds. Nearly every farmer fed corn and cob meal and oats or barley. The largest grain feeder, Number 5, fed fourteen pounds of grain a day, all corn and cob meal. The smallest feeder in grain, Number 12, fed about two pounds a day, corn and cob meal and oats. The roughage fed by these two men was the same, and all the difference in cost, $16.20, comes in the grain ration.

Through the courtesy of the creamery officers I was able to get the returns which these men received from the creamery, and from these figures I calculated the average production per cow for the past year. This varies from 50 pounds in the case of Number 4 to 181 pounds in the case of Number 24. Number 4's cows were poorly housed while those of Number 24 had a good barn and received good care though they were not fed nearly as heavy as some other herds. Numbers 1 and 25 were greatly troubled with abortion and that accounts for their low production, for the cows were well fed and housed.

In "Returns for each $1.00 worth of feed fed" we find Number 24 in the lead. This herd was of the dairy type, all either Guernsey or Jersey grades, with but one exception, a grade Shorthorn. He sold only the poorest cows and raised all the heifers.

In the Profit or Loss column we find what the farmer should

look for. This varies from $8.01 loss per cow to $35.01 profit per cow. I have already described Number 24's herd which leads in profit. Next to his is Number 7 who received $21.00 profit per cow. He had very good looking cows, of dairy type. His stable was warm and Sugarota Dairy Feed was added to the winter ration. Number 4 suffered the greatest loss per cow, which amounted to $8.00 less than he could have gotten for the feed at the warehouse.

Of a great many I asked the question, Are your cows getting better? Many said, "about the same." Some said their cows were getting poorer and only two, Numbers 24 and 18, felt that their herd was improving. The trouble seemed to be that the cows were kept for butter production but were bred for beef or nothing.

The following table gives the results of the twenty-five herds which I visited:

No. of patron	Cows.	Heifers.	Breed.	When calved.	Cost of keep.	Returns per cow.	Lbs. fat per cow.	Returns for $1.00 in feed.	Profit or loss.
1	22	2	Jerseys	A	$36 80	$48 00	150	$1 30	$11 20
2	11	3	Mixed stock	A	22 20	43 00	134	1 90	20 80
3	14	4	Mixed stock	A	24 80	43 00	134	1 73	18 20
4	3	1	Mixed stock	A	24 50	16 47	50	67	—8 03
5	15	3	Common stock	F & S	36 60	37 30	116	1 01	70
6	15	3	Common stock	F	31 20	40 60	126	1 30	9 40
7	16	4	Common stock	W	27 80	48 80	152	1 75	21 00
8	20	5	Common stock	W	34 30	35 30	110	1 02	1 00
9	15	3	Durham	A	27 30	27 00	84	90	— 30
10	10	2	Common stock	A	24 00	22 88	71	95	—1 12
11	11	1	Mixed cattle	A	24 20	37 63	117	1 55	13 43
12	12	5	Common stock	S	20 40	23 27	75	1 14	2 87
13	8	4	Grade Durham	A	24 00	36 04	112	1 50	12 04
14	12	2	Common stock	A	28 60	33 30	104	1 17	4 70
15	9	0	Common stock	W	26 05	28 70	89	1 10	2 65
16	11	2	Grade Durham	S	25 00	20 70	64	82	—4 30
17	6	0	Mixed cattle	F	33 80	53 97	168	1 59	20 17
18	14	4	Grade Durham	F	33 00	47 82	149	1 44	14 82
19	9	3	Grade Durham	F	32 00	26 16	81	81	—5 84
20	5	3	Common stock	W	34 10	36 95	115	1 08	2 85
21	10	2	Purebred Durham	A	26 00	46 68	145	1 79	20 68
22	10	2	Common stock	A	22 20	31 54	98	1 42	9 34
23	15	2	Grade Durham	A	23 60	34 98	109	1 48	11 38
24	13	5	Mixed cows	A	23 10	58 11	181	2 51	35 01
25	14	4	Mixed cows	A	26 90	43 90	137	1 63	17 00

DISCUSSION.

Mr. Goodrich: How was this cow census taken?

Mr. Griswold: We drove from house to house, visited nearly every farm and the farmer himself gave us the facts as to the feeding and the care of the herd. The production of fat was figured from the creamery returns, it was all gathered cream.

A Member: In that herd where there was a loss of $8 per cow, how much did you figure the calf?

Mr. Griswold: The calf is not figured in this at all. I think the calf in many cases was not worth anything.

The Chairman: I suppose a lot of these gentlemen here are saying, "Lord, is it I?" What kind of a sire was used in that bunch, No. 4?

Mr. Griswold: A grade Shorthorn.

Mr. Searles: Were these farmers among our patrons in the testing association?

Mr. Griswold: No, I had to skip the best farmers, because they were in the testing association. As to No. 4, that owner took one general farm paper, fed his cows once a day 7 qts. of half barley and half oats, as his grain ration. You will notice there is quite a difference, No. 12 kept his cows for $20.40 while No. 5 fed $36.60 worth, and the difference was practically all in the grain that they fed their cows during the winter months. They fed the same hay and stover. Neither had a silo.

Mr. Goodrich: Now, it cannot be supposed that these figures are exactly accurate, but they surely indicate something. Of course, I don't know just the methods Mr. Griswold took to find out the amount of feed but I presume it was done pretty well.

Taking into consideration all the possible inaccuracy, I think there is a great deal to be learned in cow census, and I am sure we can start improvements by it. I have had some interesting experience in noting how men look at these cow censuses; a man cannot pick out his herd by the number. They will look along down and see the herds that had about so many cows, and he had about that same number of cows, and he looks along and sees that in one such herd the production is small and he will say to himself, "That isn't mine". I remember one

man saying, "I will do better than that another year, or I will kill every cow I have," and I kept track of some of those men and they did do a great deal better the next year. That is what this cow census did.

Mr. Rawl: There is one point in this whole matter we ought not to miss. Whether those figures are accurate or not, the fact remains that only one herd has returned to the farmer as much as $58 per cow, and some run as low as $16, $18 and $20 per cow. Now, look at the composition of those herds. That is an important question, a very vital point in the whole business. If we are going to have cows at all, we must maintain a herd that will bring us in a decent gross return, bigger than most of those are. Taking the price of butterfat this year,— and it was good—the best herd there only returned $58 per cow, and that herd doesn't average over 200 pounds of butterfat.

Now, gentlemen, there is no use in talking about it, you can take all the data available in this whole country,— and there is lots of it,—and you will not find profitable dairy herds in any part of the United States that do not have a higher average production per cow than is shown in any herd in that table. If we are going to operate in dairying for money, then we must get rid of those mixed herds; we must get dairy cattle suited to the production of 300 pounds of fat a year when they are fed properly, and there isn't a single herd in that whole bunch anywhere near that.

Now, somebody said something about overfeeding. I don't like to hear that mentioned, because there are about 99¾ per cent of men who underfeed their cows where there is one quarter of one per cent that overfeed. Let us not miss these important points. We have to have a herd that will produce more than $58 gross returns, and they should produce at least $90 and when we get $90 from each cow, we can deduct from that a good big feed bill, and still have a good business profit.

Mr. Aderhold: I would like to ask Mr. Griswold what were the average returns from his own cows last year?

Mr. Griswold: One hundred and fifteen dollars.

Mr. Rawl: There you are, gentlemen. You see it can be done. What was the average creamery price for butterfat?

Mr. Griswold: Thirty-two cents, and the average cost of feed per cow in our herd was $44.

Mr. Glover: There is another thing to be considered in this cow census, whether those figures are exactly right or not. You will notice in Herd 16 the owner received from the factory $20 per cow, and there were eleven cows in the herd; in Herd No. 1 there were twenty-two cows and the owner received $48 per cow. In other words, No. 1 received more than twice as much per cow from the creamery. Why? We don't know, unless this man had better cows. Those figures are perfectly correct, because that is the return the owner received from the material that went to the creamery. Why that difference? It is in the man and the cow. The cow census taker said there wasn't but one pure dairy sire used among these 25 farmers. Now, why are we trying to get butterfat from an animal that isn't bred for that purpose? If you were going out on the race track to win a race, would you take an animal that was bred for drawing loads, or would you take one bred for speed? In selecting horses you select those that can fulfil the function you wish performed. You do that everywhere except in dairying. Many, many dairy farmers think that they can combine two functions in one animal, that they can get a splendid beef animal and a splendid dairy animal in one creature, but the two functions do not harmonize any more than speed and draft go together.

A bull dog is a fighting machine; the hound is a running machine. You can clearly see the difference in their conformations. Realizing this, why do dairymen select a sire not bred for dairy purposes? When the farmer chooses dairying as a business, why not breed so as to produce the kind of animal that has been bred for generation after generation to produce milk the most economically? If you have a pure bred sire and you breed to common cows, you will produce half pure bred cows, and then breed him back to his daughters and the resulting generation is three quarters pure bred.

Do not try to make meat with a dairy cow, or milk with a beef cow. If you are in the meat business, select a beef breed; if you are in the dairy business, get an animal bred for dairy work.

COW INDEX OF KEEP AND PROFIT

By W. J. Fraser, Professor Dairy Husbandry, University Illinois, Urbana.

How much is this cow worth? And that one?

How much milk and how much butterfat does she produce per year?

What profit will she return each year?

What is the cost of her feed for one year? Of the labor? What are the other expenses and depreciation?

What is the value per year of the skim milk? Of the manure?

Will the skim milk, calf and manure pay all expenses except feed?

These are vital questions (financially) for every dairyman, concerning every individual cow in his herd. If he will answer the second question, the table will answer the other nine. It is a ready reckoner of cow economics.

The efficient cow is the chief factor in making money on a dairy farm. Good dairying is one of the most remunerative lines of farming, and for this reason even poor, unbusiness-like dairying may result in some gain. As a rule the average, or even the best dairymen, neither know nor suspect the extent to which the profit or loss from each individual cow affects the profit received from the whole herd. The profit on the good cow covers up the loss on the poor ones, and thus the owner fails to see how easily and to what extent the profits could be increased by simply disposing of a few poor cows. If the largest returns are to be obtained, it is necessary to weed out the unprofitable cows from the herd. This testing and weeding out of the unprofitable cows has been advocated for several years. Test associations for this purpose have been recently started in all the most prominent dairy countries of the world. Hoard's Dairyman, thru its valuable cow census work, has shown clearly that many herds in different sections of the United States are kept at an actual loss. The Department of Dairy Husbandry at University of Illinois has published no less than ten bulletins and circulars on

this subject in the past five years. But for all that, both the dairymen and the public have not realized the full significance of this work. The reason so many herds are kept at an actual loss or little profit is because a man with a large herd of poor cows may receive a large check at the end of each month, but he does not see the large expense bill that must be subtracted from this. The total receipts must not be looked upon as the net profit.

In an attempt to bring out these facts more clearly, and to save the dairymen much figuring, the following table has been worked out. This table is based on the experience and findings of the Department of Dairy Husbandry during the past thirteen years. To illustrate the use and value of this table, it is here applied to the yearly records of the individual cows of 5 herds taken from the many herds which have been tested by this department.

This table and its application to herds proves that many men are, twice each day, milking cows that are not paying for the feed they eat. Yet the laborious task is continued, year after year, in the vain attempt to make money with a class of cows utterly unable to return a profit. The game of making money with inefficient cows is absolutely blocked, yet many dairymen are so busy milking these poor cows that their vision is apparently bedimmed, and they cannot see the ultimate outcome. One might as well pay his entry fee and attempt to win a race in the 2:10 class with a draft horse that could not go a mile in five minutes, as to attempt to make money with some of the cows that are being milked. Just think of the "Wasting of years of weary, unprofitable toil" on our dairy farms in doing all the labor of preparing the ground, planting, cultivating, harvesting and storing the crops, only to dispose of the feed to a dairy herd in which many of the individual cows are kept at an actual loss. All of this waste of labor and energy might easily be obviated if intelligence and common sense were used in establishing and breeding up an efficient dairy herd. To present and impress the facts of profit and loss in the herds as they are today, is the object of this table and its application.

TABLE 1.—*Based on Averages from Classes of Cows of Different Production, Considering Their Value, Production, the Cost of Keep and Income from Products.*

1. Value of cow at first freshening	$30.00				$35.00				$40.00				$45.00	
2. Value of cow for beef at end of life	30.00				29.00				27.00				25.00	
3. Difference, or depreciation during life	0.00				6.00				13.00				20.00	
4. Pounds milk produced	2000	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	4750	5000	5250
5. Pounds skim milk, 85 per cent of whole milk	1700				2550				3400				4250	
6. Value of skim milk at 20c	$3.40				$5.10				$6.80				$8.50	
7. Value of each calf (Bull $3; Heifer $3; Average)	$3 / 3.00				$3 / 3.00				$3 / 4 / 3.50				$3 / 5 / 4.00	
8. Value of manure at an average price of $1.50 per ton	13.50				14.00				14.50				15.00	
9. Total value of skim milk, calf and manure	**$19.90**				**$22.10**				**$24.80**				**$27.50**	
10. Cost of labor	$17.00				17.50				$18.00				$18.50	
11. Interest, taxes, insurance and repairs on barn	4.00				4.00				4.00				4.00	
12. Service fee	2.00				2.00				2.00				2.00	
13. Interest, depreciation on cow	1.50				2.62				3.89				5.15	
14. Veterinary service, medicine, and spraying materials	.20				.30				.40				.50	
15. Depreciation on dairy utensils	.60				.65				.70				.75	
16. Total expense of labor, housing, service fee, interest and depreciation on cow and utensils	**$25.30**				**$27.07**				**$28.99**				**$30.90**	
17. Does skim milk, calf and manure pay labor, interest and depreciation on cow?	**-$5.40**	**-$5.29**	**-$5.18**	**-$5.07**	**-$4.97**	**-$4.77**	**-$4.58**	**-$4.38**	**-$4.19**	**-$3.99**	**-$3.79**	**-$3.60**	**-$3.40**	**-$3.13**
18. Pounds butter fat in 4 per cent milk	80	90	100	110	120	130	140	150	160	170	180	190	200	210
19. Value of butter fat at 27 cents per pound	$21.60				$32.40				$43.20				$54.00	
20. Cost of feed for cow	34.00				36.00				38.00				40.00	
21. Profit from butter fat over feed	**-$12.40**	**-$10.20**	**-$8.00**	**-$5.80**	**-$3.60**	**-$1.40**	**$ .80**	**$3.00**	**$5.20**	**$7.40**	**$9.60**	**$11.80**	**$14.00**	**$16.20**
22. Total year's profit per cow	*-$17.80*	*-$15.49*	*-$13.18*	*-$10.78*	*-$8.57*	*-$5.17*	*-$3.78*	*-$1.38*	*+$1.01*	*$3 41*	*$5.81*	*$8.20*	*$10.60*	*$13.07*

TABLE 1 Continued—*Based on Averages From Classes of Cows of Different Production, Considering Their Value, Production, the Cost of Keep, and Income From Products.*

1. Value of cow at first freshening			$50.00				$30.00				$70.00			
2. Value of cow for beef at end of life			25.00				25.00				25.00			
3. Difference, or depreciation during life			25.00				35.00				45.00			
4. Pounds milk produced	5500	5750	6000	6250	6500	6 50	7000	7250	7500	7750	8 000	8250	8500	8750
5. Pounds skim milk, 8 per cent of whole milk			5100				5950				6800			
6. Value of skim milk @ 20c			$10.20				$11.90				$13.60			
7. Value of each calf { Bull / Heifer } Ave			$3 / 6 4.50				$3 / 8 5.50				$3 / 10 6.'0			
8. Value of manure at an ave. price of $1.50 per ton			15.50				16.00				16.50			
9. Total value of skim milk, calf and manure			**$30.20**				**$33.49**				**$36.60**			
10. Cost of labor			$19.00				$19.50				$20.00			
11. Interest, taxes, insurance and repairs on barn			4.00				4.00				4.00			
12. Service fe'			2.00				2.00				2.00			
13. Interest, depreciation on cow			6.14				8.10				1'.06			
14. Veterinary service, medicine, and spraying materials			.60				.70				.80			
15. Depreciation on dairy utensils			.80				.85				.90			
16. Total expense of labor, housing, service fee, interest and depreciation on cow and utensils			**$32.51**				**$35.15**				**$37.76**			
17. Does skim milk, calf and manure pay labor, interest and depreciation on cow?	**-$2.87**	**-$2.60**	**-$2.34**	**-$2.19**	**-$2.04**	**-$1.90**	**-$1.75**	**-$1.60**	**-$1.45**	**-$1.31**	**-$1.16**	**-$1.00**	**-$0.84**	**-$0.68**
18. Pounds butter fat in 4 per cent milk	220	230	240	250	260	270	280	290	300	310	320	330	340	350
19. Value of butter fat at 27c per pound			$64.80				$75.60				$86.40			
20. Cost of feed fo' cow			42.00				44.00				46.00			
21. Profit from butter fat over feed	**$18.40**	**$20.60**	**$22.80**	**$25.00**	**$27.20**	**$29.40**	**$31.60**	**$33.80**	**$36.00**	**$38.20**	**$40.40**	**$42.60**	**$44.80**	**$47.00**
22. Total year's profit per cow	*$15.53*	*$18.00*	*$20 46*	*$22.81*	*$25.16*	*$27.50*	*$29.85*	*$32.20*	*$34.55*	*$36.89*	*$39.24*	*$41.60*	*$43.96*	*$46.32*

TABLE 1—Continued—*Based on Averages from Classes of Cows of Different Production, Considering Their Value, Production, the Cost of Keep, and Income from Products.*

1. Value of cow at first freshening	$80.00				$90.00				$100. 0				$110.00
2. Value of cow for beef at end of life	25.00				25.00				25.00				25.00
3. Difference, or depreciation during life	$55.00				$65.00				$75.00				$85.00
4. Pounds milk produced	9000	9250	9500	9750	10000	10250	10500	10750	1100.	11250	11500	11750	10200
5. Pounds skim milk, 85 per cent of whole milk	7650				8500				9350				12000
6. Value of skim milk at 20c	$15.30				$17.0				$18.70				$20.40
7. Value of each calf { Bull, Heifer } Average	$3 / 13 8.00				$16 / 16 16.00				$20 / 20 20.00				$24 / 24 24.00
8. Value of manure at an average price of $1.50 per ton	17 00				17.50				18.00				18.50
9. Total value of skim milk, calf and manure	$ 0.30				$50.50				$56.70				$62.90
10. Cost of labor	$21.00				$22.00				$23.00				$24.00
11. Interest, taxes, insurance and repairs on barn	4.00				4.00				4.00				4.00
12. Service fee	2.00				2.00				2.00				2.00
13. Interest, depreciation on cow	11.98				13.97				15.95				17.89
14. Veterinary service, medicine, and spraying materials	.90				1.00				1.10				1.20
15. Depreciation on dairy utensils	.95				1.00				1.05				1.10
16. Total expense of labor, housing, serving fee, interest and depreciation on cow and utensils	$40.83				$43.97				$47.08				$50.19
17. Does skim milk, calf and manure pay labor, interest and depreciation on cow?	$-.53	$-.39	$-.25	$-.10	+ $6.53	$7.30	$8.07	$8.85	$9.62	$10.39	$11.16	$11.94	$12.71
18. Pounds butter fat in 4 per cent milk	360	370	380	390	400	410	420	430	440	450	460	470	480
19. Value of butter fat at 27c per pound	$97.20				$108.00				$118.80				$129.60
20. Cost of feed for cow	48.00				50.00				52.00				54.00
21. Profit from butter fat over feed	$49.26	$51.40	$53.60	$55.80	$58.00	$60.20	$62.40	$64.60	$66.80	$69.00	$71.20	$73.40	$75.60
22. Total year's profit per cow	*$48 67*	*$51.01*	*$53.35*	*$55.70*	*$54.53*	*$57.5(*	*$70.47*	*$73.45*	*$76.42*	*$79.39*	*$82.36*	*$85.34*	*$88.31*

How to Use The Table.

This table shows how the profit differs with cows differing in production from 2000 to 15,000 pounds of milk per year. There is a column of figures for each increase of 250 pounds of milk. To find the profit or loss of any individual cow, it is only necessary to follow line 4 to the column having the number of pounds of milk nearest to the production of the cow; run down the column to line 17, the first figures in large black type, and note these. Begin again on line 18, following it to the figures that correspond the nearest to the pounds of butterfat produced by the cow; go down this column to line 21, the second figures in large black type. The sum of these two amounts in large black type gives the total year's profit or loss from the cow. The reason that the cost of feed should be based on the figures found in the column with the butterfat, and not in the column with the milk, is because cows producing rich milk require more feed per hundred pounds of milk than cows testing low in butter fat.

As an example of how to use Table 1, the returns from the first cow in herd No. 1 are here figured. She produced 4191 pounds of milk and 122 pounds of butterfat. In line 4 find the number of pounds of milk nearest that produced by the cow, which in this case is 4250. Follow down this column to line 17, the first figures in large black type, which are—$3.99. Beginning again on line 18, follow it to the figures that correspond the nearest to the pounds of butterfat produced by the cow, which in this case are 120. Go down the column to line 21 and find the next figures in large black type,—$3.60. The sum of these two amounts—$3.99 and—$3.60, is—$7.59, the total year's loss from this cow.

As a second example, the last cow in herd No. 1 gave 6606 pounds of milk and 254 pounds of butterfat. Her milk production places her in the column headed 6500 pounds of milk, resulting in a loss of $2.04, as shown in the large black type, line 17. Her production of butterfat—254 pounds—places her in the 250 pound class, showing a profit of butterfat over feed of $25.00 line 21. The sum of this $25.00 and the—$2.04 previously found in line 17, is $22.96—the total year's profit for this cow.

Detailed Explanation of Table.

These figures in Table 1 are based upon conditions as they exist today, which in many cases are far below the ideal.

The price for the product is considered at the market value of butterfat at the creamery, and this price should be obtained by any dairyman in the state, no matter what his location. If the milk were shipped to a city for direct consumption, retailed directly to the consumer, or cream sold for a fancy trade, the returns would be much greater than indicated in the table.

The production per cow is the average for six years,—the length of time cows are milked in most herds. Altho some cows produce for twice this length of time, there are also many which drop out after only one or two years' production.

These figures are based upon definite data worked out at the Experiment Station, but the results will fluctuate slightly, according to the way the herds are fed. The price of feed varies in different years, but as a rule the price of the product varies with the feed, so that this fluctuation is small. When a dairyman uses this table, the question is not whether the results obtained are absolutely correct to a few cents, as it makes no special difference to a farmer whether a cow brought in a profit of $10 or $10.50, but it does make an enormous difference whether she lost him $5, or made him $20 as may be easily done by ordinary cows producing within the range of many cows in the average herd.

To illustrate the use of Table 1 and to show what is the trouble with many of our dairymen, and how the difficulty may be remedied, the profit, based upon the actual production of five herds which have tested for an entire year by this department, has been figured out according to Table 1.

The following tables are not merely a lot of cow records, but the results in black faced type are interpretations of cow records in terms of profit and loss. The results speak largely for themselves, but a brief discussion follows each herd.

TABLE 2.—*Herd No. 1.*

No. cow.	Age.	Lb. milk.	Lb. fat.	Percent fat.	Profit.	Loss.
1	3	2496	102	4.09		$13.18
2	5	3158	107	3.39		10.57
3	13	3369	110	3.27		10.57
4	7	4178	121	2.90		7.59
5	3	3389	123	3.63		8.18
6	15	3349	124	3.70		8.37
7	3	3036	124	4.08		8.57
8	6	3415	125	3.65		5.98
9	6	3947	128	3.24		5.59
10	8	3438	132	3.84		5.98
11	3	3263	133	4.08		6.17
12	8	3435	134	3.90		5.98
13	3	3547	145	4.09		1.58
14	8	3686	149	4.04		1.38
15	3	2429	151	6.22		2.18
16	8	3922	157	4.00	$1.01	
17	4	3612	158	4.37	.62	
18	8	4185	158	3.78	1.21	
19	8	4296	161	3.75	1.21	
20	4	4328	168	3.88	3.41	
21	6	4131	170	4.12	3.41	
22	11	4290	175	4.08	5.61	
23	7	4528	181	4.00	5.81	
24	8	4458	182	4.08	5.81	
25	9	5014	184	3.67	6.20	
26	7	5191	195	3.76	10.87	
27	12	5403	196	3.63	11.13	
28	7	5673	200	3.53	11.40	
29	8	5333	211	3.96	13.07	
30	4	5215	213	4.08	13.07	
31	9	5820	218	3.75	15.80	
32	6	5953	221	3.71	16.06	
33	5	5822	227	3.90	18.00	
34	8	6606	254	3.84	22.96	
					$166.66	$101.87
					101.87	
					$64.79	
Av.		4233	163	3.85	$1.91	

Difference in profit between best and poorest cow, $36.14.

Herd No. 1 is composed largely of grade cows, of which but six had a predominance of dairy blood. Its most striking feature is that the entire herd of 34 cows brought in a profit of only $65, or an average of $1.91 per cow, whereas had the owner disposed of the 15 cows which lost him money, he would have made over $166, and would not only have been relieved of all the labor of raising the feed, housing, feeding, and milking 15 cows, but would also have increased his actual profits by over $101. To meet this loss it required more than the profit of the first 15 cows on the credit side of the account. In other words, he milked 30 cows for nothing and would have made more money

had he milked but his four best cows,—the only ones that come up to the standard a dairyman should have. The observance of such points as this rates the business ability of the dairyman and proves how essential it is that he should know just what each cow is doing, and dispose of all unprofitable members of the herd.

TABLE 3.—*Herd No. 2.*

No. cow	Age.	Lb. milk.	Lb. fat.	Percent fat.	Profit.	Loss.
1		1204	49	4.07		$27.52
2		1236	50	4.05		27.20
3		2944	88	2.99		15.17
4		2597	91	3.50		15.38
5		2518	98	3.85		13.18
6		2475	99	4.00		13.18
7		2569	105	4.09		10.98
8		3164	117	3.70		8.37
9		2829	123	4.34		5.67
10		3380	149	4.41		1.58
11		4582	158	3.45	$1.41	
12		4146	174	4.20	3.41	
13		4103	177	4.31	5.41	
14		4993	191	3.82	8.40	
15		4435	200	4.51	10.21	
					$28.84	$141.23
						28.84
						$112.39
Av.		3147	124	3.94		$7.49

Difference in profit between best and poorest cow, $37.73

This herd of 15 cows is phenomenal in the proportion of cows on the losing side of the account, and also in the excessive loss on many of them. Either one of the two poorest cows lost the owner almost as much money as was made by all the cows on the credit side of the account.

The inference might be that the cost of feed in Table 1 is too high for this herd, but the actual fact is that some of these cows were fed as much as ten pounds of grain per day, during the winter.

The most striking figure in the above table is the last one in the last column, showing a total loss of $112, which means that this man received $112 less for the products from his dairy herd than he would have received had he simply sold the feed. It is well, also, to note that the profit from the best cow is only

$10.21, and that this best cow is indeed absolutely inferior to the poorest cow in many of the herds in the state.

This is a deplorable state of affairs,—a man trying to support a family with a herd of cows utterly unable to return a profit. The actual conditions of this man's affairs is shown by the last two columns of the table, and is a forceful answer to the question, "Why test cows?" No man would conduct a losing business when fully aware of what he was doing.

Poor as this herd is, losing $112 annually, the owner, by disposing of the poorest two-thirds of his herd, without buying a single cow, might have prevented his loss of $141, and have changed himself from a cow keeper to a dairyman.

TABLE 4.—*Herd No. 3.*

No. cow	Age.	Lb. milk.	Lb. fat.	Per cent fat.	Profit.	Loss.
1		5986	252	4.20	**$22.66**	
2		7920	254	3.21	**23.84**	
3		7600	260	3.42	**25.75**	
4		7169	293	4.08	**32.20**	
5		8300	295	3.55	**35.00**	
6		9010	322	3.58	**39.87**	
7		9045	333	3.68	**42.07**	
8		9043	337	3.72	**44.27**	
9		8877	344	3.87	**44.27**	
10		9999	348	3.48	**53.53**	
11		11293	376	3.33	**63.99**	
12		7632	403	5.28	**56.69**	
13		10289	422	4.10	**69.70**	
					$553.84	
Av.		8628	326	3.77	**$42.60**	

Difference in profit between best and poorest cow, **$47.04**

Here is a herd of high average production. Altho a grade herd, its lowest cow returned a profit of over $22, which is more than twice that of the best cow in the poorest herd (No. 5). The difference between the individuals of the herd is large, but the star boarders were long ago eliminated, as a result of several years' work keeping individual production records of the cows and replenishing the herd by using a good pure-bred sire and raising the heifers from the best cows.

On only 96 acres of land, with practically no expense for purchased cows or feed, the owner is making with this herd a com-

fortable living for himself and family. He is an enthusiast instead of a plodder, reads dairy literature, turns drudgery to pleasure, and has time and money for the better things of life. He receives pay not only for his manual labor, but the neat little sum of $554 as a clear profit, to compensate for his head work.

Conclusions.

The returns from cows, when expressed in dollars and cents, stand out much more vividly than they do when expressed in pounds of milk and butterfat. Therefore, if every dairyman would keep a yearly record of the amount of milk and butter fat produced by his individual cows, and from this calculate, according to Table 1, the profit or loss of the individuals, he would be astonished at the wide variation in earning capacity of the different cows in his own herd, and the results would be of untold value to him. When the herds themselves are given like consideration, a notable contrast in the variation in earning capacity of the herds is brought out.

The cows in herd No. 2 lacked $7.49 each in paying for their feed and care, while each cow in herd No. 3 made a profit of $42.60, making a difference in income of over $50 per cow between the two herds. The best cow in the good herd brought in $69.70 profit, while the poorest cow in the poor herd was kept at a loss of $27.52, making a difference in the earning power of the two cows of nearly $100 annually.

Equally surprising facts for the guidance of the dairyman would be brought out were Table 1 applied to many other dairy herds.

THE IMPORTANCE AND PRODUCTION OF CLEAN MILK

Prof. Oscar Erf, Ohio College of Agriculture.

Gentlemen, I am going to talk on a very unpopular topic, but it is a thing that we must have in our conventions, it is a thing that we must preach; it is like the Sermon on the Mount, which has been preached for 2,000 years and I presume this

sanitary proposition has been preached that long and probably will be preached for the next 2,000 years. I really accepted this invitation with some reluctance, for fear that some of my friends in this state would be familiar with the Ohio conditions, and you would tell me something like the big girl told the boy, "Your face is dirty." She says, "You go home and wash your own face."

Now, I want to say that we are not in the foreground at all with sanitation, but we have accomplished some things. I refer to the breaking up of the distillery slop dairies. I know of one other place in the United States where this particular condition was carried on, and it went something like this:

There are a great many distilleries in Southern Ohio, it has not quite gone dry yet, you understand. In connection with these distilleries there were dairies, and to these dairies they run a string of pipes and the moment the kettle was emptied, it was forced over into a large tank, and then from this tank the cows were fed the distillery slop by gravity; all you had to do was to turn a faucet and you would feed your cows automatically.

The material that came from these tanks was a highly acid material, fermented, containing about 6 per cent solid matter, the balance of it being water; naturally, it had to be in order to flow through the pipes. This was all that these cows were fed; they never got a smitch of dry feed. The cows were produced from various parts of the country and were put into these stables, and they were fed on this slop and of course they became laxative, very laxative, in fact, a diarrhoea set in, and I can just give you an idea of the condition of that stable when I visited one of them. An old fellow came up to me, and he says "Hold on, where are you going?" I said, "I am going in the stable here to see these cows." "You better not," he says. "Come here, I want to tell you something." So he handed out a long coat and a pair of rubber boots. "Put these on first, before you go in there, or you will be sorry you didn't." And I can assure you, gentlemen, that was actually necessary, I am not exaggerating a bit. You can imagine the unsanitary condition that existed in those stables, and there was no use for shovels to remove the manure with, it was simply a mass of corruption. And yet in spite of all these things I must say that

the cows gave milk and a considerable quantity of it, but the milk was of an abnormal character, and I want to say to you that there is many a little grave in the cemeteries of Cincinnati caused by this unsanitary milk. Infants died by the score in that city owing to the abnormal conditions of the milk.

Nobody could compete with a situation of that kind. These distillers would send this food through the meters and would register the number of barrels that would flow into a trough, and five cents a barrel was paid for that feed, and that was all it cost the owners. Consequently, they could sell the milk for five cents a quart in Cincinnati and compete with the fellow that was doing an honest business.

I understand there was wealth back of this business and several attempts were made to remove the situation, but it seemed an impossibility. Bills were introduced several times into the legislature, but nothing came of them, they went into obscurity.

So, finally, we appealed to the sentiment of the people and we took them there; we also took members of the legislature and showed them the actual condition of affairs, and I want to tell you that these folks knew when they were coming, and they brushed up; they had their stables whitewashed, but for all that sentiment went against them and finally a bill was passed prohibiting the use of distillery slops.

We have no complaint to make against feeding distilled slops. Brewers grains are all right, we had no objection to them, nor to the distilled slop if they had fed some dry grain with it in order to get a mixture that would produce normal milk and keep the cow in good health; but they did not do that. So after this bill was passed, they were informed of the fact, and inspectors were sent down to these various places. Some of them were beginning to get ready to stop. Others continued, claiming it was wrong, the law was unconstitutional and couldn't be enforced. It was fought through the courts, and I must say it was a desperate fight, and finally about three months ago we closed the last distillery slop dairy in the state of Ohio, and we feel mighty good about it.

The question of sanitary milk is to the American people especially important. Milk is perhaps used to a greater extent in the manufacture of food products than in any other country and is fast becoming the food product that will be used more extensively than any other for direct consumption.

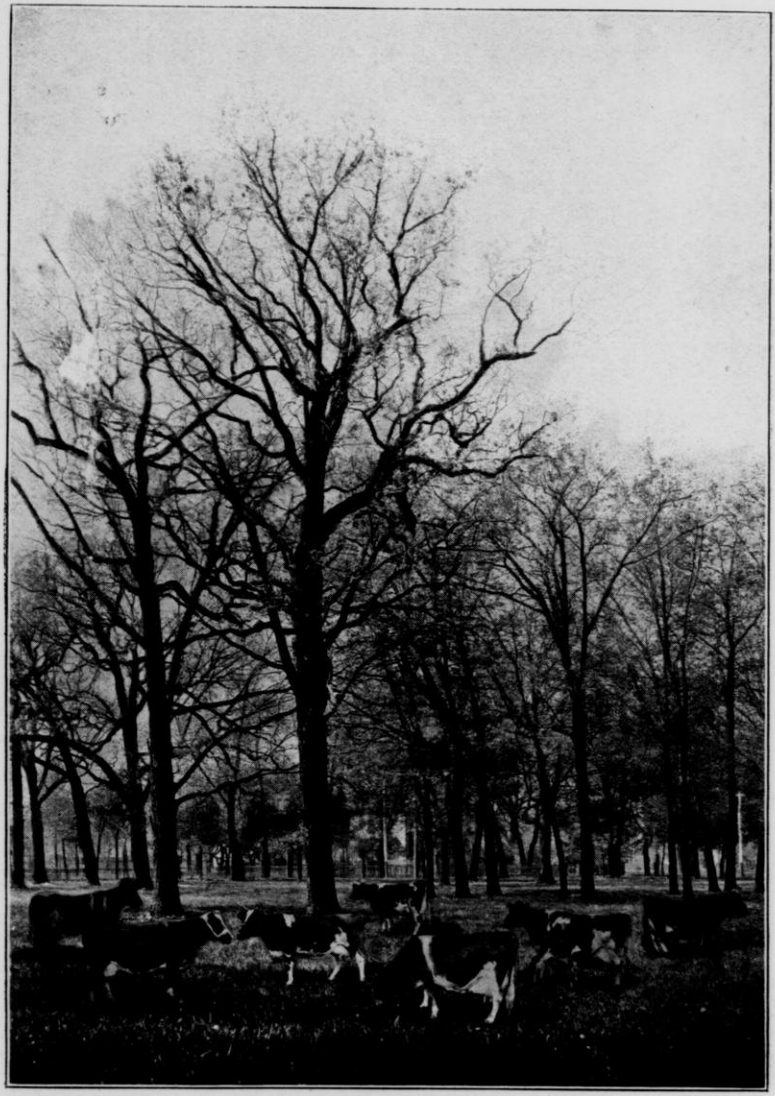
It holds a peculiar place in the nation's dietary because of its varied applicabilities, containing as it does all the essentials of a perfect food, protein, carbohydrates, fats, salts and water. It is capable of almost universal use because of its comparative ease of digestion and assimilation, and constitutes an important food product for the sick and convalescent.

Of even greater importance is the use of cow's milk as a substitute for mother's milk in infant feeding. We understand that four-fifths of the infants born in the United States depend entirely upon their foster mother, the cow, for their sustenance. It will be perceived that those most dependent upon this food, the sick, the convalescent, infants and children, suffer the greatest injustice from the use of foods impaired in their nutritive value. This is due to the fact that they are least able to resist the harmful effects of foods contaminated by toxins and disease producing micro-organisms.

While conditions of living have lessened the general mortality in civilized countries, this undoubtedly does not apply to the infant population under one year of age. It is recognized that intestinal diseases are the cause of the large infant mortality, conditions which are due in a great measure to improper methods of handling and feeding milk. These conditions are of grave importance to the people of this country, especially when we consider the fact that milk is one of the cheapest of food products, according to its nutritive value and digestibility, that man can purchase.

The average good cow is capable of producing about 6000 pounds of milk in one year and this milk at the very lowest estimate must contain 12 per cent of total solids. She is therefore capable of producing 720 pounds of dried solid matter, every ounce of which is readily digestible and can be consumed without any further preparation or without any necessary loss.

Compare this with her sister, the beef cow, which produces a calf a year, which at its best will weigh about 700 or 800 pounds at the end of that period. This, when dressed and prepared for the table, supplies approximately 100 pounds of edible material, which contains on an average 60 to 75 per cent of dried material and which requires expensive operations to prepare if fit to serve to man, and which after all these processes is not as good and digestible as the raw milk from a healthy cow.



LEADING GUERNSEYS

Honor Bright — Dolly Dimple — Stranford's Princess
Yeska Sunbeam Imp. Hayes Richesse 2nd — Glenwood Girl 6th Mary McFarland

The highest producing cow in this group has a yearly record of 18,458.8 lbs. milk and 906.89 lbs fat; the lowest, 10,470 lbs. milk and 469 lbs. fat.

Since meat has been the important food stuff for man in the past and since through wasteful methods and extravagant conditions which man has created for himself that commodity has been raised in value, it becomes necessary for the people of the United States to resort to cheaper and more economical foods, of which we would class milk as first.

The question of the production of clean milk challenges our best endeavors. Gradually as our population increases conditions become more unsanitary, owing to the fact that the people concentrate themselves on smaller areas. Nature wisely provides for sanitary conditions as long as they are not disturbed by mankind. Fifty years ago approximately 40 acres of land were available for each cow. Unsanitary conditions were not liable to exist when the animal had an opportunity to roam over such large areas. Today, this amount of land should provide a sufficient amount of pasture to support 40 cows and oftentimes 40 animals are confined in much smaller areas, as for instance in barn lots of one-half to one-quarter of an acre. Continual tramping over the same ground converts the soil into slush in wet weather and raises dust in dry weather. Both conditions are unsanitary.

Years ago cows were not housed in dark, dismal stables but were kept out in the open air during the entire year, where they could get all the sunshine that Nature provided for them and all the pure air that existed under the heavens. True, inclement weather conditions at times worked hardships on the animals, but often vitalized them so as to make them strong and vigorous, and as a result of this the disease resisting power of the animal was much greater.

Tuberculosis undoubtedly must have been rare, first because the source of infection was reduced to the minimum, and second an abundant supply of God's sunlight and pure air made conditions very unfavorable for the growth of the tubercular germ.

All these things existed, and while the animals in their native state could not be considered economical producers, for they were not intended to be food producers for mankind, still Nature provided for them such healthful conditions that they were strong and powerful as a rule.

There is no question but that the most delightful and sanitary place to milk a cow is in the middle of a big clean, pasture

field on a quiet, beautiful, June morning, while the dew is on the grass. Nature provides these conditions but one cannot always depend upon them; consequently it is necessary for man to provide for inclement weather conditions. While he is doing this it is wise for him to copy from Nature as nearly as possible some of the most important principles in providing equipment and in housing his cows.

Since the production of clean milk is of such vital importanee to infants and invalids and of no small concern to every consumer, it is necessary to take into consideration, a man with a clean conscience, then the health of the men engaged in the dairy business or those who handle the milk. More trouble can be traced to the health and purity of the man employed in the dairy and more little graves that now exist in the cemeteries can be traced to this one fact than to any other in the process of milk production. I should by all means place this before the health of the cow or any other manipulation in importance, as affecting directly the health of mankind. A man with no conscience is the most dangerous condition that exists in connection with the dairy business. I would prefer a man who is affected with a disease and who has a clean conscience, to a healthy man with no conscience, to handle the milk business. However, both are bad and should be eliminated from the milk producing business. Public health is at stake under both conditions. There is no question but that the man suffering from tuberculosis is more liable to infect the milk and transmit the disease to the consumer than a cow affected in the same way.

This fact the average Boards of Health has somewhat neglected in its systems of inspection. Sanitary conditions should exist on all dairy farms for it is very important that the conditions of the milker's household and his surroundings be sanitary as well as that he should be in good health. This necessarily requires a higher class of men to engage in dairy operations who of course demand a higher salary and this increases the cost of milk production, which the public must necessarily expect. It is my opinion that the Boards of Health could do more through this channel than by any other method.

Next in importance to the health of the milker is the health of the cow. Much has been said in regard to tuberculosis in dairy cows and while many rash and uncalled for statements

have been made by both professional men and dairymen, there still exists a sentiment of justice which cannot be overcome, though some attempt to exaggerate it, or even though the dairyman may try to keep himself in ignorance of the fact.

There is no question but that bovine tuberculosis has its effect upon human health, although it is limited largely to infants and invalids; let us as dairymen, try to do away with the least chance of infection from this source. Tuberculosis exists in cows and exercises its effects very strongly upon lessening the producing capacity of each individual affected. Knowing these facts why should we as dairymen be reluctant in testing our herds, if not for the sake of humanity but for the purpose of making our herds more efficient in performing their work.

The tuberculin test cannot be considered infallible, but errors in the test do not lie so much in the test itself as in the operations or in the veterinarians who do the testing. I am sorry to know that there are so many men who profess to be veterinarians who are incompetent to do this work. An incompetent veterinarian can do much harm in a community and the results of it will last for years. I shall welcome the day when there are more veterinarians who specialize along this line and the day when we will find more competent, worthy and honest men in this profession. I do not wish to say anything to discredit the profession for there are dairymen as well who are doing the things they should not do at present but which we hope will be rectified in the future.

If there is no veterinarian in your community in whom you have confidence, I assure you that it would be plausible, if you are an enlightened and energetic dairyman to make the test yourself, for we as dairymen should help to stamp out this dreaded disease which costs the lives of so many human beings as well as animals.

Great care should be taken that cows have no other diseases, the chief of which are the inflammatory diseases of the udder. All diseases depend more or less upon the housing of the animal; therefore, stables and surroundings should be provided that are clean and sanitary. The yards should be provided with the proper slope and drainage so as to make them dry and clean at all times. They should be either paved or well bedded to make them dry.

An enclosed expansive shed provided with light, where the cows can roam around during the day is not amiss and often results in great profit. This is especially true where you have old barns or old buildings which cannot be utilized for dairy stables. Clean milking stables are necessary for the production of clean milk.

It is evident that Nature intended milk simply for the nourishment of the young and the milk was never intended to see the light of day. If sucked from a normal, healthy gland, it is a perfect food for the offspring. In this natural method of nourishment, there is little possibility of contamination from outside sources. Since artificial methods of drawing milk have been resorted to, there enters a whole set of conditions which are entirely new and different. The milk comes in contact with the air, the vessel into which it is drawn and particles of dirt from many sources; therefore, it is essential to have pure air in the stable where the milk is drawn.

It is necessary that proper drainage should be provided in this milk stable and a hard, vitreous floor construction, except possibly in front where the cow stands, is necessary. The floor in the stables should be so constructed as to allow the smallest amount of contamination and at the same time be made simple and at a minimum cost.

Personally I believe that the cement floor is the cheapest and best floor to put in a dairy stable, but it is a little uncomfortable for the cows to stand on and I believe that the proper construction is to use cement in all places except where the cows stand, especially with their front feet. This place should be provided with a cork floor, as cork is the best insulator. Below the cement the floor should be thoroughly insulated with cinders and the ties should be comfortable for the cow.

A good ventilating system should be provided, which can always be built in connection with the silo and always works perfectly. Sunlight is of the utmost importance, therefore a barn should be provided with as much space as possible which can be devoted to windows. In some instances barns are built on side hills so that the light is available from only one side. If that is the case, I should advice the use of prism glass which concentrates the rays of light and sends them over the stable. Sunlight is a great disinfectant. It purifies the air and kills germ life of a disease producing nature.

With the proper barn construction, healthy milkers and healthy cows, the balance of the milk supply can be included in three terms: First, cleanliness; second, cold; and third, speedy transportation to the place of consumption. In the first place it is necessary to keep the germs out of the milk because the deterioration of milk is due to the germ life and if milk is drawn in the pure air and into clean vessels it is not possible for it to absorb any odors.

The second point indicates that what few germs there may be in the milk, which may come from the cow or through slightly faulty manipulations, would be prevented from growing by a low temperature. A speedy transportation from the place of production to the place of consumption is quite essential, for even at a low temperature germ life increases, although very slowly, so that in time milk may become contaminated even though kept at a low temperature. Therefore, if consumed soon after its production it will be found a great advantage toward a healthy milk supply.

The scoring of milk in the various cities by the Boards of Health is fast developing and today we have ample proof in making the statement that there is a test by which you can determine whether a man has been clean in his methods or whether his operations have been faulty in that respect. Since the Boards of Health have placed restrictions upon the temperature at which milk shall come into the cities, the bacterial test has finally resolved itself into a test of conditions under which milk has been produced.

In the thousands of bacterial tests that we have made for the various cities of Ohio, which have a temperature regulation of 60 degrees F., it is shown very conclusively that the bacterial content is comparable with the insoluble dirt in the milk, in other words, the sediment in the milk.

There are a few other factors which influence the number of bacteria. One of these is whether or not the cow is milked dry. There is probably no factor aside from sediment and temperature that has so great an influence as this. We find that the bacterial count increases 100 per cent when the cow is not milked thoroughly at each milking. It seems the milk that remains in the udder ferments very rapidly and increases the bacterial content in the next milking very decidedly. It is

this factor combined with the factor of uncleanliness that the average untrained milker will increase the bacterial count from five to eight times with the same apparatus and under the same conditions that a trained man will work.

The influence of wiping the udder with a damp cloth is another factor that has great effect in reducing the bacterial count. Frequent determinations prove that where the udder is wiped only about 1100 bacteria will drop into the pail, while under the same conditions with an unwiped udder we find the average bacterial count is increased to 10,000.

One should bear in mind continuously this important point, that milk should be handled as little as possible in pouring from one receptacle to another. Furthermore dust in the air should be eliminated as much as possible and strainer cloths ought to be avoided. If these things are taken into consideration and the temperature is kept low, there is no question but what a good, safe milk supply can be produced. And it must be expected by the consumer that an increased amount of labor must be paid for by the dairyman and that he must finally remunerate the dairyman for it.

The average consumer is not loath to tell the dairyman that he should produce clean milk and that as mere cleanliness should be the policy of every dairyman, he should not charge much for it. However, we have a great number of data to show what is meant by the cost of sanitation. We find that in the average certified dairy they are producing milk at a labor cost of about $49 per cow per year. We have all gradations and all degrees of sanitation down to where a man sits down under a cow sheltered by the leeward side of a barbed wire fence, who throws a few bundles of stalks out occasionally but allows the animal to get her chief nourishment from the straw stack, who is generally not public spirited and who is of a low type of character and consequently receives small remuneration. With these conditions at hand he can easily take care of the cow at a cost of $7 per year for labor.

We hope that the consuming public will soon recognize the importance of sanitation and we hope that the Boards of Health will be composed of public spirited, broad minded men there for the purpose of protecting the public health instead of catering to the whims of a politician. We hope that these Boards of

Health will employ competent inspectors who will not only be inspectors but will also be instructors. We hope that the veterinarians will soon become more conversant with the tuberculin test. Then and not until then will our milk supply be sanitary and safe.

The Chairman: It is now time for dinner, so we will take up this discussion immediately after dinner.

Recess to 1:30 p. m., same day.

The Convention met at 1:30 p. m., same day.

The President in the chair.

Mr. Aderhold: How about that cork board in the stall? Many of us did not understand that.

Prof. Erf: It is just a plain cork board, about two inches thick, or it may be cork brick, which is four inches thick.

Mr. Aderhold: Is cement underneath?

Prof. Erf: Yes. The cork runs back about three and a half feet from the manger. That practically takes in the whole cow, so that the cow, you know, does not rest upon the cement floor when she lies down. We find it very durable in our experience.

Mr. Goodrich: How much does it cost?

Prof. Erf: About ten cents a square foot.

Mr. Goodrich: Is that as hard as board?

Prof. Erf: No, it has considerable resiliency. That is one of the advantages of cork over boards, and at the same time it is sanitary.

A Member: Is that genuine cork, or is it manufactured material?

Prof. Erf: It is the refuse of a cork factory.

Mr. Aderhold: Is that pitched over after it is laid?

Prof. Erf: Yes, with common pitch, containing about 2 per cent light oil; that does not allow it to break off, makes it elastic-like.

THE WISCONSIN DAIRY COW COMPETITION

PROF. F. W. WOLL, Experiment Station, Madison, Wis.

We are all aware and proud of the fact that Wisconsin ranks among the foremost dairy states in the Union. The soil, climate, water and population combine to make ideal conditions for the pursuit of dairy husbandry in our state and as a result we find that she has taken front rank along most lines of dairy effort. We were the first to establish a separate dairy school and are now maintaining the largest and perhaps the best equipped school in this or any other country in the world. The Babcock test, one of the foundation stones in modern dairying was invented by our own Dr. Babcock, Chief of the Department of Agricultural Chemistry in our Agricultural College. So was the Wisconsin curd test, the method of cold-curing of American cheese, and a number of other methods and apparatus that are in general use in up-to-date butter and cheese factories. Wisconsin breeders of pure bred dairy animals have a reputation second to no class of breeders in the Union. Brown Bessie, Loretta D., Lily Ella, Yeksa Sunbeam and Colantha 4th's Johanna were all Wisconsin cows and made their wonderful records either in this state under the supervision of our Agricultural College or in national contests where they were entered by their Wisconsin owners. Who can estimate the value of the worth of any of these cows to our dairy breeders and to the dairy interests of our state! The bringing out of these cows has been the life work of their respective owners, the one important fact that will always give glory to their names and to the name of our fair state that renders it possible the achievement of these breeders. Wisconsin has also claim to distinction along the lines of dairy education aside from any reference to our dairy school or Agricultural College. The Dairymen's Association founded in 1872 has occupied an unique position in the teaching of specialized dairying and advanced dairy methods through the width and breadth of our state, and the work of this association, as well as that of farmers' institutes closely allied to it, has been of untold benefit to the farmers of our state through the de-

velopment of Wisconsin dairying, for which both institutions have stood first and last and all the time.

In this connection should also be mentioned the educational work of the Wisconsin Dairy and Food Commission in the line of factory inspection and that of the best special dairy paper in the world, Hoard's Dairyman, a Wisconsin product which has long since outgrown the confines of any state or country in its preachment of the dairy gospel and teaching of the principles of modern dairying. Our state has been exceptionally fortunate in having had the past thirty years or more, with Ex-Governor Hoard as the central figure, a band of enthusiatic dairymen who could speak of the advantages of dairying with the authority that comes from thorough, practical experience and technical knowledge and eloquence born by enthusiasm and a firm belief that the salvation of Wisconsin agriculture lies along the lines of animal or dairy husbandry. Without wishing to minimize the importance of the work of any individual it is only right to mention here the names of the early workers in the cause, Chester Hazen, Hiram Smith, C. R. Beach, Stephen Favill, W. H. Morrison, H. C. Adams, H. C. Thom, John Gould, C. P. Goodrich and Geo. C. Hill, most of whom have now gone to their reward. All honor to these men who gave themselves freely, often with sacrifice of their own convenience and private interests, to the educational dairy work that has been done in this state during the past few decades.

But no less important than the work of the leaders has been that of the rank and file of our dairy farmers and factory operators. No one can question this, when the development in our dairy industry during the past few records is considered, and Wisconsin's present position among the various states in the union. Within the borders of our state are now located nearly one-half of all the cheese factories in the union and one-sixth of all the creameries. The output of our two main dairy products, creamery butter and cheese, is worth about $27,000,000 and $21,000,000 each annually and if the value of condensed milk, skimmilk, whey and miscellaneous dairy products be included the sum swells to the enormous figure of $68,500,000, according to the latest information given out by the State Dairy and Food Commissioners. These are facts, the contemplation of which gives us the greatest satisfaction and makes us proud that

our lot has been cast here in a state whose name is everywhere recognized as synonymous with progressive dairying and enlightened citizenship.

I have so far sketched the bright side of the picture. The other side will not prove discouraging when we think of the progress that has been made and the present high development of our dairy industry in the best districts of the state. As your program puts it, there is, however, "abundant room for further improvement. The cow that does not pay her board is everywhere in evidence." We have in this state at the present time about a million and a quarter dairy cows two years old and over. No one knows just how much they produce on the average during the year, but according to the best information at hand we are doubtless safe in placing their average annual production somewhere around 4,000 pounds of milk and 150 pounds of butterfat. Valuing the latter at 25c. a pound gives us $37.50, or about what it is generally assumed costs to feed a dairy cow, if ordinary market prices are charged for the feed eaten. That is, there is only the value of the calf, the skimmilk and the manure produced to pay for the cost of the labor, which is variously estimated from $12 to $18 for a cow during the year, and for all expenses connected with keeping the cows, value of bulls and their feed, feed of heifers and calves, interest on investment, taxes, insurance, repairs, depreciation of property, veterinary services, etc. It is difficult to escape the conclusion that farmers keeping only average cows are supporting their cows and not the cows and their families.

The fact that averages are made up of lower as well as higher figures rendered the picture still darker. If we cannot find any profit in keeping cows producing average amounts of milk and butterfat only, what shall we say of all the cows and even herds whose production comes below the average. Where does the profit come in for their owners? If they had to buy the scant feed they give their cows. They would not be able to do business at the old stand for any length of time, but would go from bad to worse with every year. Fortunately the seed sown by our various educational agencies during the past decades has fallen on good ground in many places and is bearing fruit that will gradually raise the average production of our daily herd to a point where the industry will become what it already has in

our best dairy sections, one of the most profitable agricultural pursuits and one that will leave the farm in better condition for the generations that will follow us than it was when the present owners rescued it from the effects of ruinous agricultural practices of the past.

But where does the Wisconsin Dairy Cow Competition come in, you will ask. It will not be necessary for me to speak at length about the details of this competition for you will find it fully described in Circular No. 9 of our Experiment Station which will be sent free of charge to all parties sufficiently interested in the subject to write to the Experiment Station at Madison for a copy.

The Wisconsin Dairy Cow Competition came into being through our desire to aid in the further development of Wisconsin dairying by stimulating the interest in yearly testing of cows for milk and butterfat production. Work along this line has, as most of you know, been done by our station for nearly twenty years past; especially during the last ten years this work has assumed considerable importance and has become of great value to our breeders of dairy cattle. Last year the dairy press announced that Mr. W. W. Marsh of Waterloo, Iowa, had given $1,000 for prizes for the largest authenticated records of production of butterfat for one year by Iowa cows, and the thought occurred to me that it ought to be possible to find a few Wisconsin public-spirited men who combined would be willing to do as much for Wisconsin as did Mr. Marsh for Iowa. Professor Humphrey and I took up the matter with a number of breeders of dairy cattle and others in the state, and some progress was made during the past summer toward establishing a prize fund for a dairy cow competition, but not sufficient to make it seem worth the while to go ahead in view of what had been done in Iowa. The matter would, therefore, very likely have been allowed to go by default if Mr. Marsh had not stepped in and told us that he was interested in the development of the dairy industry in this great Mississippi Valley and would be glad to do as much for Wisconsin as he had done for Iowa.

The plan of establishing a dairy competition received a new impetus through this generous offer and the further arrangements gave relatively little trouble. A number of Wisconsin breeders of dairy animals and others subscribed a prize fund

that will amount to over $2,000 with accrued interest on the first of November next year. In addition, the W. D. Hoard Company offered a monthly prize of $25 (or $600 in all) to go to the cows having the highest production of butterfat for each month during the period the competition will be in progress, November 1, 1909, to the same date, 1911. A large number of special prizes of registered bull calves and of dairy machinery of different kinds have futhermore been secured, the aggregate value of which about equals that of the cash prizes, and finally the American Jersey Cattle Club and possibly other dairy breed associations will duplicate all cash prizes, except the Hoard's Dairyman monthly prize, when won by registered cows of their own respective breeds. It will be seen, therefore, that the value of all prizes which will be offered in this competition is likely to exceed $6,000. All of this sum will be paid to Wisconsin dairy farmers and breeders for records of production of butterfat made by their cows individually or collectively prior to November 1st next year. The College of Agriculture will pay for the administration of the tests and traveling expenses of our supervisors, out of the extension fund provided by the last legislature, and the farmers entering their cows in the competition will pay for the services rendered by our supervisors of dairy tests in conducting the monthly tests.

Prizes will be awarded for yearly records made by individual cows and for groups of two to ten cows in the same herd, the main emphasis being laid on the herd prizes for records of production by ten cows. $1200 in cash prizes and special prizes to the value of $1000 will be awarded for such herd record or for records made by groups of cows in the same herd. Among the cash prizes are four of $500, $300, $200 and $100 respectively, which should make it interesting to all owners of good cows in the state to enter these in the competition. Cash prizes of $300, $200, and four of $50 each are offered for the yearly records made by individual cows as explained in the circular just mentioned which gives a nearly complete list of the various prizes offered.

The competition is open to cows of any breed, whether of pure bred, grade or native stock. In fact, a number of prizes are offered for records made by cows composed of grade or native cows only, viz., four prizes: a feed cutter, a grinding mill, a

tread power, and a Babcock tester, for the highest records of groups of five cows in different herds, and three prizes of registered Guernsey, Jersey or Holstein bull calves will be awarded for the best individual records in as many such herds. These prizes cannot be competed for by farmers owning pure bred cows. For most other prizes offered, grade or native cows can compete with pure bred cows on equal terms and are welcome to capture as many prizes as they can.

The competition is conducted under the general rules governing the so-called semi-official tests which our station has been directing for many years past. Our supervisors visit once a month the farms where cows are entered and make a two-day test for the production of milk and butterfat by the cows, taking a preliminary milking in each case. The average per cent of fat for this two-day period is taken to represent the quality of the milk for the month and the production of milk is obtained from the owner's records, the figures being verified in a number of ways so as to insure their accuracy. The expense of the monthly tests on the competition is $5 per each herd, whether one or ten cows are tested, and the farmer must give our men board and accommodations during the conduct of the tests and bring them to and from the nearest railway station or place of testing. Besides supplying correct figures for the milk yields of the cows entered this is practically all that is required of them. The station or our representatives attend to everything else and furnish all necessary blanks except the original milk record sheets.

The competition was started November 1st, last year and has, therefore, now been running a little over three months. The results for the third month are not yet all in, but will be published in our dairy press within the next two or three weeks. For the month of November we had 60 entries, of which number 35 cows were entered for the entire month. The second month there were 85 entries, with 63 entries for the full month. The table shows the average results of the monthly tests to date in so far as the January figures are at hand. I shall not discuss these results at this time, but will only say a few words more with regard to the competition itself.

The Wisconsin Dairy Cow Competition.

	November.	December.	January.
No. of cows entered	60	85	114
Guernsey	28	40	51
Holstein	16 (1 gr.)	25 (2 gr.)	36 (3 gr.)
Jersey	16 (7 gr.)	20 (7 gr.)	27 (8 gr.)
No. of breeders	13	18	26
Guernsey	7	8	12
Holstein	4	6	8
Jersey	2	4	6
Av. production for mo., lbs. butter fat	49.304 (35 cows)	51.349 (63 cows)	50.975 (97 cows)
No. above 50 lbs. butter fat	17	36	49
Production of butter fat for month:	Mernaletto II.	Leland Maid.	Daisy Queen Neth. II. Piebe.
Highest	80.772	79.297	85.238
Lowest	30.111	31.631	30.784
Average, 3 highest cows of butter fat for mo.	72.508	76.579	84.801
Average, 3 lowest cows of butter fat for mo.	33.004	34.017	31.395

The main object of the competition is, as previously stated, educational, viz., to attract the attention of dairy farmers and others to the importance of determining the production of the individual cows in their herds and in learning how far each cow gives fair returns for the feed she eats and the care given her. It follows, therefore, that we aim to interest farmers in all parts of the state in the competition so that they may take up this work and thereby be lead to improve their herds and feed and care for the cows that are worth keeping, in such a way that will produce according to their dairy capacity. We like to see as many cows entered in each herd as possible, since the value of the tests to the farmer will thereby be greatly increased. For this reason more prizes are offered for records made by groups of cows in the same herd than for individual records and the value of these prizes as we have seen greatly exceeds that of the individual prizes combined. The competition was not originally planned nor will it be conducted, so far as we are concerned, for the purpose of making big records or of deciding which of the dairy breeds will produce most butterfat in a month or a year. Of course, if the results of the competition show incidentally that we have some very excellent dairy cows in the state, as they have so far, all will feel gratified and it will make a good advertisement for the owner of the cows, and the breed,

and our dairy interests generally, but that was not and is not the primary object of the competition and will be of less importance to the dairy industry of our state than it will be to have dairy farmers in all parts of the state enter their cows and obtain accurate information as to the returns which their cows give them; whether these be high or low, the owners will be placed in position to know what their cows are doing and how their production may be increased so as to give fair returns for the labor they bestow on them. I trust that all dairy farmers here present will consider seriously the matter of entering their cows in the competition as these freshen in the spring or next fall, and will talk it over with their neighbors, so that we shall have a dozen herds entered before long where we now have one. A general participation in the dairy cow competition cannot help being of the greatest value to our dairy industry and will give a new impetus to dairy work in this state that will be far-reaching in its effects.

The rules governing the competition are given in the following, with a list of cash and special prizes to be awarded for records made by single cows or groups of cows in the same herd.

Rules Governing the Competition.

1. Any cow owned by a resident of the state of Wisconsin, may be entered in the competition.

2. Cows entered in the competition shall be tested for two days each month during the year, as arranged for by the rules governing the semi-official yearly tests in this state, with the provision that no award shall be given to a cow that has not been safely bred within five months from the date of last calving.

3. The owner shall furnish a detailed monthly statement of the kinds and the amounts of the different feeds eaten each month by the individual cows entered in the competition.

4. In order not to place young animals at a handicap in the award of prizes, the records of production actually made by cows under five years of age shall be increased in accordance with the average results obtained in authenticated yearly tests of cows of different ages, as follows: Records made by cows under 2½ years at the beginning of the yearly test shall be increased by 30 per

cent; 2½ to 3 years old by 24 per cent; 3 to 3 1-2 years old by 18 per cent; 3 1-2 to 4 years old by 15 per cent; 4 to 4 1-2 years old by 8 per cent, and 4 1-2 to 5 years old by 5 per cent.

5. Records of production for the competition may begin on the fifth day after calving and shall close 365 days from the date of the beginning of the test.

6. The cost of the monthly two-day tests conducted in connection with this competition shall be $5 for each farmer. The expense stated covers the entire cost of the test to farmers so far as the Station is concerned and includes all necessary expenses of the supervisors of the tests (traveling, hotel, per diem, etc.). Farmers supply the sulphuric acid and glass jars or bottles used on the tests, and pay notary fees (if affidavits are required) and express charges on Babcock testers. They provide for the accommodation of supervisors at the farm during the tests and convey them from and to the nearest railway station or next farm where tests are conducted.

No more than ten cows in any one herd shall be tested at one time on monthly tests if the cows are milked twice a day, and no more than eight cows where any are milked three or four times a day. The number of milkings per day shall in no case exceed four.

7. Applications for entries on the competition may be made any time before November 1, 1910. Records of production may commence on November 1, 1909, and prizes will be awarded for records made prior to November 1, 1911.

8. All questions not covered by the preceding rules or by the rules governing the semi-official tests in this state shall be decided by the heads of the departments of Animal Husbandry and Dairy Tests in the College of Agriculture of the University of Wisconsin, whose decision shall be final.

The following prizes will be awarded in the Competition:

I. Cash Prizes.

a. For the highest records of production of butter fat by a cow for one year—
First prize, $300.
Second prize, $200.
Third prize, $100.
Four prizes of $50 each.

b. For the highest records of production of butter fat by 10 cows in any one herd for one year—

First prize, $500.
Second prize, $300.
Third prize, $200.
Fourth prize, $100.

Two prizes of $50 each.

The maximum amount of money paid for prizes to any one breeder shall be $500. Prizes shall only be awarded to the bona fide owner of a cow at the time her record was made.

II. Special Prizes.

1. **For the largest production of butter fat during a month by a single cow,** The "*Hoard's Dairyman* Monthly Prize" of $25 (will be awarded only once for records made by the same cow).

2. **For the highest records made by five cows in a herd composed of grade or native cows only:**

First Prize, 1 No. 13 feed cutter, with traveling feed table and 12 feet of enclosed steel carrier, donated by S. Freeman & Sons Mfg. Co., Racine, Wis.

Second Prize, 1 No. 5 Ideal Duplex Feed Grinding Mill, donated by the Stover Mfg. Co., Freeport, Ill.

Third Prize, 1 Sheep Tread Power, donated by The Althouse-Wheeler Co., Waupun, Wis.

Fourth Prize, 1–12 bottle Facile Babcock Hand Tester, donated by A. H. Barber Creamery Supply Co., Chicago, Ill.

3. **For the best individual record in a herd composed of grade Guernsey or native cows only,** 1 Registered Bull Calf, donated by J. Gilbert Hickcox, Milwaukee, Wis.

4. **For the best individual record in a herd composed of grade Jersey or native cows only,** 1 Registered Bull Calf, donated by Muskego Lakes Jersey Herd, Muskego Lakes, Wis.

5. **For the best individual record in a herd composed of grade Holstein or native cows only,** 1 Registered Bull Calf, donated by Frank B. Fargo, Lake Mills, Wis.

6. **For the highest records made by five cows in one herd, without regard to breeding.** Choice of 1 Registered Jersey Bull Calf, donated by F. H. Scribner & Son, Rosendale, Wis., or 1 Registered Holstein Bull Calf, donated by C. R. Montague, North Prairie, Wis., or 1 Registered Guernsey Bull Calf, donated by M. D. Cunningham, Kansasville, Wis. (Winners of 1st herd prize and special prizes Nos. 7, 8 and 9 barred from competition.)

7. a. **For the highest records of three pure-bred Jersey cows in a herd,** 1 Registered Bull Calf, the get of Merry Maiden's Third Son, 60516, donated by H. C. Taylor, Orfordville, Wis. (Winners of 1st herd prize and special prizes Nos. 6 and 8 barred from competition.)

b. **For the highest records of three pure-bred Holstein cows in a herd,** 1 Registered Bull Calf, donated by Rust Bros., West Allis, Wis. (Winners of 1st herd prize and special prizes Nos. 6 and 9 barred from competition.)

c. **For the highest records of three pure-bred Guernsey cows in a herd,** 1 Registered Bull Calf, donated by E. R. Whitcomb, Whitefish Bay, Wis. (Winners of 1st herd prize and special prize No. 6 barred from competition.)

8. **For the highest record made by a pure-bred Jersey cow,** 1 Registered Bull Calf, the get of Blue Belle's Eminent, 74774, or Double Time's Varsity King, 82315, donated by Fred Stubley, Black Earth, Wis. (Winners of 1st individual cash prize and of special prizes Nos. 6 and 7 barred from competition.)

9. **For the highest record made by a pure-bred Holstein cow,** 1 Registered Bull Calf, donated by A. L. Williams, Fond du Lac, Wis. (Winners of 1st individual cash prize and of special prizes Nos. 6 and 7 barred from competition.)

10. **For the largest number of records made by cows of the owner's own breeding,** 1 No. 12 Ohio Monarch Self-feed Cutter, complete with blower, elevator distributer, and 30 ft. galvanized pipe, donated by the Silver Mfg. Co., Salem, Ohio.

11. **For the largest number of records in one herd,** 1 Empire No. 2B hand separator, capacity 600 pounds, donated by Empire Cream Separator Co., Chicago, Ill.

12. **For the highest records of four animals the get of one sire,** 1 No. 15 United States Hand Separator, capacity 650 pounds, donated by Vermont Farm Machine Co., Bellows Falls, Vt.

13. **For the highest records made by two animals, the produce of one cow,** 1 Dairymaid Cream Harvester No. 3, capacity 650 pounds, donated by International Harvester Company of America (Inc.), Chicago, Ill.

14. **For the highest records made by three cows in the same herd, 2½ to 3½ years old at the beginning of the test,** 1 Improved No. 12 DeLaval Hand Separator, capacity 450 pounds, donated by DeLaval Separator Co., New York City.

15. **For the highest record of a heifer, 2½ years old at beginning of test, during her first lactation period.** 1 Agos Babcock Tester, donated by Vermont Farm Machine Co., Bellows Falls, Vt.

16. **For the highest record by a cow during her second lactation period,** 1–12 bottle 20th-Century Babcock Tester, donated by Creamery Package Mfg. Co., Chicago, Ill.

DISCUSSION

A Member: Is there any efforts to keep count of the feed consumed, the cost of production in this test?

Prof. Woll: Yes, we aim to keep the closest account of it that we can. There is no difficulty as a general rule in getting pretty close figures for the green feed eaten, but when it comes to hay, most of the farmers that have entered their cows will put down, "Hay, all they will eat." Or give just, "Hay, at lunchtime," or something like that. We follow it up and we want to get as close estimates as we can so that we can figure in all cases on the economy of the production of the cows. There is no account taken of it in the award of prizes.

PRODUCING MILK BY THE ACRE

J. P. MASON, Elgin, Ill.

Mr. President and Neighbor Farmers:—When I was invited to come to Wisconsin I felt a little overwhelmed. I had heard a good deal about dairy business in Wisconsin and about your noted breeders of dairy cattle. We sometimes hear you ship all the poor cows to Illinois, so you can readily see that if we make a living there you surely ought to get rich. That is what we have been trying to do in Illinois in the past. We have a state association for the improvement of dairy cattle, also a State Holstein Association, and we are fully determined to push the breeding of dairy cattle, as cattle of all kinds have never been higher or in greater demand, and the demand is in excess of the supply. At Elgin nearly all the farms are run as dairy farms and all the whole milk is sold, either shipped to Chicago, or to the bottling plants or a condensary. There is no butter made in that vicinity and about 80 per cent of the farms are rented, which is detrimental to farm life, and produces depreciation to farm property. If the owners would live on their own farms and improve them, it would be a great deal better; that would be

their place of business and they would get a great deal more out of the farms. I believe in having a farm on a good paying basis; it helps materially to build up a substantial, comfortable, pleasant farm home. It helps to keep the boy on the farm by showing him that the farm is just as comfortable and far more profitable than many other vocations, and the supply of opportunity for improvement, like the atmosphere, is always with us, and there certainly is no profession where brains or knowledge put into action, will count for more than in the business of farming or dairying.

I look at dairying as a business proposition, the farm and buildings being the fixed capital; the dairy and tools the working capital, and as in any other line of business enterprise, the object will be to make the working capital pay the largest per cent possible on the fixed capital, as well as adding to its value in the shape of soil fertility.

There are three factors that come into play in running a dairy. There is the soil, the cow and the man. The soil is just as sensitive to the touch, and will respond just as readily as a dairy cow will, with a balanced ration and good care. By working the soil when it is in condition to work and making a perfect seed bed by thorough cultivation many a crop has been doubled. On the other hand, I have seen many a piece worked when it would take the life right out of it, and take five years to get it back to its orginal condition. Many farmers do not realize what that means. You can grow as many bushels of corn on a piece of land in five years by having the land in grass two of those five years. I like to have it in pasture, about half an acre to a cow, which will leave the land pretty well fertilized for the corn crop next year.

Now, I will go back and show how I commenced dairying. I did not have the opportunity to learn dairying that the young man has today. We did not have our agricultural school then, and we learned it through the hard road of experience. I often think that the young men of today ought to appreciate the opportunities they have for learning to do business.

I commenced on a rather poor farm with poor buildings; a good deal of timber on it and a good many sloughs that I had to tile, and let me tell you there is no investment on the farm

that pays better than tiling; you get the quickest results furnished by anything on the farm, if your land needs it.

I cleaned it up and went to raising crops. I did not know as much about dairy cows, as I do now. I used to raise all I could through the summer and in the fall I would go to Iowa and stock up my farm to feed the crops. I didn't buy as good cows as I could, but I fed the crop. In the spring I would reduce the herd, perhaps one-third, or one-half, and they would sell for more than they cost. In the fall and winter I would produce the milk when it was at the highest price and when labor was cheap, and we fertilized our fields and marketed our crops at a good advantage. I did that for years and I did well; I built other buildings on my farm and I bought more land. Finally I took a notion that I would try cattle feeding. I had 98 acres, and I never had much pasture. I used to soil my cows a good deal through the summer, at least partly soil them. You don't know how much feed you can get off a little piece of land if it is a good crop. Take the rye, for instance in the spring I used to feed that a good deal and it came right handy. Then I would go onto clover, or oats and peas. I always believed in feeding a cow. I guess we had a lot of poor cows; it made me feel I was at home when I looked at these figures here.

I know our friend Goodrich here. He gave me a raking up at one time down to Aurora; he called us "cattle killers." I have made the heaviest flow of milk per cow in July and August that I ever made feeding the cow in hot weather. That is what produces milk, when they don't have to run all over the farm to find something to eat.

One spring I pastured four and one-half acres of rye, and turned out 28 cows that had been milked all winter on the 26th day of April. They were there 26 days, and produced 292 cans of milk. I fed them a little hay, I always give my cows hay on grass; they won't eat much the first day, but they will the second, and there is nothing that keeps them from getting too laxative as well as a little hay and a little grain. That four and a half acres of rye paid me net $42.50 an acre in milk. But you have to be careful not to turn your cattle on when it is too wet. That happened to be a dry season. Then I put on twelve loads of fertility to the acre and put it into corn and I got a good

crop. Then I turned them onto seven and one-half acres of grass and that paid me $1.00 a day for ten days.

I have tried to raise good crops. I reduced my corn rows down to three feet, which made a difference of 50 per cent more hills to the acre and I couldn't see but what I got just as much to the row.

At that time we didn't know as much about clover as we do now; through the winter I would make this milk exclusively out of the corn crop with the addition of bran. We threshed the corn, dried it and mixed it pound for pound with bran, and corn stover was all the roughage they had. I kept track of the bran and the corn to see what an acre of corn would produce in milk, and I was never more surprised in my life. No experiment ever stimulated me any more than that month's work. My neighbor kept track of it also, and at the end of the month we were only $2.50 apart. My acre of corn in milk, after deducting the bran about $14 a ton at that time, and we were getting $1.00 a can for the milk, netted me $74.50 and he got $2.50 less. That stimulated me to go on until I had more land to keep more cows to make more milk to buy more land.

I then thought I would try the steer business. I had 106 steers. I want to show you the difference between dairying and cattle feeding and that is the reason I bring this in here. When I shipped those 106 steers and 300 hogs I brought back $10,300, but when I went to the barn it looked mightly lonesome; all the machinery, the raw material of the farm, went into product in the shape of beef and pork and it was gone. Then we went into the dairy business and that surprised me again. At the end of twelve months I found we had got within $50 for the milk of what those cattle and hogs brought, and when I went to the barn the next morning we were doing business right there, producing 50 cans of milk per day. It struck me as the one being the product of the working capital and the other took the working capital to get it, so there's a point for the dairyman.

We want to get more out of an acre of land, as well as more out of the cow. We have been turning attention to raising young stock, and when I was running that way my milk brought me $1650, and if we made the same amount of milk without any increase in the cost of production, at the price we get now, it would bring over $2,000 a month. I have good barns, with

cement floors. I feed my cows heavy and take the best care of them.

I do not think any of us have any conception of the possibilities of the American dairyman. It is like compound interest, it will double up on itself if you will only carry it on right. You are building up your soil on the one hand, increasing the crops yearly, and on the other hand you increase the flow of milk. We want to encourage this, show our young neighbors what there is to it and have our young men realize that there is something in farming. It is a serious matter that so many are leaving the farm, going to the city, but none of them quit eating when they go there. All the time, we must remember, that there is no farm in the country that has ever been run quite as it should be. I never talked with a man but that admitted he could do double what he is doing. That is the trouble with the high living we hear so much about, we are not producing what we should. There is nothing worse than a farm that isn't run right, not very well situated, with poor buildings, and not very good crops raised, but when you have your farm up in good shape, your buildings handy, everything convenient and have a herd of dairy cows well bred and everything run right and a good substantial milk check at the end of the month, there is nothing more attractive.

I have a statement of a farmer given me the other day, and I want to read it so you can comment on it. It is just about my line of farming. He has done well, and I want to say here he can double the net profit and that is what we are after. He says:

"The feed on hand January 1, 1910, is practically the same as that on January 1, 1909, also I had 59 milking cows on hand January 1, 1909, and have the same number January 1, 1910. I have 131 1-2 acres in my own farm and rent 80 acres, making a total of 211 1-2 acres. Had 60 acres into corn, 30 of which was put in silo; the other 30 was shocked and husked. Had 40 acres of hay, consisting of 20 acres alsike clover and 20 acres common red clover and timothy; four acres of rye, which was cut and put in silo with three acres of alsike clover, about the middle of June, which I began feeding July 1st, and same lasted until the middle of September, when we commenced filling silos with corn.

"I have two silos, one 16 by 30, the other 16 by 36, both Stave Indiana Silo Company silos. I have a Belle City feed cutter

and blower, run with an 18-horse power gasoline engine, therefore do not have to be under obligation to others, but can fill silo when and how I like. I think those seven acres of rye and clover were the most profitable crops I raised, as it stood me in good stead, as you will see by the number of pounds of milk I got through the dry time and fly time of the summer of 1909 which all the dairymen of Northern Illinois and Southern Wisconsin will well remember. I had 15 acres of oats and the balance of land was in pasture. The number of pounds of milk produced per month that was shipped to the St. Charles Condensing factory at St. Charles, Ill., is as follows:

"January, 37,846 pounds; February, 34,856 pounds; March, 37,571 pounds; April, 32,776 pounds; May, 34,000 pounds; June, 35,632 pounds; July, 30,982 pounds; August, 32,141 pounds; September, 32,717 pounds; October, 39,496 pounds; November, 36,516 pounds; December, 42,617 pounds; Total, 426,150 pounds.

"I also raised fifteen calves, which I fed 18,360 pounds of milk, sold to private parties 3876 pounds, making a total of 448,386 pounds for the year, or 7600 pounds per cow. The average price of milk being $1.40 per 100, would make each cow's milk bring $106.40, and being 59 cows in the herd, the grand total would be $6,277.40. Besides the fifteen calves I raised, I sold $200 worth of veal calves. I have 12 two-year old heifers, which have advanced in price the last year $20 per head, or $240. Have 12 yearling heifers, which have advanced in price $10 per head, or $120. Total amount derived from dairy from January 1, 1909, to January 1, 1910, $6,837.40.

"Now, taking the debit side of the sheet, we have 80 acres of land rented at $5.00 per acre, or $400; feed and mill stuff bought $825; hired help, five months, $725; hired help seven months, $1,085; blacksmithing bill, $40; repairs, $50; threshing, $25; binding twine, $25; gasoline, $25; taxes, $50; depreciation on 15 cows, $450; two cows died, $160; interest on money invested, farm included, $20,000, at 5 per cent interest, $1,000. Total, $4,860. This would leave a net profit of $1,977.40. As you know, Mr. Mason, I am not on my farm, and only go up there occasionally, and depend entirely on hired help. I think the possibilities of farming and dairying are in their infancy. Farming is the grandest occupation, and with our experimental colleges and machinery of the present day, one can scarce-

ly conceive the advancement that will be made in dairying in the next few years. I am quite sure that I had a number of cows that gave over 10,000 pounds of milk the last year, as 12 of the cows in this dairy were two-year-old heifers, with their first calf. I wish to say that I have an exclusive Holstein dairy, six of them being pure breds. The remainder are very high grade, as I have kept a pure bred sire for the past twelve years.

"Hoping that this may be of some value to the young farmer if not to the old, I remain, your friend and fellow dairyman, F. B. Pratt."

The man that wrote this letter was foreman on the Dunham Stock Farm, and he rented a farm two miles away. There are two or three little items I think you can get around and double the profits. In the first place, in figuring what these young cattle had advanced, it cost $44.40 to keep a cow a year, and the help cost $30; so with feed, everything figured in, the milk cost $1.00 a hundred. I think he fed a little too much; if he had had alfalfa he could have cut out the pasture hay, so in all those items he could have largely increased the profits of his farm.

There was another farmer from whom I got the weight of milk from the Borden book, and the average of the entire herd for the year, was 9,250 pounds. We have several farms in our neighborhood that are running along those lines.

I saw a piece in the paper the other day that shows the difference in methods; it was about a 160-acre farm in the great dairy district and the farmer concluded that the farm didn't pay, but he had the same opportunity that this other man had. Such reports as his are no encouragement to our young men to keep on farming, but there is really no better business, and we want to encourage it all we can, and where it doesn't pay, there is something wrong with the system. It is simply a business proposition. Of course you ought to keep books like any other business man, and then you can see where you can better yourself next year; you have got something to work to and know what you are doing, and that is what the average farmer doesn't know.

The institute has influenced hundreds of young men to attend the College of Agriculture, and the short courses, and the study clubs formed throughout the state are the direct result of the efforts of the institute. Its department of household science

is an important feature of the work and its influence is felt in every county in the state.

Listen to State Superintendent of Public Instruction, Francis G. Blair. He says: "The Illinois Farmers' Institute is covering a field in public instruction that is not and cannot be occupied by any other educational institutions; it is doing more for the educational uplift of Illinois than any other factor.

DISCUSSION

Mr. Jacobs: What did you get a can for your milk?

Mr. Mason: Last winter the price was $1.40 and 16 cents freight; that left $1.24.

Mr. Jacobs: What sized cans?

Mr. Mason: Eight gallon cans. Last summer I think it was 91 cents net, an average of $1.06 or $1.07 for the year, and we fed silage every day, night and morning.

A Member: Do you raise your heifers or buy them?

Mr. Mason: I have not raised them for the last two years.

Mr. Imrie: Do you supply the water to the cow or the can?

Mr. Mason: I run it through the cow first.

A Member: How do you feed the salt?

Mr. Mason: I put it in the manger. You don't want to crowd it onto them. If they don't relish it, don't give it to them.

A Member: Do most of them want some every day?

Mr. Mason: Yes, they get kind of used to it. I like to feed them pretty heavy with salt. They drink more and the more they drink and the more they eat, the more milk they will give, and the more milk they give the more they will eat and drink.

A Member: How do you water your cows in the winter?

Mr. Mason: We have iron boxes between each two cows so they can drink any time they choose. I had 100 cows in one barn, and I never came home, never stepped into that barn even in the dead of night, that I didn't hear some cow drinking.

Mr. Everett: Do you have any tuberculosis in your herd?

Mr. Mason: I reckon so. That is where I made a mistake. I started in and went to raising cattle and this has come up now and I am going to test my cattle and get down and start over again.

The Chairman: This has been a good discussion. That is a man after my own heart.

Mr. Aderhold: Only you don't admit your mistakes so freely.

Mr. Mason: They say you can't teach an old man, but I have been a farmer all my life and I never was so anxious to learn as I am now.

Prof. Emery: It seems to me that we must all be impressed as we have looked upon Mr. Mason and heard him speak, that the first and foremost thing is this iron purpose in that man to achieve his results. That is the first essential. When we have a man with that purpose, that determination, the cow will come and the opportunity will come.

The Chairman: I think Mr. Mason struck one of the keynotes of successful dairying, and that is to keep that machine going. You go into any manufacturing plant and we find every machine working to its capacity, and that business would not prosper unless those machines were going to their fullest capacity.

A Member: I put some alfalfa into my silo last June and my cows wouldn't eat it until starvation stared them in the face.

The Chairman: Those were Guernsey cows.

A Member: No. I can prove by Mr. Searles that they were Jerseys.

FEEDING DAIRY COWS FOR LARGE PRODUCTION

Mrs. E. W. Strawbridge, Moorestown, N. J.

I feel it quite an honor to be asked to address you on some of our experiences at Pinehurst in making A. R. records, and I had hoped to speak to you in person, and have the pleasure of mingling with you once more, but I have been called 1000 miles away by a death, and shall not return in time for this meeting. May I hope at some future time to be invited to be with you? I have a great regard for Wisconsin dairymen, both for their progressive spirit, and the success which has crowned their efforts.

I was asked to speak about "Feeding cows for large records," and while it may not seem entirely relevant, I want to begin

with raising the calf. I feel so many good calves are lost, and many more perhaps injured, because their owners don't realize the necessity for keeping down the ever present "germ." We have for many years raised calves with a very good degree of success in the same pens and on an earth floor. We aimed to clean out these stalls about once a week, and to disinfect the floor with formalin or air-slaked lime. I had been talking of putting in cement floors, but had neglected doing so, and this last spring our Nemesis overtook us, the calves were sick, first one and then another, and then nearly all sick, then better, almost none of them doing well. They did not look like our nice, thrifty calves. At last two fine heifers went the way of all flesh. (They would have paid for the cement floor over and over.) I got a good sensible veterinarian to come and look at the calves. He observed the little wretches, heard them cough, and promptly pronounced it "verminous bronchitis," or worms in their throats, from over-crowding and being too long in one place. Also he said the very dry, dusty spring helped to make it worse. Being a sensible man he gave no medicine, but told me to put them in fresh pasture, to feed them grain in new loose boxes, and as the rain had come to lay the dust, he thought all would come out well. We put them in a meadow with running water, and he was right, for now we have a bunch of calves that would do any dairyman's heart good to see. But we have put in the cement floors, laid to drain out back, and now with cleaning the stalls each week, and disinfecting them, I don't expect these serious diarrhoeal troubles. I mention this because I know many farmers have periodic attacks of scours among their calves, losing them in quantities, then perhaps for years losing almost none, and then the germs arise again in their might from the old foul soil, and decimate the flock. Given clean stables, warm sweet separator milk, sweet grain and good hay, a calf ought to be a thing of beauty, and it should be a joy to watch it grow.

We have made at Pinehurst more than forty A. R. Records, averaging about 465 pounds of butterfat from the two-year-old heifer up to the mature cow. In these days hearing of the feats of "Dolly Dimple", this may seem quite a modest achievement, but it is my proud boast that these records have been made by plain farm men, nearly all under plain farm conditions, and with no other superintendent than myself. That we have the cows in

the herd to equal some of the biggest records if they were pushed and cared for as these cows have been, I have reason to believe. This, however, I never expect to do. It is my feeling that I am doing the dairymen of this United States more real good by making good records with such care as a farmer ought to give, and which he can duplicate, and by selling the bull calves at such prices as he can afford to pay, than I would by pushing my cows for phenomenal records, and asking almost prohibitive prices for their offspring.

We, in our part of New Jersey, have many difficulties to contend with, that the western farmer knows nothing about. In the first place our soil is comparatively light. It is also in need of much fertilization, and not much of it is natural grass land. A cousin of mine in Pennsylvania told me if they let their orchards alone, they would come in in blue grass, but my orchard left to itself would grow up in weeds of as many varieties as Jacob's coat had colors. Consequently we have to fight for all we get in records from our dairy cows. For us there is no easy road, and I know my cows are capable of far more than they have ever done, given the best condition. Now to begin with a cow who is to make the record, I like to have dry at least six weeks before the commencement of the record. I am sorry to say we do not always accomplish this feat. Selma of Pinehurst, 14521, who has three A. R. records, the last one of 644 pounds of butterfat, does not usually like to cease giving milk, and a diet of water and timothy hay has been resorted to, to induce her to cease her lacteal functions. This I do not like to do, as for best results, I want a cow fat, almost like beef, and then when she freshens, one can almost see the fat fall off into the pail. Auricula Second, 12-2-09, a cow whose average fat test is not high, about 4.57, has under these conditions tested 5 per cent, her first month in lactation, when ordinarily she would test about 4.2 at that time. I do not think we can feed fat into milk by any change in grain rations, but we can put it in for a time at least, out of the cow's own body. I am now speaking of the best way to make records, as I have found it, but we don't near always get our cows in this fine condition.

We will now suppose we have our cow fresh, in good condition, and ready to begin her year's record. I have found good, sweet bran, ground in the home mill, and Buffalo gluten mixed in the

proportion of about two of the former to one of the latter, to be a very good foundation. We have fed bran and gluten in varying proportions to make almost all our records. This winter we are feeding about 75 pounds crushed oats, 100 pounds gluten, 200 pounds bran, and a little cottonseed as our grain ration. After freshening we think a warm bran mash a suitable meal to begin with, and when the udder is much caked, ensilage has to be fed very sparingly for some time. We begin with a small amount of grain, hay, and add some ensilage as the cow seems able to bear it. Gradually increasing the grain, watching the cow's appetite, in three weeks she should normally be on full feed, which seldom means with us, as much as 10 pounds per day. Oftener it is eight pounds, and Betty K made 509 pounds of butterfat in a year, often eating only four pounds per day, and always in good flesh. We have alfalfa mixed clover hay and ensilage for roughage. We usually raised the large beets to give the test cows a lunch at noon, but this winter we are trying beet pulp for this purpose, moistened and allowed to swell, and a small portion of grain added. This we find very satisfactory, both to the cows and ourselves. As the spring comes on and April opens, the birds begin to sing, the grass to start, and the cows grow restless, I have seen them looking longingly through the gates toward the open fields, lowing, and showing plainly the desire for a change from the winter diet. We can't allow our small area of precious pasture land to be invaded before May 10th, and unless green feed is furnished now there is a big shrinkage in milk. To meet this need, we have fields of rye, sown the fall previous, and about mid-April, the cows are wading in green rye up to their knees, eating their fill. The increase in milk is most gratifying, as well as in beautiful golden color. I love this farm picture best of all, the beautiful sleek, contented cows from the warm stables, no flies to torment them, apple blossoms overhead, and the glorious spring days full of the promise of new life. When the rye is gone, we have some pasture, but our acreage is small, and our droughts of late years have been severe. Soon we are soiling with our faithful friend, alfalfa, to be followed by Canada peas and oats, then cowpeas, alfalfa again, fodder corn, and even sowing last millet and rye for fall pasture. Cabbage serves both for market and feed. The damaged heads and leaves fed after milking are a very valuable fall

asset. We are so heterodox as to pasture our alfalfa fields a little before winter comes on (though never on empty stomachs) and then in October we begin on our main-stay, ensilage, again. We try not to let the cows feel the transition from one season to another more than can be helped. You see there is both work and expense in this way of feeding, that those who have plenty of natural grass land, know nothing about. I greatly prefer blue grass and clover to almost anything else as milk makers, if one can only get enough of them. Our drought last year was very severe, almost no good rain from May until October, and our pasture fields were indeed brown and dry. My foreman managed so well in his soiling crops that the cows came into winter in fine shape, while many dairies were almost starved. Our records were quite creditable too, though of course, not near what they should have been in a favorable year. To sum up I would say, if we want our cows to do good work, first, have a cow in fine flesh and good condition; second, give her a good rest from producing milk, third, when fresh bring her gradually to full feed, taking near three weeks to do it; fourth, feed an ample easily digested grain ration; fifth, always have an abundance of succulent palatable food, both winter and summer, so that the cow will have not only enough to maintain herself, but plenty over to put into the pail, and with water always within reach; sixth, make her happy and comfortable, treat her kindly, and always milk her clean.

As I have said in another paper, take your men into partnership with you (unless you do all the work), get them interested, speak not of "my cows" but of "our cows", and thus secure their interested co-operation, which for me at least, is absolutely essential. There is drudgery in all lines of work. It takes "grit" to carry anything worth while to success, but let us by kindness, sympathy, profit-sharing and enforcing the Golden Rule, secure the loyal, happy co-operation of those who toil with us. If we can unlock some of nature's secrets and put them into successful operation, and at the same time make life more worth living, and up-lift those who work with us, we shall feel at the close of life's journey, that our efforts have not all been in vain.

BREEDING THE DAIRY COW.

JOHN CLARK, Whitewater, Wis.

There are three essentials that we must bear in mind when we seek to breed dairy cattle of the highest class. They are: 1st, the qualities that make a desirable animal; 2nd, profitable production; 3rd, reproductive ability. I shall consider these in the order named.

The qualities that make a desirable animal, are usually expressed by the word Constitution. Webster defines constitution as, "That form of being or peculiar struction and connection of parts that makes or characterizes a system or body." If breeders meant this definition when they use this term constitution it would answer admirably. But as used by breeders, constitution indicates strength and the ability of an animal to maintain its general health and vigor and its productive and reproductive powers unimpaired to a good old age. The score card points allotted to constitution are merely those indicative of physical health and strength.

Thus it would seem that the qualities that make a desirable animal is a term that expresses my meaning more clearly.

I shall not attempt to describe the typical form of the dairy cow, but the man seeking to become a breeder must always study the animals about him and fix in his mind the essential points so that he will be able to analyze an animal at a glance. Until he has a definite and desirable type in his mind and selects his cattle to conform to it, he will not produce uniformly good cattle. It is far easier to get good prices for well formed, attractive cattle, and form is the only visible indication of performance. Wherever you find a man selecting, breeding and caring for his cows intelligently, you will find a herd returning a large profit. And when you find a man that is indifferent regarding these things, you will find a herd that returns at the best a very small profit. The great secret is in the individual cows of the herd; in every herd there is an enormous variation in the production and profit of the different cows. There is only one way to secure the highest profit from your herd and that is to know

BANNER HOLSTEIN-FRIESIANS

Inka 6th — Roxanna Parthenea — Esther Piebe De Kol 2nd

Grace Fayne 2nd's Homestead — Aaggie Cornucopia Pauline

Skylark Mercedes De Kol Johanna — Colantha 4th's Johanna

Shadybrook Gerben

The highest producing cow in this group has a yearly record of 27,432.5 lbs. milk and 998.26 lbs. fat; lowest, 16,063.3 lbs. milk and 526.9 lbs. fat

what each cow is doing and to keep the best. The cow testing associations under the control of this society furnish the best way of doing this work. The breeders of pure bred dairy cattle in this state are missing great opportunities by not doing everything possible to organize such associations in their own neighborhoods.

If you desire to build up a permanent herd to receive enduring benefit from your work of testing and selecting you must seek for reproductive ability. Hitherto I have said nothing about the relative merits of scrub, grade and pure bred animals. While the scrub cow may have productive ability and be a fairly desirable individual, there is little chance that she has within herself the power of producing offspring with her good qualities unless she is mated with a bull capable of transmitting those same qualities. Mated with a bull of her own class her own merits will be great indeed if she can impress them upon her offspring. Among grade cows of the established dairy breeds desirable individuals and profitable producers are the rule rather than the exception, and when mated with purely bred bulls of their respective breeds these qualities are usually reproduced. Mated with grade bulls like themselves the tendency of hybrid matings to revert will produce a mixed offspring, some good and some bad. In pure bred herds we expect to find the desirable qualities and productive ability reproduced with certainty. You may conclude from what I have said regarding the comparative reproductive abilities of scrub, grade and pure bred that the pure bred is always a desirable animal. I do lay great stress upon pure blood because it is the source from which we must draw the blood for all breed improvement. But a pure bred animal should be pure, not only in the sense of being eligible to registry, but pure bred because it is free from the blood of unproductive ancestors. In testing a pure bred herd we will usually find about as wide a variation in production as in any other herd, but in good herds it varies around a far higher average. We will also sometimes find that the daughters and granddaughters of some certain animal group themselves together and whole families will be found whose production is uniform and far above the rest of the herd.

When a breeder finds a family of this sort he should devote his energies to developing it, for he has a firm foundation upon

which to build, for such families are the real source of all improvement in breeding. The great cow that springs from an ordinary ancestry and whose descendants fail to inherit her greatness is a damage to any breed, because breeders will pay high prices for her sons only to learn after costly trial that she did not possess reproductive ability.

What I particularly wish to impress upon you is that first you must have a clear conception of the best types of breed. Then, that you must test them to learn their productive ability. Finally that you should always seek in your own herd for high producing cows of superior type whose daughters are uniformly superior in type and performance. Not all of us can expect to discover strains equal to the Glenwood Girl, Bonnie Lassie and Yeksa families, but careful testing will bring out many more just as good, and every breeder will find plenty of strains worth developing if he will only look for them.

There is no lack of good material to work on but there is a lack of the patience and perseverance necessary that it takes to wait for a family to develop. Many writers in the agricultural press are fond of referring in a mysterious way to the secrets of the great breeders, how they mould the animal form to their will, etc., etc. These writers rarely make a sensible attempt to go behind the veil that guards this holy of holies and they create an impression that the successful breeder has in some way obtained an uncanny knowledge that is beyond the ken of ordinary mortals. Some of the old time breeders encouraged this belief and it has grown until it is surprising how many sensible people believe it. As a matter of fact, I do not believe that any breeder that ever lived had any mysterious secrets about breeding that were worth knowing or ever succeeded in any other manner than by knowing just the sort of animals that he wished to produce and by breeding to the strains that would produce them. Do not think that I wish to belittle the great breeders of an early day or that I undervalue the work that they performed. There is no question but some of these men attained a really marvelous knowledge of animal form and that they established strains whose reproductive ability was wonderful. We have little record of their work, but the thing that has impressed most people is that practically all of them practiced inbreeding. From this the belief has grown that it was the greatest factor in their work.

We must remember that they had but a limited amount of material from which to choose breeding animals. They knew the value of reproductive ability and that a strong outcross of unsuitable blood would shatter the results of their labors. Thus in order to retain this reproductive ability they mated close relatives together. Chas. Darwin probably studied inbreeding more closely than any other man. He decided that while cattle were not particularly susceptible to the evil effects of inbreeding, still when close and long continued that it resulted in a loss of vigor and fertility.

It is probably a good plan for a breeder of experience to experiment carefully with inbreeding; whether it is advisable in any case or not can only be determined by trial. In all the dairy breeds there are many families combining all the three essentials in a high degree of perfection. We should look to these families for our bulls and labor to produce the right sort of females from our own herds to mate with them.

Discussion.

Prof. Emery: Mr. President, I have been most strongly impressed with the exceedingly clear, able and forcible way in which this subject has been presented. I think we should count it as great, good fortune to listen to so clearcut and able a paper as has been presented to us.

Mr. Everett: What stress do you place upon function and form in breeding dairy cattle, Mr. Clark?

Mr. Clark: I think that there is a very close relation between them, but we cannot always say that they are developed equally in the same animal. A cow may be lacking in form and still greatly developed in function, or she may have an extremely good form where the function is not so well developed; but then they are certainly combined and there must be some connection between them. I think we ought to try to get them both.

Mr. Everett: What value do you place upon dairy form? To be more explicit, what is dairy form?

Mr. Clark: Why, the shape of a cow, a shape that is common to all the dairy breed and to all well producing cows, whether dairy, dual-purpose or native.

Mr. Everett: Will it pay to feed cows having the dairy form for beef?

Mr. Clark: I do not consider that it will. No.

The Chairman: Don't you think, Mr. Clark, that one of the places where we have fallen down as bad as any other is in letting a good many of our sires go before we really knew their worth?

Mr. Clark: Yes, I do think so. I do not believe there is any better way to produce cattle than by breeding to cattle that we know.

Mr. Glover: In breeding cattle, how much do you take record into consideration?

Mr. Clark: Of course it depends on what you are taking it for. For testing purposes, I wouldn't take a big record. In producing good cattle, I would sooner breed to a family that had a lot of good cows in it than one that had only one with a big record.

The Chairman: Then, according to your statement, the longer line of good producing ancestry you have in the pedigree of that animal, the better you like it?

Mr. Clark: I do, certainly.

Prof. Erf: How many generations would you inbreed and sider it safe?

Mr. Clark: I would only regard inbreeding as a thing to experiment with, and a man should be governed by the results. We have allowed a good deal of inbreeding in our own herd, but I can say we never have produced satisfactory animals. Those inbred animals proved very good dams.

Prof. Erf: You practice line-breeding then, very largely?

Mr. Clark: Yes.

A Member: Would you advise the average farmer to inbreed?

Mr. Clark: No sir, I would not.

The Chairman: Then you would not advise breeding a sire back to his own daughters?

Mr. Clark: No, not unless I wanted to experiment. A breeder may have to do something that is an experiment and he may get one good animal out of ten and spoil all the rest. Maybe the breeder can afford to do that, but the average farmer cannot.

Mr. Jacobs: Don't you think it would be a safe proposition if you started with the ordinary cow, to breed back in that way?

Mr. Clark: It might be in some instances, but I would not lay down as a principle something I did not know anything about.

Mr. Jacobs: I think that has been tried a good many times.

Mr. Clark: I have tried it myself.

Mr. Jacobs: On a common, ordinary scrub cow?

Mr. Clark: Yes.

The Chairman: I think it is tried there more than any other place, and at a great loss as a rule.

Mr. Taylor: I have been listening with considerable interest to this matter of breeding, as I have made something of a study of it for a number of years. I think that it is the height of foolishness for the ordinary farmer who never had any experience or at best very little experience in breeding, to undertake to breed a sire back to his own daughters, generally speaking. Mr. Jacobs put the question so that you really had to answer it in one way, he said, "If the sire was the right kind of sire."

Now, that is where the rub of the whole business is, if the sire is the right kind of sire. There are but very few successful inbreeders of live stock anywhere in the world, though a few have studied it so closely and watched results so carefully that they have made a wonderful success of it.

For over thirty years I have been following line-breeding in pure bred dairy cattle and I have met with some decided failures and some most excellent successes. Generally speaking, there is somewhere in the sire a weakness that should never be continued and when you inbreed there is danger of intensifying the undesirable qualities in the animal, because you just double it up.

There are two results that will follow:

If I had a bull that was line-bred, and I knew many of his ancestors and knew that he was the only good animal in his family, I wouldn't seek another sire of that same family to use upon his daughters or animals related to him; I would have an entirely different strain.

Mr. Imrie: How closely related?

Mr. Taylor: Pretty close, providing I had the opportunity of observing the physical conformation and constitutional vigor and the other qualities that I was seeking after; I can't say just how close.

If you will pardon me, I will tell you that the result of mat-

ing full brother and sister, which has been very sucessfully done, a most excellent sire, a sire of wonderful prepotency and constitution.

Such men as Governor Hoard, who visited my farm have said to me "You miss the opportunity of your life if you do not mate brother and sister under these circumstances," and it was done, but I want to tell you in the three times, two of the sisters were almost failures as milk-producers, but the best breeding animals I ever have known in my family came from those two sisters. We cannot carry this far.

The males in my herd have been selected for many years with great care and if I live twenty years I know what sires I shall use. We always have in mind, one purpose, one line, and believe in sticking to it.

The ordinary dairyman has a Holstein bull this year, a Guernsey next year. The next year he has a white-faced one, the next year a red one, and if he had horns, maybe he would discard him, and get one without any horns, and it all results in a mixture.

I want to say one more thing. Fellow dairymen, you have the greatest opportunity that has ever been offered in agriculture in the world. You, as dairymen, have more before you to encourage your thought, your education and your energy than any other agriculturist possesses. I want to say to you that as dairymen, as breeders of pure bred live stock, you have a chance to exercise all faculties of a well balanced and well educated mind.

You go into a home and the little boy who is just beginning to write his name with a pencil upon a piece of paper,—why you won't be in that home but a few minutes, before the little fellow will come up and show you how he has written his name and he is proud of it. You visit another home where there is a little girl just growing up to learn how to make her own dresses, her own shirt waists, trim her own hats, or something of that kind, and in a few moments this young lady will come forward with a dress on or a shirtwaist that she has made, and she is very proud to say, "I made that dress myself, it is my own work." Now, we can carry out this thought and we find the dairy farmer who loves to take you out and show you, who will say, "There are ten cows upon my farm the result of my own

planning, my own thought; I provided the brains and raised the feed upon my own farm, I fed a balanced ration to these cows and there they are; there are the records they have made." And surely he has something to be proud of, he is a benefactor, an example many of us can wisely follow; we can tread in his footsteps and be successful.

I tell you, my friends, there is something about that that appeals to us as farmers. If we want to get real happiness out of life, we want to be able to show something that we have done, something we have accomplished.

There are many of us who are proud of special trees that we planted ourselves; we carefully selected a certain kind of a tree that we wanted, we selected the position it should occupy and some of us can sit down under the shade of such trees and we can't help but think how way back thirty years ago we talked it over with the good wife and concluded that in our old age we would need a shade tree right here, and here it is. My mind goes back to a tree in my yard that we planted when we began to fix up our home on the farm. We set out a lot of trees and I remember that there was one maple tree left over, one I didn't know what to do with, so I stuck it in the ground, thinking it would be left there over night perhaps, but while we were doing chores, Mrs. Taylor went out and set that tree out just where she wanted it set. It was near the well, and she said, "Many years from now there will be a great big tree here, our horses will stand under the shade of that tree while they are drinking out of the watering trough." We had one of those old-fashioned watering troughs about eight feet long and two or two and a half feet through and the farmer who was before me on that place had chopped a watering trough out of a log; it would probably hold a barrel, and that was all the tank there was on that farm when I went there; that was the water system of the whole farm, that one log placed on four legs, and Mrs. Taylor set the tree out there and it is now an immense big tree. If five hundred dollars were put down in my hand today I would not take it for that tree, for the associations, the sentiment, and the beauty of that one shade tree.

Now, my friends, let us go just a little further. A man with four boys grown up to manhood and one daughter grown to womanhood had taken this farm from the government and lived

upon it until they were old people. When I went upon that farm there was no gasoline engine, not even a windmill, but that was added the same year and is there yet, and we have a water system in the house and barn; all the water we want right on tap all the time. It goes to the dairy barn and there is a trough between each two cows so they have water all the time. In these days you can have all those things and many more which should more than make you contented and happy with your lot as dairymen, and if there are any conditions or circumstances that need improvement, go right to work and make things just as you want them.

Adjournment to 10 o'clock a. m., next day.

MORNING SESSION.

Friday, February 11.

The convention met at 10 a. m.

Mr. Goodrich in the chair.

The Chairman: Is the report of the committee on Resolutions ready to be submitted?

The following report of the committee on Resolutions was presented to the convention, and after some discussion, particularly with reference to the age limit of the young men to be allowed to conduct tuberculin tests, the resolutions were adopted as follows:

RESOLUTIONS PASSED BY THE WISCONSIN DAIRYMEN'S ASSOCIATION.

Whereas, The citizens of West Salem have done everything possible to assist in making our thirty-eighth annual convention a successful and helpful series of meetings and have provided the members with every comfort and hospitality, therefore, be it

Resolved, That we extend them our sincere thanks as an indication of our appreciation for their many courtesies and kindnesses.

Whereas, By means of the state cow contest it is possible to stimulate state wide interest in better dairying and effect great improvements in the character of our dairy cow. Therefore, be it

Resolved, That this association through its officers and members do everything within its power to acquaint dairymen with the movement and in every way encourage the work.

Whereas, Efforts are being made to induce the directors of the National Dairy Show Association to remove the Dairy Show to another state which we believe less adapted to contribute to its success, be it

Resolved, That we as an association go upon record as unqualifiedly in favor of its retention at Milwaukee where it has been held with success.

Whereas, The laws of this state now provide that all cattle sold after December 1, 1910, for other purposes than temporary feeding or for shipment out of the state shall be tested for tuberculosis, and

Whereas, The members of this association believe that great good may come from the intelligent extension of the test, and

Whereas, We believe that it is not generally known that all men who have satisfactorily passed the examination of the State Live Stock Sanitary Board may make the test and are entitled to charge for their services, be it

Resolved, That this association do everything possible to encourage the administration of the test by any and all qualified and empowered to make it—over 18 years of age.

Whereas, The Minnesota Live Stock Sanitary Board has adopted a ruling which provides that all animals shipped into that state must have been tested for tuberculosis within thirty days of the date of shipment and whereas we believe this enactment unnecessarily adds to the expense of animals shipped into that state and also enables deceptions to be practiced; therefore, be it

Resolved, That we call the attention of the Minnesota authorities to this condition of affairs and ask them to so modify their requirements as to extend the time from thirty days to six months or a year.

Whereas, We believe that oleomargarine should sell upon its own merits and that coloring it yellow to look like butter has given the manufacturer an opportunity to sell his product as butter; therefore, be it

Resolved, That we as an association ask that the present federal law be continued until a law can be enacted to prevent coloring and to force oleomargarine to sell upon its own merits.

RELATION OF CREAMERY OPERATOR TO PATRONS.

JOSEPH NEWMAN, Elgin, Illinois.

Mr. Chairman, Ladies and Gentlemen: It is a pleasure to me to be here in Wisconsin, our sister state. I was here yesterday and saw a splendid audience drinking in the inspiration that was given them from the rostrum, and I was much interested to note the working of this educational work and it is evident from the audience this morning that this interest is being carried on, so many have left their work and come here after knowledge and that is what educators like to see.

The dairy business has been ably discussed from many sides at this meeting and the commercial side of the question seems to interest the farmers most of all, but the business and profit side is not all there is to life, even on a dairy farm, and you will pardon me if I take up a few minutes of your valuable time in trying to show how the "Relation of Farmer and Manufacturer" can be a mutual help in the uplift of their business and the general welfare of the community in which they reside.

By the operator, I take it is meant the buttermaker or foreman in charge of the creamery, cheese factory or condensary, as the case may be, as they do or should reflect the ideals of the owners, hence, the operator should be a person of more than ordinary intelligence, because he has the interests of the factory and dairyman in his hands, and it depends on his wisdom of handling the business intrusted to his care, whether justice is done both parties. With intelligence must be embodied a thor-

ough knowledge of his business especially from a manufacturing standpoint. The more he can inform himself on dairy agriculture, the more of a success will he become in his chosen line of work. By this knowledge he can get close to the farmers by imparting it to them as needed and as occasion presents itself. When the farmer finds such a man at the factory the solution of my subject is easily found, providing the farmer is a man who reads good dairy literature and tries to inform himself on better methods and to reach the ideals in his chosen line of work. This brings two intelligent men together—the rest is easy. Their interests are mutual and helpful.

It's a pleasure to show such a one the details of the Babcock tester and explain why the test is different today than it was yesterday; or to explain why milking with wet hands is a filthy habit affecting both the flavor and cleanliness of the milk; why the pails, cans, etc., in which the milk passes from the cow to the consumer should be kept in a sanitary condition, or start a conversation leading up to the qualities necessary for a good dairy cow and to feed such a cow a balanced ration, to the end that the net profits may be commensurate to the labor and feed used; or to show why a silo will make an acre of corn go farther than feeding it dry; or why a dairy barn should be well ventilated and lighted. Such men, I say, can spend an hour in the country store or school house where others can enter into the discussion and the time be always well spent and helpful to the community, and I venture the assertion that such localities will in a few years have more thoroughbred bulls of a dairy type in their herds and less of the 100-pound butterfat cows, thus bringing up the butterfat standard of the whole state. Such men, by working together, can prove to the world that the true relation of the operator and patron is one of mutual help and the interest of each is best subserved when working together hand in hand, shoulder to shoulder, for the uplift of the dairy interests.

The trouble is, my friends, there is too much ignorance displayed, sometimes at the factory and more often by the farmer selling milk and cream. I use the word "ignorance" believing it to be the kindliest way I can put it for such. There are other words that would apply in some cases, such as skimming the cream from the milk can or watering the milk, selling a cow

to a neighbor after she has reacted from the tuberculin test, adding fat to cream to make it test higher, delivering milk from a diseased cow, etc., etc.

On the other side, by cheating at the scale when weighing in the milk or in reading the Babcock test too high or too low, by incorporating the casein in the butter or more moisture than the law allows, by selling any product from the factory and using the money for themselves, etc. Quite a few of the foregoing are state prison offenses and in time bring their own reward, but for those caused by ignorance we have only pity, and sometimes contempt, knowing that if we look into such factories or farm homes we will not find a dairy paper or book containing the knowledge they so much need. You will not find them buying a postal card to write to the University for bulletins on any subject. That is why I advocated in my own state ten years ago to take part of the money spent on bulletins and use it putting the information in the dairy press and also in the daily or weekly newspapers.

No use gathering knowledge at these centers of education, then taking one and two years to get it printed in bulletin form, which to a great extent are laid up on shelves until they get musty, Give it to the people whose money paid for the work, in a shape they will read and digest the information while it is fresh. Do not stop on one insertion of important subjects, for it is the common people we want to reach and bring up to a higher standard. It is from that class, by reading and studying, have come the great men of the past as well as present, and once reading may not leave the impression desired.

It is this work continued that will weed out the undesirables in both factory and on the farm. So do not get discouraged in your work, keep at it until every factory and every farm reflects the quality of work done at your experiment stations. Let those in charge of education on agriculture keep in close touch with the operators of factories, for it is through them they can best reach the farmers who will not read or attend the "Farmers' Institute" but who most need the information. It was such the Master had in mind when he said "the whole need not a physician." We too often spend the time with men who are congenial and possess the knowledge, when it should

be spent among the "highways and byways" of the human family.

I also know it is discouraging to throw "pearls" before such when for the doing it you will only be rewarded by scoffs and sneers, but rest assured, the factory man who will persistently do it will live to see the fruits of his labors, and the ignorant made to open his eyes to the light. When this occurs, he has made a close friend of the one benefited, who in turn can best spread the dairy gospel among his kind.

Generally, the only way to bring this about is in showing him some change in his methods that will bring him immediately more money for his product. In this, the farmer is no different from men in other lines of business. We have the reputation among nations as being abnormally a commercial nation, and we can see good in education or business only when it produces dollars, and men are so willing to leave the "straight and narrow path" of right, friendship, truth, if there is only something "in it" for them, but we must remember the rank and file of our people are not seen abroad and they should know all the people before coming to such conclusions. If some thought is given to the subject many suggestions can be made how to increase profits and thus get in his good graces.

My experience with the men in charge of factories has been varied. The ideal man is hard to find. When found we are willing to let him have an interest in the business. It is the mutual co-operation between the operator and patron that should be fostered—they need each other's help in working out the great problems in the dairy business. To do it, they must be honest with each other. We must ever remember the old saw "There is more in a pint of milk than has yet been discovered" and when the operator calls the farmers' attention to some unsanitary condition of the milk or cream he is delivering, stop and think of the responsibility resting on his and your shoulders, for the product of the cow is an article of food and the health of the people is entitled to be safeguarded.

We are anxious for strict dairy laws to aid us in stopping the sale of oleo when sold under the name and guise of pure butter. The hog has no right to masquerade in the clothes of dear old Bossie; neither has dirt nor filth any place in food for human beings. The one great thing the operator has to labor with the

patron, is the getting of his milk and cream to the factory in proper condition. Our firm alone has spent a fortune buying machinery to try to remedy the faults of those on the farm caused mainly by simple carelessness in handling the milk and cream before we get it.

It has been demonstrated by Hon. H. B. Gurler, of our state, that when milk is taken from the cow's udder in a sanitary manner, kept cold in proper utensils, it will keep sweet over two weeks, proving that "Cleanliness and Cold" are the two essentials necessary to bring your product to the operator in the best of condition. Why not co-operate with him in this? Those of you who have hand separators why not co-operate with him to see that he gets your cream at least twice a week in winter and at least every other day in summer, and thus do your part in bringing up the standard of quality of butter and cheese in your state. Remember, while the operator can help you, he also needs your help—in fact, cannot make good without it.

One grand, good man of your state has done much to bring the operator and patron together. I refer to Dr. Babcock who gave to the people the now celebrated Babcock tester, whereby the operator can show the patron a correct test of his milk or cream in about six minutes, that will show its market value. If there is such a thing as making men honest, this child of the brain of Dr. Babcock is one of them. All honor to his name. It has placed both operator and patron in a position to "know the truth" and it's the truth that makes men free, and brings them together as brothers in a common interest. Your state has furnished many great, helpful men in developing the dairy interest of not only this state, but the nation. Prof. Henry with his "Feeds and Feeding" has sent a flood of knowledge down the stream of time to those who knew not such a thing as a "balanced ration." Prof. King has shown how to build homes for the animals that are healthy and sanitary. Gov. Hoard is not only working out ideals in a practical way, but has been blessed with the means and power of diffusing this dairy knowledge through the dairyman's bible, "Hoard's Dairyman." It is such helps as these that bring the operator and patron together and make them a power for good; hence I say in the highest sense, their relation is mutual help one to the other.

DISCUSSION.

The Chairman: The gentleman's address seems to be so good and so true that it settles the matter, if we will only follow his instructions.

Mr. Newman: I thank you, gentlemen of the convention, and I will carry back to our sister state association the good feeling which I know exists here.

A Member: One question before you get away: What remedy do you suggest for a creamery operator who has been working dissatisfaction among his patrons for his own personal benefit and behind the backs of the farmers?

Mr. Newman: Dishonesty anywhere in any line of business will bring its own reward. If there has been any dishonesty in the case you refer to, give him all the rope he wants, and if he doesn't hang himself, I miss my guess.

THE GROWTH AND THE PRESENT STATUS OF THE DAIRY INDUSTRY IN WISCONSIN.

J. Q. EMERY, Madison, Wis.

The term dairy is very broad, including among its phases the business arising from milk production, the building where milk is kept and converted into butter or cheese, the store devoted to the sale of milk and its by-products, the dairy farm, the dairy herd, the dairyman, etc.

It is well nigh impossible to clearly picture to the imagination of the present generation the conditions of the dairy industry of Wisconsin in its beginning. The cow was the ordinary native; the dairy barn was a straw-stack; the dairy house, creamery or cheese factory was the farm kitchen, cellar and well; the buttermaker or cheesemaker was the pioneer farmer's wife; the market was the local grocery store and that often many miles away and glutted; the means of transportation was by

foot or perchance by ox team; price five to ten cents a pound for butter, pay taken in brown sugar at twenty-five cents a pound and other groceries at corresponding prices. The cows freshened in March or April, ran at large and were dried off in November or December,—no winter dairying. From my own personal knowledge and experience in the early history of Wisconsin, I am prepared to assert that the foregoing picture is not overdrawn.

The first effective organization for the promotion of dairying in the state was in February, 1872, when on the 15th day of that month, W. D. Hoard, Stephen Favill, W. S. Green, Chester Hazen, H. F. Dousman, A. D. Favill and H. C. Drake met at Watertown and organized the Wisconsin Dairymen's Association. The distinctive necessity which as stated by Mr. Hoard was urged at that meeting for such organization was the low condition of the market, the unmarketable character of the principal portion of our cheese, and the lack of action on the part of buyers to handle our goods. Our only market was Chicago, and three car loads would glut that for a week. We made as a rule a soft cheese, and our only market as a consequence was the home demand and the western states and territories.

Speaking of the conditions of that time, Hiram Smith, whom to know was a liberal dairy education, once said that western cheese in the markets bore about the same relation to eastern cheese that marsh hay does to early blue grass or timothy hay, and the manufacturers had to leave it to be sold in the country stores, one or two in a place, and replenish as sold. Mail carriers and peddlers disposed of all they could. At one time it was feared that the lightning rod man and the insurance agent would have to be called in to aid in disposing of accumulated stock.

Let us briefly contrast present conditions in Wisconsin with those at the beginning of the industry. Where there were at that time no cheese factories, no creameries, no skimming stations, no condensaries, there are now known to be in Wisconsin 1,817 cheese factories, 1,010 creameries, 143 skimming stations and 14 condensaries. The manufacture of butter has been transferred from the farm to the modern Wisconsin creamery. The manufacture of cheese has been transferred from the pioneer farm to the modern Wisconsin cheese factory. The old straw-

stack as a means of protecting the cow from the cold and the storms of winter has been replaced by the modern dairy barn, which more and more is being well-lighted and ventilated, and in which the old, rigid stanchion so promotive of filth and discomfort of the cow is being replaced by the modern stall promotive of cleanliness and comfort. The old time native, scrub, no purpose cow, poor and plastered on both flanks and hips with filth, with hair protruding, hedgehog fashion, back filled with grubs, —a thing repulsive to behold, is being superseded by clean, well-kept, high grade or pure bred, special purpose cows of the dairy breeds,—things not only profitable to the owner, but beautiful and highly attractive to every beholder.

The grocery or general store as a market for butter and cheese has been replaced by the great markets of Elgin, Chicago, New York, and other great modern cities. The cellar as a place of storage has been replaced by the modern refrigerator plant. Instead of the footman or the ox team bearing with slow pace the farm butter to the grocery store market, we now have as a means of transportation for dairy products the modern railway with its refrigerator cars. The milking machine is fast superseding the tedious process of hand milking. Instead of the open, shallow pan for raising cream by gravity, we have the modern cream separator; instead of the old dasher churn, we have the modern combined churn and butter worker run by steam power. Instead of the method of empiricism for manufacturing dairy products on the farm, we have skilful buttermakers and cheesemakers manufacturing butter and cheese in accordance with scientific principles in the creameries and cheese factories which are equipped with all modern appliances for the attainment of perfection in the manufacture of cheese and creamery butter.

For the training of these cheesemakers and creamery buttermakers, we have the great dairy school conducted under authority of the state where they are trained in their respective arts in accordance with scientific principles. In this school the teaching and training is not done by the old time literary methods or mere lectures, or telling how to do, but the school was planned upon the theory that it should be an object lesson for students, and a model for the creameries and cheese factories of the state; that the scrupulous cleanliness of the apparatus, the floors, the

windows, the ceilings, the walls, the receiving room, the brightness and cleanliness of the cans used by the patrons, the fresh, clean and wholesome milk product received for manufacture into butter, the exact weighing and testing of the milk or cream, the quality and just proportion of the by-products returned to patrons, the uniformly excellent product manufactured, the strictly high class, fresh quality of product always supplied to the market, and the integrity used in every phase of the business, should serve as concrete examples to students and as models for the creameries and cheese factories of the state.

In the beginning of the dairy industry in Wisconsin, dairymen were dependent upon empiricism. They merely followed the practices of their fathers and their grandfathers, without concerning themselves about reasons. They had very little, if any, scientific knowledge of the numerous subjects involved in the business. How changed are the conditions at the present! Since that time, in consequence of the Morrill, the Hatch and the Adams acts of Congress, great agricultural colleges and agricultural experiment stations have been established and maintained, where the fundamental purpose is the bringing of new knowledge to light. In these great modern institutions, and notably in the Wisconsin Agricultural College and Experiment Station, great scholars have devoted their time and energy to learning not merely what the Greeks and the Romans knew, as revealed in their literature, but in learning how to read God's thoughts in the great book of nature, and helping to solve the problem how man is to gain dominion over the earth, including among these practical subjects or questions the nature of milk and its various products, the characteristics of the dairy animal and the laws of reproduction, the environment necessary for the highest success in the handling of the dairy cow, the balanced ration, the mode of manufacture of dairy products, the preservation of the same, cold storage, conservation of soil fertility, and multitudes of other subjects, making a complete revolution in dairy knowledge.

Our agricultural colleges, dairy schools, farmers' institutes and dairy press have been teaching to thousands and thousands of dairymen this new knowledge and the method of application of the same. The Wisconsin Dairymen's Association, at first

concerning itself with all the phases of the dairy industry, has gradually specialized its efforts in behalf of the great mass of dairy farmers. Growing out of this organization are the Wisconsin Cheese Makers' Association, the Wisconsin Buttermakers' Association, and the Southern Wisconsin Cheesemakers' Association, whose efforts have been specialized along the line of improving the skill of the cheesemakers and the buttermakers of the state, and of improving the quality of the cheese factory and creamery products. Resulting from this tremendously progressive movement have come our country agricultural schools that are aiding in the improvement of the knowledge and the skill of dairymen in the various phases of the dairy industry.

One function of the dairy and food commission is to arouse motives and stimulate the desire in dairymen, cheesemakers and buttermakers to make a practical use of this knowledge in the way of clean, wholesome and profitable dairy products.

The movements of those various forces have brought such wonderful revolutionary improvements in multitudinous ways as to stagger the imagination; their number is legion.

The Wisconsin dairy industry has developed to the point where the annual value or revenue of the same reached the stupendous sum of $68,497,000. A very careful and conservatively made estimate of the annual value or revenue of the dairy industry of the state, is as follows:

	Number of pounds produced.	Received for, or valued at.
Cheese	165,717,000	$21,166,000
Creamery butter	108,462,000	26,908,000
Butter produced on farms	8,059,000	1,648,000
Milk sold to condensaries	185,609,000	2,249,000
Milk produced on farms other than that sold to cheese factories, creameries, skimming stations or condensaries	646,609,000	8,406,000
Skim milk	2,048,667,000	6,146,000
Whey	1,316,416,000	1,974,000
Total		$68,497,000

As before stated there are known to be 1,817 cheese factories, 1,010 creameries, 143 skimming stations and 14 condensaries in the state exceeding the number of cheese factories and of creameries those of any other state. The estimated number of

cows contributing to these cheese factories, creameries, skimming stations and condensaries is 1,132,700.

According to the statistics gathered by the Secretary of the State Board of Agriculture, the total number of cows in the state is 1,260,000. According to the estimates of the United States Department of Agriculture, there are upwards of 1,500,000 cows in the state.

In striking contrast with the quality and reputation of Wisconsin cheese in its early history, as described by Governor Hoard and Hiram Smith previously referred to in this paper, was the unparalleled exhibit of Wisconsin cheese at the Fourth Annual National Dairy Show in Milwaukee, October 14 to 24, 1909, wherein Wisconsin outclassed and outstripped all competitors, winning first, second and third prizes in the American Cheddar cheese class; first, second and third prizes in the Swiss cheese class; first, second and third prizes in the Brick cheese class; first, second and third prizes in the Limburger cheese class; first prize in the Munster cheese class; first prize in the Club cheese class; first prize in the Fromage de Brie cheese class; first prize in the Neufchatel cheese class; first prize in the Fromage D'Isigny cheese class, and first prize in the Lunch Brie cheese class. Of the 194 Wisconsin cheeses exhibited in that great national show, 182 scored 92 and above, entitling them to the National Dairy Show and Wisconsin Cheese Makers' Association diplomas or awards of merit. Only two of the entire number exhibited scored below 90.

As further showing the extent, variety, quality and rank of Wisconsin dairy products today in competition with those of other states, I call attention to the fact that at that Fourth National Dairy Show, Wisconsin won first prize, the gold medal, for butter made from gathered cream; first and second prizes, gold medal and silver medal, for market milk, also honorable mention and diplomas on the part of three exhibitors; first prize, gold medal, for market cream, also honorable mention and diplomas on the part of three exhibitors; first prize in the creamery patrons' contest, and honorable mention on the part of two exhibitors. It is well known that first class dairy products require for their manufacture, first class raw material. That the volume of Wisconsin dairy products is very great,

has long since been a well-recognized fact. The belief that the quality of Wisconsin dairy products, including the manufactured products and the raw materials is unsurpassed by those of any other state, if indeed it is equalled by any other state, finds confirmatory evidence in the winnings of Wisconsin dairy products at the Fourth National Dairy show above recounted. In further confirmation of this view, I quote remarks attributed by the dairy press to Professor John Spargo, Yonkers, N. Y., as follows: "There is no city of the same size in Europe, I dare say, that has as good a milk supply so far as purity goes, as Milwaukee has." Professor Spargo is also reported to have said that he had inspected several dairy farms of Wisconsin, and never before saw such a general high average of cleanliness.

Professor Spargo's remarks confirm the conclusions reached as a result of an inspection of the city milk supply in forty-four Wisconsin cities, including the city of Milwaukee, made by the Dairy and Food Commission in the months of January, February and March of 1908, and by similar inspections since made. In the inspection mentioned, 596 samples of milk were taken. Of that number, only 5 fell below the legal standard of 3% butterfat, and only 16 fell below the legal standard of solids-not-fat. About one-third of the 596 were tested for chemical preservatives and none were found. Of the total number, 474 samples or about 80%, on application of the Wisconsin curd test, gave curds having a close, firm, even texture with a smooth, velvety appearance and no undesirable odors, indicating that the milk was normal, was produced under clean conditions and was suitably cared for. That is, 80% or more of those milks were of excellent character and above reasonable criticism as to cleanliness and the care they had received. Inspections of milks since made in the various cities of Wisconsin have shown not only that this high standard of excellence in city milks has been maintained, but has been undergoing improvement.

As typifying the development of pure bred dairy cows in the state in contrast with the pioneer native, I call attention to the following premiums won for Wisconsin dairy cattle at the Fourth National Dairy Show at Milwaukee:

Brown Swiss, Guernsey, Holstein and Jersey pure bred dairy cattle won a total of 145 prizes, of which one was Grand Champion, and four were Champions, 35 were 1st prizes; 27 were seconds; 32 were 3ds; 24 were 4ths; 14 were 5ths, and 8 were 6ths.

The Brown Swiss won 43, of which 13 were 1sts; 8 were 2ds; 8 were 3ds; 6 were 4ths; 4 were 5ths, and 4 were 6ths.

The Guernseys won 58, of which 1 was Grand Champion; 2 were Champions; 13 were 1sts; 14 were 2nds; 14 were 3ds; 11 were 4ths; 2 were 5ths, and 1 was 6th.

The Holsteins won 31, of which 1 was Champion; 5 were 1sts; 2 were 2ds; 8 were 3ds; 4 were 4ths; 8 were 5ths, and 3 were 6ths.

The Jerseys won 13, of which 1 was Champion; 4 were 1sts; 3 were 2ds; 2 were 3ds, and 3 were 4ths.

That the sale of pure bred and grade dairy cattle by Wisconsin dairymen and breeders returns to them a large yearly income which is annually increasing, is certain; but what the figures are, I am unable to state. This highly gratifying condition of things is due in part to Wisconsin's intelligent and aggressive policy of ridding Wisconsin dairy herds of tuberculosis. Were the amount known that is annually received from this source, it could be legitimately credited as an added item of dairy revenue.

I have estimated the number of cows contributory to the Wisconsin cheese factories, creameries, skimming stations and condensaries as 1,132,700. The year book of the United States Department of Agriculture gives the number of milch cows in Wisconsin on January 1, 1908, as 1,392,000. That year book estimates the fertilizer value of the manure produced by each of those cows at $20, making a total annual value from the cows of the state, of $27,840,000. I have not included these figures in my previous statement of the total annual revenue from the dairy industry, yet these figures may legitimately be reckoned as a part of the annual revenue or value of the dairy industry of the state. In this connection I call attention to the statement of Prof. Woll on page 19 of bulletin No. 180, "Fertilizers for Wisconsin Farms," to-wit: "The dairy farmer selling butter loses the smallest amount of fertilizer, the one selling

cream coming second, cheese third and whole milk fourth." This brings us into the consideration of the present development of the dairy farm as compared with other branches of husbandry. The dairyman feeds to his stock all the roughage and all the grain produced upon his farm, and in addition, large quantities of oil meal, bran, distillers and brewers grains, gluten feed, etc., commercial feeds rich in the fertilizer elements, which are constantly being added to our dairy farms, and therefore not only conserving the existing fertility of soil, but adding to that fertility. Intelligent dairy farmers are therefore constantly increasing the productiveness of their farms while at the same time increasing their profits, for it is the business of the dairyman first to produce large crops upon his own farm, which he markets by feeding to his cows, thereby making a profit on those crops which he feeds to his cows, and also making a profit on the dairy products produced by thus making his dairy herd the market for the large crops produced upon his farm. The dairymen are therefore among the pioneers in the present great conservation movement. Resulting from this conservation and increasing of the fertility of the Wisconsin dairy farms and the profits arising from other phases of the dairy industry, comfortable and convenient farm buildings are constructed, and farm homes are maintained wherein the occupants enjoy the necessaries, the comforts, the conveniences and many of the luxuries of life.

As to the sanitary conditions in the cheese factories, creameries, skimming stations and their utensils and premises, in dairy barns, cleanliness of the cans and other utensils used in handling the milk, and in the milk and cream products themselves, very great improvements have taken place in recent years, according to the observation and reports of the inspectors of the Dairy and Food Commission who are devoting their time and energies to this line of work and who are constantly observing these conditions. These improvements include drainage, substitution of cement floors for old, rotten wooden floors; substitution of sanitary pipes for old, rusty pipes; bright, new cans for old, rusty and open-seamed cans, and greater cleanliness of the milk and cream supplied to cheese factories and creameries as well as city milk supplies. Changing conditions in

the dairy industry call for greater knowledge and skill on the part of the cheesemakers and buttermakers and there has been corresponding progress in these particulars. As our inspectors have visited these manufacturing establishments in the performance of their legal duties, inquiring into all the details of the process of manufacture, they have freely given instruction as to the most approved process in the business. Elsewhere and on other occasions, I have given somewhat lengthy and detailed addresses on the various phases of the industry that I have just mentioned, and of frauds upon the industry, which have been published in the dairy press and in various reports. What I have said in those addresses is still applicable to the industry. By a process of natural selection or adaptation, different forms of the industry have developed in different sections of the state.

In bulletin No. 140 of the University of Wisconsin by Russell and Baer, attention was drawn to the different sections of the state where specialized forms of the industry are found. The home of the Swiss cheese industry of the state and of this country is in Green and Lafayette counties. The industry also extends through a portion of Iowa county, a portion of Rock county and also a portion of Dane county. The southwestern portion of Dane county may be said to be the home of the Limburger cheese industry.

One of the centers of the American Cheddar cheese industries is Richland county, from which it extends into Sauk, Vernon, Crawford and Grant counties and the northern half of Iowa county. The great center of the American Cheddar cheese industry is the lake shore and adjoining counties, where the manufacture of cheese is the almost exclusive dairy industry. The home of the Brick cheese industry of Wisconsin is Dodge and Washington counties. The great creamery butter region at first began in the beautiful Rock River Valley, from which it extended over the two southern tiers of the counties of the state as a part of the great Elgin creamery district, and thence northwesterly between the two cheesemaking regions. Central Wisconsin and the counties northward constitute the newer dairy region where the industry is developing along the lines of both butter and cheese. The production and shipping of mar-

ket milk and market cream is reaching extensive proportions in the counties of Kenosha, Racine, Milwaukee, Waukesha, Walworth and Rock and the counties bordering on the Mississippi river and the western boundaries of the state. The number of milk condensaries has increased within the past three or four years from three to fourteen, and the further rapid development of that industry seems likely to continue.

In what I have said of the magnitude of the great dairy industry of Wisconsin, I am sure I have not in the least exaggerated its stupendous proportions. In what I have said as to the progress in various lines of the industry, including the quality of the raw material furnished and of the manufactured products, I have by no means maintained that perfection has been reached, but that great progress in all these lines has been made and is being made. The industry is largely permeated with a spirit of the motto of our state,—"Forward."

It must be conceded that there are obstacles in the way of needed progress. Still better and higher ideals are needed by the patrons of our cheese factories and creameries, by those who supply market milk, by the dairymen themselves, and by the cheesemakers, buttermakers, and managers of cheese factories and creameries. The hand separator that ought to prove a saviour of life unto life, if not wisely used may prove a saviour of death unto death to the industry.

Greed, the holding of a penny so close to the eye that the dollar cannot be seen in the distance, is constantly causing practices of a threatening nature to the industry. For the overcoming of these obstacles there is needed yet higher and better ideals on the part of all engaged in the various branches of the industry and a realization in practice of these ideals; and these enlarged ideals should include the triple elements of integrity, intelligence, and industry as the basic elements of permanent success. With these three elements forming a triple alliance and permeating every phase of the business, nothing can stay its progress.

CLOVER CULTURE.

FOREST HENRY, Dover, Minn.

Mr. President, Ladies and Gentlemen of the Convention: It gives me great pleasure this morning to meet with you in your convention assembled, to talk over these matters regarding our business, and as a dairyman from Minnesota I want to bring greeting to the dairymen of Wisconsin.

This morning we listened to a very able paper from your Honorable Dairy and Food Commissioner, and I was very much interested in it, in that it recited the great and noble work that you have done and are doing in dairying. While I was listening I could not help but feel that there was a good deal of truth in the story that has been told about a Wisconsin dairyman dying and going to his reward. Soon afterwards a Minnesota man died and he also was admitted to the New Jerusalem which he found very much more beautiful than he expected. The streets were paved with pure gold, everything was splendid, but there was one thing he didn't fully understand. He saw men there parading those beautiful streets with balls and chains, and fetters, and he inquired of the good Apostle Peter why that was, and he said, "Well, these are dairymen from Wisconsin, and we have to chain them to hold them here." After hearing this story of Prof. Emery, I couldn't help but feel that there must be a good deal of truth in that statement.

We Minnesota dairymen are very proud of what our state is doing along dairy lines, we are very proud of the quality of the product we are putting out, but we have to acknowledge that you are far surpassing us when it comes to quantity. But now the question comes up, Are we doing it in such a way that we are keeping up the quality of our products as best we can and doing it in as economical a manner as we can. Right in line with that question is the subject of my address this morning, "Clover Culture."

Tomorrow is the anniversary of the birth of the great emancipator, Abraham Lincoln. There is a story told of him that in his early days a certain judge wanted to investigate the finan-

cial condition of a certain attorney and he sent President Lincoln to take an inventory of his property. The report was something like this, "We find that this attorney has a wife and family, valued at perhaps $10,000; he has an office desk that is worth about $10, but way over in the far corner of the office is a rat hole that will bear investigation."

The question came to my mind this morning, while you are doing this noble work, isn't there an opportunity for improvement? Isn't there a rat hole that ought to be investigated? In other words, in doing this work, are you keeping up the fertility of the soil and are you manufacturing dairy products as economically as possible? The time is coming when we must do better than we have done in the past; our consumption is catching up fast with our production. We can only in a small way increase our acreage. How are we going to feed the teeming millions coming to our shores and that are being born among us? There is only one solution to this problem, and that is that we must make one acre of land produce what two acres are now producing, and for my part, I do not know any way in which we may more easily accomplish this than by the use of clover, this wonderful plant.

Fifty-three years ago I emigrated with my parents from Wisconsin to the state of Minnesota. Since that time I have been closely identified with the agricultural work of that state, and something more than thirty years I have been farming on my own hook. We first tried wheat growing, but wheat wouldn't grow for me, and after I tried it five years I determined to drop it, and to start work on entirely different lines.

The farmers of our state were very much discouraged at that time; many of us felt that we had no hope; land dropped in price more than one-half, and it was a very serious question what we should do. I was one of the few that believed at that time that God never made as good a state as Minnesota, and I insisted that it was not right to raise only the one crop. I believed we could carry farm animals and this called for growing corn, but we had reached a condition where we could grow only twenty-five or possibly thirty bushels to the acre, and that of very inferior quality. We drew out all the manure we had, and this helped wonderfully, but we could only keep a little stock

and the question came, how are we to so arrange these matters that we can produce better crops to feed this stock more economically.

I began to read about that time what clover would do with the soil, and I thought I would try it. I was surprised to find that on a piece seeded to clover I could grow just as good a crop of corn the following year as I could on a manured field, side by side, and this was very encouraging. It was not possible to get over the whole area with barnyard manure, but we could go over it with the clover plant, and the more we studied and experimented on this thing, the more we saw its value. It was only a few years before the grain crop worked up to 40, 50 and 60 bushels and for more than ten years in succession, we raised 75 bushels to the acre, largely due to the fact that we had grown clover on that land. In the same way we had increased the capacity of the farm for keeping stock, and taking the two together we had more than doubled the product of the farm.

There isn't a man here but knows what clover will do for the soil, because it has been known for a great many years that it is one of those plants we could grow, and while it was one of the best money crops, furnishing one of the best feeds for the stock on the farm, it increased the fertility of the soil at the same time.

The records show that when we feed this clover to dairy animals, they always give more milk and bring in more profit in the way of butter than on grain feed. We find that claimed even in the old records made by George Washington, and in addition he says that mules fed on clover do better work. Everybody does not know that Washington was one of the best agriculturists in his day; if he had never been known for his achievements along military lines, or as our first great President, he would certainly have been known the world over for his achievements in agriculture. He was simply years in advance of his times.

Now, the question we are interested in this morning, is this, How does clover do this work? It has only been a few years that we have really known how this work came about. Indeed, we have made more advancement in the last forty years along agricultural lines than we did in 6,000 years previous to that.

It has only been within the last forty or fifty years that we have been making very rapid strides. It has only been within the last twenty-five years that it has been really understood how the wonderful work of the clover plant has been accomplished. It was left to German scientists to fathom the mystery.

There are three important elements in the soil, in reality fifteen, but these three must be made available for plants, that is, nitrogen, to make the leaf grow; potash, to strengthen the plant and phosphoric acid to fill out the grain. Of these, nitrogen is the most important, and it costs the most. I find that in the old state of Maine they were paying more than $10,000,000 annually for nitrogen, buying it in a commercial form—fully one-half the value of their crops as taken off the land. I think it is unnecessary.

Where is the source of all nitrogen? It is in the air we breathe; four-fifths of this air is pure nitrogen. What does that fact mean to the Wisconsin and Minnesota farmer? It means that hanging over every acre of your land you have $5,000,000 worth of nitrogen, and if you own 160 acres you are a great deal richer than Rockefeller. It doesn't seem reasonable that the Almighty God should put this mass of wealth just above our fields, within our reach, and then say to us, "You must patronize the commercial fertilizer companies."

The great value of the clover plant is that it will take this valuable asset from the air and put it into the soil. It takes it from the air where it is not in shape to use and puts it into the soil. This work is being done for us night and day, rain or shine, Sundays and other days, all through the growing season, through the means of what are really little insects found on nodules on the roots, and by this process our clover plant will take from the air above through these nodules on the roots, sufficient nitrogen to grow four, five or six crops.

Now, in this way we can incorporate all the nitrogen we desire in the soil without the outlay of one dollar in money, and while we are doing this, we are doing other work equally valuable.

Clover does not put into the soil available potash and phosphoric acid, but it is not for lack of these that our crops are cut short. Our agriculturist will tell us that we have potash in

most of our soils in Wisconsin and Minnesota enough to last us 200 years, and a great amount of the phosphoric acid as well, but they are not in an available form, they are in granules, so to speak, and not in such shape that the plant can make use of these mineral feeds until they are dissolved in water. All plants take their food in liquid form; the water is drawn up through the plant and the plant food left in the plant for growth, and the water is thrown out into the air; the plant can take no food, except as it drinks it; all plants drink to live—and some farmers do.

How does clover help us along this line? When clover rots it forms a slight acidity in the soil which dissolves these mineral plant foods and puts them in a condition so that the plant can take them up and make use of them.

Then again, the clover plant grows differently from most of our farm crops; it grows by means of a long tap root which pumps up that fertility, the potash and phosphoric acid, that have been reached by heavy rains down to the subsoil, leaving it near the surface.

There is another kind of work that the clover plant does; while it is doing the work I have spoken of, it also puts a dense shade on the ground. One of the best conditions known to science for conserving the fertility is cropping the soil. Nothing we can do is better for the soil than to put on a dense crop.

I want to tell you a little story in support of this proposition that close shading of the land does increase the fertility of the soil. I was speaking on our Western border one cold afternoon to a very large audience, and I made the statement that shading the land increased the fertility of it. A young Norwegian sitting back by the door, with a lighted up countenance said, "I believe what you say is true, though I never heard it before. A year ago last summer my neighbor's barn door blew onto my grain field, and it lay there during the entire summer. In the fall we plowed that field and we had to move the door and I thought no more about it, but this year, when I harvested that crop, the wheat stood up head and shoulders above any in the field and that patch took exactly the shape of the barn door. Now what you say in regard to shading land makes it all plain to me."

Another thing that the clover plant does for us—and per-

haps this means more to us in Minnesota than to you in Wisconsin,—but it means more than anything else to us; it puts vegetable matter into our soil, and that is very valuable. Some years we have a big crop; other years our crop is a failure, and we don't know why this happens. Some one says to us "This year was too dry and that was the reason you didn't have a good crop." Then the next year they will tell us it is too wet. If there is anything we can do to equalize this matter of moisture in the soil, we should do it, and there is nothing better than clover growing on account of the vegetable matter we put in our soils.

What is soil anyway? It is simply pulverized rock and vegetable matter. Take away the vegetable matter and it is pulverized rock alone, and you have a soil that will not hold water. Take it in one of those old fields where the vegetable matter has been burned out by continual cropping; the water will percolate into that soil and soon be out of reach of the plant; but, on the other hand, if there is vegetable matter there, it forms a sponge in the soil that will hold the water. When we raise clover on a piece of land, we are putting in a sponge that will help hold the water.

What is the trouble in a wet season? A wet season is nearly always a cold season, simply because our soils run together and shut out God's bright sunlight and air; the soil doesn't warm up and our vegetation is at a standstill. You grow clover on that land, incorporate vegetable matter in that soil, the particles will spread and let in the warm air and sunshine and our vegetation will grow.

The last two years have been very cold and corn has been backward, especially on our old fields; although our frosts came on earlier than usual, our corn did not ripen nearly so well, but on clover fields where corn was planted on clover sod, there was no such trouble, the corn grew and ripened to maturity. We can take any farm and practically place it 200 miles further south by growing clover; we can so change the conditions of that farm that that crop will mature as well as it would on a field 200 miles further south without clover.

But there is another side to this proposition which may appeal to you a little more in a convention than the fertility side

of it. I want to speak of its value as a forage crop on the farm. Alfalfa excepted, there is no hay that we feed to our stock that means so much to us as clover hay, provided it be cut early and cured well, and I want to speak just a few moments along that line. Why is it that clover hasn't the reputation in the market that it should have? It is this, because clover, as a general rule, is sown with timothy, and clover matures first. We sow it with timothy, about two-thirds timothy and one-third clover and then when clover has grown too woody, too much fiber before the timothy is ready to cut, we curse the clover and say it is no good, while if the clover is cut when it should be, we would have one of the most nutritious hays on the market. This is not only true in feeding the dairy cow, but just as true in feeding the horse and all your cattle. If there is any farmer here that feels that well cured clover hay is not good for horses, let me tell him I believe he is badly mistaken. I have fed practically nothing else for thirty years, and during all that time I never have had an animal injured by feeding it. It is not the clover hay that gives your horse the heaves, it is simply indigestion brought on by your forgetting that the horse has a small stomach in comparison with its size, and when you over load that stomach it presses on the lungs, and the horse chokes, becomes windbroken. I tell you that for work horses there is nothing you can feed that will do more good, nor any feed quite so cheap as clover hay.

I made this statement at an Institute yesterday in Minnesota: "We go to our Capitol building that we all appreciate so highly at St. Paul, we look up at it and can't help but admire it. But there is one feeling that always stays with us, and that is the remembrance of the millions of dollars it cost, over $5,000,000, and the farmers of Minnesota are paying big taxes because of that, and I tell you the farmers are paying a tax attributable to timothy hay that means more than five times the cost of that capitol building every year. If the farmers of Minnesota could be induced to raise clover, and feed it in place of timothy hay, they could build five capitol buildings every year and still have money left, and I do not doubt but that is true in Wisconsin as well.

I want to say just a word or two along the line of curing

clover hay. We have not been cutting it early enough, and not giving enough careful attention to curing it. Clover is a plant that soon turns to woody fiber after it reaches the right stage, and a delay in cutting it means the clover is spoiled. To be at its best, clover hay must be cut at full bloom and then I would not over-dry it in the sun. Our practice is to cut it in the morning, and by afternoon run the tedder over it so the dew will fall on the green side and next day, about 10 o'clock, rake it up, put it immediately in the pile and let it cure there. After lying in the pile about four days, it is drawn to the barn. Great care is taken that it shall not be drawn when there is any dew or rain on it. It is carefully stored away, never allowed to pile up in the center, because that means moldy hay. Hay put up in that way only costs a little more to cure it and it is worth double what clover hay is that is put up in the usual manner.

Now, in regard to the comparative value of late and early cut clover hay. It has been my practice for several years to exchange with a neighbor in putting up our clover hay. He wants to put it up about ten days later than I do, so we get through before he is ready. Some years ago I got mine cut and sent him word that we wanted to draw it in the morning. Rain fell for five consecutive days and on one occasion he said, "Forest, when you get ready to haul that manure I will help you." On Saturday afternoon the weather cleared up and Sunday was a bright day, and the piles dried out nicely. On Monday morning, I told him I was ready to go ahead and asked him to bring all the help he could, because I wanted to finish up. When we got to these piles he said, "What a pity to cut such nice clover and let it spoil in the field." He walked up to the first pile and put his fork in it and said, "It isn't nearly as black as I thought it would be; if that had been my hay it would have been black to the bottom of the pile." We turned it over and by Monday night we had the whole field in the mow. Several times he said, "If you hadn't been in such an everlasting hurry and just let that clover stay, you might have had it all in without rain on it."

I said, "Never mind, I will trust that first hay we cut." We took out the last cut hay first and I will acknowledge that it looked rather critical, but after a while we came to the early

cut hay, and notwithstanding those cocks had been there so much longer I naturally expected them not to look so well. When we came to feed that early cut hay the cows increased on an average three pounds of milk over what they had been doing a day while they were fed that which was cut later without a drop of rain on it. I don't want you to understand that it was the five days' rain that put the value in that clover—no, it was the early cutting. That which was cut later had largely turned to woody fiber and lost its value.

I am not so much in favor of the hay loader as a great many are. We have found in our state, where we have kept pretty close tab on the amount of cost in putting up hay, that there isn't near as much difference in the amount of cost in putting up hay by "hand" as we term it, as there is in the use of the hay loader. Indeed, we find that there is a very, very few cents difference to the acre, and not nearly the difference we expected to find, and the quality is very much better in putting up by hand.

I want to say just one word in regard to alfalfa. I know that you are raising a great deal in Wisconsin and under certain conditions I believe it is a right and proper crop to grow, but I do not believe it is for the average farmer. Mind, I am not speaking about one of your best dairymen here. I have been growing alfalfa for seven years and it does not mean one-fourth of what clover does, and I never saw a better field than we are growing. Now, why doesn't it? Simply this, while it does make a better quality of hay, it does not fit into your rotation; it is not in any sense of the word a rotation crop, and while a man on a small area who is running an intensified dairy farm, will manure it, keep up his permanent meadow, that is all right, but it would not apply to a man who has an ordinary farm and practices rotation on his farm. I have found this to be true in all my agricultural experience. I find there is no section where clover does real well where a farmer cares to grow alfalfa, except where you are making dairying a specialty and running an intensified dairy farm.

I thank you for the good attention you have given me.

DISCUSSION.

The Chairman: We cannot go any further this morning, but I wish that every farmer here and every one in Wisconsin would remember every word of this talk by Mr. Henry—except what he said about alfalfa.

Mr. Glover: I think we should discuss this subject a little bit. Mr. Henry says alfalfa does not fit into a rotation, and I am sure he is mistaken. Hoard's Dairyman farm uses it in its rotation, and so do many others.

Mr. Goodrich: I know of farmers that use it in rotation, and it makes the biggest corn crop that ever grew in the country where it is raised; they make it three years alfalfa, two years corn and one year small grain, and I never saw a better rotation. What would be the objection to that?

Mr. Henry: I knew I was in trouble and that is why I did it. You know John Wesley, at one time, had a school, and it was his hobby to send pupils from that school from Sunday to Sunday, to talk in different neighborhoods, to practice at preaching. One night a young fellow who had been out preaching came back, and Mr. Wesley asked him, "Did any one laugh at your talk today?" The young man answered. "No." "Did any one cry?" "No." "Did any one get mad?" "No." Mr. Wesley said, "You needn't go the next time."

Now, I say alfalfa does not fit into a rotation, not such a rotation as we want in Minnesota, nor what I think the majority of farmers want in Wisconsin. I have made that rotation spoken of here on an intensive dairy farm and it is all right and proper, but in the first place as a rotation crop it is entirely too expensive. As a rule we have to sow a nurse crop the first season, and so it is too expensive. I can get practically as much, or more hay, from June clover than I can from alfalfa on my farm. I have gotten six tons of clover hay in two cuttings and we all know that in raising alfalfa the first crop is very hard to cure, because it comes at a bad time to cure hay. The second crop comes right in harvest with us and the third crop comes at a time when it is hard to cure. It is a little too expensive, it is much better as a permanent crop. You under-

stand I am speaking of the average farmer, not the special dairy farmer. On the average farm unless we keep up a four-year rotation, put in clover one year, follow with corn, possibly two crops, small grain and seed it back to clover, the fertility of our farm is going to run down.

The Chairman: We will have to adjourn now. I fancy Mr. Henry has presented his side of the question as well as anybody can, but we will have a little time after dinner to talk about this.

Recess to 1:30 p. m.

The convention met at 1:30 p. m.

Mr. Goodrich in the chair.

The report of the Committee on Nominations was called for.

In that report the following gentlemen were named as officers for the coming year and on motion of Mr. Scribner, duly seconded, were unanimously elected to fill such offices, viz.: For President, H. D. Griswold, West Salem; for Secretary, A. J. Glover, Fort Atkinson; for Treasurer, H. K. Loomis, Sheboygan Falls.

The Auditing committee next submitted its report, which on motion duly seconded, was adopted.

WEST SALEM, Wis., February 10, 1910.

We, the Auditing committee, appointed by President Scribner to audit the Treasurer's account of Wisconsin Dairymen's Association for the year ending February 10, 1910, hereby certify that we have examined said accounts and find them correct.

M. L. WELLS,
H. C. TAYLOR,
C. P. GOODRICH,
G. A. FREEMAN.

A Member: Have you tried alsike clover and how did you find it as compared with other clover as to producing humus and fertilizing the soil?

Mr. Henry: It is not nearly so good a fertilizer as June clover and its root growth is not nearly so great, consequently it does not give as much vegetable matter in the soil. Speaking of alfalfa again, on our dry uplands where we want to practice crop rotation, it is not nearly so well fitted as ordinary June clover; in an ordinary season it does not make half the hay, and where June clover is set thickly, we find an equal quantity of feed as in alfalfa. In practice we sow a little of the alfalfa with the June clover, so we have a variety, and variety means almost as much as quality. The more variety we can get, the better for our dairy cow, and for that reason we sow a little alfalfa and timothy with the June clover. We sow four quarts of the medium red, one quart of timothy and two quarts of alfalfa, but we never see the quart of timothy.

GROWING ALFALFA AND ITS VALUE.

Mr. C. L. Hill, Rosendale.

(Read by Mr. Freeman in the absence of Mr. Hill.)

I want to quote quite at length from a letter just received from a young man who has gone from Wisconsin to New England, and bought a farm there. He spent several weeks in different parts of New England and finally located near a town in which there is a great agricultural college, and where he says the land is unusually good. He writes me as follows under date of January 23rd, 1910:

"The situation in the country about us is very curious, and is a sample of conditions in many New England towns. We are doing pretty well with our herd, and sending quite a lot of cream to Holyoke, at 35 cents per quart for 40 per cent. cream, but all about us the cattle are being done away with. Let me give you a few examples of what my neighbors are doing. First,

a farm of 160 acres which had been in a certain family for generations; badly run down from hay selling; herd of 15 head sold last year; the man now works in a store in town, taking the trolley which passes the door. Nothing is done with the place, but to cut a little hay in old meadows, and place it for sale and no offers. The trolley in New England is a blight on the land as this thing occurs everywhere. It means the man quits working the place, gets in the car in the morning, and goes to town where things are lively, and he can get a job behind the counter.

"Second, a neighbor, with no capital to work with and no business head; tried to carry 40 cows and 20 or more head of young stock of the poorest Jersey scrubs. He peddled milk. The interest on $4,500 mortgage and taxes on the place were not paid for three years. The owner of the mortgage has just foreclosed; the family will step out this spring with nothing but the clothes on their backs. It is a good, level, 120-acre place, right on the trolley; for sale and no offers.

"Third, my second neighbor on the other side has just sold his herd of about 20 head. Thinks he can make more raising hay with chemicals, and I believe he is right in his case, as hay is now $24 per ton delivered, and he has a miserable lot of cows and a Shorthorn bull.

"Fourth, farm across the road from us carried 15 head but owner sold out and moved away. Present owner is plumber in town, farm lies idle. He paid down very little on the place, and the interest on the mortgage is less than his house rent in town would be, perfectly level place of 30 acres with good buildings; former owner made good living; for sale and no offers.

"Fifth, place across the road from this is a good farm with fine orchard, absolutely idle for the last three years, since the owner was paralyzed. He is an old man and lives on his pension.

"Another place of 40 acres just sold to an incorporated fruit company for apple growing. Herd sold off. So it goes, a different reason in each case, but the cattle are going. I think, however, there will be a splendid opportunity for those who stay and develop these farms. In most cases, I have mentioned, it is the old, hard shelled, New England character, and moss grown ideas. The human stock has been inbred too long."

I have quoted thus at length that we may take a look ahead and see what the conditions may be in Wisconsin fifty or one

hundred years hence. It may help us comprehend some of the conditions that confront our agriculture, especially our dairy industry. Note these are not stony, undesirable farms, but among the best in New England, and once worth more than land is now worth in Wisconsin. We won't think that such conditions can never prevail here, but they little dreamed fifty years ago that such conditions would prevail with them. I have seen farms in Wisconsin so impoverished and weed ridden that they scarcely paid for cultivating. Alfalfa is going to do much to restore some of this New England land to a state of usefulness, and the young man whom I quote, is doing well with it on his farm. Few states in the East or North have conditions more favorable for growing alfalfa than Wisconsin, and I soon expect to see the day when vast areas in Wisconsin are devoted to its culture. There is little doubt but that it will do better on limestone soil than where lime does not exist. Most Wisconsin soil is underlaid with some sort of limestone rock. I have seen beautiful stands where soil on top of solid limestone was not over 6 inches in depth, and even less than that.

By all means select rolling land, and the most ideal location is where there is a subsoil composed of broken limestone, but I have seen good stands on nearly every kind of soil from Kenosha to Superior. I began experimenting with alfalfa 11 years ago, and sowed six acres the first time. This piece of land was not rich enough, and little good resulted, although an acre that I sold for building lots produced from this seeding a very fair crop of alfalfa for five years or more, though it was much mixed with June grass. I next sowed in the spring a piece of six acres without a nurse crop. The weeds grew so rapidly that it was necessary to clip it three or four times. This piece yielded the second year three very fair crops of hay, being inoculated between the first and second crops. However there was a good deal of June grass in it, and it all died the second winter without apparent cause, as the ground did not appear to be heaved. It was never as vigorous as it ought to have been. I manured this land and put it in corn, and manured it again in the fall, sowing alfalfa in the spring with one bushel of spring wheat per acre.

This has produced a fine crop of alfalfa the past two years, and better the second year than the first. It was however quite

badly infested with June grass and I have this year manured and plowed it, and will grow corn on it this coming year, but will ultimately put it back to alfalfa. It has been my privilege to see much alfalfa growing in New York and New Jersey, where fall sowing is the almost universal custom. Three years ago I decided that as my land was so infested with June grass, and some of it with noxious weeds, that I would summer fallow a piece and sow it in the fall.

In the summer of 1906 I took 5 acres of land in clover and plowed it as soon as the second crop of clover was off, working it down fine, so it could be driven over in the fall and winter with the manure spreader; gave it a heavy coat of manure from the cow stable, which is, I think, the inoculation it needed. Plowed it again in the spring, and disced and dragged it till the first of August, when it was a very fine seed bed. I then sowed 20 pounds per acre of the best seed I could buy, and it came up in a few days. It was 16 inches high when it froze. There was not a weed of any kind in sight, not even a plant of June grass. Canada and sow thistles that were on the place are dead. Prof. Otis said it was as fine a stand as he ever saw and a friend of mine from New York said he never saw better there, and he grows from 50 to 100 acres. It produced a beautiful crop of hay in 1908, and was 15 inches high when it froze. It was cut three times.

Last summer it did even better, though now there is to be seen once in a while a plant of June grass, but early this coming spring I shall go over it with a spring tooth harrow. At the Illinois Experiment Station last spring, I saw them going over their fields in this way two or three times, and it tore out all the grass and left the alfalfa practically uninjured. Prof. Fraser said they had found it much more successful than the disc, which is so often recommended, or even the spike tooth alfalfa disc.

In the summer of 1908 I treated another five acres in the same way, but it was so very dry that not all the annual weed seeds sprouted, and while the treatment killed Canada thistles and quack grass, some red roots, pigweeds, and the like came up the next spring. On account of drouth, this field was not sown to alfalfa till August 11th, and the alfalfa was only six or eight inches high in the fall, and it looked as though it had a poor chance to live, but in the spring it came on rapidly, and

very soon was as big as the older piece, and last year produced more than the first piece did the first year. No June grass in sight.

Last summer I took a nine-acre piece treating it the same way, but it was so dry that not all the annual weed seed sprouted. I sailed for Guernsey on July 14th and it had not rained for nearly a month and the ground was very dry. I told my man to sow the alfalfa seed August 1st, no matter what the weather was, and he sowed it then in dust six inches deep, but that night there was a nice shower and in three days it was green.

I am now thoroughly convinced that on rich Wisconsin land, where June grass is a weed, it will not pay to grow alfalfa unless we first get the land pretty well cleared of this grass. Several of my neighbors have tried sowing it in the spring as I have with not a single real success. Last year my neighbor tried a fall sown piece and he has a good stand, and at least two others will try sowing a piece in the fall next year. One thing that bothers when the ground is so bare, and fine, and especially on hilly ground, is the washing, and this can be quite largely obviated by dragging around the hills the last time. The seed is covered by dragging as lightly as possible. A heavy coat of manure is very essential to get a good stand, but later top dressings have shown little effect. Do not be afraid of getting the land too rich and make just as fine a seed bed as possible. Sow the seed both ways, about half each time, so that no spots or strips be missed.

The usual advice is to try half an acre or an acre the first year, but I am now so sure that alfalfa can be grown in Wisconsin if we go at it right, that I would advise you all to get in the game as soon as possible. I was fearful that the heavy snow this winter might smother it, but I dug down in several places this week, and there is no frost, and the alfalfa actually looks as if it was growing. I had 75 tons from 15 acres the past season, and the cows are certainly laughing this winter.

It is well to remember in growing and curing alfalfa that a ton of well cured alfalfa hay is nearly equal in feeding value to a ton of wheat bran for which you are paying today $22.00 to $25.00, according to the part of the state you live in. Then plan to make that hay in the best way possible even though it

does take more time. Make caps of cotton sheeting 40 inches square with weights of about ¼ lb. attached to each corner with a string about four to six inches long. If weather conditions are right I cut the alfalfa in the afternoon, and commence to go over it with the tedder as soon as dew is off in the morning. I said cut it if weather conditions are right, and we think them right unless it is raining too hard for man and team to be out. Then if it is not good weather the next day and you are obliged to let it lie one day, it will not be injured if it is not wilted. We continue to run the tedder till leaves begin to rattle which varies from 11 a. m. to 3 p. m., according to the weather, and it is then put in small piles, and caps are put on. It is left in the piles till it is well cured, when often it is drawn to the barn right from the piles, and at other times opened up and dried out. If it is to stay in the piles more than three or four days the piles should be moved so as not to injure the plants underneath.

Almost everybody has now heard enough about the feeding value of alfalfa, so that it is not necessary to emphasize it at this time, but still we do not value it at its true worth, as it improves the land, bringing the fertility from deep down and when the roots are plowed under, the land is, on this account, and from the nitrogen taken from the air, actually richer than before. One thing against it is that it does not fit in well with our rotation of crops but we will soon become accustomed to this, raising our corn and grain on the level land and alfalfa on the hills. Use rich land, get good seed, fit the land well, sow from July 25th to August 10th, and expect a good crop.

DISCUSSION.

Mr. Henry: Mr. Hill made one statement there that hit the nail right on the head. He says the great trouble is that alfalfa does not fit in with your rotation. No one doubts it is a valuable hay, but I was at the station last Sunday and I was talking with one of our boys, and he asked me, "What is the big thing, the farm, the crops we grow, or the stock?" and I said, "It is the farm every time." Rotation is what keeps up the farm and

clover fits in perfectly with rotation. The gentleman makes another important statement there; it helps to keep up the fertility of the soil, and it is true, but the trouble with this alfalfa is we do not get it over our whole farm. It does help the fertility in the field where it grows, but it doesn't help the next field to it.

We must have thoroughly drained soil, in order to grow alfalfa. You have thousands of acres in Wisconsin and we have thousands of acres in Minnesota that will grow alfalfa, provided we make the conditions right, and one is, to get plenty of stable manure on the land.

We never plow manure under, all our manure is practically put on the clover sod. That gives a mammoth crop of June clover and it is left one season and plowed up in the fall and corn put in the following year. I feel that one load of barnyard dressing thoroughly spread on top of the clover field is worth three loads plowed in. If my land is a little poor so I feel I can't get a good stand of June clover, I go over the nurse crop with a light dressing.

Four years ago we added to our farm a little strip that had been tilled forty years without any clover. We sowed it to barley, thinly, not more than a bushel and a peck to the acre, and clover at the same time. Then we put on about five loads of manure to the acre and that season we got 31 bushels of barley to the acre and one of the finest stands of clover I ever had. Late in the season we put on five more loads and then we cut that crop of clover that I spoke of this forenoon, six tons to the acre. We often struck five, but we never got six before.

A Member: How do you sow your clover seed?

Mr. Henry: We sow it broadcast and harrow. Do not sow the nurse crop too thickly and do not let that nurse crop be oats. Oats takes 25 per cent more moisture from the soil than any other crop we grow. In order to grow one pound of oat straw it takes 2,500 pounds of moisture, and in a dry season nothing draws so much moisture as an oat crop. Spring wheat is very good and so is barley, but sow either one very thinly, so that the sun can shine through that growing crop. If it is sown too thickly, when the crop is cut off, it has not seen the sunlight before and the bright sun will burn the life out of it; on the

other hand, if it had been sown thinly so the sun could shine through it, it makes a more vigorous growth and there isn't one time in a hundred but what the clover will grow all right.

Mr. Glover: I know we all appreciate what Mr. Henry has said, and agree with him in most of his statements in reference to clover and alfalfa. But I am sure there is a little misunderstanding in regard to alfalfa fitting in the rotation. Southern Minnesota conditions are a little different than those in Southern Wisconsin; I know that, because I was raised not far from where Mr. Henry lives. It seems wise for me to state briefly what the Hoard's Dairyman farm is doing with alfalfa. Mr. Henry has said alfalfa does not work well in a rotation.

When a piece of land on Hoard's Dairyman farm is sown to alfalfa, about three pecks of barley is sown per acre and about twenty pounds of alfalfa seed. When the crop of barley is cut, the alfalfa comes on and grows well, giving protection for itself during the winter. The field is kept in alfalfa for two years, cutting three crops each year. At the end of the second year, after the third crop is removed, the land is plowed. Corn is planted two seasons when the field is again sown to barley and alfalfa. This constitutes a five-year rotation. Alfalfa is used in the rotation and it has become as sure a crop as red clover. On the Hoard's Dairyman farm some clover is grown, but the yield is not as great as alfalfa. Clover sells for $8 or $10 a ton, while alfalfa hay sells at from $12 to $15 a ton. Surely if Mr. Henry had met with those conditions he would not say that it would not work into the rotation, because on Hoard's Dairyman farm it is being used in the rotation. I have great faith in Mr. Henry's judgment, he is a splendid farmer, but I believe that our conditions in Wisconsin, if he knew them better, would cause him to modify some of his statements.

THE TUBERCULOSIS QUESTION.

W. D. HOARD, Ft. Atkinson, Wis.

Gentlemen and Ladies: I note I am to say something to you on this question of tuberculosis. The program says I am to speak from the standpoint of the law. I would much rather speak from the standpoint of my own experience. I have had no experience with the law, I needed none, you need none. The law of common sense, common ability to reason from cause to effect, a plain, straightforward pride and purpose to keep and breed only healthy cattle is all I needed, all you need to take you by the peril and keep you clear of it. We must be a law to ourselves, or else we will not amount to much.

I think I had better give you a leaf from the chapter of my own experience. When I first established my present farm in 1898, I had four registered Guernsey females and the bull Espanore 2nd of my own breeding. This bull has since become the sire of six cows in the Advanced Registry. I had a newly constructed stable room for 25 cows, constructed under plans furnished by Prof. F. H. King with his system of ventilation. I had to have more cows so I bought grade heifers and cows to fill the stable. I knew nothing practically of tuberculosis, but I had read about it extensively. I was confident that the scientific men who had studied this question clear out to its roots, were not mistaken in their conclusions. So I called in the best veterinarian in the county and told him to test every animal I had. I had bought six fine grade heifers of one man and to my great surprise four of them reacted. I was determined to do no slack work myself, so they were killed and sure enough there it was—not very much developed but it was there. I went to the farmer I bought them of and told him he had tuberculosis in his herd, that I had killed four of the fine heifers I bought of him and found it. He repudiated the idea. Like a good many other farmers he was opposed to a good deal more than he was in favor of.

I kept steadily on testing every six months, and giving my stables thorough disinfection by liberal use of whitewash and

other disinfectants. My neighbors said this was some more of "Hoard's Theories". They were too smart to be "caught in that trap." What a lot of smartness there is going to waste among us farmers.

I had purchased two pure bred Guernsey cows, one on my own risk, the other from a distant portion of the state on the test of a veterinarian who did not know his business. Both proved to be diseased. But I kept two heifer calves from them that are still in my herd, both Advanced Registry cows. The mothers were killed and buried. One other cow was killed. By 1900 I had a herd clean and free of the disease and not a reaction has been had since, although I aim to test regularly every year in November. I have been very careful about buying in animals, keeping any such in quarantine until I could fully determine the validity of the test I bought them on.

In the last seven years I have bought nothing except one bull and two heifers from Guernsey Island. Several cows have died, as they will in all herds, from various causes, but a post mortem has failed in every instance to find the least trace of tuberculosis. When I had completed my first test, I felt that I ought to publish it to the world, in order that sound conviction as to the disease and the efficiency of the tuberculin test might spread among dairy farmers. Every person with whom I advised about making public my experience counseled me against it. They said "It will hurt the reputation of your herd to have it known that you have found tuberculosis there." But somehow I could not see it in that light. It seemed to me that those buyers who were alive to the question, should have all the more confidence in the herd, if they but knew I was bound to banish every trace of the disease. So I published in Hoard's Dairyman the story, and told how it all happened and what the results were. You can imagine how gratified I was when I began to receive letters like this for example:

"I see you are bound to drive out tuberculosis from your herd. Have you any stock for sale?" It has not been a difficult thing for me to keep that herd clear of tuberculosis, nor has it been expensive. The seven animals I sacrificed have been paid for ten times over in three ways: (1) They did not have the chance to spread the disease. That was a big advantage and of great profit. (2) The prices I have sold my cattle at and the

ease I have had in making sales of all surplus stock. (3) In the increased milk production of the herd because they were healthy. Do you not think that a cow is going to do a great deal better at the pail if she has pure air to breathe? Farmers have not got it squarely into their heads yet, that pure air is food. If you have the King system rightly installed in your stables, you are putting additional milk into the pail. Further, if you put all the windows into your stables you can—when you think you have all you can get in, add a few more—you are introducing the most powerful disinfectant known. Light, pure air and the tuberculin test are the three cardinal doctrines to be preached against tuberculosis.

My herd now numbers about 40 cows. Twenty-eight of them have gone through the advanced Registry test with an average of 8,242 lbs. of milk and 446.43 lbs. of butter fat. Mind you, this has been done without changing any of the habits of the herd in feeding, or milking, or breeding. Their ration is the regular one, and they have been milked but twice a day and have borne calves regularly. The balance of the herd have not yet completed the Advanced Registry test. Now there is a record equivalent to 520 lbs. of butter per cow. Could they have done this, think you, unless their health was perfect and the conditions surrounding them—light, ventilation and feed had been right?

Why then should so many farmers be skeptical on this question. Why wait for law, when you can be a law unto yourselves? Why hesitate about putting in the King system of ventilation and taking the pains to put it in right too? I have no more use for the law in this respect than I have in other things. The law is not made for people who are a law unto themselves.

You and I know enough, if we will summon courage, to do as well as we know. Too many of our Wisconsin farmers have acted a foolish part in crying down the tuberculin test. "It is not infallible" they say. Well, who or what is infallible?

Here we are, with the finest future before us as a dairy cattle producing state, with the whole world ready to come to us for our cattle, if we but know enough to do the right thing. Let every man sweep before his own door, clean up his own herd, no matter what the neighbors say. Set up a high standard. Breed towards it, feed towards it, construct your stables for it.

Consider health and efficiency as the first prime objects to attain. Cast off all this foolish prejudice against the tuberculin test.

In December I attended the meeting at Buffalo of the International Committee for the Suppression and Control of Bovine Tuberculosis. Eleven of the wisest men on this subject—with one exception—in both Canada and United States, met there for a two days' consultation. What do you suppose was the united judgment of that body of men as to the prime causes for the alarming spread of this disease? Ignorance and dishonesty. I have shown you how I got rid of my ignorance and I could only do it by being honest towards my cattle and myself. What a cheat that man is who tries to cheat his cows and himself. My advice is to pay no attention to the law except to obey it faithfully by going ahead and acting for yourself. My course has brought me thousands of dollars. A like course will pay you well.

Ex-Gov. W. D. Hoard was unable to attend the convention on account of celebrating his fiftieth wedding anniversary.

VALUE OF RECORDS IN BREEDING COWS.

PROF. HUGH G. VAN PELT, Waterloo, Ia.

Mr. Chairman, Ladies and Gentlemen, I want to congratulate you people of Wisconsin on the great strides you have been taking in the dairy business. Especially since hearing the report of your State Dairy and Food Commissioner, I have been even more impressed with the results you have attained in dairy farming than I was before. Over in Iowa we have been trying to imitate you more or less, because we realize that, although Iowa has been preeminently a beef and pork-producing state, beef and hog products cannot be produced with the certainty of dairy products. Our farmers over there are largely quitting the feeding of beef cattle and hogs in many vicinities, because of this, but they realize that to retain the fertility of their farms,

EMINENT JERSEYS

Adelaide of Beechlands Bessie Bates — Mollie of Edgewood Emma's Rowena — Rosaire's Olga 4th's Pride — Magyarland's Temisia Jacoba Irene — Olive Dunn — Star of Weldon Financial Countess — Hector's Fairy Belle

The highest producing cow in this group has a yearly record of 17,253.2 lbs. milk and 924.1 lbs. fat; lowest, 9,743.8 lbs. milk and 602 lbs. fat

they must do something that will take the place of the feeding operations of the past. So, we are looking largely to the state of Wisconsin for leadership, for guides for us to follow, so that the state of Iowa may come to be the same profitable dairy state as you have over here.

With reference to the value of records in breeding dairy cattle, I believe it is safe to say that there are four different classes of records which should be given more or less consideration on every dairy farm. These various classes of records are: 1st. The production of milk and butter fat; 2d. The feed records; 3d. The breeding records, and 4th. Show yard records.

Of these four classes of records, undoubtedly the more important are the production records, because the ultimate purpose of all breeds of live stock is production. If you are breeding beef cattle, the ultimate purpose of your efforts is the block, or the beef when the animal is killed; if you are breeding hogs, the ultimate purpose of your efforts is pork; if you are breeding sheep, the ultimate purpose of your efforts is mutton, or wool, or both, and if you are breeding dairy cattle the real ultimate purpose of all your efforts is the production of milk and butterfat. Consequently, these records are all important, and they are a guide or an index showing what you are able to do, or what will be accomplished by your efforts, in breeding dairy cattle.

The pedigree of your dairy animals is valuable or not valuable according to the extent of the records which it contains. If a pedigree for six generations shows a great many good records, demonstrating that the animals which make up this pedigree have been valuable and large producers, or show yard winners, or good breeding animals, which ever the case may be, the pedigree is valuable. On the other hand, if the pedigree contains no animals—or if the history related by the pedigree shows that no animal in that pedigree has ever done anything worthy of note, the pedigree is absolutely worthless, except from the standpoint of demonstrating the purity of the blood.

One of the laws of breeding, which is most familiar to us all is, that "Like begets like, or a likeness thereof." When we have animals whose pedigrees are made up of animals that have been large producers at the pail and the churn, we can, with all reason, expect that the offspring of these animals will also

be large producers of milk and butterfat. On the other hand, if the pedigrees show no animals with records, we cannot, with any degree of certainty, expect record producing offspring. It may be possible that some place back in the generations there have been animals that have been large producers, though we have no certainty of this, nor no guide as to their value, and we have no guide as to what we can expect from the offspring of such animals.

I might say that over in Iowa, and I believe it is true on some of your farms in Wisconsin, and I know it is true in Minnesota and Nebraska and in most of our Western and Central West states—the average cow, or the cow that is being milked on the average farm—is not better, if as good, as the cows that were being milked twenty-five years ago.

Now, this being the case, there is something wrong. The farmer of the Central West, I believe, is one of the most intelligent farmers of the world and he has made great progress in the past twenty-five years. As was said by somebody else, he made more progress in the past few years than was made in the 6,000 years prior to the time of the beginning of this advancement. But here in the Central West the man who is milking the cow has been very busy with other things and he has not given the attention to his dairy cattle that they deserve. He has made wonderful improvements in the character of beef animals he is breeding and feeding, also the hogs and the horses and the farm equipment and machinery, but because of the fact that the dairy cow has been considered a side issue, he has paid very little attention to her and he has kept no records of her performance. As a result comes the unfortunate fact which Prof. Rawl presented to you the other day; namely, that there is a large percentage of the 22,000,000 cows being milked in the United States that have never returned a cent of profit to their owners, and I want to tell you that the reason why this is so is because the people who are milking those cows have not kept records. You will agree with me, because you know absolutely that there is not an American farmer living, who would, knowingly, go out to his barn day after day, and 700 times in a year milk a cow for absolutely nothing, and in many instances hand her a cent for the privilege of doing so.

Now, it is the truth, it is a fact that we know the American

farmer is doing this very thing and why? There is just one reason why he is, and that is because he doesn't know that he is doing it; he doesn't realize it, and there is absolutely no way for him to find out that he is milking unprofitable cows, unless he keeps records of what his herd is doing.

As a rule, I am confident that the dairy herds of the Central West are making nice profits. I believe there are very few entire herds in the United States that are losing money, but the reason that the cows are being milked that are losing money, is because they are intermingled with other cows in the herd and are covered up by the cows which are making large economical yields and large profits.

We find in the testing associations that we have started in Iowa,—and it is found everywhere where testing associations are started and records kept,—that in one and the same herd are to be found two cows standing side by side under identically the same conditions, consuming the same kind of feed and the same quantity, and one of these cows is making a handsome profit and the other cow making an absolute loss. In some instances, we have found one cow in a herd making as high as 400 pounds of butter in a year, and another cow making as low as 100 pounds or even lower. It is just as plain as anything can be that it makes no difference even though one of these cows is eating four times as much feed as the other, requiring four times as much barn room as the other, and four times as much time and care in feeding and milking her, still she is four times as good a cow as the other and much better even than that. With a very little figuring we can see that one cow is worth the other four. So, I say we are not milking these cows that are losing us money not because we want to, or because we don't know any better. We are simply doing it because we have not yet brought ourselves to realize the difference between a good cow and a poor cow, and we never will until we begin keeping the records of the cows. Then we go further than this, we not only milk these unprofitable cows, but we save them, generation after generation, save their offspring and we do not realize that the inherent value of one calf that we are saving for a future dairy herd is far greater than another, because we have not yet brought ourselves to realize the immense value of records. We select our sires in the same way, and even though we have

raised some heifer calves from some wonderfully good cows by mating these with sires whose records we have disregarded and which would reduce them to the class of unprofitable cows, by continuing this practice, some of us have managed to stay just about where we were twenty-five years ago and I presume 5,000 years ago. In other words, we haven't got to a point where we wish to make a change for the better.

That reminds me of what I noticed coming over in the car. A lady stood by the car door for some time and finally she said to a young man, "Will you kindly help me off this car?" He said, "Certainly, I will be glad to." Then she explained to him. "You will notice I am very large and rather old, and consequently when I get off a car I have to get off backwards. I have been trying to get off for the last five stations, and when I go to get off the conductor thinks I am getting on and pulls me back again."

That is exactly what we do when we do not keep records of what our animals are doing for us. It doesn't make any difference how good an individual may be that we have in our herd, whenever we mate her with an animal whose ancestry is poor, we don't know it because there are no records to show it. That sire is the conductor that pulls us back again.

In selecting our sires, we must bear in mind the fact that without records we have absolutely no knowledge of what the animal itself is doing or what its ancestors have done, or what we can expect of the offspring from those animals. By keeping records we of course put ourselves to more or less expense, it takes more or less time, but when we stop to consider the time lost and the money wasted by not keeping records, we are in a position to realize whether or not we can afford to take the time and put ourselves to the meagre amount of expense that is necessary for keeping records from year to year.

Now, the breeder of dairy cattle, as a rule, realizes this. Many of you have heard famous breeders who have been keeping records for many years and they have told you the great value received from keeping records.

Sometime ago I was in Sioux county, Iowa. I met a young man from Holland who told me the history of a part of his life. Nine years prior to the time I met him he came from Holland with very little money, as he said he never expected to own a

cow or a horse, all he expected to do was to make a meagre living. One of his friends in America sent him a ticket to come, he hadn't even money enough to pay for that, though he paid it in the first year he was here and made besides, at farm labor, $300. The second year he made $350; the third, $375, and then he did what most all Hollanders, or any one else does, he got married and moved on a farm. The owner of the farm furnished everything except the horses, and gave him half, and he started to milk cows, because he had milked cows in the old country and knew how to do that. The first year he kept no records of his herd, except that at the end of the year he figured up how much money he had gotten from the creamery and divided it among his cows. I asked him to write it out, and he gave me a letter showing what he had accomplished. The first year the returns from the creamery for his cows showed $28.50 apiece, and he said he realized that that really didn't pay for the cost of feeding the cows. So he thought it over and began weighing the milk and testing it, and getting rid of the poor cows and keeping the good ones, in other words, making records. Then the next year from the 1st of March, 1905, to the 1st of March, 1906, the returns per cow were $36.20; the next year $41.20; the next year $45.84, and last year it was $53.01. He also gave me his figures on the cost of all the feed he gave these cows, and the skimmilk fed the calves and the milk used on his own table, and at the bottom of those figures he has put a figure which shows that his cows returned him a net profit of $36.09.

Now that shows you what that man accomplished by making records, a man who can hardly speak the American language even today. He knows exactly what he is doing and if he had not kept those records he would have been milking yet the same class of cows that he started with and receiving in the neighborhood of $28 per cow, while today he is making a net profit on the average of all his cows of $36.09.

I have a letter from Mr. Auten. I wrote to several breeders, just to learn what their idea was as to the value of keeping records, so I asked him what he paid for Jacoba Irene, the cow that made over 2,700 pounds of butter in three years. He told me not to tell you; but you can realize what a cow without a record going into the auction ring would be apt to bring. He says:

"Of course I have no fixed price on her value now, but she is paying me big interest on a $10,000 investment per annum."

Now, the question is, is her real intrinsic value any more today than it was five years ago when he bought her at the common average of a right good Jersey cow, and do you think that the man who owned and bred this cow would have allowed her to have gone out of his hands had he known what her real intrinsic value was? He would no more have disposed of her at the price he received for her than the man who is milking a cow 700 times a year and paying for her feed without being paid for his efforts would continue to do so if he knew what he was doing.

I also have a letter from Mr. Charles L. Hill, in which he says, "I commenced to weigh the milk of the first pure bred Guernsey I ever owned when she dropped her first calf in 1888, and have weighed each milking of every cow since that time, and as soon as the Babcock test was invented, I commenced, in 1891, to keep fat records of the cows. Any advance I may have made in the breeding or dairy business, and I might say any that I may hope to make, will be founded on the work done in keeping records of the cows. How else can we hope to work improvement? I now have animals whose maternal ancestors for seven generations have yearly milk records, and five generations have official yearly fat records."

The very fact that the man who has not kept records has not made any improvement and that the man who has kept records has made improvements should be sufficient to make us realize the extreme value of keeping records of what our animals are doing. Mr. Hill also sends me some of his records, and among them are fifty-six records of cows, ranging in age from two years old to thirteen years old, with an average milk production of 7,202.7 pounds of milk per year, an average of 377.24 pounds of butterfat.

Now, the question is, did it pay that man to know what he was doing? Has he been paid for the time which it took to do the weighing of the milk, to test the milk and keep the records? When we stop to realize the vast advance that Mr. Charles L. Hill has made in the dairy business, which he attributes to having made records of his work as he went along, we can have some idea of the value of these records.

We all know in Wisconsin what Mr. Gillett did with Colantha 4th's Johanna. We know something about the price he would sell one of her calves. We know he bought one of these calves back and sold it for something like $8,000, and I don't suppose that calf had any more intrinsic value than it had when it sold for $400 or $500.

When I was in Colorado a man told me he had a Holstein bull, he said, "One day I got a telegram from Mr. Gillett who offered me $500 and another one equally as good for that bull. I wired back I wouldn't take it. Then he offered me $1,000 and I wouldn't take it. Then I got a letter from him telling me to keep that bull, and then he told me he was very closely related to Colantha 4th's Johanna."

Now, the question is, was that bull any better than when he first bought it? It was simply the fact that they had found out the real value of the blood of Colantha 4th's Johanna that made the calf valuable.

I also have a letter from Mr. C. I. Hood, in which he says: "No one can estimate in dollars and cents the value of authenticated records and the register of merit. If you could examine the strong, rugged, everyday producing cows in our herd, with their unsurpassed constitutions and dairy characteristics, and then could compare records which show that generation after generation the heifer has done better than her dam, you would begin to appreciate, as we do, the value of those authenticated records. I wonder if breeders of dairy cattle ever thought of what the tests made in the register of merit are worth to the young men who go out from the agricultural college and work among the great herds. An opportunity of this kind to arouse one's interest was unknown a few years ago. This feature of the work leads up to others and competition grows all the while, which ultimately will double and treble the product and profit of this branch of agriculture. The records made at such farms as those owned by the Ladd Estate in Portland, Oregon; T. F. Marston, Bay City, Mich.; A. F. Pierce, Winchester, N. H.; R. A. Sibley, Spencer, Mass.; A. O. Auten, Jerseyville, Ill., are invaluable."

Now, he brings out a point there to which every farmer and every breeder should give due consideration. Every iota of advance of success that every breeder and every farmer makes

from the standpoint of breeding, is made by the sires which he uses, and too few of us have very well bred sires to realize a fact which I am going to tell you and which is just as simple as anything could possibly be, and that fact is this: Whenever we use a sire whose resulting daughters are in the least particular poorer, less valuable or less productive than their mothers, our efforts are an absolute failure; we have accomplished nothing.

On the other hand, whenever we use a sire whose resulting daughters are in the least degree the superior of their mothers, our operations from a breeding standpoint are a success. If the increase in production of the resulting daughters of a cross with a sire produced under the same conditions is only five or ten pounds of butter more a year than their mothers, we are making a degree of success out of our business, and if we continue this success generation after generation, producing daughters that will produce from five to ten or fifteen pounds more butter a year than their mothers, it is only a course of a short time until we will have a herd which is just as good as anybody's herd.

I was impressed with this thought that had never come to me before, in talking with Mr. Gillett. I asked him why he disposed of a certain bull while he was yet young, and he told me that he found that the daughters from that bull did not produce any more milk than their mothers, and that the milk which they did produce was one-tenth of one per cent poorer. He was keeping records, and pretty close records, in order to note so small a difference in production between the mothers and the daughters by the cross of this sire, but that is why that man has made a great and wonderful success, such as we all know he has made, simply through knowing what every sire he has used has accomplished with his herd, and whenever the result was not a profit, that sire was disposed of at once.

So much for records of production.

Now, I believe that along with the records of production we should keep records of feeding, that is, as largely as we can. It probably is more difficult, or a little more expensive to keep feeding records than it is milk records, but still, as far as we can, we should keep feeding records of our animals, realizing that the cow which makes us $35 worth of milk and butterfat and solids-not-fat in the year and consumes only $25 worth of

feed is more valuable to us than another cow which produces the same amount of milk and butterfat and solids-not-fat and does it on a larger amount of feed.

There is another value to be realized if we look at this matter from another standpoint, this matter of making records in our herds, and that is this: I am sure that through the mere making of these records we develop our cows, if we feed intelligently, not overfeed and not underfeed but feed the cow that which she should have to stimulate her to do the very greatest and best amount of work that she is capable of doing. I am sure we develop the cow in the same manner as we do working horses for work, or those bred for speed purposes when we develop them to work or make speed records. So that is something for us to give our consideration to and think about.

I believe that we have had in this country a great many cows capable of making large records, as large even as some of our better cows have made, and the reason they have not made these records or shown that they had the ability to make such records, was because they were not cared for and crowded along and led up to the point where it was possible to develop them and make the records which were later made by other cows.

Breeding records, undoubtedly should be kept, because often times we find individuals capable of making large records in the way of milk and butterfat production that do not reproduce themselves or their characteristics in their offspring, and then of course the real value of these animals lasts only for the one generation and their blood is not carried forward or they are not made a fountain head of a family of great producers. So we should watch and keep records, not only of what individuals do, but also of the other individuals of the same family.

Then another point which we are too prone to overlook, is to determine what the sires used in our herds are really doing for us. I am sure there are many cases, in fact, I have known a great many examples where most excellent sires have been disposed of, in fact, have been slaughtered and gotten rid of before their real value could be determined.

I remember some four or five years ago when I was down in Massachusetts talking to Mr. Julian Hood. He told me that one time his uncle sent him to Connecticut to buy some cows. He bought quite a number, brought them home and began to

milk them, and without exception they are phenomenal cows. His uncle said to him, "You better go back and find out where these cows came from, what their ancestry is, how they happened." So he went back and began inquiring and he found that these cows without exception were daughters of Sophia's Tormentor, and he came back and reported to his uncle. His uncle said, "You go back and buy Sophia's Tormentor, it doesn't make any difference what you have to pay for him. We want him." When he went back, he found they had sold him, but he followed him up, followed him up to another place, and got there just the next day after that poor old bull had been slaughtered. Now, one of those cows in that lot was Marna and she was the only cow that ever defeated Figgis in the show yard, the cow that made a record of something like 675 pounds of butter in her eleventh year and won the grand championship prize at the St. Louis Exposition when thirteen years old. I could tell you many instances of that nature, of just such sires that have been lost because of the fact that one breeder after using him for a time, got rid of him, and he got out of his reach before his real value had been learned. I believe every one of us should take extreme pains never to let the sire we have used get out of our sight until we have fully determined whether he was valuable by the performance of his daughters and whenever in that way we locate a sire that is producing wonderful daughters for our herd, then the thing to do is to keep him his lifetime. It is very seldom that we find a breeder who is fortunate enough to get even one sire that is capable of making him famous, so that we should not run the risk of sacrificing any of our sires until we know whether or not he is a sire that is capable of making us famous.

There is just one more point that I wish to dwell upon briefly, and that is show yard records.

I believe there is value in show yard records, even for dairy cattle. As I said before, I believe there is more value perhaps in milk and butter records, but even at that I am certain there is something to be gained by the breeder of dairy cattle from the show yards. In the first place it fixes the type, it fixes uniformity and it fixes the type of form and conformation which we wish to breed to and as has been demonstrated by Colantha 4th's Johanna, Jacoba Irene, Dolly Dimple and Rena Ross and all

famous cows. A cow does not have to be broken backed or have a tilted udder or a lot of other such unsightly faults in order to make a big record.

Last year at the National Dairy Show I asked the judge of the Jerseys, "Suppose Jacoba Irene was led along in the ring of your show cows and had not received the accident of knocking her hip out of shape, what could you do with her?"

He said, "What could I do with her? A cow with such individuality, such form, I could do nothing but put her clear to the top." These cows that have made phenomenal records conform to types which we desire in the show ring, undoubtedly they would be recognized by expert judges. There is value in show yard records that are realized when we consider the great advantages the beef breeder has had over the dairy breeder through the publicity he has made with his animals, and the advertising he has gained, because his animals have been shown in their best form to the farmers of the country and consequently they have favored beef cattle rather than dairy cattle.

Many of you probably have read of the fact that nobody should buy even a beef bull that was too fat; they should be bought in poor condition rather than fat; but I want to tell you I never in my life saw a buyer of beef cattle—and I have had a good deal of experience in that respect. I have seen a great many expert breeders of cattle select and buy bulls to put at the head of their herds, but I have yet to see the man who would go and buy a sire or a bull that was too poor in flesh, even though he himself had talked hour after hour telling the other fellow not to buy a sire that was fat. Why does he do that? Because, when he sees the two animals together, the one in good flesh and the other not, he is displeased with the one and pleased with the appearance of the other, and consequently he selects the fatter beast, and that is exactly what you will find all human nature doing. If you take two cows and put them side by side, both of them equally good from the standpoint of milk and butterfat records, you will find that the man who is going to buy one of them will always choose even at a higher price the animal which has the appearance of beauty as well as utility. So therein undoubtedly lies the value of show yard records as well as any other.

In conclusion and summing up, I am sure that invaluable are records of all kinds in breeding and developing dairy cattle. The breeder who pays no attention to records will have just as hard a time to make the greatest success out of his breeding operations as he would have in trying to sail across the Atlantic ocean in a ship without a rudder.

DISCUSSION.

Mr. Phillips: Do you suppose the man that sold Yeksa Sunbeam at Minneapolis for $40 or $50 had ever weighed her milk?

Mr. Van Pelt: No, he certainly had not—he might have weighed her milk, but he had not tested it.

Mr. Phillips: Don't you suppose that that friend of yours, who got on so well after he got married, was successful in reaching a profit of $36 because his wife helped him milk?

Mr. Van Pelt: I don't know whether she ever milked or not. I presume that is true, though.

GROWING CORN FOR MILK PRODUCTION.

C. P. BULL, Minnesota Experiment Station, St. Anthony Park.

Mr. President, Ladies and Gentlemen: In our agricultural statistics we have been gathering in connection with different topics that have to do with farmers in our state, we found that stockmen are the most intelligent class of farmers and we have also found that the dairymen are as a rule a little more onto their job than the other classes of stockmen.

The prosperity of a business lies primarily in the cost of production and the net profits. Now, in getting these net profits we must consider the cost of the production.

I want to quote here just briefly from Bulletin No. 48, Bureau of Statistics in the United States Department of Agriculture

and simultaneously published at our Minnesota Station as No. 197, the work being the same thing.

We found in gathering these statistics that the cost of ensilage was something like $18.21 per acre, and that the yield on the average was about ten tons of green forage per acre; corn cut and shocked in the field costs $10.53. We found that when it is hauled to the barn it costs $12.20.

Then there is the cost of the production of an acre of corn grown for ears. Of course the corn has absolutely no value unless hauled from the field, so that would add to the cost. Now, that makes the corn fodder very expensive, and if we could get larger yields as it is possible to get, we could lessen the cost per ton and the whole thing must eventually get down to the cost per ton. In other words, in order to make the most out of our efforts in the production of fodder corn, we must get a very large yield, because the cost of producing these acres remains nearly the same. There are certain things which will influence the yield of corn fodder and in this we must give the soil a little consideration.

Now, what are the methods by which we can get larger net returns? First of all, by increasing the production, which can be done by increasing the fertility of the soil, I mean primarily the addition of humus to the soil.

The reason so many of our Eastern farms are being abandoned and not as productive as they have been and the reason they have to buy commercial fertilizers, is because they have been depleted of their humus, the vegetable matter, that should have been put in the soil and kept there.

There is no method of farming that we know of as yet that will return to the soil a greater proportion of plant food than dairying; it is the one class of farming that removes the least and returns the most. Grain farming, on the other hand, is the one that takes the most out of the soil and returns the least. There must be of course in all classes of farming, if they are going to be ultimately successful, the replacing of these food elements in the soil and the maintenance of a given quantity of humus in the soil.

We can then, in the second place, increase the production per acre by better culture. There are mighty few farmers who give

the proper attention to the preparation of the seed bed, to plowing and the application of manure.

You will recall that the seed put into the soil has a certain amount of plant food stored up in it, which nourishes the little plant until it gets its roots into the soil, and then, in conjunction with the material that the roots may take in, the leaves in the presence of the sunlight will elaborate that plant food and make it useful for the development of the plant. If the soil has not been properly prepared, we will not have a condition favorable to the growth of the young seedling.

Now, if we can fall-plow on average soils—some heavy soils will have to be spring-plowed, but if we can fall-plow, disk thoroughly in the spring, harrow down and topdress with manure, and then plant our seed in a seed bed that is first made fine, and then firm, we will have a condition which will be a congenial one to the development of the young plant.

It is useless to send an animal out to a trough that hasn't any feed in it; it is useless to permit the roots of plants to go into vacant places in the soil. That is in an indirect way what I mean by having the soil first made fine and then made firm. Plantlets growing in that way after they have used up the amount of food stored away in the seed, will be able to grasp enough food from their root system, providing they are the right kind of seed, to keep the plant growing right along.

The next item is in connection with better seed. The quality of the seed used for corn fodder is altogether too poor. I am of the opinion that a man can afford to pay almost as much for fodder corn seed as he can for the seed which he plants for his earing corn crop. Ordinarily you may get seed at the seed houses for fodder corn at about $1.00 per bushel. You can better afford to pay $2.00 per bushel and get a better class of seed than you can buy at the seed houses for $1.00.

You all know that in the selection of seed corn for planting in checks, three or four stalks to the hill for producing ear corn, you select the kernels from the middle of the ear. Those from the butt and the tip of the ear are smaller, and therefore produce the smaller germ.

From experiments we have conducted at the Minnesota Experiment Station we find that the central kernels will yield an

average of ten per cent. more than will those from the butt of the ear by growth measurement, and we find also that those kernels from the center of the ear produce 30 per cent. more forage than those from the tip of the ear. The reasons are plain; those in the central portion of the ear have been normally developed; they received the strong pollen; in other words, the sires of those central kernels have been strong producers. The pollen which fertilizes the silk from the kernels of the tip and butt of the ear is that which has been immaturely ripened. If the central kernels will give you ten per cent. better growth than the kernels from butts and 30 per cent. more than the tip kernels, then it is safe to say that seed from the central kernels will give you the better growth of forage. Those three points are vital in connection with the production of forage.

Now then, a word in regard to the methods of planting. Some years ago at the experiment station we conducted a series of experiments comparing the value of production from different kinds of seeding. We seed, for instance, by hand, in furrows thirty inches apart, plowing the furrows four inches deep. Of course we did not plant four inches deep, but we plowed a furrow four inches deep and covered with the harrow running crossways. Upon that plot we used 150 pounds of seed per acre and that yielded us 14,200 pounds of forage per acre.

In the next plot we sowed by hand in furrows 44 inches apart. We used in this instance, 96 pounds of seed per acre, and harvested 12,000 pounds of forage. In the next plot we sowed in double drills, seven inches apart with a so-called keystone one-horse drill, a drill manufactured for the purpose of sowing fodder corn evenly in the row. We used in that instance 64 pounds of seed and that yielded us just 10,000 pounds of forage. In the next one we sowed in single drill, using 32 pounds of seed per acre in drills 44 inches apart and that yielded us 9,100 pounds of forage. In the next plot we sowed 28 pounds of seed per acre, planting it in hills 22 inches by 44 inches apart, and from this we got 10,800 pounds of forage. And lastly, in the sixth plot, we planted 21 pounds of seed in hills 44 by 44 inches apart in the ordinary check row method and from that we harvested 8,700 pounds of forage.

If we could follow these amounts that I have mentioned as being seeded per acre and the yield in each case, we would find

that the lighter quantity of seed used per acre gives us the smaller yield of forage per acre. There is of course a limit to which you could go in planting that amount of seed per acre and the amount of forage returned that you would get, but we find also another item of importance. With 64 pounds of seed in double drills and 44 inches apart we got 10,000 pounds per acre, and with one-half the amount of seed, 32 pounds per acre in single drills, we got almost as much forage per acre, 9,100 pounds, the difference being very slight.

Further than this, there is another item to be gained here which does not show itself in figures; where we grew the forage with a less amount of seed, the stalks grew larger and there was less digestible nutrients in those, and less palatable also. Where we put on the greatest amount of seed, we not only increased the production per acre, but we also increased thereby the palatability and the digestibility. The lesson that we can gain from this sort of an experiment is this, that by planting in the proper proportion to the acre, we can get the maximum amount of forage and of palatability—if we can call it such—and the maximum of digestibility.

Now, while we can get from the double drills perhaps a greater amount from our seeds, larger crops, there is another item, a practical point, that should be noted. Those double drills lodged more than the single drills did. Where we used a greater amount of seed per acre, the corn lodged more than where we used less. Then the thing to do is to get those two conditions as near together as we possibly can; in other words, planting the maximum amount of seed and the maximum amount of tillage will give us fodder of the best palatability and the largest yield. The experiment was repeated another year and the results were practically the same.

In regard to the kinds of corn to use for fodder purposes, there are at the present time a good many inquiries coming into our station as to what kinds of corn will make the best fodder. In the northern part of the state we almost invariably recommend some of the Flint varieties; in the southern part of the state we say, those varieties you are growing for seed purposes will give you as good results as any.

Not long ago I was talking with a man that claimed he could get better yields, and just as good palatability from southern

ensilage corn, as any other; but I contend that is not the kind of corn we want to grow up here. It may produce a greater amount per acre, but it is not as palatable and it is not as good for silage as the corn we grow here. We want a variety that will yield as much as we can expect it to yield under the conditions that we plant it under, and at the same time mature a good crop.

For early feeding, if the cost of seed is not too large, the sweet corn makes a very good variety to cut or throw over the fence, or into racks for dairy stock to supplement the dry time of pasture. This has been practiced by Prof. Haecker at the experiment station, but the cost of the sweet corn seed, unless we save it ourselves, is almost prohibitive.

The Flint corn varieties will produce slightly more forage than the Dent corn varieties, but as we do not now cut corn by hand, we lose a good share of leaves from the under portion of the stalk by cutting with the binder, and on that account we may not get as good corn fodder, using Flint varieties, as we will by using others. In the long run it is a good deal better to select seed from the corn grown for ears, provided the seed is properly selected.

I quote here from some experiments which were conducted at another state institution, and I will give you the results simply in brief.

The chief points which may be urged against the selection of excessively late varieties of corn for ensilage are as follows: there is much greater bulk in proportion to the actual amount of feed, or feed value, and, second, the greater probability of waste in the manger on account of the refusal of animals to eat very thick and coarse stalks, and third, such corn, while furnishing more dry matter, contains a larger proportion of the less valuable food substances and a smaller proportion of protein and fat, and fourth, immature corn produces a silage that is sourer than that which is mature.

In conclusion, we believe it to be desirable with many kinds of seeds, to separate the seed and discard all except large, well developed, mature and heavy seed, because, first, about 33 per cent. of seeds as placed on the market consists of dirt, chess and small undesirable seeds. This may not be altogether true with corn, but I make the statement simply to show that even the

fodder corn, which is offered for a nominal cost, is not all germinable seeds. I venture to say that the majority of the fodder corn seed obtained commercially, will germinate not more than 75 per cent. The heavy seeds produce healthy, large, well developed plants that will give maximum crops.

There is one other point that I missed in speaking of the good and the poor value of the seed where that seed comes from the central portion of the ear of corn as compared with that coming from the tip and the butt; that is, in the root system. The root system of the poor corn from the butt and the tip of the ear is very limited, and does not develop equal to the root system of the kernels taken from the middle part of the car.

DISCUSSION.

The Chairman (Mr. Goodrich): We have now come about to the end of our meeting, and it seems to me that somebody ought to make a little bit of a farewell speech. If somebody else doesn't, I will have to myself.

Mr. Phillips: Make it yourself, go ahead.

The Chairman: I want to say that I have enjoyed this meeting immensely. I really didn't think last year that I would ever come to another one of the kind, and my folks, some of them tried to discourage me from coming this time; my grandchildren said, "Grandpa, you can't stand it to go up there." But I have, and I am feeling pretty good yet. I tell you it does me good to get amongst civilized people, and you know dairymen are the highest civilized people in the world. A man that is caring for cows and takes good care of them is a mighty good man.

There are just two kinds of men in this world. I have seen two young men start out and they were practically just alike in their prospects. One man started out and learned the dairy business, and he made a splendid man; he was kind to his cows and when he got married he was kind to his wife and to his children, he was a fine man, all around.

The other man, what did he do? He went to driving teams from the lead mines across the southern part of the state of Wis-

consin; I used to see him coming by my place, going to Milwaukee with a load of lead with six or seven yoke of oxen on a great big wagon, and we used to call those fellows 'bull-whackers,' and when they got through with their loads the oxen were all gashed up, ready to give up and die. What kind of a man do you suppose those fellows made, brought up in such a way as that? I do know that the business that a man is engaged in has a great deal to do with forming his character.

I feel my character is already reformed, because I have been here.

I have enjoyed it always to associate with dairymen, and if you ever come to Fort Atkinson, call on me, come to my house—not all at once,—but I will be glad to see you, and if my house won't hold you all, you can have an overflow meeting at Mr. Glover's, and if he can't take care of you, you can go over to Governor Hoard's, he can take care of a great big crowd of us.

Good-by, and God bless you until we come again.

Adjourned *sine die.*

TREASURER'S REPORT, 1909.

Mr. President and Members of the Association:

The following itemized report is made showing the source from which all moneys paid into the Treasurer's hands were received and the disbursements paid on orders from the Secretary which I hold as vouchers:

Receipts.

1909.		
Mar. 22.	Balance in hands of treasurer	$1,136 69
Apr. 29.	From state treasurer	1,000 00
Apr. 29.	Memberships	201 00
May 16.	From state treasurer	2,000 00
Aug. 10.	Membership	1 00
Nov. 27.	From state treasurer	2,000 00
1910.		
Feb.	Memberships	4 00
		$6,342 69

Disbursements.

Mar. 2.	F. W. Woll, convention expenses	$8 58
Mar. 2.	Colon C. Lillie, convention expenses	32 05
Mar. 2.	Ray N. West, salary and expenses	126 23
Mar. 8.	Peter Zumkehr, salary and expenses	120 00
Mar. 8.	H. C. Searles, salary and expenses	178 26
Apr. 12.	Peter Zumkehr, salary and expenses	75 00
Apr. 12.	H. C. Searles, salary and expenses	207 96
Apr. 12.	Ray N. West, salary and expenses	166 59
Apr. 12.	F. H. Scribner, services and expenses	65 04
Apr. 12.	Cornish, Curtis & Greene, testing outfit	62 20
Apr. 12.	H. K. Loomis, convention expenses	355 23
Apr. 12.	H. K. Loomis, premiums	60 00
May 8.	Ray N. West, salary and expenses	167 50
May 8.	Peter Zumkehr, salary	110 00
May 8.	H. C. Searles, salary and expenses	187 37
May 12.	H. K. Loomis, traveling expenses	6 30
June 9.	Cornish, Curtis & Greene, supplies for testing	52 60
June 9.	The Bingham & Risdon Co., supplies for testing	25 45
June 9.	Robert Kohli, printing Swiss report blanks	1 50
June 9.	Peter Zumkehr, salary	130 00
June 9.	Ray N. West, salary and expenses	164 06
June 9.	H. C. Searles, salary and expenses	193 13
June 9.	H. K. Loomis, postage	50

June 19.	A. D. De Land, attending ex. com. meeting.....	6 76
July 5.	Peter Zumkehr, salary.....	105 00
July 5.	Ray N. West, salary and expenses.....	161 14
July 5.	H. C. Searles, salary and expenses.....	181 97
July 5.	F. H. Scribner, services and expenses.....	64 75
Aug. 10.	H. C. Searles, salary and expenses.....	175 34
Aug. 10.	Ray N. West, salary and expenses.....	167 65
Aug. 10.	Peter Zumkehr, salary.....	130 00
Sept. 6.	Cornish, Curtis & Greene, acid.....	5 69
Sept. 6.	H. C. Searles, salary and expenses.....	171 43
Sept. 6.	Peter Zumkehr, salary.....	130 00
Oct. 3.	Ray N. West, salary and expenses.....	147 00
Oct. 3.	H. C. Searles, salary and expenses.....	179 81
Nov. 3.	Peter Zumkehr, salary.....	100 00
Nov. 3.	F. H. Scribner, atending dairy meeting at Whitewater	22 72
Nov. 3.	Ray N. West, salary and expenses.....	127 06
Nov. 3.	H. C. Searles, salary and expenses.....	181 27
Nov. 3.	Peter Zumkehr, salary.....	130 00
Nov. 3.	Spence, McCord Drug Co., acid.....	10 92
Nov. 3.	Cornish, Curtis & Greene, supplies.....	1 25
Nov. 3.	H. K. Loomis, postage.....	50
Dec. 9.	H. C. Searles, salary and expenses.....	182 61
Dec. 9.	Ray N. West, salary and expenses.....	164 16
Dec. 9.	Peter Zumkehr, salary.....	100 00
Dec. 9.	F. H. Scribner, attending conv. at Polaski.....	23 08
Dec. 9.	Cornish, Curtis & Greene, repairs on tester....	4 75
Dec. 9.	F. H. Kiser, hall rent.....	6 00
Jan. 9.	Spence, McCord Drug Co., acid.....	5 96
Jan. 9.	Peter Zumkehr, salary.....	75 00
Jan. 9.	H. C. Searles, salary and expenses.....	192 55
Jan. 9.	Cornish, Curtis & Greene, supplies.....	7 16
Feb. 4.	Mandel Engraving Co., halftones.....	11 60
Feb. 4.	H. C. Searles, salary and expenses.....	182 98
Feb. 4.	Fargo Creamery Supply Co., supplies.....	3 65
Feb. 4.	W. D. Hoard Co., printing.....	44 65
Feb. 8.	Express on treasurer's book, H. K. Loomis.....	35
Feb. 8.	A. J. Glover, salary and office expenses.....	322 13
Feb. 8.	Balance in hands of treasurer.....	320 19
		$6,342 69

SECRETARY'S REPORT, 1909.

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

I have the honor to submit the following report of the expenditures concerning the period from adjournment of our Convention at Barron, February 10, 11 and 12, 1909, to the present time.

Convention expenses	$355 23	
Convention premiums paid	60 00	
		$415 23
H. C. Searles, superintending cow testing association—		
Salary	$1,200 00	
Expenses	1,041 68	
		2,214 68
R. N. West, superintending cow testing association—		
Salary	$540 00	
Expenses	851 49	
		1,391 49
Cornish, Curtis & Greene, supplies	$133 65	
Bingham, Risdon Co., supplies	25 45	
Spencer, McCord Co., supplies	16 84	
Fargo Creamery Co., supplies	3 65	
		179 59
Colon C. Lillie		32 05
F. W. Woll		8 58
H. K. Loomis		7 65
Secretary—		
Salary	$250 00	
Office and traveling expenses	72 13	
		322 13
Mandel Engraving Co.		11 60
W. D. Hoard Co., printing		44 65
Expenses of board meeting		6 76
F. H. Kiser, hall rent		6 00
F. H. Scribner, attending summer meetings		175 59
Southern Wisconsin Cheesemakers' and Dairymen's Assn.		1,206 50
Total		$6,022 50

A. J. GLOVER,
Secretary.

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