MR. SAUNDERS: The total score, that ran around 88, 87.33, 88, 86 to 88 is the score.

THE VICE-PRESIDENT: I think the subject has been pretty well covered, unless somebody else has something to add.

**WHEY VALUE FOR HOG FEED**

By E. C. DAMROW, Fond du Lac, Wis.

Ladies and Gentlemen: In my travel among the various cheese factories, I see the enormous amount of whey that is wasted at certain times of the year—whey which the farmer does not take home—because he has neither pigs nor calves to feed it to, or he thinks the whey is of no feed value.

Yes, many a farmer has said to me, "What is the use of taking the whey home? We have plenty of water home." He does not realize that there is better than six pounds of solids in a hundred pounds of whey.

There is almost as much food or feed value in a hundred pounds of whey as the cheese maker takes out of the milk in making cheese. There is no method known by which more than half the solids in the milk can be incorporated in the process of cheese making.

Do you realize that when the farmer takes home 100 pounds of whey he is taking in this whey the equivalent to nine pounds of cheese in feed value? In other words, that much feed is actually wasted when this whey is run down the ditch into some swamp or river, and creates a smell that is not a credit to the cheese industry.

What would you think of a man who took a 60-bushel load of potatoes to town in an open wagon box: when he got to town, 12 bushels had rolled out because he did not have an end board in the wagon box. Where he should have had $90.00 for his potatoes, he received only $82.00—an actual loss of $8.00.

This is just about the same proportion of loss that the dairy farmer has who does not feed this whey to his pigs or calves, even when hogs are only 8 cents per pound alive.

This a broad statement to make, and I will try to prove to you that these are actual facts, taking my figures mostly from feeding experiment stations.

There are but very few farmers who realize that the feed value is so great.

In a recent feeding experiment made in our State University by Prof. Morrison and Bohstedt of the Animal Husbandry Department, they took a lot of well grown pigs weighing from 125 pounds to 150 pounds. These pigs were fed on barley and whey and gained 2.22 pounds per day, or in 45.1 days they gained 100 pounds and were fed each 353 pounds of barley and 854 pounds of whey.

I never heard a farmer in this locality who claimed that he made much money in raising pigs if he had to buy all feeds. The usual
saying is that if you have to buy grain or feed that is fed to the pigs you are money out. I do not know of a test record made.

THE COST OF 100 POUNDS GAIN IN THE PIGS

If this 100 pounds gain on the pig is sold at the prevailing price of 8 cents a pound alive, it will bring $8.00. Now deduct the cost of the 853 pounds of barley at 1 cent per pound or $3.53. This will leave $4.47 which should be mostly credited to the 854 pounds of whey or 52.3 cents per 100 pounds of whey.

We do not claim all this gain of 52 cents per 100 pounds for the whey, but the feeding of this whey and barley makes such a well balanced ration that it is hardly possible to improve on it except if feeding skim milk or buttermilk instead of whey. I think we are justified in claiming at least half of this 52 cents or 26 cents credit to a 100 pounds of whey as actual feed value in producing side pork and ham. Whey from casein has practically the same feed value.

I wonder if there is any farmer or cheese maker here that ever made an actual feeding test and kept a close record of all whey, grain, feed, and pasture, and figured his results.

A few years ago a personal friend of mine, Mr. F. P. Baker, St. Cloud, made a test.

He bought 8 seven-weeks old Poland China pigs

June 16, 1928, at ........................................ $ 3.00 $24.00

Seed for one-fourth acre pasture, oats and rape
on a gravel hill ........................................... 1.25

Ground barley .............................................. 10.25

Flour Middlings ........................................... 12.40

H hominy feed ............................................. 19.80 42.45

Total cost of pigs, seed and feed .................... $67.70

The pigs were fed mostly whey and very little grain. Starting with 80 pounds of whey, which was increased to 240 pounds daily in the last two months or an average of 180 pounds of whey, for 117 days (3 mo., 26 days) making a total of 21,060 pounds of whey.

The hogs were sold in less than four months of feeding at the age of 5 months, 16 days, weighing an average of 196 pounds or a total weight of

1,584 pounds at 10½c ....................................... $166.32

Cost of pigs and feed .................................... 67.70

Net gain for pasture and whey ......................... $ 98.62

All the pigs weighed over 208 pounds except one misfit which brought down the average weight.

$98.62 divided by 210 equals 47c per 100 pounds whey and what little the pasture produced.

If the hogs would have sold for eight cents per pound the value of the whey would have been 27c per hundred.
The hogs know good whey as well as the little pigs know sweet milk. The whey tank was thoroughly cleaned every other day, except for one week, and the hogs soon voiced quite emphatically a protest against such slop and insisted on good wholesome whey.

Mr. Baker took the whey for his pigs the following morning the same as his patrons did.

Another experiment made by Milton Pindle, Stockbridge, Wisconsin:
Bought eight three-months old pigs from a farmer who was selling whole milk, and was short of feed and of course had no milk by-products to feed to the young stock. These pigs were pastured for three months and fed on all the whey they wanted; they received but little ground corn.

Eight 3-months old pigs at $4.75 ..................... $38.00
Ground corn ........................................ 10.00

Total cost ........................................... $48.00

Mr. Pindle had about 450 pounds of milk and got about 400 pounds of whey daily, which was considerable more than the pigs could consume. At this rate if the pigs could have consumed all the whey, 36,000 pounds were used at the end of four months, when they were sold for ........................................... $138.85
Cost of pigs and ground feed ........................................... 48.00

$138.85 divided by 36,000 equals 25c per 100 pounds of whey.
If 300 pounds of whey was the daily consumption of the hogs, then the whey will net 31c per hundred.
90.85 divided by 27,000 equals 31c per hundred.

Thirty pounds of whey is a good average that a well grown pig can consume and properly digest. In this 30 pounds of whey there is in feed value the equivalent of 2½ pounds of cheese. Now if a pig can digest this feed—the equivalent of better than two pounds of cheese should do something. I think that a pig's system is such that if a little grain is fed with the whey, it will satisfy the peculiar squeal that is so familiar to all of us.

I hope that the cheese makers and butter makers, as well as the farmers will also make these tests on feeding. Our agricultural departments at Madison, Wisconsin, will be only too glad to help and work with you.

I shall appreciate it very much if you will make such experimental feedings, keeping an absolutely accurate record of same, and send me your results. I shall then compile them and give you a summary of the complete report at your next convention, which, I hope, will be bigger, better, and of far more educational value to us all.

THE VICE-PRESIDENT: Are there any questions you would like to ask Mr. Damrow?
MR. MARTY: Mr. President, I would like to ask Mr. Damrow what was the percent of acidity in that whey.
MR. DAMROW: I don't know. This is the report I got from the professors in Milwaukee. I asked them what the solids were in whey and I guess they took that from Henry's book on feed and feeding.

MR. MARTY: The question in my mind arises, how many pounds of milk sugar is there in whey after it is developed into lactic acid to the extent of coming from an American cheese factory? When you have the acidity in American cheese factory whey developed to the fullest extent, after the milk sugar has gone in that way, what element in the composition in that particular whey is there left to make 6.50 pounds of solids? I can't figure it out.

MR. DAMROW: I don't know either.

MR. ADERHOLT: Part of the sugar is developed into lactic acid.

MR. DAMROW: The only thing I know is that actual feeding experiments have been made, that it actually produced pork and bacon at a very nominal figure. Very little grain or solids was fed. I would like some cheese maker to get some conscientious farmer to put up a bin and provide a litter of eight pigs, and divide them into two litters, and feed one with whey and the other with water, and keep an actual record, one grain fed and the other less grain fed, and see what is the actual difference, and that can be done in a very short time. I think if that is done, that is one of the best things you can do in a cheese industry.

MR. MARTY: Mr. Damrow, after sterilization of whey, don't you think it would keep the original feed value of that whey more so than without sterilization?

MR. DAMROW: Certainly, far better. It is absolutely essential that whey is kept as sweet as possible, as when it is pasteurized. You have far better feed value that way than if it is not pasteurized. One particular factory I know has a farmers' whey tank over his making room. Far less odor than you find in the average factory where the tank is 200 feet away.

THE VICE-PRESIDENT: An amendment to the constitution has been presented and according to the by-laws it will have to be read at this time, if we want to vote on it some time tomorrow. It is as follows:

We members propose an amendment to the constitution that in the future no one can hold an office or take part in the election of officers in the Wisconsin Cheese Makers' Association, unless he is a licensed cheese maker, making cheese at least a part of the year, or producer of milk, delivering milk to a cheese factory. Signed by L. E. Kopitzke, Ed. Malczewski and W. J. Dehn.

That is all there is to that at this time. Now you can discuss it between yourselves and it will be in order to vote on it tomorrow.

REPORT OF THE CENTRAL WISCONSIN CHEESE MAKERS' ASSOCIATION

By PRESIDENT MARTIN

MR. MARTIN: Mr. President, Ladies and Gentlemen: About ten minutes ago the Secretary asked me if I could take the place of Miss Bruhn. I don't think that is hardly fair to Miss Bruhn because if she wasn't any better looking than I am she would never get a husband. But I have noticed here today that there are quite a few strange faces here and I have been wondering whether we couldn't