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## **Proceedings of the Wisconsin Cheese Makers' Association annual conventions 1913-14-15 assembled in its twenty-first annual convention in Milwaukee January 8, 9, 10, 1913, its twenty-second annual conv...**

Wisconsin Cheese Makers' Association  
Madison, WI: Cantwell Print. Co., 1913?

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PROCEEDINGS  
OF THE  
WISCONSIN CHEESE MAKERS'  
ASSOCIATION

ANNUAL CONVENTIONS 1913-14-15

Assembled in its Twenty-first Annual Convention in Milwaukee January 8,  
9, 10, 1913, its Twenty-second Annual Convention in Milwaukee  
January 7, 8 and 9, 1914; and its Twenty-third Annual  
Convention in Milwaukee January  
6, 7 and 8, 1915.

Compiled by  
A. T. BRUHN, Secretary



Madison, Wisconsin  
Cantwell Printing Company

1915

### **OFFICERS—1915**

President, O. A. DAMROW, Sheboygan Falls, Wis.  
Vice Pres., C. A. VOIGHT, Chili, Wis.  
Secretary, A. T. BRUHN, Spring Green, Wis.  
Treasurer, T. A. UBBELOHDE, Glenbeulah, Wis.

### **DIRECTORS.**

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JACOB KARLEN, JR., Monroe, Wis.  
P. H. KASPER, Welcome, Wis.

### **JUDGES OF CHEESE.**

J. D. CANNON, New London, Wis.  
E. L. ADERHOLD, Neenah, Wis.  
FRED MARTY, Argyle, Wis.  
ALEX SCHALLER, Barneveld, Wis.

### **Superintendent of Cheese Exhibit.**

J. W. CROSS, Milwaukee, Wis.

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LETTER OF TRANSMITTAL.

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Office of the Secretary,  
Wisconsin Cheese Makers' Association,  
Spring Green, Wis., 1915.

To His Excellency, Emanuel L. Philipp,  
Governor of the state of Wisconsin.

I have the honor to submit reports of the twenty-first, twenty-second, and twenty-third annual meetings of the Wisconsin Cheese Makers' Association, showing the receipts and disbursements the past three years, also containing papers, addresses and discussions had at the annual conventions held in Milwaukee, January, 1913, 1914 and 1915.

Respectfully submitted,

A. T. BRUHN,  
Secretary.

## **A BIT OF HISTORY AND A GLIMPSE INTO THE FUTURE**

In the year 1905 Wisconsin factories produced 110,000,000 lbs. of cheese. During the four years following, the production increased thirty-two per cent, making the output of cheese 145,000,000 lbs. for the year 1909.

In 1914, Hon. J. Q. Emery, then dairy and food commissioner, from the best information at his command estimated that Wisconsin factories turned out 189,000,000 lbs. of cheese during the year 1913.

Considering the continued rapid growth of this industry it is not unreasonable to assume that the output of Wisconsin cheese for 1915 will approximate 200,000,000 lbs., which is well in excess of half the cheese made in the United States.

### **FUTURE POSSIBILITIES.**

Wisconsin's cows, with fair treatment and more intelligent feeding, would easily yield fifty per cent more milk than they now do.

The big majority of our dairy farms can conveniently support bigger herds of cows than they now carry.

In the north half of our state a vast domain comprising millions of acres of fertile land is being gradually converted into dairy farms.

The rapidly increasing population of the United States will insure a good demand for all of our cheese.

How important it is that this great industry, with its wonderful possibilities, be better safe-guarded than at the present time.

### **A DRAWBACK.**

Among cheese factory operators there has been no prescribed standard of factory management. Numerous factories have been well managed, but a large percentage of them have, in some respects, been indifferently managed, and there have always been scores of them in such lamentable condition as to constitute bad advertising for the industry. Apprentices in those mismanaged factories have received the wrong kind of training.

For the sake of the industry, present and future, we cannot afford unsightly, unclean, bad smelling factories.

### **LICENSING.**

In order to facilitate the elimination of such undesirable conditions a law was created by the legislature of 1915 making it the duty of the dairy and food commissioner to license butter and cheese factories and the makers and to prescribe rules and regulations under which they shall operate. Such rules and regulations together with printed information relating to the operation of factories will be displayed at every factory as a standard for all operators and employees to work up to.

The significance of such regulations and other valuable information so displayed, as an instrument for placing factories on a high plane of sanitation and attractiveness, must appeal to all who are familiar with past and present conditions.

May we not confidently expect that this licensing act will prove the greatest blessing the Wisconsin dairy industry has experienced since the establishment of dairy inspection ten years ago!

Wisconsin Dairy and Food Commission,  
R. L. ADERHOLD,  
Assistant Commissioner.



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## Wisconsin Cheese Makers' Association TWENTY-FIRST ANNUAL MEETING Milwaukee, 1913

The conventions for the past three years of the Wisconsin Cheese Makers' Association have been held in the month of January in Milwaukee. The proceedings having not been printed annually, it was decided best to consolidate and print in one volume the report of these meetings for 1913, 1914, and 1915. Hereafter it is expected the proceedings of each annual meeting of the convention will be printed promptly each year, following each meeting.

The twenty-first annual meeting of the association was held in Milwaukee, January 8, 9, 10, 1913, at the Republican House.

The opening session was called to order with President O. A. Damrow of Sheboygan Falls in the chair. After an address of welcome by James P. Keenan, secretary of the Citizens Business League, and response by H. C. Chaplin, of Plymouth, Mr. Damrow delivered the president's annual address:

### PRESIDENT DAMROW'S ADDRESS

We have good dairy laws in Wisconsin and our worthy Dairy and Food Commissioner, J. Q. Emery, and his able and vigilant assistants have put forth their best efforts to raise the standard of Wisconsin cheese and other food products and they have succeeded well.

The Wisconsin Cheese Makers' Association has also done a world of good for the betterment and education of our cheese makers and factory managers; still it is with a sense of regret and disappointment that I call attention to the fact that with 1900 cheese factories in the state, the membership of our association is only about one-third of that number. I think every cheese maker and factory manager in the state should be a member of this association.

It seems to me the time is not far distant when we cheese makers will have to organize for mutual protection. What concerns one concerns all of us in general. We only are fighting the battle individually.

Travel, brother cheese maker, over the country roads in the dairy districts of Wisconsin and you will find beautiful country homes with large modern dairy barns that you can point to with pride. But how about the cheese makers' homes? I believe I am safe in saying that not one-third of them live in dwellings separate from the factory, but in rooms over the factory. Let me ask why is it thus? Simply because many of us are struggling along for an existence and cannot afford a separate home. I believe as our former president, Mr. McCready, said: "The competent cheese makers of Wisconsin are underpaid."

The cost of producing a pound of cheese today is 50 per cent higher than it was ten years ago, yet the price paid for making has hardly increased at all. Furthermore, the prices obtained for cheese and the returns to the patron are on a much higher level than they were a few years ago, yet we cheese makers do not seem to share in this general advance of prices. I am of the opinion that we are in need of a state wide organization to provide for our future welfare. If we had such an organization together with local county organizations, we could establish a more uniform price for making that would be fair and equitable. Then there would be no reason why

competent cheese makers should not be encouraged to continue in the business if they are paid what their services are worth. Through such an organization every cheese maker could be passed upon as to his qualifications by a board selected for that purpose and it would aid in improving our own conditions. The man with only a few months experience, who is not proficient in his work, would be prevented from taking charge of a cheese factory until he had learned his business before he entered into competition with experienced cheese makers.

It is generally conceded that the call board system of selling cheese in Wisconsin these many years past has been largely instrumental in bringing out the highest possible prices and that it is the best and fairest and only reliable system of establishing a market price. While only a small portion of the product is sold on the call boards, the sales thus made form a basis on which nearly all the cheese made in the state is paid for. Therefore every cheese maker, factory manager and factory patron ought to support the call board system wherever it is in his power and see that his cheese is sold on the call board whenever he is situated so that he can. It is to be deeply regretted that the sales on the call boards have fallen off so extensively during the past two years, and I wish to warn the salesmen and those he represents that if the time ever comes when the call board system is abandoned, they will have no reliable means of knowing the price cheese sells for and they will be sorry they did not support the boards.

## LIMBURGER CHEESE MAKING

**Jacob Lehnherr, Monroe**

The chairman introduced Jacob Lehnherr, of Monroe, formerly instructor in sweet curd cheese making at the Minnesota Dairy School. Mr. Lehnherr said in part:

The real difference between brick and limburger is that the brick cheese contains less moisture and is cured in a dryer atmosphere than is the case with limburger. These conditions of moisture, both inside and outside of the cheese influence the character of the fermentation of the cheese.

Limburger is perhaps more generally known by its odor than by anything else.

Limburger is made from sweet milk, it requires practically the same milk as it does for brick or Swiss cheese.

A steam vat and curd knives like those used for brick cheese are employed in the manufacture of limburger.

The same draining tables are used for this cheese as are mentioned for brick cheese; wooden molds 5 inches wide, 30 inches long and 8 inches deep make six pieces of cheese, 5-inch square blocks when cut.

The milk is set at 90 degrees, enough rennet should be used to coagulate the milk in thirty-five to forty minutes.

The curd is ready to cut when it will break clean before the finger, and is cut a little coarser than for brick cheese. The curd is thrown with the milk scoop from one side to the other and then allowed to stand for five or seven minutes before turning on the steam. The curd is stirred by hand for about eight or ten minutes and then the steam is turned on and stirring can begin with the rake.

The temperature for cooking the curd is from 96 to 98 degrees.

The curd is dipped when a little softer than for making brick cheese. When curd is firm enough whey is drawn off about half of it, then it is stirred again and the molds are immediately filled, after about fifteen or twenty minutes the molds are carried into the cellar, at the same time molds are tipped upside down. The turning of the cheese in the molds will take place about four times a day. After 10 or 12 hours cheese is taken out of the molds and is cut into 5-inch square blocks and will be salted immediately.

The salting usually extends over three days.



The cheese are piled three or four layers deep being laid on their broad sides, after salting the cheese it is taken to the curing cellars on shelves, setting the cheese up edgewise.

The cheese is then rubbed by hand about three times a week; care should be taken that the cheese stays in form and shape on the shelves. If the cheese appears a little dry, salt should be sprinkled over it and rubbed in the next day. The temperature of the cellar should be about from 55 to 65 degrees, no more and no less.

As soon as the cheese shows a yellowish appearance on the shelf the pieces are wrapped in good quality of manila and parchment paper and also in tin foil.

The cheese is then packed in pine or bass-wood boxes 20 inches wide, 5 inches deep and 36 inches long; sometimes the same size box is used as for brick cheese.

Sixty-five to seventy-five pieces in a box, according to the demand of the market and net weights from 115 to 130 pounds to a box.

## PROBLEMS OF CHEESE MAKERS

A. J. Glover, Fort Atkinson

First, the relation of cheese making to the fertility of the soil. It has been a well known fact for many years that dairying is one of the easiest forms or phases of agriculture we have to increase the fertility of the land. In the manufacture of cheese you take a little more fertility from the soil than is taken in the manufacture of butter, not so very much more, nothing very alarming, except that I believe you boys who are attending the school at Madison intending to become future cheese makers of this state, you men who are already seasoned in the work, should have something of an understanding of the relationship of your industry to the fertility of the soil, which is the foundation of American prosperity and American agriculture.

I want to drive home to you today the fact that there are three important elements of plant feeding that are apt to be lacking in the soil. There are ten elements in the making of plants but only three that need claim our attention. The three are nitrogen, phosphate and potash.

### Nitrogen

Most of the soils in Wisconsin are supplied with potash, except the low lands and I think possibly your land that has been plowed up; you have all seen land on which corn was growing, some of it as high as my head, the balance of it small, and none of the stalks producing ears. In nine cases out of ten that land needs an application of 300 to 400 pounds of potash per acre to produce a splendid yield of corn, and we have thousands of acres of that land today in Wisconsin. Last year on Hoard's Dairyman farm we applied to a low piece of ground a ton of murate of potash. This land had never produced a crop that was worth harvesting. It had been farmed by a man that had owned it for several years and now and then he tried to grow corn on it but finally quit, said the land was no good. Do you know that last year there were between twelve and fifteen tons of good silage corn taken from the same land, and this year between eighteen and twenty tons were produced, because we added that food that was lacking from the soil.

Nitrogen is an important element of plant food. When the soil becomes depleted in this element it will not produce crops any more than you can produce cheese if you do not have milk, or if you only get a small amount of milk you cannot produce a large amount of cheese, because plants cannot make something from nothing. The dairy farmer is in a splendid position to get nitrogen in his soil. The growing of a legume will bring the nitrogen from the air, and there is nine pounds of nitrogen resting upon

every square inch of surface. Tons and tons of nitrogen are over every acre of land in Wisconsin. The growing of cow peas, clover, etc., will not only supply us with the element we need for our soil, but will also furnish us splendid feeding stuff for the dairy cows, and the great rank and file of dairymen in this state lack in protein for their animals. Protein is the element that manufactures the casein in your milk; it grows the hoofs, the horns, the hair, the hide and the meat of the animal; you must have it there or you cannot properly nourish the young calves or the older stock. See how well it works out and how well the dairy industry is adapted to the building of the soil, because the crop that is one of the most valuable crops for the farmer to feed his live stock is at the same time one of the most valuable crops he can grow on his soil. I want you to see the relationship. For instance, in Colorado, in Wyoming, in Idaho, in fact in all the western states where they grow alfalfa it is worth, away from the dairy section, between three and four dollars per ton. Here in Wisconsin, alfalfa, for the last three years, has been selling for from eighteen to twenty-two dollars per ton. What has done it? The dairy cow. There is no other answer. The farmers in the West are growing as much alfalfa as the farmers in Wisconsin can grow, yet they cannot get over one-sixth of the price for it, so here comes the dairy cow not only taking this plant food which we raise, which is so beneficial to our soil, but it brings at the same time to this grain an increase in price. Instead of the farmers of this State getting returns of from nine to twelve dollars per acre for alfalfa, they are getting a return of from sixty to eighty dollars per acre, provided the farmer knows how to put in practice the principles that are necessary for the growing of this plant.

### Phosphates.

Phosphate, as I have said, is an important element of plant food and our soil lacks this element. This soil that has been farmed a great many years, and we know from experience that the addition of fifty to sixty pounds of raw rock phosphate, which is nothing more or less than certain kinds of ground stone, mixed well into the load of manure, has been the means of increasing the crop on Hoard's Dairyman farm a great deal. We know, from experiments conducted in this country by Dr. Hopkins of the Illinois University and Dr. Thorne of the Ohio station, that it is one of the best investments for farmers to purchase phosphate to mix with manure to increase the fertility of the soil. Help to place this information before your patrons because it means an increased production of grains on the farm and an increased production means more milk, and that is what you are looking for. You want to become more than a cheese maker if you want to be of the greatest service in the community in which you live.

### Silage and Alfalfa.

Why are silage and alfalfa so good a combination for dairy cows? I will tell you. Silage is a succulent food and we know dairy cows are so constructed that they require a succulent food. They do the best upon the grass of June, they do the best in winter upon roots or ensilage when supplemented or fed with the alfalfa or clover hay or something of that sort. Prof. Frazer of Illinois fed several cows on silage and alfalfa and one of those cows produced three hundred and fifty odd pounds of butter fat in one year. The cow had nothing but silage and alfalfa and yet she was capable of doing that large amount of work, while the average cow in this state is not producing much over 175 pounds of fat, if she is doing that well. They gave this cow the same feed in the summer as in the winter, as they had no pasture. The point was to prove the value of silage and alfalfa when fed together. The cow ate approximately about 40 pounds of silage a day and 16 to 18 pounds of alfalfa hay. Alfalfa is one of the feeds that is very rich in protein, not only rich in protein, but is rich in ash, which is an

important element especially for the growing stock. It seems to me that animals that have been fed on alfalfa become larger, stronger than animals fed on other kinds of hay, but that is not the whole story. While these two feeds combined in the very best of ways will produce a most excellent ration for the production of milk, yet corn and alfalfa will produce more digestible nutrient per acre than any crop you can grow in Wisconsin. You can get about four thousand pounds of digestible nutrient, that is the amount of nutriment an animal can get from the alfalfa hay grown on one acre; you can grow 3,500 pounds digestible nutrients in corn silage, calculating ten tons to the acre, while you can only grow on good timothy land about 1,300 pounds of nutriment to the acre. Alfalfa will yield you more than three times as much food per acre as timothy hay, and corn will yield two and a half as much.

Now about the growing of alfalfa, we find that in the farming of this soil of Wisconsin it becomes sour. You people know what sour is. You develop acidity in your curd. If you wanted to sweeten that what would you do? You would put in lime, a little lime will sweeten acid. So what do we do to the soil, put ground limestone on it, or else marl. Marl is found all over Wisconsin, it is found in the swamps, the very places that need lime and need potash, and marl is nothing but lime. Use lime at the rate of one or two tons per acre and make it sweet, then those little bacteria can live in it and have the power of gathering nitrogen from the air. You will find little nodules on those plants and if they are not there the plants do not gather nitrogen from the air and in time will turn yellow, sicken and die and you think the soil is not right, while as a matter of fact the soil is all right but you have to put it into the right condition, that is all. Most any soil that will grow good corn will grow alfalfa, provided you put the soil in a good sweet condition before you sow the seed. On Hoard's Dairyman farm, of over 160 acres, in the nine years I have been with them we have only lost one field of alfalfa. One field of alfalfa has been winter-killed and the rest has lived. Last year we took off nearly 300 tons of alfalfa hay, a yield of about five tons per acre; in the dry season over three tons per acre. Compare that with timothy, is it not worth while to place before your patrons these things that will help them to see why this good crop should be grown?

### Pure Bred Sires.

Just a word about pure bred sires and why you should get into your community good animals. There never was a time in the history of Wisconsin when there was such a demand for good cattle. We have men at Fort Atkinson today that walked in and paid \$9,000 for twelve head of cattle, \$9,000 for twelve head of cattle to go to New Zealand. Was it worth while for the farmers in the vicinity of Fort Atkinson to spend some money for a pure bred sire when a man will come out and buy twelve head of their cattle and leave \$9,000 there? It is worth while.

There are other men coming from New Zealand to buy cattle, there are men coming from South Africa to buy cattle in America, and are your patrons getting themselves in line to make anything out of it, or are they resting on their oars and milking cows that produce 150 to 175 pounds of fat each year and are satisfied with the returns? Are you as cheese makers satisfied to have that kind of patron bringing milk to you? No, you are not. Would you not prefer to have a number of patrons delivering eight thousand to ten thousand pounds of milk per cow each year? Mr. Aderhold handed me some figures this morning of production in Sheboygan county, where they took a census a few years ago, and this census showed an average of 4,800 pounds of milk or 180 pounds of butter fat per year per cow in one of the best counties in the State; some herds showed a production of six thousand to eight thousand pounds of milk per cow, so there must have been some herds producing less than 4,800 pounds per cow to bring the average down to that. Why were those poor cows kept there?



You can get a cow census for every patron that comes to your factory, and then talk to them about the importance of importing to the community bulls of pure breed; form an association and buy one of those pure bred animals, then fix up by-laws and regulations for keeping the animal, and his service may be used in all the herds that come to your factory unless there are too many cows, in which case you would have to buy more sires. But don't you see if there is a good sire in one community and the farmers in an adjacent community own another good sire, you can change those sires about and you can use those sires for years without inbreeding, simply by changing around. It is a cheap way, an inexpensive way to get the farmers into the pure bred business. There is nowhere such an educator in a community as a pure bred sire. It sets men to thinking.

### **SANITARY MILK PRODUCTION**

**Charles Steffen, Milwaukee**

**President of the International Association of Dairy and Milk Inspectors.**

In my connection of almost five years with the Milwaukee Health Department, one year as chief inspector of the milk inspection work, I have had an opportunity to gather statistics on the farm cows feeding, such opportunity as has come to but few men in Wisconsin, and I want to emphasize fully this question of good cows and good feeding and this question of Sheboygan county as compared with the balance of the state of Wisconsin.

We are getting in Milwaukee today milk from perhaps nine counties. I show a picture of one depot where we receive our milk supply, showing the business in Milwaukee at the present time with our wagon getting the milk from the St. Paul depot. Within the last year we visited some 120 farms in Sheboygan county and found the average production per cow in that county was approximately three gallons, while the average of all cows sending milk to Milwaukee was two gallons per cow. That was last spring. This fall, up to this time, we have visited 950 farms located in five counties. As a result of this second inspection, we found of these 500 farms the average production was three-quarters gallon per cow. In the territory surrounding the city of Milwaukee, to the south, the west and the north, we found the lowest production, many of the farmers making a practice to buy cows and depend on the brewery slops for feed. I again emphasize the necessity of feeding corn silage and alfalfa. We find where the farmers grow their own feed for the cattle there is a better breed of cattle, the production is higher and we get a better supply of milk.

The question of clean, sanitary milk production for the Milwaukee milk supply is a greater one than the supply for the cheese factories or the creameries. There never was a better demand for milk than at present, but we have too much of the wrong kind of milk. This fact is emphasized when we go into competition, it was emphasized last fall at the annual dairy show and it is emphasized in the monthly scoring contests.

The report of C. E. Lee in charge of the Wisconsin butter and cheese scoring exhibitions for November, in referring to cheese scored says: "It was a fairly good lot of cheese, considering the condition of the milk from which the large percentage of the cheese was made."

Mr. Lee's report coincides with my experience and observation. Within the past year a number of complaints have been referred to my department for investigation. Most, if not all, were due to an excess of moisture in the cheese, hasty marketing and rank flavor, due to the poor quality of the milk from which the cheese was made.

It is within my recollection and yours, too, when pasteurization was heralded as the one process necessary to insure the butter maker "extras" from inferior milk. Time and experience have proven this erroneous, and contrary to the very essence of the laws of nature, dirt is dirt, and filth is filth, whether you cook yours or prefer to take it raw.

### Excessive Moisture and Unclean Milk

This report convicts the cheese makers of incorporating an excess of moisture, and of making cheese from insanitary and unclean milk. The judges have condemned your practices and you are on parole. The question of moisture, texture, and the practice of marketing green, uncured cheese, are directly under your control. Any cheese maker who deliberately incorporates an excessive amount of moisture and markets green cheese, is, in my opinion, guilty of a conspiracy to destroy the reputation of Wisconsin cheese.

We all know with good clean milk the cheese maker can take his time all through the process of cheese making from the time the milk is heated to the proper temperature until it goes to press. How different with unclean, stale, old milk. There are times when you can't work fast enough to control all the different types of bacteria which you can plainly see are getting the upper hand in this battle for supremacy.

The result is always the same; unclean, filthy milk wins. In consequence of this hasty handling of the curd, we have incorporated excess moisture, and the cheese maker, knowing the milk was of poor quality and his wages depended on turning out extras, rushes his green cheese to market before the undesirable ferments develop too far, and deprive him of a portion of his salary.

### Licensing of Operators

It should be the duty of every cheese and butter maker to inspect regularly all cow barns and cows from which comes his milk supply, to insist that all cans and receptacles are promptly and thoroughly cleansed and scalded with boiling water, and as reasonable precautions taken as will insure the delivery of a fairly clean milk supply. I believe much could be accomplished by law to improve the cheese and butter of this state, if it were possible to secure legislation compelling all operators who make butter or cheese to be licensed by the State Dairy and Food Commission before permitting them to engage in that profession, and by requiring a standard of efficiency, intelligence, and cleanliness, as a requisite to obtain a license would tend to eliminate the careless, filthy operator from the ranks of cheese and butter makers.

Such a law should confer on operators all rights now conferred on inspectors of the State Dairy and Food Department, insofar as applied to cow stables, and our present corps of state inspectors act as instructors for our cheese and butter makers. It would, in my estimation, do much toward bringing about the desired regulation, so necessary in this campaign for better cheese, butter, and a clean market milk supply.

Get your producers to read dairy papers, study the question of light and ventilation, proper barns in which to house milch cows, how to feed them properly so as to get the best results from the feed consumed, and lastly, let them understand they cannot strain dirt from milk, that they must keep milk clean; that means that it must come from clean cows, kept in a clean barn, and handled by clean people.

The producer has the best sediment test at his home. Rest assured, evidence of dirt in the strainer cloth insures a contaminated milk supply in proportion to the amount of dirt shown, and the danger of using the sediment test is, that the producer will be more careful in straining his milk supply, and pay less attention toward keeping the cows clean, unless you inspect his herd and premises, and compel him to use a small top milk pail, unless you are assured he is taking all precautions possible to provide against contamination. Unless he does this, you have no assurance whatever that sediment free milk means clean and wholesome milk, but the sediment tester, reinforced by farm inspection and the compulsory use of the small top milking pail, will be a tremendous force in improving our milk supply.

In my own experiments last year I clearly showed the close relation between sediment and bacteria count, that increase in sediment means increase in bacteria count, all other conditions being equal.

The number of organisms found in the milk will always be the final test or indicator of the purity or wholesomeness of the milk supply, and these organisms will be in proportion to the precautions exercised in keeping out filth, prompt cooling, temperature to which the milk was cooled, and age of the milk.

### **Demonstrated at Dairy Show**

Milk produced under the best supervision possible contains a certain number of bacteria, but the average farmer or dairyman can produce a very superior quality of milk low in bacteria, if he chooses to do so, as was demonstrated by us during the International Dairy Show last October. An average farm barn scoring 48.4 points, kept scrupulously clean, all utensils thoroughly washed and sterilized, cows' udders washed with clean water and wiped with clean cloth, milked in closed top pail, removed immediately from stable, cooled to 40 degrees Fahr. and stored at a temperature of 35 degrees Fahr., contained after six days 150 bacteria per cubic centimeter, and the milk scored 98.3 points out of a possible 100 points perfect.

A model dairy entered milk in this show in the same class, barn conditions generally superior to the other farm and scoring 74.5 points by the government score card. The herdsman didn't believe in those modern methods of milk production; he strained the milk into the can in the cow barn, left it there twenty minutes before cooling, the result was 82,000 bacteria, and scored 73.5 or 25 points less than the milk produced on the average farm.

Need more be said with reference to cleaning and brushing cows, wiping udders, removing milk promptly from the stable and cooling to about 40 degrees and keeping at that temperature in a clean place?

Producers should discard the fore milk from each cow; the importance of so doing is evident. As a result of experiments by our department recently, the first one-half pint drawn from the udder contained 19,000 bacteria, the remainder or balance of eight quarts drawn contained only 4,000 organisms, in other words the first half-pint from the cow contained five times as many organisms as did the whole milk, and the fore milk contained but 1.6 per cent butter fat, while the whole milk 4.2 per cent.

We found in our tests that removing milk from the stable and prompt cooling of same lowered the bacteria count from 5,000 organisms to 3,000 or a difference of forty per cent in favor of prompt cooling and immediate removal.

One of the greatest abuses in the past was the practice of returning whey in the milk cans to the producer. This should not be permitted under any circumstances. The importance of clean utensils cannot be too strongly emphasized. The cheese maker can do much toward remedying this abuse by making a thorough inspection of all cans and vessels at the factory as well as at the farm.

An abundant water supply of good quality for the herd as well as for cleaning utensils is an important factor in the production of a clean milk supply.

### **Dairy House**

A dairy house in which to properly cool and store the milk is a necessary adjunct to every well equipped dairy and is deserving of far more attention than is given this subject by the average producer at the present time. The cattle should be housed in a barn so constructed as will enable them to keep clean and in good health. For the average farmer that means plenty of sunlight and ventilation, equipped with swinging stanchions and cement floor, not longer from gutter to stanchion, for the average cow

than four feet eight inches, a gutter eighteen inches wide, about six inches deep, and sloping to one end.

The manure should be removed from the barn daily, to a distance sufficiently remote so the cattle will not be compelled to wade through the same in passing in and out of the stable, and so that any odors arising therefrom, will in no way affect the milk in the milk house, or the air in the cow stable. All feed should be fed after milking and by so doing the cattle will be more quiet during milking, give more milk, and the milk will be of better quality.

The milk house should be conveniently located, so that ready access may be had from stable and ice house, and should be near the well if possible, and we insist this house be used only for cooling milk, cleansing of utensils, storing of milk, and must be kept clean.

Health of attendants is of great importance. Diphtheria, scarlet fever, tuberculosis, typhoid fever, all are prevalent to a far greater degree than producers generally are willing to admit, and should be guarded against. Finally, convince your patrons it is to their advantage to apply the tuberculin test to their herd, and you have your patrons producing a reasonably safe and sane milk.

In conclusion, I believe Wisconsin produces as clean milk as any people in this, or any other country. I believe our producers are as intelligent and as progressive as can be found anywhere. The trouble is, we have too much poor milk and too little milk of the right quality. It is your duty to reverse these conditions and by so doing, you will do much for the reputation of Wisconsin dairy products. It will bring happiness and prosperity to the producers, make your work more pleasant and profitable, and finally, to the consumer you will be a benefactor.

### Discussion.

Mr. Glover: The straining of the milk outside of the barn involves a lot of extra work especially where the barn is large, and have you ever thought of building within the barn a very small place in which the milk might be strained, to give opportunity for straining it out of the atmosphere of the barn and at the same time prevent so much walking? I believe we have to get around this in some other way. I moreover believe that if the barns were properly ventilated, as they should be, well lighted, whitewashed and kept clean as cow homes ought to be, that it would not be of prime importance to the production of high class milk to have it strained outside the barn in a milk house. We would make a tremendous step forward in the production of clean milk if we could get the farmers to realize the importance of air, sunlight and white washed walls in their barns, but when we ask a busy man to carry milk as far as would be necessary in a barn of fifty cows we are asking too much, we are asking more than we can expect a human man to do unless he is paid more than we are willing to pay for so much work. Why not install a place within the barn where the milk can may be set and scales ready for weighing the milk?

Mr. Steffen: In Sheboygan county we found a great many large dairies and I have had occasion to visit some of them, and it is our experience that the larger the dairy, the more cattle a farmer is keeping, the better are his facilities for caring for his product and it is easier to deal with him than it is with the owner of five cows. He is more intelligent, better equipped, has a better barn, and is easier to approach than the five cow farmer. Our trouble is with the five cow man, the man that milks twenty-five to forty cows usually has the proper equipment and we have no trouble with that class of producer.

As long as I am in charge of the work I believe I will not prosecute a man for keeping a filthy cow barn because he has sinned enough already, we will simply shut his product out from Milwaukee and let it go somewhere else. I believe it is practical to have a small room in one corner of the barn, where the milk may be strained, but there should be a hallwa



of 3 or 4 feet and a window through which the air could pass from the barn before entering this room. I believe that would give good satisfaction and I have recommended it to the inspectors.

Mr. Noyes: I have lived in Wisconsin about thirty-five years, and at the present time the barns are more than 500 per cent better than they were when I first came into the state, but our milk is far from perfect and I do not know whether building better barns, airing them and getting sunlight into them will produce better milk or not. It has not proved altogether true. I think the inspection of cheese twenty years ago at the University was as high as it was this last year. That is saying something pretty hard, and we know the barns throughout Wisconsin have improved 100 per cent. There are pretty good barns in this state and still our milk is pretty poor in the matter of cleanliness. I believe the best way to overcome this difficulty would be for every cheese factory operator and every creamery operator to require his patrons to produce milk of a certain standard.

Mr. Steffen: In regard to paying higher prices, theories are all right but they do not always work out. A year ago this winter we had the highest price milk and in Milwaukee the dirtiest milk we ever had. It was our experience at that time that barns that were adapted to the keeping of ten cows had fourteen cows in them. We have but few good dairymen that realize that cows should have a reasonable amount of air space, light and ventilation, but that question of light and ventilation for the dairy cows is in a backward state and we have to recognize that fact. This theory of paying the farmer a price for his clean stuff is all right, but the minute we do that we will find we will have to have somebody with authority and enough ginger to watch them after all. Last year we prosecuted nineteen shippers that shipped water and skimmed milk to Milwaukee and only two for dirty milk. We are carrying on a campaign of education. We have inspected 2,600 farms and made 3,400 visits the past year to farms located in nine counties. We have improved the conditions tremendously on those farms.

Mr. Glover: There is no use in getting discouraged, we are on the right track; but do not expect the farmer to produce certified milk when we pay him an ordinary price because he will not do it. That is what I am pleading for today, not to take such a big step that we cannot get anything done, but when the time comes that we are going to produce the kind of milk that this speaker described we are not going to buy it in Milwaukee for 11 cents a quart. It will be worth 15 cents, and good milk is worth 15 cents in Milwaukee today if beefsteak is worth 30 cents a pound. A quart of milk contains as much nourishment as a pound of beefsteak and why should we sell food in Milwaukee cheaper than anyone else is selling food? Milk is the cheapest produce before the American people today.

### PRACTICAL TALK TO CHEESE MAKERS.

T. A. Ubbelohde, Glenbeulah.

I like a milk house built against the barn, of cement blocks, with a door leading from the barn, and a tank of either galvanized iron or cement, although I prefer cement. The water comes into the tank from the pump and runs off into the watering tank for the cows. All the water for the cows goes through there and in the winter the cover of the tank fits tight, which is all that is necessary to keep the milk from freezing. A year ago this winter we had some severe weather in Sheboygan county and the milk in tanks of that description never froze sufficient to injure it. If the barn is well ventilated there is no objection to coming through the barn to the milk house and it is not necessary to go out doors. I do not want to go out doors to strain milk and I know the rest of the farmers do not want to either. The principal point is to keep the milk house absolutely clean

and that is easily done. The washing of the cans can be done elsewhere if the milk house is not large enough. The milk house should be so constructed that it may be easily cleaned and the flies kept out in the summer. The important points about milk are to cool it quickly and keep it clean. I believe it is better to cool it first and then cover it up tight so that everything is kept out. The air will not keep anything out of milk, but puts in many things.

I believe the cheese maker can do more towards improving the quality of the milk than can any other person. He sees the farmers every morning and he has the law behind him and if he only makes up his mind to, he can get this clean milk. If the patrons know if they persist in sending dirty milk that you will inform a state inspector, they will eventually do better.

### Selling Cheese.

In regard to selling cheese. Wisconsin produces 145,000,000 pounds of cheese. Do you realize what one-half cent a pound loss on that cheese means to the farmers? It would put up a whole lot of nice improvements on the barns and milk houses. The trouble is we have not had a good method of selling our cheese, although we have call boards. I remember before we had the call boards I had a hard time to learn what my cheese sold for.

It has been said that some dealers were barred from buying on the Plymouth board. So far as I know, there was only one dealer shut out from this board and there was good reason for doing that. If we have enough cheese offered on the board we can get plenty of buyers.

The way the Elgin board has been conducted is not right, because the committee had already established the market. The prices were not established by the butter sold on the board, the way prices are established on the cheese board. There should be some regulation of these boards to see that the buyers are responsible and will do as the board requests.

We have some buyers at Plymouth that do an immense business. In September some of them drop behind one week in their settlements for cheese, while in October they may be behind six weeks in their payments, and are doing this business on the farmers' money or the cheese makers' money, whereas they are supposed to make returns to the cheese maker in one week from the time the cheese is purchased. Some cheese makers have to pay the farmers themselves, and that is no way to do business.

In my opinion it is better to have the cheese maker sell the cheese because he knows what the cheese is and an outside party does not. Farmers have no way of learning those things. If a cheese maker does not know what his cheese is he should send a cheese to the scoring contest at Madison, keeping one of the same quality in his factory to score himself at the same time Mr. Lee scores the other. By doing that he will soon be able to score a cheese and know exactly the quality of it.

It should not be a hardship for any factory, no matter how far away it is located, to sell cheese on the board, as all that is necessary, after a membership is obtained, is to write to the secretary of the board. That is the way my cheese has been sold for years. I would notify either the secretary or one of the banks the amount of cheese I had to offer and if I so desired I would state that I did not want to sell it for less than a certain price; if the price went below that to hold the cheese over. After the cheese was sold, the secretary called me by 'phone, notifying me of the price, and I would ship the cheese and if the cheese passed straight on the market I would have no further trouble. The cheese sold in this way can be shipped direct to the buyer from any part of the state. Dealers that have warehouses at Marshfield buy in that vicinity. All that is necessary is to have enough cheese offered to establish a market, and the farmers can appoint an agent to do the selling if they see fit. The membership fee is only \$1 or \$2 and that will work no hardship on anyone.

### Short Weight.

Another thing which was agitated this summer, was the question of short weight. It was suggested the cheese should be sold the same as weighed, the whole load weighed. Our pure food and drug law will not permit that. You know if the cheese is shipped out somewhere and Uncle Sam finds short weight there is trouble. He picks out a single box, weighs it, then picks out another and weighs that, and that is what the dealer is supposed to do. I think we are giving more weights sometimes than we ought to, but under the law we cannot do otherwise. The dealers cannot be expected to take cheese after it is shipped in if it falls short in weight. The state will only allow full weight; each box has to have up weight, and several buyers have told me they have had trouble this fall about short weights. Cheese would come in weighing just 16 ounces, no more, and by the time it was shipped out to a warm country it would fall short and there would be trouble. The cheese maker would write in that he understood from the published report in the paper that the full weight was all that was necessary and that the cheese dealers were cheating the farmers, and sometimes that is true. I know of one cheese maker who shipped a lot of cheese that averaged 2 ounces up weight right through. He went down to see the cheese weighed (it was the time cheese dropped one-half cent on our market). The cheese marker went right through the shipment and he could not find a box that was not marked at least 1 ounce over the pounds, and some of them were 2 ounces, yet he was cut on it because the firm in question did that kind of business, and that is the class of people that we are trying to keep off our boards. Everyone must do a straight business or they cannot do business on the board.

### VALUE OF WEIGHTS AND MEASURES LEGISLATION TO THE CHEESE MAKER.

**Fred P. Downing, Chief Inspector of Weights and Measures.**

"The effective enforcement of the Wisconsin state law relating to weights and measures since its passage two years ago has exerted a most wholesome influence upon the manufacturing, industrial and business interests of our commonwealth," said Mr. Downing, who discussed the subject both as to the value of the law to members of the great purchasing public of Wisconsin, and second, its value as applied to cheese making. As to the latter he said:

"Every cheese factory is equipped with several scales. The milk as it comes from the farms and dairies must be weighed. The cheese before being sent to the warehouse is likewise weighed. Milk must be tested in the Babcock test bottle to ascertain its fat content. Is it not highly important that the cheese maker know that his scales and his calibrated glassware are accurate? I feel safe in predicting that fully one-third of the scales now in use in the cheese factories of this state are inaccurate. There has been a great demand for cheap scales and the manufacturer in his efforts to furnish them has turned out a product so poorly constructed that it is often inaccurate when it leaves the factory or soon becomes so. A second cause that brings about inaccuracy in scales is the effect of use, exposure, etc. All of these causes tend toward the production of an inaccurate weighing device. Scales should be properly set up. They should be frequently overhauled. They should be kept clean. They should be placed upon a level floor or counter. While the owner of the scale can keep the same clean and free from rust he should not undertake to tamper with the pivots or knife edges or with the nose iron at the end of the levers.

Undoubtedly the cheese makers of Wisconsin have been losing thousands of dollars annually through the use of defective scales. Many of the scales used are from one-half to four percent off on 100 pounds. Let us suppose



for example that a scale is 1 per cent off, that is, that it is 1 pound off on 100 pounds. The milk purchased by the average cheese factory amounts to about 750,000 pounds annually. If the scale used for weighing-in this milk shows an error of 1 per cent the loss for the year will amount to 7,500 pounds. At \$1.60 per hundred the loss to the factory will be \$120. This is a very conservative estimate as many scales have been found in Wisconsin that have an error of 3 or 4 per cent. If the scale is fast the cheese maker is the loser, while if the scale is sluggish the patrons of the factory are the losers.

"In the determination of the fat content of milk the operator should have some means of knowing that the Babcock glassware used is accurately calibrated. This work of calibrating is now being done at the office of the state department of weights and measures at Madison and the results are most gratifying. But very few of the newly purchased Babcock cream and milk test bottles have been found to be inaccurately calibrated. The wide mouthed 50 per cent cream test bottle should be discarded as there is too great an opportunity for error in the reading of the same. Cream test scales of necessity should be extremely sensitive. We believe that a scale of this nature should be sensitive to at least one drop of cream or approximately one-half grain. The so-called twelve-bottle cream test scale in use in many of the creameries of Wisconsin is frequently not sufficiently sensitive and serious errors result. In the hands of a careless or ignorant manipulator the error often exceeds 5 per cent. The fact that one drop of cream in excess will produce an error of 8-10 of 1 per cent illustrates my point.

"Another important matter to all cheese makers is clearly shown in a statute relating to the purchase of cheese at wholesale and the manner of weighing and paying therefor. This statute provides that every person, firm or corporation that engages in the business of purchasing cheese in quantities of 50 pounds or more in Wisconsin shall, unless otherwise especially stipulated in a contract, correctly weigh each and every box or package at or before the time that such cheese shall be delivered to the purchaser, and payment shall be made for such cheese according to the weight so ascertained at the time of such delivery. This law strikes a blow at the common practice of weighing from three to five boxes of cheese in a load and then estimating the weight of the entire load from the weight of these few.

"It is likewise apparent that the pound should not be the smallest unit of purchase in the buying of cheese. The scales at your factory for the weighing of cheese indicate or should indicate ounces. If a cheese weighs 19 3-4 pounds the cheese maker should receive pay for that amount and not for 19 pounds. In several states net weight container laws have now been passed that make it mandatory on the part of the manufacturer to stamp on the outside of the box or package the true net weight of its contents. In the great state of New York a net weight container law goes into effect next July. A regulation issued by the state superintendent of weights and measures of that state says: "Cheese of 5 pounds or over in weight must be marked in terms of pounds and fractional parts of the pound in bold faced type, letters at least one-eighth of an inch in height. The weight should be the actual weight at the time of delivery."

## WHAT OF THE MORROW?

### J. Q. Emery, Dairy and Food Commissioner

In the first biennial report of the dairy and food commissioner of Wisconsin, 1890, the following statement is made under the subject "Cheese:"

"Sixty million pounds of cheese is annually made in this state. There is not an article of commerce that requires greater skill in handling in order to secure favorable markets. No industry has been so perverted. No business exists that has been so basely manipulated,

and no article of food has been so degraded by counterfeiters. In no time has the honest manufacturer met with such dishonest competition. Matters have come to such a pass that the genuine article is under the ban of suspicion at home and abroad."

In striking contrast with the foregoing conditions in 1890 are the following taken from the biennial report of the dairy and food commissioner for 1911-12:

"In 1909, at the National Dairy Show in Milwaukee, Wisconsin cheese won first, second and third premiums in all classes exhibited.

"In 1910, at the National Dairy Show in Chicago, Wisconsin cheese won first, second and third premiums in all classes exhibited.

"In 1911, at the National Dairy Show in Chicago, Wisconsin American cheese won first and second; Wisconsin Swiss cheese won first, second and third; and Wisconsin brick cheese won first and second.

"In 1911, at the International Dairy Show in Milwaukee, Wisconsin cheese won first, second and third premiums in all classes exhibited.

"In 1911, at the nineteenth annual session of the Wisconsin Cheese Makers' Association at Milwaukee, Wisconsin cheese won first, second and third premiums in all classes exhibited, six other states competing.

"In 1912, at the twentieth annual session of the Wisconsin Cheese Makers' Association at Milwaukee, with five states competing, Wisconsin American cheddar cheese won first, second and third premiums in all four classes; Wisconsin brick cheese won first, second and third premiums; Wisconsin Swiss cheese won first, second and third premiums; and Wisconsin limburger cheese won first, second and third premiums."

With 165,000,000 pounds of cheese manufactured in 1911, Wisconsin has reached the pinnacle, where confessedly she excels all other states in the quality, quantity and variety of her cheese products. This climax has not been reached through mere chance. The great improvements in the conditions shown by the report of the dairy and food commissioner for 1911-12, as compared with the conditions as described in 1890, are the result of a number of coöperative forces. Chief among the efforts which have resulted in this magnificent accomplishment has been the persistent striving for the highest excellence.

But what of the morrow? They who do not advance necessarily recede. Will Wisconsin cheese makers, factory owners and patrons continue to strive for the highest excellence in cheese products or will they repeat the folly of the filled cheese fraud by various efforts at deception whereby the quality of Wisconsin cheese is lowered and infinite harm or ruin to the industry results?

As the quality of cheese improves, there is a greatly increased demand for the product. Good cheese is in demand. People want it. Will buy it. Will eat it. But poor cheese, like a bad egg, is not wanted. People will not buy it. They will not eat it.

In a public address upon the general theme, "Improving Canadian Agriculture" by that remarkable man, Dr. James W. Robertson, of Canada, occurred the following statement:

"Last year the farms of Canada produced field crops worth \$565,000,000. That amount can be doubled in ten years if all farmers will adopt the systems and methods followed on the best 10 per cent of the farms examined last year by the Commission on Conservation."

### Double Value of Yearly Production

Applying Dr. Robertson's thought and reasoning on Canadian agriculture to the Wisconsin cheese industry, I assert that the value of the yearly production of Wisconsin cheese can be doubled in ten years if all the cheese makers, managers and patrons will adopt and follow the sys-

tems and methods practiced by the best 10 per cent of the present Wisconsin cheese factories. Think of the significance of this remark. The best estimate on Wisconsin factory and farm-made cheese for the year 1911 is 164,365,000 pounds, valued at \$21,776,000. If the aggregate value of Wisconsin cheese were to be doubled in a period of ten years, the value of the yearly product would exceed \$43,000,000.

If all of the cheese makers of the state would adopt the methods followed by the best 10 per cent of the Wisconsin cheese makers, every cheese factory in the state would be scrupulously clean; the vats, pipes, every piece of apparatus, the premises and everything connected with the factory would be scrupulously sanitary; every cheese factory door, window and intake would be screened as a protection from flies; the best methods of manufacture would be employed every day in the manufacture of cheese and only fresh, clean, sanitary milk would be received and manufactured into cheese.

If all the managers or owners of Wisconsin cheese factories would adopt the systems and methods followed by the best 10 per cent of the managers or owners of Wisconsin cheese factories today, our cheese factories would be so constructed or so remodeled that they could be kept clean and sanitary; suitable provision would be made in every instance for adequate drainage; a pure water supply would be secured; modern apparatus would be provided; every appointment of the factory would be worthy of this great industry of which it constitutes a part; and the receiving of milk other than that which is fresh, clean, and sanitary would not be tolerated.

If all the 85,000 patrons of the Wisconsin cheese factories were to adopt and follow the systems and methods of the best 10 per cent of the patrons of Wisconsin cheese factories, only fresh and sanitary milk would be offered at those factories. No watered milk would be offered; no skimmed milk would be offered; no filthy milk would be offered; no milk from diseased cows would be offered. The only milk that would be offered to those factories would be the clean, fresh milk, drawn from clean cows, kept in clean, well-lighted barns, cared for by clean men who use only clean utensils, and the night's milk designed for the production of American types of cheese would be quickly cooled to a temperature from 60 to 50 degrees and kept at that temperature until delivered at the factory.

If all the patrons of Wisconsin cheese factories would adopt and follow the systems and methods followed by the best 10 per cent of the patrons of Wisconsin cheese factories, there would be kept on those farms cows of a distinctly dairy type that would produce economically the largest volume of excellent milk from the feed consumed; there would be adopted and practiced an intelligent system of rotation of crops as well as care and feeding of the stock; the greatest care would be taken in the selection of seed for use on those farms; the presence of weeds would be reduced to a minimum and an intelligent system of cultivation would prevail.

If all the buyers of Wisconsin cheese would adopt and follow the methods practiced by the best 10 per cent of those buyers, the producers of cheese would be strictly upon the basis of the quality of the product. The efforts of the cheese makers and of the patrons to produce cheese of the highest quality would receive their just reward. They would receive what their cheese is worth; no more, no less.

The conditions which I have thus described are the conditions which today prevail in the best 10 per cent of the cheese factories of Wisconsin and practiced by their patrons. The cheese produced under such conditions scores uniformly above 95 per cent. Can you doubt that if such conditions prevailed in every cheese factory of the state that within ten years the value of Wisconsin cheese would be doubled? Is not this an end worthy of the best efforts of this association?

### Profits of Coöperation

The Wisconsin cheese industry needs to have all Wisconsin seeded down to the practice of the best cheese factories and the best of their patrons;

and this is not impossible of accomplishment. I believe that Dr. Robertson's argument for coöperation among the Canadian farmers as a means of accomplishing the end he had in mind is equally applicable to the various factors involved in the production of Wisconsin cheese, and this leads me to raise the question whether the time has not arrived in the history of this association when it should put forth strenuous efforts to promote coöperation among cheese factory owners, cheese makers, patrons and cheese buyers. I raise the question whether or not the time is not at hand when instead of the extreme segregation of the cheese makers of the state in their association work and the dairymen of the state in their association work and the butter makers of the state in their association work, there should not be more coöperation, more coming together of these respective interests. Is it not true that it would be to the mutual advantage of cheese makers and their patrons if there could be a completer understanding by each of the problems and difficulties and of the methods of the other in the accomplishment of the objects in which both parties are mutually interested. If joint meetings of this association and the dairymen's association could be held in the great cheese producing centers of the state wherein the problems of the cheese makers and the problems of the patrons could be presented and discussed, would not the results be highly beneficial to all parties concerned?

Under existing conditions and tendencies and in view of the great need of more coöperation, I have wondered if after twenty-one years of divorcement, a remarriage of the Wisconsin Dairymen's Association and the Wisconsin Cheese Makers' Association would not prove more advantageous to the dairy interests of the state than the present state of divorcement. In my opinion this is a question worthy of thoughtful consideration.

The high standard which the Wisconsin cheese industry has reached indicates that the best cheese factory patrons spurn the offering of filthy milk to the factory and the best cheese makers and factory owners spurn the manufacture of such milk into cheese. But so long as there is one patron of a cheese factory, or one cheese maker or cheese factory owner whose system and practice are not equal to the best, there still remains work by this association and its members to secure improvement.

### **SALARIED INSTRUCTORS.**

**S. G. Thompson, Department of Agriculture, Washington.**

Such gains as the cheese industry in your state has made in the last ten years can not be accomplished without thorough organization of the persons interested and the proper concentration of effort by competent leaders in the work. An increase in the annual cheese production of 67,000,000 pounds or 87 per cent in ten years has not been secured without the combined energy of all the forces which are working for the success of the industry.

### **Better Methods Desired.**

It is plain that Wisconsin is interested in better dairy methods. This is shown by the support given your university which is one of the largest of its kind in the country; also by the development of your dairy and food department which is perhaps doing more work and has a larger force of capable men employed than any other state in the Union, besides the development of other educational forces at work in the state, particularly your own organization.

Fortunately, the need for improved methods is recognized by many producers. The increased cost of feed and labor makes it necessary for the dairyman if he wishes to be financially successful, to keep only such cows as are capable of producing at a profit and to discard all others.



He must also get away from the old idea that a cow is a cow which is to be fed and handled like every other cow and learn to deal with them individually instead of collectively. Furthermore, the successful dairyman must have a good idea of modern requirements in order to put the improved methods into successful operation. Your educational institutions already referred to are furnishing instruction of this sort and this association is helping to solve these problems, yet with all the work done and with all the advancement made there are too many inferior cows kept in Wisconsin as in all other states and too much poor raw material delivered to your cheese factories as in other places. Thus, it becomes apparent that although you are making advancement you are not securing improvement in methods fast enough to keep pace with the demand and are failing to reach the class of people who most need assistance.

There are many patrons of our cheese factories who have never had an opportunity or at least have not embraced it, of being shown how they could produce a better and more valuable product at a reasonable cost and make more money out of present day dairying. I believe this condition can be overcome in a large measure through our cheese factories and creameries if they will undertake the task.

#### **The Cheese Factories' Relation To The Patrons.**

The cheese factory represents a certain number of patrons whose interests are identical and whose success depends in a large measure upon the success of that factory, in fact, I do not think it is putting it too strongly to say that the cheese factory is responsible for the quality of milk produced by its patrons and for their success as dairymen. This being the case, then, our cheese factories may be considered a unit made up of the farmers patronizing them. This unit is maintaining itself so far as cheese making and marketing is concerned against the competition of other similar units. Each one is striving to make a little better product than its neighbor and hopes to get more money for it in order that it may pay its patrons a higher price for the milk they furnish. There is a common interest in this direction and why not make the organization valuable in other directions. Why not broaden the scope of the organization to include not only the manufacturing of cheese but for buying supplies and making the cheese factory a distributing point for practical information and assistance. This will fill the place which the educational institutions fail to reach, by taking the assistance to the homes of the patrons and delivering it to them in a practical way.

#### **New Plan Proposed.**

The plan I would suggest is for the cheese factory to employ a man to do this work, a man who will spend all his time among the patrons of the factory showing them where they are failing to get best results and how to make the necessary changes. Such a man must be well trained both practically and scientifically besides possessing the necessary tact to make his work valuable. Such a man must, of course, be expensive, but I have no fear that his work can not be made profitable. Several states have undertaken instruction work in a limited way with excellent results and the dairy division is conducting experiments at creameries for the purpose of determining just how far it is profitable for them to go with such work and while the experiments are far from being complete the indications are that the plan is entirely feasible. We can never hope for the state or federal governments to furnish men enough to work with each patron of our cheese factories and creameries, and if it were possible I doubt if it would be wise to do so as there would be too great a tendency to rely on some one else to solve our problems for us. But since the patrons of creameries and cheese factories are integral parts of the organi-

zation each one would have some responsibility which would require more or less thought and study, if such work be undertaken by the organization. By this plan each unit would employ its own man who would properly be called an instructor. The plan, is not intended to increase the cost of production, but instead to decrease the cost of production and at the same time secure a better product. It is a well known fact that an article of good quality always brings a high price and it is also well known that it is only possible to secure a high price when you have a superior product to sell. With the highest market prices received for milk the farmer or dairyman who has the right kind of cows and uses proper methods can make more money from dairying than ever before. A cow that produces more milk per year than is necessary to pay for her feed and care makes more profit when milk sells for \$2 per hundred weight than when it sells for \$1 per hundred weight. Then, again, the profitable cow is usually a large producer and if the production could be increased the cost of producing would be decreased and with double the amount of milk available for manufacture the cost of making would be materially reduced.

#### Wisconsin Cheese Statistics.

Reports from 232 cheddar cheese factories in Wisconsin for the year 1911 which made a total of 23,369,541 pounds of cheese, showed that they received an average price of 12.51 cents per pound. They also showed a variation in the selling price from 10½ to 14½ cents per pound, a difference of 4 cents per pound between the maximum and minimum price. If a cheese factory or a combination of factories making 400,000 pounds could increase the selling price one cent per pound they could afford to pay a salary of \$2,000 per year to an instructor, then have left \$2,000 more to be distributed among the patrons. If the selling price could be increased 2 cents per pound they could pay the salary stated and have left \$6,000 to distribute among the patrons, and so on. The reports referred to showed that the average cost of making cheese was 1.683 cents varying from 1.37 to 2.25 cents per pound or a difference of nearly one cent. If this amount could be saved because of increased production it would pay a handsome salary to the instructor and leave something for the patrons besides.

#### Requirements For Instructors.

The successful instructor must be well trained and familiar with production and manufacturing problems. He must also have a large amount of tact and push, then if he is interested in his work there is no end to the good he can accomplish. He would probably first visit the patrons for the purpose of making their acquaintance and studying their conditions. On his first trip he would probably make a critical examination of the conditions which he finds, but if he is wise he will make only minor suggestions and such as can be easily complied with. His first effort will be directed toward improving the quality of the product delivered to the factory by improving sanitary conditions generally and perhaps by discouraging undesirable practices that may thoughtlessly be followed. He will work to secure a clean, pure milk properly cooled and protected from contaminating influences. A trained man will notice many things that the untrained hard working farmer overlooks but which he appreciates if pointed out to him in a proper way. It is necessary, however, that only one or two of the more important items be mentioned at once, as too many suggestions at one time may defeat the purpose of the work. The successful instructor must be practical and he must stay down to the level of the person he would assist. In other words, the instructor must not talk over the head of the man he is working with. There are very few farmers who will not receive suggestions regarding their work from a person who has shown himself to be familiar with the subject and who presents his suggestions in a practical way.

By the time he has succeeded in securing improved methods of handling and caring for milk without any material increase in the cost he will have secured the confidence of the patrons and shown himself to be a safe and careful leader. He can then take up matters which at first may not appeal so keenly to the producer.

### Instructor's Methods.

It is likely that he will explain to the farmer the importance of keeping records of each individual animal in his herd and he will probably weigh and test the milk of each cow in the herd himself for a certain period. This will interest the dairyman because he would like to know definitely which cow is actually giving the most milk and butterfat, although it is likely that he has never taken the trouble of finding out for himself. With a record of each cow's production for a certain period it will be easy to show the importance of complete individual records since the surprises in the first test will show that only individual records can be depended on. The instructor will then probably discuss the methods of feeding and the importance of feeding a proper ration and perhaps will figure a balanced ration for part or all of the animals in the herd. He will also weigh the food for each cow and compute its cost. This he will compare with the value of the milk produced and right here is where most dairymen will become interested. They will for the first time realize that they are conducting an important business to which should be applied business principles and they may for the first time understand their chosen calling in its true light. If some cows can not produce at a profit they are likely to be quickly discarded and a search made for profitable animals to take their places. This should lead to the establishment of a cow testing association in each community. It is quite likely that sooner or later it will be discovered that the only way to secure the necessary number of desirable cows is to breed them. Here again the instructor will have an opportunity to assist in selecting the cows from which to breed and in this he can perform a real service. He will also help in selecting the sire, for by this time the scrub bull will be no longer desired. When the patrons understand the need of better cows and find a reasonably sure way of getting them by breeding they are sure to become more interested in all branches of their new business proposition and it would be strange indeed if they do not seek the advice of the instructor in the matter of securing cheaper feeds. Many will decide that a silo is necessary in order to provide succulent food for winter. The instructor will be familiar with the various kinds of silos on the market and be prepared to assist the patron in making his selection. He will also probably supervise its construction for him in order to prevent mistakes being made which might interfere with its success.

When several patrons become interested in keeping herd records and the proper selection, breeding, feeding and handling of their animals, other patrons who failed at first to become enthusiastic over the proposition will see the advancement that their neighbors are making and realize that they are losing some valuable assistance which would be theirs for the asking and the most of these will take up this work immediately. When producers become thoroughly interested in the problems already referred to they will do a lot of thinking for themselves and not depend so much on the instructor for everything they wish to know. They will soon realize that high class animals must be kept in better stables and it is likely that many barns will be remodelled and perhaps several new ones built and other needed improvements made. In this work the instructor can again make himself very valuable. There are many other things that this instructor can do but if he is able to develop an interest along the lines indicated with a few patrons of each cheese factory his work will be a success for as soon as the seed of improvement is planted and a proper start made it is sure to gain such headway that it will be carried along by its own mo-



mentum. When one's interest and enthusiasm is aroused it is only necessary to show that the plan is feasible and successful from a financial standpoint.

### SWISS CHEESE MAKING.

**Mr. Joseph Willimann, Monroe, Wisconsin.  
Cheese Factory, Dairy and Food Inspector.**

I shall take a positive stand against the prevailing opinion, that the imported Swiss cheese is better than our domestic Swiss, for it is not, providing we proceed in the process of making and curing the same, as the fundamental principles of Swiss cheese making require. We know, a cow fed on alfalfa, good grain and pure water will give a good milk, which of course, is the first essential part to make good Swiss cheese. With such milk the old country Swiss maker begins, but for financial and technical reason, he skims a portion of the cream from that milk, which we do not, and have therefore a point in favor of a better product. When I say financial and technical reason, I mean by extracting one half to three quarters pound butter per hundred pounds milk. Any of you can see the financial gain in that process. When I say technical, I mean the texture gets more tensile strength, which is really needed, to open Swiss cheese to such extent as the imported Swiss is opened, and of course, the people are of the opinion that Swiss cheese must have big eyes or holes as they call them and a lot of them. Not that the cheese is any better for that reason, but the point is, to make a big show with a little quantity and yet get a lot of money for it.

Well, I stated the maker in Switzerland starts his Swiss with a good clean milk, makes the cheese with the best of scientific and practical methods, brings it to a cool cellar, salting it daily for about four weeks, when he removes it to a warm room for fermentation, until satisfied that it is open enough for export market. Then it is removed to a cool room again and is continually salted until it is five to six months old, when the wholesale merchant will buy it, remove it to his store room, where again it will be continually salted, until it is salt ripe, which means that it has that oily salt water in the holes, a flavor peculiar to Swiss cheese, which bites a trifle on your tongue when you eat it. And last but not least, it melts between the teeth.

### Swiss Cheese in Wisconsin.

Now, let us see how we make Swiss in Wisconsin—it is possible for us to have just as good milk to begin with here as anywhere under the sun, and even better than in Switzerland, which I will explain. We got the good milk to start with, but I must admit, while we have a good lot of number one Swiss cheese makers, we also have a good lot, who lack scientific and technical training, although we have the finest dairy school in the United States at Madison. We see further that our good makers, do not adhere to the well known laws and principles of Swiss cheese making. While they take a creditable, well-made cheese to the cellar, they start the gross neglect as soon as they get it down cellar, by omitting the daily salting, which hastens fermentation and that is just what they want, so they can get it on the market in from four to six weeks. In capacity of foreman of a large wholesale firm, Swiss cheese only thirty days old passed through my hands going to the consumer. They were what you call open, the texture fairly tender and white, but this unnatural condition of cheese only four weeks old was brought about by the starter or "sur." But at the cost of the aroma and flavor which was sacrificed, as there is not a trace of flavor or aroma which an imported Swiss cheese has. And do not forget the cheese eating public is not long in deciding which cheese they will eat when you put before them the imported or at present our Wisconsin Swiss. Can you, fellow milk producers, cheese makers and

cheese dealers in the face of this condition go on in a way which is harming an industry of such importance, until the other fellow gets the whole field? I say, no, a thousand times no. To my understanding this is beyond American business ability to let any one else from abroad capture our home market, simply because someone is napping.

I say some of you must start the ball a rolling by ripening some of our Wisconsin Swiss like they do across the sea and establish the fact that we can make just as good Swiss in Wisconsin, as anywhere under the sun, and I say again, even better. Because we have just as good water, and the lime stone subsoil which is known to impart the superior flavor to all dairy products, the clover, blue grass and alfalfa and more fat, the makers in Switzerland are finding it more difficult to produce number one Swiss cheese on account of so much commercial fertilizer and commercial feed used, which has very detrimental effects on cheese making.

In conclusion, it seems to me, if they over there on land nearly double the price of our land, can buy milk, make cheese, cure it for about a year, which implies great capital, then pay transportation and duty to America, and still realize a good profit, then why cannot we equal this foreign product in quality, and in consequence realize a greater profit?

## WHEY SEPARATION AT CHEESE FACTORIES

**Prof. G. H. Beydendorf, University of Wisconsin**

In discussing this subject it is my purpose first to call your attention in a general way to the losses of the fat in the whey—second to take up the subject of recovering this fat, and third to give my views as to how the proceeds can be divided equitably so that the maker and the patrons will each get a just share of the gross proceeds arising from the sale of the whey cream.

The losses of the fat in the whey vary with the kind of cheese manufactured. Where the so-called American cheese is made the losses in the whey approximate close to .3 of one per cent during the entire year. At certain seasons of the year, in June for instance, the loss may be rather low while at other times the loss may be so high as .4 to .5 of one per cent. Some investigators have found the average loss in the whey during the entire season as high as .36 of one per cent.

Many cheese makers do not appreciate the richness of drippings and merely test the whey at the time of dipping. An observation made in Sheboygan county by careful investigators showed that the drippings from the milled curd of a 5000 pound vat of milk amounted to 58 pounds testing 11.0 per cent fat. This no doubt was an exceptional case but to get from the same amount of curd 40 pounds of drippings testing 8.0 per cent fat, is not unusual.

A friend of mine in Manitowoc county reported that during June he was able to recover 2.52 pounds fat per 1,000 pounds of milk; during December 3.94 pounds; during the entire season the average received was 2.7 per 1000 pounds of milk or .3 of one per cent fat in the whey. This young man made these observations in a factory operating on the "pound for 10" system and it was to his interest to keep the losses down as much as possible. Our observations at the Dairy School corroborate these figures as being very conservative.

Those of you acquainted with the manufacture of Swiss cheese appreciate the enormous amount of fat lost in the whey where Swiss cheese is made. The high temperature employed, the fine cutting, and the rough treatment that the curd receives necessarily cause great losses of fat in the whey. Such whey tests .7 to .8 of one per cent and even up to one per cent, or in other words from 20 to 30 per cent fat delivered to a Swiss cheese factory goes into the whey and is lost unless an effort is made to recover the same.

### Recovering of Fat

Therefore the recovery of this amount of fat in the cheese factories of this state is a matter of considerable importance. Conservative estimates of the amount of cheese made in Wisconsin during the past season place it at over 160,000,000 pounds. Assuming that it took 10 pounds of milk to make one pound of cheese we have the enormous amount of 1,600,000,000 pounds milk used in the process of manufacture. Again assuming 90 pounds of whey as a by-product per 100 pounds of milk used, we are safe in estimating that the total whey amounted to 1,440,000,000 pounds. Now using the very conservative figure of .3 of one per cent fat lost we get 4,320,000 pounds of fat which could have been recovered. Personally I believe it amounted to over 5,000,000 pounds on account of the great Swiss cheese industry in this state and the high loss of fat in the whey produced from this type of cheese. At the very conservative estimate of 25 cents per pound, which is none too high, the value of this fat would be over one million dollars—a sum certainly worthy of the serious attention of this association.

The problem of recovering the fat otherwise lost is not as difficult as formerly believed. There was a time when the installation of a separator as a part of the equipment was looked upon as an experiment. That time has passed. A good whey separator is now regarded as part of the equipment of an up-to-date factory. American cheese makers and foreign cheese makers testify to the profitableness of using them. Cheese makers in American factories who have kept accurate data will agree that by careful work they can recover about three pounds of fat per 1000 pounds of whey on the average during the entire season, providing of course that a good whey separator is used. This whey fat in the shape of whey cream finds a very ready market in Wisconsin when it is properly cared for.

The care of whey cream offers no unusual difficulty; it should test from 45 to 50 per cent fat; it should be cooled immediately and should be delivered at least every other day. Such cream will bring the highest market price. A friend of mine near Spring Green receives 2 cents above Elgin for such cream during the hottest month of the year. Of course if a cheese maker skims a thin cream, does not cool it properly and delivers it only twice a week, he can not expect a good price. Such cream acquires a whey flavor which is very objectionable and makes it impossible to manufacture first class butter from the cream. Incidentally I may mention that this factoryman lives eleven miles from the station but he found it profitable to deliver the cream frequently.

It may be argued by some patrons that whey which has been separated has no feeding value and is not worth hauling home. Such patrons however are badly mistaken for the food value of the small amount of fat removed from the whey can easily be replaced by adding a pound of cornmeal to each 100 pounds of whey. The value of whey as a food lies chiefly in its albumen and its milk sugar content and not in the small amount of fat which it contains. While it is true that the fat it contains has some feeding value we must remember that butter fat is worth from \$500 to \$700 a ton and hence is too high priced to feed to hogs profitably.

Then there is another point well worth considering and that is where the whey is not separated the fat will rise to the surface and form a scum, making it not only difficult to keep the tank clean but also difficult for the patrons to keep the cans sweet and clean. For this reason many of the patrons try to avoid taking home the scum of the tank—hence in many cases the fat is absolutely lost.

### Pasteurization

While making arrangements to separate the whey many cheese makers arrange to use the exhaust steam to pasteurize the same. This calls for very little additional expense and certainly is very commendable. Pas-

teurization will not only tend to prevent the spreading of tuberculosis among the farm animals in the neighborhood, but the whey will get back to the patrons sweet, which they are sure to appreciate. The cheese maker also is benefited because the labor of cleaning the whey tank becomes a pleasure rather than an irksome task.

Cheese makers who have tried separating and pasteurizing the whey report that the patrons invariably like such whey a great deal better than the whey which has not been heated and separated. These makers claim that they get a better grade of milk following the introduction of these methods on account of the patrons not taking home the sour whey in the milk cans. This advantage alone is sufficient to pay for the trouble of separating and pasteurizing the whey.

### Cost of Operating Separator

Let us briefly look at the gross proceeds derived from the sale of whey cream and the cost of operating a separator. As stated previously the average amount that may be recovered in the whey at an American cheese factory will approximate very close to 2.7 pounds of fat per 1000 milk, which for a factory receiving 5,000 pounds of fat would be about 13.5 pounds of fat per day. This cream if properly cared for and delivered frequently will sell for a good price. The average price received by one cheese maker from May 1 to December 1, 1912, was 30 cents per pound fat. He received two cents above Elgin, but had to pay the transportation charges—which amounted to one-half to two-thirds cents per pound fat. On the basis of 28 cents or Elgin, 13.5 pounds of fat would be worth 3.78 cents or 76 cents per 1000 pounds of milk. In the case of a Swiss cheese factory the amount would be so much greater that one wonders why there should be the least hesitancy in installing a separator to recover the fat lost. Swiss cheese makers may argue that they do recover some of it by allowing the fat to rise and then skimming it by hand.

There are two very important reasons why the hand skimming method is a bad practice: First, the method is very wasteful, particularly where "cold skimming" is practiced. Professor Farrington some eight years ago obtained data showing that .3 per cent fat is left in the whey after skimming, which as was shown, is the average amount left in the whey at American cheese factories. In other words, one out of every three pounds of fat in the whey is lost by this method.

The second objection to "cold hand skimming" is the fact that the cream is of poor grade, it will test low and the acidity is so great that salable butter cannot be made from it, hence the cream will not bring the price it should.

Where "hot skimming" is practiced the results are somewhat better, but there is considerable extra labor involved. The cream is sweet but very thin. No doubt this method is to be preferred to the "cold" method, but neither the hot nor the cold method can begin to equal the good results obtained by a modern whey separator which will deliver a cream testing 45.0 to 50.0 per cent fat—a point which must not be overlooked if the best results are desired.

The cost of installing a good separator with complete outfit depends greatly on the equipment of the factory. As a rule \$450 to \$500 will fix a factory up very nicely. This will not, however, supply the engine and the boiler. Steam turbine separators appear to be popular on account of requiring less room, ease of operating, etc.

As to the fuel required to separate, let me refer to an investigation made in Sheboygan county where whey butter was made. (I obtained the following data from Cir. 161, B. A. I. Department of Agriculture.) The coal was carefully weighed and it was estimated that the cost of the fuel used to separate the whey and to make the butter amounted to 1½ cents per pound of butter. A steam engine was used at this factory. Assuming that it costs the same to separate one pound of fat, we would have in a 5,000 pound factory, 13.5 pounds fat (the whey fat recovered



per day) times  $1\frac{1}{2}$  cents, or close to 20 cents for the cost of the fuel. At the rate of \$5 per ton this would mean 80 pounds of coal per day, which I think is a very liberal estimate of the amount of coal which would be used. This is at the rate of 4 cents per 1,000 pounds of milk. It may be possible to reduce this by using a gasoline engine, many cheese factories being already equipped with them.

### Depreciation and Interest.

The question may be raised as to the depreciation of the plant and the interest on the investment of \$500. I think we can safely assume the following:

Interest on investment, \$500 at 6 per cent.....	\$ 30.00
Depreciation 10 per cent.....	50.00
Oil.....	5.00
Repairs.....	15.00
Odds and ends such as insurance, etc.....	5.00

Total for one year.....\$105.00

Where a season's run extends for seven months, we would have \$105 divided by 7, which would give us \$15 per month, or 50 cents per day, or 10 cents per 1,000 pounds of milk. I do not think that anyone would question these figures as being too low to cover depreciation, interest on investment, etc.

The question now arises, what share of the gross proceeds from the sale of the cream shall go to the cheese maker? What part shall go to the patron? And here lies the obstruction that is preventing to a great extent the rapid introduction of the whey separator into our factories. I do not see why there should be any difficulty whatever. Before installing the machinery to do this work it is well to have a clear and definite understanding with your patrons.

I note that in many factories one-half of the gross receipts goes to the patron and one-half to the maker. In some factories the makers allow the patrons 3 or 4 cents extra per 100 pounds of milk, this amount being about one-half the gross proceeds.

Many patrons object to these methods basing their arguments on the suspicion that the cheese maker may be manipulating his curd, or by careless work increase his share of the receipts.

### Just to All Concerned.

I believe that the following method is fair and just to all concerned: That the patrons purchase and install the separator without expense to the factory man, except such labor as would be required to put it in place (arrangements to this effect can probably be made with any supply house); the patrons' proceeds of the first cream check received to pay for the installation of the equipment; when paid for the equipment of this part of the cheese factory to belong to the patrons, the cheese maker to receive as his share, 25 cents per 1,000 pounds of milk received at the factory; the cheese maker to pay for his fuel, oil, and keep the machine in repair. In a 5,000 pound factory he would receive \$1.25 per day for his work and the expense connected with it. The cost of fuel, oil, and repairs ought not to exceed 25 cents per day, leaving him \$1 for his additional labor, which I believe to be fair compensation.

Where 8,000 pounds of milk is received the cheese maker's part would be \$2. It would always be an easy matter to compute the cheese maker's share at the end of the month. If it should be impossible at any time for the cheese maker to separate the milk it would only take a few minutes to make an adjustment. The patrons would also know just how much they received each month from the sale of whey cream. Above all there



would never be the least friction or suspicion as to the cheese maker increasing the losses in order to get an increased pay check. It would be to his interest to keep the losses to the minimum in order to get a good yield of cheese. He would also be just as careful to receive good milk as before for he would continue to work for a good yield and not for the losses in the whey.

It may be argued that 25 cents per 1,000 pounds of milk is not enough, but when one stops to consider that he has no money tied up on account of these new methods, that the additional work is not very much, that part of this additional work is offset by the less amount of work required to clean the whey tank, we must agree that this is fair compensation for the cheese maker.

Again, some argue that it would be better to charge one-fourth cent per pound for making, which would net the cheese maker about the same per 1,000 pounds of milk, but offer several objections. First, in case the whey is not separated it would be somewhat more complicated to calculate the amount due the maker. Second, in case of competition there would be a tendency to commence to underbid and drift back to the same price for making that was paid before the separator was installed. I believe the proceeds from separating the whey and the charges for making the cheese should be kept separate as they represent two lines of work. In case the cheese maker has to put in the equipment I feel that he should be allowed 10 cents more per 1,000 pounds of milk to compensate for the depreciation and interest on the investment.

On the basis suggested we would have the division as follows, in case 70 cents were the gross receipts for the whey fat per 1,000 pounds of milk:

Cheese maker.....	25c
Owner of equipment.....	10c
Patron.....	35c
	<hr/>
	70c

I favor the patrons' owning the equipment because within a short time they will have the machinery paid for and they will receive about 1 cent extra per 100 pounds of milk delivered. If for any reason the market price of fat goes down the cheese maker will receive the same amount of money, and it is right that he should, for the amount of work and the expense remains the same. The one argument against the method of dividing the proceeds as I suggested is the liability of the maker becoming shiftless and not taking care of the cream so that it will not bring a good price. Such a maker, however, would be careless in other respects and competition would soon compel him to brace up or lose his patrons, or his job.

### WISCONSIN DAIRY SHOW.

W. G. Bruce, secretary of the Merchants Manufacturers Association, Milwaukee, addressed the convention regarding the so-called Wisconsin Dairy Show, asking the association's endorsement. Charles Hill of Rosendale followed, saying that there should be no conflict between the Milwaukee show and the National Dairy Show. He thought the Wisconsin cheese makers ought to be in the National Dairy Show, because Wisconsin is the leading cheese state in the world, 45 per cent of all the cheese being produced in Wisconsin, having passed New York in that time, and Wisconsin cheese excels in quality the cheese made in any other state in the Union.

On motion of Mr. Ubbelohde, the following resolution was adopted:

RESOLVED, That we, the Wisconsin Cheese Makers Association, heartily endorse the holding of an annual Wisconsin Dairy Show, and for that purpose respectfully petition the state legislature to grant a yearly appropriation of \$15,000 for its

aid and support, to the end that greater efficiency and higher standards may be fostered in the dairy industry and that the prestige and reputation of dairy products of the State may be promoted and advanced.

### OLEOMARGARINE BILL.

The following resolution was adopted:

RESOLVED, That this association condemns the Leaver Oleomargarine bill now before the House of Representatives as being unfair and detrimental to the dairy interests of the United States, and that we do hereby heartily endorse the Haugen Oleomargarine bill now before the same body and earnestly and unanimously recommend its passage.

### SECRETARY'S REPORT, U. S. BAER.

Secretary Baer reported the association's most successful year. In all localities the make of all kinds of cheese had been superior to that of former years. He also reported the request of the State Board of Public Affairs for suggestions for the improvement of reports, the reduction of the cost of printing, a report on the work of the association and what it had accomplished, covering a period of eight or ten years. Mr. Baer's report also included a letter from Secretary of State Frear, chairman of the Printing Board, saying that under the law certain matter would have to be stricken out of the manuscript of the proceedings, or greatly condensed.

### TREASURER'S REPORT.

Receipts:		
Jan. 10-12.	Balance carried forward.....	\$436.33
Jan. 12-12.	Memberships 20th annual meeting.....	251.00
Feb. 13-12.	Memberships by A. T. Bruhn.....	6.00
April 30-12.	Memberships by U. S. Baer.....	35.00
April 30-12.	80 pro rata entries at \$2.....	160.00
July 3-12.	State Treasurer's check.....	600.00
July 6-12.	Contributions from various sources, Feb. 1 to June 1..	87.00
Dec. 16-12.	Check for advertisements (not all handed over).....	680.00
	Total receipts.....	\$2255.33
	Total disbursements.....	1668.41
	Balance.....	\$586.92

### ELECTION OF OFFICERS.

Officers were elected as follows:

President, A. T. Bruhn, Madison.

Vice President, J. J. Reid, Oconomowoc.

Secretary, U. S. Baer, Madison.

Treasurer, T. A. Ubbelohde, Glenbeulah.

Director for three years, Jacob Karlin, Jr., Monroe.

### LIST OF PRIZE WINNERS.

#### American Cheese.

W. J. Schoepke, Clintonville.....	96.66 First Prize.
P. H. Greiner, Little Chute.....	96.50 Second Prize.
A. C. Werth, Appleton.....	96.00 Third Prize.

**Brick Cheese.**

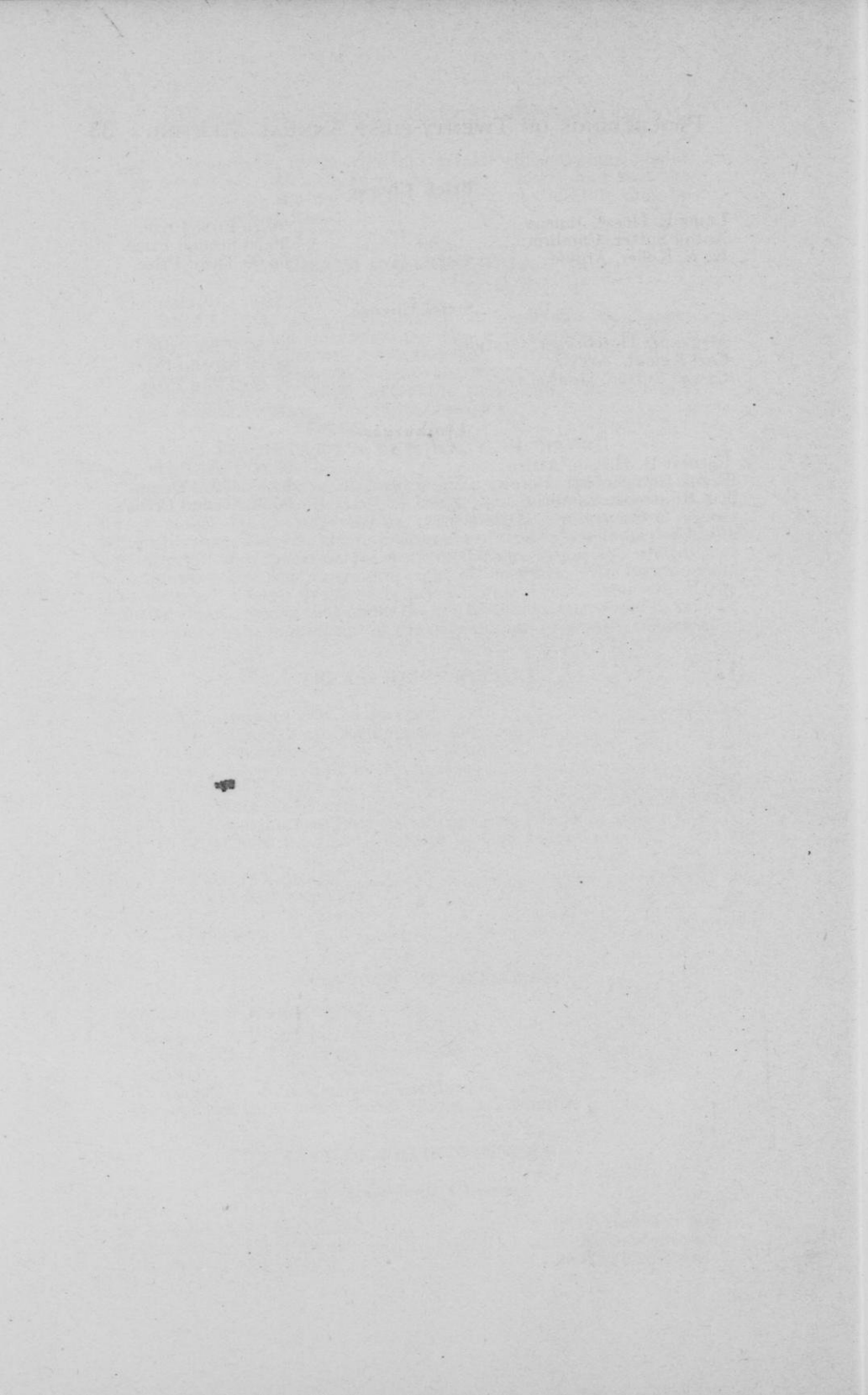
Louis E. Hasse, Juneau.....	96.75 First Prize.
Anton Sutter, Cambria.....	96.50 Second Prize.
K. A. Koller, Argyle.....	96.00 Third Prize.

**Swiss Cheese.**

Alexander Hoerburger, Gratiot.....	97.50 First Prize.
Carl Keusch, Argyle.....	96.00 Second Prize.
Casper Sutter, Monroe.....	95.25 Third Prize.

**Limburger.**

Earnest R. Haesig, Attica.....	95.50 First Prize.
Frank Ehinger, Mt. Horeb.....	94.25 Third Prize.
Ed. Buntrook, Cambria.....	95.25 Second Prize.



# **Wisconsin Cheese Makers' Association**

## **TWENTY-SECOND ANNUAL MEETING**

**Milwaukee, 1914**

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### **OFFICERS.**

J. J. REID, President, Oconomowoc, Wis.  
A. T. BRUHN, Acting Sec'y, Madison, Wis.  
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E. L. ADERHOLD, Neenah, Wis.  
FRED MARTY, Chicago, Ill.  
ALEX. SCHALLER, Barneveld, Wis.

### **Superintendent of Cheese Exhibit.**

J. W. CROSS, Milwaukee, Wis.

### **Official Organ.**

Sheboygan County News & Dairy Market Report, Sheboygan Falls, Wis

The twenty-second annual meeting of the Wisconsin Cheese Makers' Association was held in Milwaukee, January 7, 8 and 9. E. L. Aderhold acting as chairman, owing to the illness of President Reid. In response to the address of welcome by James P. Keenan, secretary of the Citizens' Business League. H. J. Noyes spoke of improved conditions, saying cheese of all varieties now made in Wisconsin stands first in quality and that there are in Wisconsin 2,200 cheese factories, the state making nearly or quite half of all the cheese in the United States. Regarding filled cheese, which Mr. Noyes also mentioned, the chairman referred to the filled cheese bill which Mr. S. A. Cook of Neenah so materially aided in getting through congress, taxing filled cheese 10 cents a pound and which had brought millions of dollars into this state because the state got its reputation for cheese where it ought to be. He announced that



Mr. Cook had offered premiums for American cheese, Swiss cheese, brick cheese and limburger cheese.

C. H. Everett of Racine spoke briefly of the improvements brought about by legislation and by the association. It was up to the cheese makers he said, to make a high quality of cheese to maintain a high standard of quality throughout the world.

The chairman appointed as a committee on resolutions, H. J. Noyes, H. M. Scott and T. A. Ubbelohde, after which there was an inspection of cheese exhibits.

### COUNTY CHEESE MAKERS' ASSOCIATION.

H. M. Scott of Waldo, in an address on County Cheese Makers' Associations, told of the organization of the Sheboygan county cheese makers last year with the hope that other counties might follow suit and later affiliate for a common cause; also unite in securing needed legislation. In the discussion that followed, M. H. Meyer of Madison said he thought in county associations those could be reached who could not now be reached; that they might improve the market and bring up the standard of the counties, enabling the cheese maker to get something besides his living.

Mr. Scott said they wanted organizations so they could send representatives to Madison who would be listened to.

Mr. Noyes: I think perhaps that the farmers haven't realized how the material that the cheese makers use has advanced. Just a few years ago I was buying Daisy boxes for  $5\frac{1}{2}$  and 6 cents. They have now risen to 9.,  $9\frac{1}{2}$  and 10 cents. You can hardly name anything that has not risen in price. We cannot make cheese now for what we did ten years ago. Farmers are getting twice as much for their cheese as they did at the time these prices prevailed. I have received a cent and a half for making twins, but I bought my boxes just as I have told you. Twin boxes I bought for 6 cents and I can remember when we got  $2\frac{1}{2}$  cents for making.

Mr. Scott: Last spring in Sheboygan county we had no organization. We quarreled with the buyers and passed resolutions and by-laws. The cheese makers of Sheboygan county have done all they could to get the farmer every cent the cheese was worth. Some of them have made mistakes they need not have made if they had worked together harmoniously, but they didn't. In Sheboygan county the cheese makers own the factory. I believe the farmer gets more for his product year in and year out than he would if the farmers owned the factory. I believe that the man who has got his life savings in a business, as many cheese makers have, all he has in the world tied up in a little building, is working and studying all the time to make that business as profitable for himself and his patrons as he can. He takes more interest than any cheese maker that is working by the month.

Mr. Fred Marty, Chicago: By all means let the farmer have an interest in the cheese factory and put as little as possible on the cheese maker. If anyone of you individually here should get in there and undertake to buy a cheese factory, become the sole owner of that factory, you would be the sole owner minus a patron. The farmer if he has an interest, be it only one dollar, in any concern will watch it and watch out for the future welfare of the industry.

The patron of the limburger cheese factory works the factory, but the packing has been shoved over onto the cheese maker. From \$1.60 a hundred for limburger we have cut it down to \$1.20 and \$1.25. The packing material has advanced. What does the cheese maker do? He buys the cheapest he can get. He has got to do it to exist. He is buying the cheapest cheese box he can get, the cheapest manila paper. In order for limburger cheese to retain its keeping quality it should have at least a tinfoil to cover the whole cheese in place of one to cover two-thirds of it. The cheese makers are buying 7x14 inch tinfoil where they should buy

8x15 $\frac{1}{4}$  inches. They are buying the cheapest material. What is the result? Look at our cheese. You can buy any quantity in Chicago today from 7 to 10 cents a pound. The cheese itself is excellent in quality, but it is very deficient in packing. New York cheese, for example, sold today as high as 17 cents wholesale, while Wisconsin cheese is selling today at from 7 to 10 cents a pound. What is the reason? You find that in the New York limburger cheese you have a nice oiled paper covered over the cheese and nice parchment next and a full piece of tinfoil covering the whole package. Practically 50 per cent difference in the price today, all due to the packing only.

Mr. Chaplin: I think that Mr. Marty has answered his own question. This is all done because the farmers own those factories. If the cheese maker himself had owned that cheese factory he would have seen that that kind of work couldn't be done, because that is against his own interest.

### MAKING THE CHEDDAR TYPE OF CHEESE FROM PASTEURIZED MILK.

Dr. J. L. Sammis, University of Wisconsin.

There has been more or less interest in the making of cheese from pasteurized milk in different parts of the world for many years. Efforts have been made in Europe and America to see if cheese could be made out of pasteurized milk. Three years ago, at this convention, attention was called to the fact that the dairy department of the state university, and the dairy division of the United States Department of Agriculture were conducting experiments in cooperation at Madison, to find out how to make cheese of the cheddar type from pasteurized milk.

The method devised as a result of these experiments has been given a thorough trial during the four seasons of 1910 to 1913. About 30,000 pounds of cheese have been made from pasteurized milk by this method and sold in small lots to wholesale and retail dealers in all of the leading cheese markets in the country, from New York to San Francisco. During 1912 and 1913, in order to try the process on different milk supplies in different parts of the state, the pasteurizer and other special outfit required was transferred from Madison to cheese factories at Spring Green, De Forest, Sheboygan Falls and Waldo, in succession. At these places pasteurized milk cheese was made from part of the milk daily by A. T. Bruhn, who is well known to all of you, while the rest of the milk was made up in the regular way by the regular factory cheese maker.

During these three years of trial, the exact yield of cheese obtained each day from pasteurized milk and from raw milk was carefully determined by weighing the milk and the cheese daily. The increased yield of cheese obtained more than pays the cost of the process. Also the cheese have been scored and examined by various cheese judges, and both their quality and shrinkage determined after curing and storage in warm climates, and in cold storage. The detailed report of most of this work had been published in Wisconsin Research Bulletin No. 27, and reprinted as Bulletin No. 165 from the Bureau of Animal Industry, Washington, D. C.

Anyone interested may see the process in operation and obtain instruction in its use at the special course for creamery and cheese factory managers, given at Madison, February 2 to 7, 1914.

This afternoon I wish to talk to you briefly, first, about the reasons why milk should be pasteurized for cheese making, second how cheese can be made from milk after it has been pasteurized, and third, some of the results which have been recorded as to the extra cost of making cheese by this process, the increased yield of cheese which more than pays for the extra cost, the improvement in quality of the cheese as a result of pasteurization of the milk, and how the profits from the making of pasteurized milk cheese may be distributed.

### Pasteurization of Milk.

The pasteurization of milk consists in heating the milk up to a scalding temperature, usually between 140 and 170 degrees F., keeping it hot for a definite length of time and then cooling it promptly. The effect of the heating is to kill nearly all of the bacteria that are present in the milk, including those that cause milk to become sour, and also the kinds of bacteria which are the cause of diseases such as tuberculosis, typhoid fever, dysentery, etc., in men, women and children.

A large part of all the milk sold to consumers in Chicago, Milwaukee and other large cities is pasteurized either before or after it is bottled. In 1908, the Chicago ordinance was passed requiring that milk sold in that city must either be drawn from tuberculin tested cows, or else pasteurized, so as to make it safe for use as food. In other cities where pasteurization is not required by law, milk dealers often pasteurize the milk to improve its keeping quality, as well as to free it from disease germs.

Cream is often pasteurized before it is churned, to improve the flavor of the butter. Even skim milk and whey should be pasteurized at the factory, in order not to distribute disease germs, such as those that produce tuberculosis or contagious abortion from one herd of cows to all the rest at the factory. Pasteurization, properly conducted, can be depended on to kill at least 99 per cent of all the bacteria in milk.

Every cheese maker knows that gassy cheese and barnyard flavors, and most other cheese troubles are caused by harmful bacteria that get into the milk at the barn, when it is not properly taken care of. It has been proven that 95 to 98 per cent of all the bacteria in the milk are retained in the curd, and 2 to 5 per cent escape in the whey from the cheese vat.

A great many people in different parts of the world have recognized that it would often be a great advantage to use pasteurized milk, if possible, for cheese making. There is very little difficulty about pasteurizing milk at a cheese factory, but pasteurized milk behaves differently from raw milk in the cheese vat and requires different handling.

The first difference noticed is that the pasteurized milk thickens slowly and poorly with rennet, giving a very loose, fragile curd, but this difficulty is easily overcome by adding a little hydrochloric acid to the milk before adding the rennet. This acid takes the place of lactic acid at this stage of the process, and the curd obtained in twenty-five minutes with rennet after adding the hydrochloric acid is even in better condition to cut and will stand handling and stirring with less loss of fat than an ordinary curd made from unpasteurized milk. As soon as the curd is cut, the agitator can be started in the vat, and when the whey is drawn, its fat content will average about 0.15 or 0.16 per cent from day to day. This is only about half of the amount of fat lost in ordinary cheese factory whey, which usually tests 30 to 35 per cent fat or more. This saving of fat increases the yield of cheese, and one advantage of this process is that the yield of cheese is always slightly greater from pasteurized milk than from raw milk.

Curds from pasteurized milk have a tendency to retain more moisture than ordinary cheese curds. The higher the temperature to which the milk was heated in the pasteurizer, the more moisture will be retained in the curd.

By regulating the temperature of the milk in the pasteurizer at 160-165, or in some cases 170 degrees F., and following the directions given for this process of making cheese, the cheese retains only a very little additional moisture, which with the saving of fat mentioned above, helps to increase the yield. On the average of all trials made during the past three years, the yield of cheese from pasteurized milk is about 5 per cent greater than from raw milk. In other words, 1000 pounds of raw milk which would yield 100 pounds of ordinary cheese, will yield 105 pounds of pasteurized

milk cheese by the new process. Increasing the fat and moisture content of the cheese by pasteurization affects its composition as shown in the table on the lantern slide.

**Effect of Pasteurization on the Composition and Weight of Cheese.**

	Cheese from 100 lbs. of raw milk.		Increase by Pasteurization.	Cheese from 100 lbs. of pasteurized milk.	
	Composition	Weight	Lbs.	Weight	Composition
	%	lbs.		lbs.	%
Fat.....	38.59	3.859 plus	.154 equals	4.013	38.07
Moisture.....	31.28	3.128 plus	.391 equals	3.519	33.37
Casein, etc.....	30.13	3.013		3.013	28.57
Totals.....	100.00%	10.000 lbs.	.545 lbs.	10.545 lbs.	100.00%

Another noticeable effect of pasteurization is that the curds from pasteurized milk require about three to six days more time to change from "curdy" to "waxy" than do raw milk curds. The color of the pasteurized milk cheese is not quite so clear an amber tint as that of the raw milk, suggesting the appearance of a cheese that is slightly color cut. This appearance and the lack of flavor in the green cheese due to slower curing, might cause anyone unaccustomed to these cheeses to suppose them to be acid or sour cheese. However, this is not the case, and as curing advances, the flavor no longer suggests too much acid, although the color remains for a time slightly faded, as a result of the pasteurization process. At the age of one month or afterward, it is doubtful if anyone excepting an expert judge of cheese could distinguish a pasteurized milk cheese from any other well made American cheese.

Pasteurized milk cheese kept in storage for six months to one year have a cleaner, milder flavor than raw milk cheese made from the same milk supply. The advantage of pasteurization lies not in the production of a cheese of different type from the cheddar, but mainly in the superior sanitary quality of the pasteurized product; also in the increased yield, which more than pays for the cost of pasteurization; and in the avoidance of losses in yield and quality from over-ripe or gassy milk during the summer season.

The quality of pasteurized milk cheese and of raw milk made on fifty-three days during 1911 was carefully determined after curing at Madison by expert cheese judges, and the results, shown in the lantern slides, show that the quality of the pasteurized milk cheese is much more uniform from day to day than that of the raw milk cheese. Also the pasteurized milk cheese average about  $3\frac{1}{2}$  points higher in total score than the raw milk cheese. The flavor of the pasteurized cheese was superior in practically every day's make, while there was a slight but perceptible difference in texture between the two lots, in favor of the pasteurized. Similar results, confirming these, were obtained with other lots of cheese which were cured in different parts of the country, either in cold storage or in warm southern climates. In all cases, the pasteurized milk cheese showed a decided advantage as to quality.

**How the Cheese is made from Pasteurized Milk.**

Any successful maker of American cheese, familiar with the making of first class starter, and with the Manns acid test, or acidimeter, should be able to learn the new method of making cheese from pasteurized milk in a few weeks or days, by working with an experienced man or at the Dairy school. The acid test is used in testing the milk in the receiving vat daily,



to determine how ripe it is, and how much acid need be added to it after pasteurization so as to bring the milk up to 25 per cent acidity, which is the standard always used. The quantity of acid required will vary from day to day.

The first thing every day is to inspect and weigh in the raw milk as usual at the intake. When the milk is all in the receiving vat, its acidity is determined. The pasteurizer is then started running. Cold water is pumped through the cooling coils. The milk is heated to 165 degrees and cooled again to about 80 degrees or lower. As the milk flows from the pasteurizer into the cheese making vat, a small stream of hydrochloric acid is allowed to run from the glass bottle or wooden keg, shown in the picture on the lantern slide so that the acid is thoroughly mixed with the milk without curdling it in the least. After the milk and the acid are all in the cheese vat,  $\frac{1}{4}$  per cent of a first-class starter is added, and the vat is heated to 85 degrees. Rennet extract is added immediately at the rate of two ounces of extract to 1000 pounds of milk. The vat is stirred for not longer than one minute, and is then left quiet.

With the milk pasteurized at 165 degrees every day, acidulated up to 25 per cent acidity, and  $\frac{1}{4}$  per cent starter added, the milk curdles and the curd behaves in exactly the same manner every day. The cheese maker knows that the milk will begin to thicken just seven minutes after rennet was added, and that the curd will be ready to cut just 25 minutes after adding rennet.

In the same way, every step of the process after the addition of rennet up to the time when the curd is put to press is conducted in a fixed and uniform manner every day, according to a fixed schedule, which is shown in the table.

**Time Schedule For Making Pasteurized Milk Cheese.**

OPERATIONS.	Time between operations.		Time after adding rennet.	
	0 Hours	0 Min.	0 Hours	0 Min.
Adding rennet.....		25 "		25 "
Cutting the curd.....		15 "		40 "
Beginning to heat.....		20 "	1 Hour	0 "
Steam off, at 104.....	1 Hour	25 "	2 "	25 "
Drawing the whey.....	1 "	30 "	3 "	55 "
Milling the curd.....	1 "	0 "	4 "	55 "
Salting the curd.....		20 "	5 "	15 "
Hooping the curd.....				

It is unnecessary for the cheese maker to use the acidimeter on the whey, or the hot iron test on the curd, to tell when it is ready to dip, or mill or salt. Just as soon as the cheese maker has added the rennet to the vat, he can write out on a piece of paper or better on a blackboard that can be seen all over the room the time schedule for the rest of the day's work.

The drying, paraffining and curing of pasteurized milk cheese is conducted the same as for other well made American cheese. However, the pasteurized cheese stand a high temperature with less loss of quality than a raw milk cheese. They can be cured at any temperature between 34 and 75 degrees. At 45-55 degrees, the cheese cure well with a minimum amount of shrinkage and with very little growth of mold. They can be put into cold storage at the age of one week, with excellent results.

Pasteurized milk cheese should be branded at the factory before they are paraffined by rolling the cheese over rubber type set in a board as shown in the figure. The use of such a brand is strongly recommended in order that neither raw nor pasteurized milk may be mistaken for each other.



### Extra Cost of Making Pasteurized Milk Cheese.

A certain amount of extra equipment is needed at a factory where pasteurized milk cheese is to be made. This will include a receiving vat, a pasteurizer and cooler, and a keg or glass bottle with fittings for holding the hydrochloric acid used in the process. It is assumed that the factory has in place a boiler, engine and shaft, and a pump set in a good well. The amount of water which must be pumped every day for cooling the pasteurized milk is about  $1\frac{1}{2}$  to 2 times the weight of milk handled daily. There are several styles of continuous pasteurizers on the market, and all those tried have given equally good results so far as the quality of cheese produced is concerned. The choice of a pasteurizer depends therefore upon its cost and convenience in running and cleaning. By consulting the price-lists of different supply houses, any one can see that the larger pasteurizing machines, coolers, receiving vats, etc., are cheaper in proportion to their capacity than the smaller sizes. From the figures in table it can be seen that the cost of machinery of 6000 pounds capacity is a little over twice the cost for a similar outfit of 900 pounds capacity. If the machinery will be completely worn out in ten years, the owner is entitled to make 10 per cent annual charge for depreciation, and also to charge 6 per cent interest annually on the money invested. These two charges amount to 16 per cent or one sixth of the investment, which the equipment should earn each year in order to pay its own cost.

### Cost of Extra Equipment for Factory Making Pasteurized Cheese.

CAPACITY PER HOUR.	900 lbs.	2000 lbs.	6000 lbs.
Receiving vat.....	\$75.00	\$90.00	\$135.00
Pasteurizer.....	140.00	225.00	325.00
Cooler.....	125.00	175.00	390.00
Acidulator, partly homemade.....	5.00	5.00	5.00
Total.....	\$345.00	\$495.00	\$855.00
16% charge for interest and depreciation.....	55.00	83.00	143.00

To find the daily cost of making pasteurized milk cheese, the daily charge for interest and depreciation, based on a run of 300 days per year, must be added to the cost of coal for heating the milk in the pasteurizer, the cost of pumping water for cooling the heated milk, and the cost of hydrochloric acid for acidulating the pasteurized milk.

The amount of steam required to heat up 1000 pounds of milk to about 170 degrees is a little less than 100 pounds of steam. The amount of coal required to produce 100 pounds of steam in a boiler which is already hot, is about 8 to 15 pounds. This amount of coal will cost at \$5.00 per ton about 4 cents. The water for cooling the heated milk can be pumped at about the same cost. Hydrochloric acid comes in glass carboys, containing 120 pounds each of acid which costs 7 cents a pound. This acid is quite concentrated, and is diluted with water as directed before it is added to the milk. For 1000 pounds of milk there will be needed about .8 pounds of the strong acid which is valued at 4 cents. These figures listed in table show that the extra cost of making pasteurized milk cheese in comparison with raw milk cheese is about 22 to 35 cents per 1000 pounds of milk handled, and the cost is lowest where the largest amounts of milk are handled daily.

**Extra Daily Expense in Making Pasteurized Milk Cheese.**

AVERAGE DAILY MILK FLOW.	900 lbs.	2000 lbs.	6000 lbs.
Interest and Depreciation.....	\$0.20	\$0.28	\$0.48
Coal for heating milk.....	.04	.08	.24
Water for cooling.....	.04	.08	.24
Hydrochloric acid.....	.05	.12	.36
	.33	.56	1.32
Per 1000 lbs. milk.....	.35	.28	.22

The extra cost of making pasteurized milk cheese would be offset by an increased yield amounting to  $1\frac{1}{2}$  to  $2\frac{1}{4}$  pounds of cheese from 1000 pounds of milk, with cheese at 15 cents a pound.

**Increased Yield of Cheese Obtained From Pasteurized Milk.**

The gain in yield of cheese from pasteurized milk in comparison with raw milk made from the same milk supply daily, has been carefully determined on 201 days in all during the last three years, the first year being at Madison, and the last two years at four other cheese factories in succession in different parts of the state of Wisconsin. The number of days make and the average gain in yield of cheese as a result of pasteurization, at each factory, is shown in table. It may be stated also that on no day in the entire series did the yield of cheese from raw milk exceed the yield from pasteurized milk.

**Increased Yield of Cheese From Pasteurized Milk.**

YEAR.	Days' make.	Average Yield of Cheese per 100 pounds milk.		Gain in Yield by Pasteurization.
		Raw Milk. Pounds.	Pasteurized Milk. Pounds.	Per cent.
1911.....	68	9.81	10.34	5.37
1912.....	69	9.75	10.24	5.01
1913.....	18	10.05	10.69	6.39
1913.....	17	9.14	9.59	5.03
1913.....	18	10.41	10.71	2.93
1913.....	11	10.66	11.03	3.51

In every case, the gain in yield was more than sufficient to pay the entire extra cost of pasteurization, and throughout 1911, 1912 and most of 1913, the gain in yield averaged over 5 per cent, or more than 5 pounds extra cheese from 1000 pounds of milk.

On several days when the raw milk curds were gassy, and had to be held several hours longer than usual in the vat to work out the gas, the cheese from pasteurized milk showed no gas, and the yield from pasteurized milk was about 10 per cent higher than from raw milk. While this process of making pasteurized milk cheese gives an increased yield of cheese throughout the season, the advantage of the new process is especially marked during the hot summer season when the raw milk curds are liable to be gassy.

The increased yield of cheese from pasteurized milk is partly due to increased fat and partly to increased moisture content of the cheese as

was shown above. When the raw and the pasteurized milk cheese are kept together in the curing room, and weighed at regular intervals, it is observed that the pasteurized lose slightly more in weight than the raw and the difference in yield decreases but slightly even after three or four months curing at a temperature of 60-70 degrees, the yield of pasteurized milk cheese is yet  $3\frac{1}{2}$  per cent higher than the raw milk cheese. This is shown in table.

**Gain in Yield of Pasteurized Milk Cheese.**

	Cured at 60-70 degrees F.	
	Age of Cheese.	Gain in Yield.
	Days.	%
Green.....	1	5.37
Paraffined.....	7-14	4.76
Cured.....	20-30	4.59
Cured.....	30-60	4.58
Cured.....	60-90	4.38
Cured.....	90-117	3.58

It is very unlikely that any dealer at the present time would store cheese for any length of time at 60-70 degrees, but if the cheeses were to be held for more than a few days or weeks, they would be put into cold storage. Pasteurized milk cheeses, paraffined and placed in cold storage at the age of one day, were found after two or three months time to be yet quite green and curdy and to have shrunk only 3.22 per cent. Put into cold storage at 34 degrees at the age of seven days, the pasteurized cheese were shrunk only 5.1 per cent from their green weight, and were well cured, while duplicate cheese kept in the curing room at 60-70 degrees for the same length of time lost  $11\frac{1}{2}$  per cent by weight.

Where pasteurized and raw milk cheese were shipped to New Orleans and stored there for a month, it was found that the pasteurized cheese lost less in weight than the raw milk cheese, which was found to be due to the fact that the raw cheeses lose a great deal of fat while stored at 75-85 degrees, while the pasteurized milk cheeses lose practically no fat under the same conditions.

### **Business Management of Pasteurized Milk Cheese Making.**

At coöperative factories where the building and machinery as well as the milk and cheese are owned by the patrons, and the cheese maker is paid wages, the profits and the expenses in the making of pasteurized milk cheese are easily distributed among the patrons.

At factories where the cheese maker owns the equipment, and buys the milk from the patrons, the expense of pasteurizing as well as the profits all belong to the cheese maker.

At a great many factories, the cheese maker owns the machinery while the patrons own the milk and cheese, paying the cheese maker by the pound for making the cheese. Under these conditions, the extra expense of pasteurizing would fall almost entirely upon the cheese maker, while the extra profits from the increased yield of cheese would belong almost entirely to the patrons. In order to deal fairly with the cheese maker, the patrons should agree to pay him in addition to his price per pound for making cheese a price per month for the use of his extra pasteurizing machinery and supplies. In the case of a cheese maker who has put in a pasteurizing outfit handling 6000 pounds of milk daily, the cheese maker is entitled to a payment of at least \$40.00 a month extra in addition to his regular price per pound for making cheese. This would leave the patrons

\$60 to \$90, the larger share of the extra profits to divide among themselves.

The manufacture of pasteurized milk cheese pays for itself in increasing yield, and should not cause any increase in the price which the consumer pays for the product.

Before a cheese maker undertakes to make pasteurized milk cheese at his factory, he should be sure that he thoroughly understands the method of making, he should find out exactly what his pasteurizer, etc., will cost him, he should be sure that the factory has a good supply of cold water available for cooling the heated milk and in general the factory where pasteurized milk cheese is to be made be put in good sanitary condition, well painted and kept clean. It must always remain the problem for the individual cheese maker to determine whether it will be profitable for him to undertake to make pasteurized milk cheese under the conditions existing at his factory.

It is believed, as a result of over four years experience with the new process, that it will be found both practical and satisfactory wherever, for sanitary or other reasons, it becomes desirable to make pasteurized milk cheese.

Inquiries respecting this process addressed to the Dairy department, University of Wisconsin, Madison, Wis., at any time will receive prompt attention.

#### Discussion.

Mr. Noyes: Do you lose any casein?

Prof. Sammis: No, we don't lose any casein. You will notice there is the same amount of casein in the pasteurized cheese that there is in the raw cheese. The presence of fat and moisture is higher. You will have 10½ pounds of cheese from pasteurized milk, whereas you would only have 10 pounds from raw.

Secretary Bruhn: That was an exceptionally old cheese, was it not?

Prof. Sammis: I don't know but that it was. That statement is based on some cheese that was made at Madison; the statement that there is 5 per cent gain, is based on three years' experience in different factories.

Mr. Voight: Is not the superior flavor and quality of the pasteurized milk cheese due to the method of making a good deal, the texture as well as the quality of the milk?

Prof. Sammis: I would say that the cheese maker here is a first-class cheese maker, and I am sure that he did the best he could with this raw milk cheese. If there is any difference between the raw milk cheese and the pasteurized milk cheese, it wasn't due to lack of skill on the part of the cheese maker.

Chairman: How do you know how much acid to put in? How do you determine that?

Prof. Sammis: When the milk is all in the receiving vat, we determine this acidity. We bring it to 25 per cent acidity by using hydrochloric acid. When you have studied the matter a little, it is a very simple thing to do.

Mr. Lindow: In a cheese factory they get the vat full of milk and make an acid test and then pasteurize that vat full of milk and run it into another vat?

Prof. Sammis: Yes. The acidity is diluted quite a good deal. It only takes a very little bit of acid.

Member: Will a low temperature prevent curing?

Prof. Sammis: It can be put in 34 degrees for one week and it will come out in fine shape.

Member: In what month do you have those experiments?

Prof. Sammis: All through the season.

Mr. Voight: It would mean an extra man in a seven hundred pound factory?

Prof. Sammis: No, where a man is running a one vat factory, he can do it just as well. The fact that you know exactly when those vats are going to come off each day will be less trouble than in the raw.



Mr. J. D. Frederickson, Little Falls, N. Y. Is there any advantage in adding hydrochloric acid to raw milk without pasteurizing the milk?

Prof. Sammis: No, there isn't, and the reason is this, that no matter if you do put acid into raw milk, the bacteria are there and some days will ripen rapidly and some days slowly. There is no use to add the acid.

Chairman: Does this hydrochloric acid affect fermentation?

Prof. Sammis: You can't find the acid in the cheese if you search for it. Ninety-five per cent of the acid put into the milk goes out in the whey and the cheese cures in the normal fashion with the aid of the bacterial starter you put into the milk.

### APPEARANCE AND FLIES.

Mr. Joseph William Warner, a Swiss, brick and limburger cheese maker, called on for a few remarks, emphasized two points, appearance and flies. "I talk to the farmers in the same way," he said. "I say to a farmer, if you drive through a town and see milk cans standing around the depot and everything in a dirty condition you don't think much of that farm. It is the same way with the cheese factories, and one and all should be cleaning up and improving their appearance."

### USES OF CONCRETE IN CHEESE FACTORY CONSTRUCTION.

#### I. M. Clicquennoi, Chicago.

The buildings which shelter the valuable machinery of a cheese factory are without doubt one of the most important of fixed changes. The requirements of a building for a cheese factory should unquestionably embody first, sanitation; second, fire-proof construction; third, permanence. Concrete has long been recognized by leading engineers to meet all of these, together with having the simplicity of construction, allowing largely of the use of local materials and a small percentage of skilled labor. The choice of finishes and the elasticity of architectural design afforded by concrete permit the erection of a building which will be a credit to the architectural surroundings.

From a sanitary standpoint, concrete by virtue of its composition and its properties is one of the most sanitary building materials in use today. It may be flushed and scrubbed by water with no danger of rotting. It is vermin-proof and rat-proof and there are no cracks, in which dust and refuse may accumulate.

The necessity of a fireproof structure is without doubt very urgent in cheese factory construction on account of their location in rural districts which afford no fire protection. Low fire insurance rates accompany this protection. There are two types of concrete construction well adapted to this type of factory, namely:—concrete blocks and reinforced monolithic concrete. The latter is to be preferred as the whole building is constructed as a unit and a stronger and more fire-proof building is obtained.

As most of the outlying cheese factories require only one story buildings, it is most essential that the roof should be of concrete. A construction of this character incloses all of the machinery of the building in a fire-proof compartment. The boiler room should be inclosed by a concrete division wall, and with the floor and roof of concrete, the danger of fire is reduced to a minimum.

The thickness of the walls will depend largely upon the height and character of the building, but for ordinary one-story buildings an 8 inch wall should be amply thick. Reinforcement in both directions, and especially around the corners is an essential feature. This gives strength and rigidity to the structure, as well as preventing cracks due to expansion



and contraction. All spans such as over doorways and windows must be reinforced with steel. This, of course, is also true of beams, girders and floor spans. In general all reinforcement must be placed near the bottom of the girder, beam or floor. This is true in every case, except where such beams and girders cross a wall or column, in which case the steel is bent up to follow nearer the top.

A good, firm foundation is a fundamental requirement for all structures. Carry the footing well below the frost line, and to a firm, load-bearing soil, such as gravel, or better still, to rock. Failure to do this may result in unsightly cracks due to the settlement of the foundation.

To say that concrete construction is permanent is no exaggeration. If properly constructed, it will last forever increasing in strength with age. Probably the greatest and most unfair argument used against concrete has resulted from the failures on account of its misuse. Usually it is advisable to place such construction in the hands of a competent contractor or parties skilled in mixing and placing concrete. It is essential, too, that the owner should be familiar with the characteristics of good materials and workmanship. Success or failure may result from a careless selection of the former and an improper manipulation of the latter.

### The Materials Used.

The materials commonly used in concrete construction are cement, sand, gravel and broken stone. By sand is meant all the finer particles of the gravel which will pass through a screen having  $\frac{1}{4}$ " openings, and by gravel is meant all the materials which will not pass through a  $\frac{1}{4}$ " screen, and ranging in size not larger than  $1\frac{1}{4}$ ". Broken stone has the same qualifications as gravel in respect to size. Any well known brand of Portland cement may be relied upon. The term "aggregates" is given to the sand, gravel or broken stone. The most important of the aggregates is the sand which, with cement, forms the mortar of the mixture and its fundamental strength. Gravel or stone when mixed with the mortar distributes this strength and increases the volume of the mass of concrete without decreasing the original strength of the mortar below a practical working value. The value of the sand for concrete work depends primarily upon three qualifications, cleanliness, grading of the sand particles, and the strength of each individual particle.

The first qualification, or the amount of clay or silt contained in the sand, should be considered first. It cannot be said that concrete sands must be entirely free from clay. The amount and character of the clay should determine the acceptance of the sand. When clay exists as a coating to the particles of sand, it should be rejected. However, when it exists to a small extent in the form of separate particles and of a silicious nature, clay is usually harmless. It is desirable, however, that sand should be free from clay, loam or other fine materials.

The second important factor of the selection of sand, the grading, may be defined as the proportioning of the different sizes of sand particles in such a manner as to produce the minimum spaces or voids between the particles of sand. The value of this grading cannot be over estimated. The ability to obtain a water tight concrete is directly dependent upon this factor.

The third and last important qualification for a good sand is the hardness of the particles. This feature does not apply to so great an extent to walls, foundations, etc., but more especially to floors, runways, etc., which are subjected to wear. In view of the fact that nearly all of the gravels in Wisconsin are of a glacial formation, they are sufficiently hard to withstand abrasion, resulting from ordinary wear. The qualifications for gravel are the same as that of sand and may be considered together.

Having considered the materials which are essential for successful concrete work, the proportioning and mixing follow in a natural sequence. A serious mistake is often made in proportioning the materials by using

the gravel as it occurs in the pit. Gravel rarely occurs in nature in the required proportions. For illustration, consider the recommended proportion for a concrete wall, namely; 1 sack of cement, 2 cubic feet of sand and 4 cubic feet of gravel. At first thought one might consider that one part cement to six parts of pit run gravel would be the equivalent of one part cement, two parts sand and four parts gravel. This is an error, first because gravel in the pits or rivers rarely is found in the proportions of two parts of sand to four parts of gravel, and second, if it did thus occur, two parts of sand and four parts of gravel will not equal six parts, as the sand would fill many of the spaces or voids between the particles of gravel to the extent that the total volume would probably not exceed five parts. If the pit run gravel is typical of Wisconsin, it will contain as much sand as gravel if not more. What would then be the results of using a one to six mixture of pit run gravel, if it was screened to determine the exact proportions? It would, no doubt, be nearly one part cement, four parts of sand and three parts of gravel, instead of one part cement, two parts of sand and four parts of gravel, which was required. As the mortar is to be considered the strength factor in concrete, one can readily see that instead of a one to two mortar, we have a one to four, or a mortar one-half as strong and we can expect the same results in our concrete, that is, only one-half as strong as we supposed. For the best work then, the pit run gravel should be screened and divided between sand and gravel, and re-proportioned in its proper proportions.

Foundations and sub-foundations may be made of a leaner mixture than the walls. A recommended proportion is one sack cement, 3 cubic feet of sand and 5 cubic feet of gravel or broken stone. The material should be mixed thoroughly, preferably in a batch concrete mixer, and with sufficient water so that the mixture will readily run into place without tamping. A wet mixture is essential as it insures uniformity and sufficient water to allow all of the cement in the mixture to act.

### A Hard Durable Floor.

A hard, durable concrete floor is an essential feature in a well equipped factory. A floor for ordinary use, which is subjected to no large amount of trucking, may be obtained by methods now in common practice, but floors used as runways, over which trucks with iron wheels are drawn, require special attention to prevent them from wearing. To secure a concrete floor of this character which will not show wear does not require special or patented applications on the surface. The proper choice of materials, and ordinary common sense in preparing them, is all that is necessary. It is reasonable to suppose that where a floor is to be subjected to abrasion, hard, durable materials must be selected for the wearing course. Choose therefore, a clean, hard, well graded sand and crushed granite or other hard materials, in sizes from dust to  $\frac{1}{4}$  inch. A mixture of these materials for the wearing surface should be 1 sack cement, 1 cubic foot sand, and 1 cubic foot crushed granite or other hard substance. This mixture should be placed of such a consistency that it will not run but slightly flatten out, when discharged from a barrow and remain in a "quaky" mass. The top should be immediately struck off after placing, and finished within two hours. The steel trowel should be used as sparingly as possible, as it tends to bring to the surface the finer particles of sand and cement. These readily wear and dust. It is essential to hold the coarser materials at the surface and therefore this is an important factor.

The last and equally important detail of a good wearing surface is the careful and thorough curing. As it is the top film or layer of the floor which will receive the wear, it is essential that the cement contained therein should have every facility for hardening properly. Therefore, as soon as the floor is hardened sufficiently, or in about 24 hours, time being dependent upon weather conditions, a covering of sand or sawdust should be

placed on the floor to a depth of 2 inches. This covering should be sprinkled once a day for a period of at least 6 days, and the floor kept free from use for at least 10 days. This wearing surface should not be less than  $1\frac{1}{2}$  inches in thickness and placed on a concrete base before the latter had hardened. The base may be of a much leaner proportion, and the mixture of 1 sack cement, to  $2\frac{1}{2}$  cubic feet of sand and 4 cubic feet of gravel or crushed stone, is generally recommended. The importance of adhering to these details cannot be over estimated. By careful attention to the selection of materials and their proportioning and placing, a concrete floor may be obtained which will withstand abrasion, without disagreeable dusting and rutting.

In laying a floor of large area which is not reinforced, some provision must be made for the contraction and expansion due to change in temperature. To provide for this the floor should be divided into sections, the size of which may be conveniently made to conform to the panels formed by posts or columns supporting the roof or second floor. If the building requires no columns, divisions may be arbitrarily made to contain not more than 100 square feet. These divisions should extend completely through the concrete, in order that each section may contract and expand separately.

#### Tanks and Vats for Storage.

The subject of tanks and vats for the storage of water, milk, etc., is no doubt one of the important details which confronts the average owner of a cheese factory. Wood will rot, disintegrate and leak; iron and steel will corrode. Concrete tanks can readily be made, however, which will not leak, and we must again return to our first principles of good concrete, to find the formula, that is, a clean, well graded aggregate. Upon this grading will depend the water tightness of the tank. Do not, therefore, allow a fine sand to be used, or a gravel which contains all large stone, but rather choose a sand which will contain all sizes of particles, from fine to coarse. This is likewise true of the gravel, except that the finest should not be less than  $\frac{1}{4}$  of an inch in size. Proportion these in the ratio of 1 sack cement to 2 cubic feet of sand to 3 cubic feet of gravel or broken stone. This mixture must be placed in the forms sufficiently wet, so that it will run readily into place without tamping. After the concrete is placed and before it has time to harden, the concrete next to the side of the forms should be agitated with a spade or a straight edge, to force back the larger stone, and bring out a larger amount of mortar. This will give a better finish and appearance to the surface of the walls. In rare instances a tank may be made without reinforcement. Where possible, a tank should be round, and if square or rectangular, the reinforcing should be carried around the corners. The bottom and sides should be poured continuously, in order that the bond between the two may be perfect. Reinforcement should be both vertical and horizontal, and spaced according to the height of the tank. Plain round steel bars are usually best suited for all reinforced concrete work.

Tanks for the storage of sour milk or whey should receive additional thought. The action on concrete of sour milk, and especially whey has been the subject, recently, of much discussion and investigation. Final conclusions cannot as yet be drawn. Much has been learned, however, namely that concrete must be dense and hard. Porous concrete can never be made to hold either of the two substances, as it is essential to have a dense, impermeable concrete, and our fundamental principles of water tight concrete again apply. An additional precaution, especially in the case of whey tanks, is to apply a coating to the surface in contact with the whey. Paraffin has been recommended, and used with satisfactory results. It should be applied hot with a brush or cloth, and thoroughly rubbed into the surface of the concrete. Sodium silicate, commonly called water glass, is also used. This should be diluted by three parts

water to one of sodium silicate and applied with a brush in two or three coats. The Institute of Industrial Research at Washington, is conducting experiments on the storage of whey in concrete tanks. In a recent report they advised that a coat of Bakelite varnish is giving the most promising results.

### Concrete Outside the Building.

Outside of the building proper, there are many ways in which concrete can be economically used. The driveway is no doubt the most important. A concrete driveway affords a serviceable road 365 days in the year. Walks, steps, chimneys, fence posts, etc., of concrete are becoming more common. All of these like the building itself, call for the careful selection of aggregates, and the proper proportioning and mixing of them. For driveways and walks single course construction is now meeting with much favor. Driveways should be constructed at least 6 inches thick, and of a wet mixture, composed of 1 sack cement, 2 cubic feet sand and 3 cubic feet gravel. A slight crown of  $\frac{1}{4}$  inch to the foot is all that is necessary. It should be provided with expansion joints running at right angles to the road, not more than 30 feet apart. It is also advisable to protect edges of these joints with soft steel plates between which tarred felt may be used as filler to take up the expansion. Unless the pavement is over 20 feet in width, no reinforcement is necessary. All pavements, however, over 20 feet wide should be reinforced with a wire mesh. The surface should not be trowelled with a steel trowel, but brought to an even surface with a wood float. It will then be rough, and will afford a footing for the horses. On steep approaches the concrete may be corrugated to afford additional footing.

The application of concrete to the factory itself, and its surroundings is practically unlimited. The success of concrete does not lie in the amount one can build, but that which is built well. Concrete itself should last forever, and to construct poorly would defeat the great purpose of its use. The fundamental principles of the choice of aggregate, and thereafter the proper proportioning, will largely determine its success or failure.

### Discussion.

Chairman: I find in visiting cheese factories where they have cement floors, in the great majority of cases the floors are not what they should be. Either they are not smooth enough, the surface is too soft or that it wears and becomes rough. In either case it makes it difficult to keep clean, and another great objection is that many of them haven't got slope enough.

Mr. Willimann: I would like to ask how he proceeds to put on a concrete roof.

Mr. Clicquennoi: We have always thought of a roof as something with a high peak on it, because if the water stood on it for any length of time it would rot and would have to be sloped out of necessity. Now, with that thought in mind, we have carried it beyond and into concrete construction where really it is not necessary. We don't care if the water does stand on it, because water doesn't harm concrete; therefore I would say, rather than make your roof difficult to construct, make it practically flat, a quarter of an inch to a foot or an inch in four feet, and slope it back or to the sides, whichever you choose, and bring it over the walls or extend your walls in order to relieve the flat surface. As to the type of that construction, it would be practically the same as the second floor, that is, you would have your supports, your stage supporting your form, which would then be reinforced and finished on top the same as any floor. Instead of having a high pitch you would have a flat roof sloping in one direction. The architectural effect could be overcome by extending the roof up in front.



## COÖPERATION.

**Charles J. Steffen, Chief Milk Inspector for Milwaukee**

The one fault that is very prominent in cheese districts as well as creamery districts, is what I call lack of coöperation. There is that spirit of animosity still in your work, the idea that you are going after the other man's patrons and he will get yours, that your patron will take his milk over to the other cheese factory or creamery as the case may be. I believe, if the cheese makers would get together, you could accomplish great good. It can be safely said that most farmers are willing to do better when they are shown better ways. I believe it will materially enhance the product and put Wisconsin cheese where Wisconsin cheese ought to be. I don't believe any cheese maker can produce cheese from a dirty, inferior milk. I believe that in the future the work you are doing in this convention will be getting after this source of the cheese, so to speak. I believe the cheese makers have left too much of this work to the inspectors. I suggest to you to get together, show a spirit of co-operation between the factories.

**"PURE MILK AND PERFECT CHEESE OUR AIM."**

**J. Q. Emery, Madison.**

I can think of no more fitting theme for this occasion than the maxim printed on the first page of the cover of your program, namely, "Pure Milk and Perfect Cheese our Aim."

In one form or another, I have urged the practice of that maxim in every address I have given before this association during the past eleven years, and I have as persistently urged a similar line of thought upon the Wisconsin butter makers. When only pure milk and perfect cheese and pure cream and perfect butter are produced in the state of Wisconsin, I promise to make a change in the character of my addresses.

Former Governor Hoard relates that at a great dairy banquet some years ago in Canada, one of the toasts was, "Put conscience into your Work," and was responded to by the Hon. Thomas Ballantyne, speaker of the Ontario parliament and one of the leading dairymen of the Dominion of Canada. In the course of his remarks, he related the following incident: "When I was a little boy, I was walking down one of the streets of the city of Glasgow, with my father. We met the richest man of all Glasgow, a Mr. McDonald, who had amassed a great fortune as a baker. My father stopped and said: 'Mr. McDonald, permit me to congratulate you, sir, for being the architect of so magnificent a fortune.' The old man straightened up his bent form and said: 'Tut, tut, man, I never tried to make a shilling.' But how could you have amassed so great a fortune' said my father, 'if you have not tried to make money?' 'Aye, there you go like the rest of the world. I tried to make the finest goods in all the kingdom and the money made itself.'"

If all the cheese factory owners and managers and cheese makers of this state were to adopt and follow the maxim of Mr. McDonald to "try to produce the finest goods in all the kingdom" our cheese factories would be so constructed or so remodeled that they could and would be kept scrupulously clean and sanitary and all the vats, every piece of apparatus, the premises and everything connected with the cheese factory would be kept scrupulously clean. Every cheese factory door, window and intake would be screened as a protection from flies. Suitable provisions would be made in every case for adequate drainage. An ample supply of pure water would be provided. Every cheese factory would be equipped with

modern apparatus. Every appointment of the cheese factory would be worthy of this great industry. Only fresh, clean, sanitary milk would be received and manufactured into cheese and the very best methods would be employed every day in the manufacture of cheese.

If all the patrons of the cheese factories of Wisconsin were to adopt and follow Mr. McDonald's maxim of "trying to produce the finest goods in all the kingdom," what a revolution would be made in the character of the milk that is offered to Wisconsin cheese factories as the material from which to manufacture cheese. The only milk that would be offered to the cheese factory would be the clean, fresh milk drawn from clean healthy cows, kept in clean, well-lighted barns, cared for by clean men who use only clean utensils and which milk would be quickly cooled to a temperature approximating fifty degrees and kept at that temperature until delivered to the cheese factory.

Instead of the open-top milk pail now in such common use, all patrons would use the closed-top milk pail by which one-half to two thirds of the dirt and filth accumulations common to milk would be eliminated. Until all cows are kept scrupulously clean and other barn conditions correspond, there is no other means so available and comparatively inexpensive for the realization of your aim to secure clean milk as the universal use throughout the state of the closed-top milk pail.

Now, Mr. Aderhold has promised to do some milking here this afternoon, and after my address I expect him to do the milking. You will see that this hood so covers the pail that the dirt and hair dropping from the cow will be kept from dropping into the milk. It is exceedingly simple and will reduce, I am told, the quantity of dirt in the milk from one-half to two thirds. Certainly so inexpensive, so practical a thing as this ought to be brought into use. It is easy to clean, durable, simple and effective. Mr. Aderhold will make some comments on this later.

Compare that with this open pail where the open part is spread out. All the dirt and all the hair and all the filth is dropping into it. There is a very great difference.

If the owners or responsible managers of Wisconsin cheese factories were to adopt your motto "Pure Milk and Perfect Cheese," or its equivalent, that of Mr. McDonald to try to produce "the finest goods in all the kingdom," and remembering St. Paul's injunction that "faith without works is dead," would prove their faith by their works, what improvements in conditions would be speedily wrought. Cheese factories would be constructed that would be worthy of the name and would be places fit in all respects to receive pure milk and in which the making of "perfect cheese" would be a possibility. They would be equal to or superior to the best buildings in the community. These buildings would be located on suitable sites where suitable drainage is possible, to the end that pure, untainted air may pervade the factory, and an uncontaminated water supply be always available. All these factories would be supplied with up-to-date apparatus. Regulations would be established and enforced that would secure pure milk and that would cause it to be manufactured into very high class, if not strictly "perfect" cheese, and they would see to it that the cheese went to a market worthy of its quality. They would see to it that only competent cheese makers were employed, and they would pay them according to their merits. They would employ cheese makers because of their known competency and reliability and not because they could be employed for less money than competent cheese makers can afford to work for. They would recognize that to produce perfect cheese, high cheese making skill must be employed and that such skill, the most profitable to employ, must receive just reward. They would insist that an ample record of each day's make of cheese be kept, showing all the essential details, so that they could at all times *know* the character of their product, and be able to cope with any emergency that might arise.

Can you doubt that if every cheese factory of the state of Wisconsin were to operate on this high plane, there would be an urgent demand at the

highest prices for all the cheese thus manufactured, and that the production of such cheese, "perfect cheese," "the finest goods in all the kingdom," would enlarge and stimulate the market for the same because of its high and uniform quality? It is good cheese, it is the cheese that extends the market that is wanted. The inferior cheese becomes a drug upon the market.

It has been said that the first requisite for a young man to obtain a good wife is to deserve one. It is equally true that the first requisite to procure the highest price for cheese is to produce cheese that deserves the highest price. Emerson says: "If any man can preach a better sermon, or write a better book, or make a better mouse trap than his neighbor, though that man build his house in the woods, the world will make a beaten path to his door."

That statement can be paraphrased into saying: If any cheese maker secures purer milk and makes better cheese than his neighbor, though he builds his cheese factory in the woods, the cheese buyers will make a beaten path to his cheese factory door for that product. To state that high quality is the foundation upon which the cheese industry must rely for its permanent prosperity seems to me simply to state a truism.

Wisconsin now produces annually nearly one half of all the cheese produced in this country, the value of which is nearly half of the value of the total annual cheese production of the entire country. This remarkable showing is due in no small measure to certain far-seeing and enterprising pioneer members of the Wisconsin Dairymen's Association, who having confidence in the high quality of Wisconsin cheese, went out and found a market for it and adequate transportation to that market. I refer to the time described by Mr. Hoard when "our only market was Chicago and three carloads would glut that for a week;" and as described by Hiram Smith when "western cheese in the market 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 at the country stores, one or two in a place, and replenish as sold. Mail carriers and peddlers disposed of all they could, and at one time it was feared that the lightning rod man and insurance agent would have to be called in to aid in disposing of accumulating stock."

Wisconsin cheese still seeks a market. The cheese market is still a competitive market. A time when the cheese market is not competitive is a time to be deplored.

### CONFIDENCE

**Edward H. Webster, Assistant Editor of Hoard's Dairyman.**

If you are going to hire a teacher, you will not hire a teacher in whom you have no confidence and who will not teach your children right. If you are going to make a purchase of some commodity in a store in your town, you are going to the merchant in whom you have sufficient confidence that he will tell you the truth. If you are going to hire a lawyer, you will go to that lawyer whom you think is absolutely fair and honest. Confidence is the basis of all relations of man with man.

If we are not conducting our business so that the public will have confidence in us and we have confidence in the public, we might as well shut up.

I believe that just as soon as the butter makers, the cheese makers and ice cream makers or anyone else dealing with the farmer, breaks that confidence between the farmer and himself, he is going to fail.

I know there has been quite a little discussion along these lines with the dairymen, friction between the producers and the men who are working up the dairymen's product, and I know there are men who are good, straight, honest, legitimate business men who are looking for communities where such conditions exist, because they can get in there and take the place of the men who have lost the confidence of the patrons.

### Discussion.

Mr. Chaplin: I think Mr. Webster has taken an entirely wrong view of what the most of us are working for in Sheboygan county. That view has been thrown at us over and over again. We believe in the farmers of Sheboygan county. Eight times out of ten the farmers are with us and we are willing to be with them. What we are trying to do is to organize for our own mutual benefit and protection among ourselves as well as among the farmers. We want to work harmoniously with the farmers.

Mr. Emery: I don't know anything about the discussion that led up to Mr. Webster's remarks, but I want to say this, that Mr. Webster has told us some plain truths. Whether they are applicable I don't care. As a general proposition to be accepted and acted upon they are true and correct.

Mr. Scott: As president of the Wisconsin Cheese Makers' and Factory-men's Advancement Association, I want to say the cheese makers haven't one word of criticism against the farmers' organization in Sheboygan county. We want to cooperate with them in every way possible. I am sorry from the beginning that some of the farmers in Sheboygan county would not allow us to cooperate with them. That is where the trouble lies. We realize, as Mr. Webster says, that we must have their confidence.

### THE CHEESE MAKER'S DUTY TO HIS PATRONS.

**Math. Michels, Peebles.**

In viewing the cheese maker's duty to his patrons, it is easily seen that their interests are common. Nothing must be required of either that does not best serve both.

As a cheese maker I have always aimed (and pardon me if I say that I have succeeded fairly well) in getting the good will of my patrons, by trying to educate them along lines of their own and cooperative business, and assisting them in an advisory capacity whenever I felt that I was able to do so.

A cheese maker, in order to be successful, must have the good will and confidence of his patrons. He must educate himself not only along lines bearing directly on the making of cheese, but he must be able to direct skillfully the sale of cheese. He must also be a judge of dairy cattle so he can help his patrons to select their stock. He should be informed as to the formation of different feeds so he can assist them in balancing rations, and be able to give general suggestions as to the handling and care of their stock. He should encourage the organization of cow testing associations, or even invite the patrons to weigh and sample each cow's milk one or two days each month and do the testing and tabulating of figures at the factory for them. I wish to say right here that this inviting them to take samples of their different cows and you do the testing for them in the factory is one of the best things you can do. I don't believe that I ever did anything for my patrons and with my patrons that did me as much good as that one thing did. It involves considerable work, and I think perhaps a good many factories could well afford to keep an extra man just for that purpose, that is, a factory of forty or fifty or sixty patrons. It was only a year or two with me when the milk doubled, especially in the winter months.

It is the cheese maker's duty to instruct his patrons in the care of milk on the farm, to set a time when the milk should be delivered at the cheese factory and have everything in readiness when it does arrive. He must carefully inspect that milk upon its arrival and pass his judgment. If the milk is nice and sweet, free from bad odors, delivered in clean cans, let the patron know that it is so. It makes him feel that his efforts are appreciated. If the milk comes in overripe, off on flavor or in



unclean cans, remind him that such milk if used will contaminate the entire lot and will cause a loss to himself, to the cheese maker, and to every other patron. Such milk should be rejected and a remedy suggested. I will say right here that to reject milk often makes hard feelings if a remedy is not suggested. The cheese maker ought to know something about the conditions of the farms of his patrons if he wants to suggest anything.

I have found by experience that if this method of taking in milk is followed, most patrons soon become fair judges of milk and will not bring bad milk even if they have to leave a canfull at home occasionally.

It is the cheese maker's duty to set a good example in cleanliness by keeping everything clean and tidy in and about the factory as well as his own person, and explain why this is absolutely necessary every day in the year, looking at it from both a practical and bacteriological point of view.

It is the cheese maker's duty to weigh accurately, sample and test each patron's milk, and never to underweigh the milk or underread the test. We know this is only too often practiced for the purpose of paying a high price either per 100 pounds of milk or per pound of butter fat. If a sample or test should happen to spoil, he should never give the same as the last test, but should leave such space open with an explanation.

Given the vat filled with finest milk, the cheese maker is in duty bound to handle it with the greatest care and skill. Unless he does this he will not obtain the best results no matter how good the milk. If it is over-ripened or handled too roughly, it will cause a loss in yield, or the use of a bad starter or leaky dipper will result in a cheese that is off on flavor and texture.

Last, but the most important of all, the cheese maker, to become a salesman or assist in the selling of cheese, must be well informed on the market's demands, must be a good judge of cheese and have some training in collecting. If the cheese maker is lacking in any of these qualifications he will never realize to the full extent all that his labors and efforts have produced. The only way to become efficient in the selling of cheese is in that most expensive of schools, Experience. I firmly believe that there is more money lost because of ignorance in getting the cheese to the consumer than there is from any other one source. Yet as far as I know there is no dairy school in the country today that makes any attempt to give any thorough training along this, one of the most important, most necessary qualifications of the up-to-date cheese maker. No matter how well made or how good the cheese may be, if the full return in dollars and cents is not realized, he will be looked upon as a light weight and has no show to rise in his profession.

#### Discussion.

Mr. President: I don't think it is much for a cheese maker that understands his business to instruct or educate the salesman who is a farmer to know just what is wanted. He can explain these things. He knows what buyers are after his cheese. In some instances he has to go to the Board of Trade with the farmer.

Mr. Willmann: I would like to ask whether he takes pains to convince the patrons that their milk is not like the other man's. We all know that each man thinks his milk is as good as his neighbor's. Did you ever get into it extensively enough with the acid test and show him actually that his milk is not as good as his neighbor's.

Mr. Michels: If a man understands his milk as he should I don't think it is very hard. If a man has good milk, you should tell him so. I used the acid test, but I didn't find it very useful. Say a farmer comes to the factory with poor milk. Suppose it is over-ripe. They know when it is sour, but they can't tell when it is over-ripe. You

tell them to go home and set that milk on the stove and if it doesn't coagulate at once, you will pay for that milk.

Chairman: Mr. Michels, in regard to showing the farmers how good or how bad their milk is with reference to the cleanliness of their milk, there is nothing that equals the sediment test or the dirt test. You can notice something wrong with the farmer's milk, but he is not able to see that. But when you make a sediment test of every patron's milk he is able to see the difference just the same as you. How many of you cheese makers here have got that sediment test? Quite a number. Do you all use it? Last May when we were doing a lot of sediment testing in cheese factories around Watertown the factory that had the cleanest milk around there was one where the cheese maker had been using this test.

Mr. Michels: How does that compare with the sediment you see in the milk cans in the morning?

Chairman: It doesn't compare very much with it, not so much as you think. This is very much more accurate in determining the amount of dirt in milk. When you use the little shipping cans, as they do in many sections, by the time you see bottom all the dirt is mixed in and you can't see sediment there at all. I urge all the cheese makers to get that sediment test, and use it.

Those who have never seen the sediment test made would perhaps like to know what it is. We have an apparatus, not expensive, and the farmer's milk that is delivered to your factory is first thoroughly mixed and with this apparatus a pint of it is filtered through a disk of cotton batting and the milk goes through but the dirt stays on top. You put that on a card and that disk is numbered with the number of the patron. It takes only half a minute to make the test.

Mr. Willmann: In conversation with Dr. Steffen I learned that we must look beyond the sediment test. You people have, in your sediment test, driven the farmers to strain their milk three or four times. They have found that the cleanest milk showing on the test, when placed beyond the sediment test, was the dirtiest. We must look beyond the sediment test.

Chairman: That is true. We sometimes find milk that is very filthy, and yet because it has been so well strained it doesn't respond to the sediment test. And yet it declares itself because it has a filthy color. Otherwise, if it was filled with dirt, it would probably be so strained that it wouldn't show on the cotton.

Prof. Sammis: In talking with Mr. Steffen this morning he told me that in his inspection work sometimes they took the last pint in the bottom of the can and this emphasizes the test, if there was any dirt there they would be sure to get it.

I want to say about the sediment test, I have used it at the cheese factories and seen cheese makers use it and they didn't have to say much of anything to the patrons. You show half a dozen cards to the patron and say, "This card is yours," and in a number of cases you don't have to talk to him about it at all. He says, "See here, if that is my milk I am going to do something to make that better." We have convinced him without a word.

I would like to ask, Mr. Michels, if you were acting as a salesman of a cheese factory, that is, you are selling cheese and are responsible for that end of the business, what would you do to keep the confidence of the patrons and make sure that they had reliance in you to avoid criticism?

Mr. Michels: I don't think we have to do anything, only square business and open. In the first place it is necessary to have everything before your patrons at all times, and everything that comes up should be discussed and thoroughly settled. Never keep the patrons in the dark about anything. In my experience of twenty-four years' cheese selling I have never had any trouble on that score at all, and that is all I have tried to do, just lay it before the patrons. If we have a stale cheese that will only sell for half a cent or a cent less than market I will tell them so. It is just the same with the farmers.

Mr. Noyes: In addition to that leave your books open where farmers can see them and explain to them.

### GIFT FROM S. A. COOK.

The Chairman: I have a letter with a surprise in it from the Hon. S. A. Cook:

"Having in mind that it is possible the members, and especially the active ones, the officers, are having difficulties and hard work to make the convention this year just what it ought to be or just what such a representative association is entitled to, that the time to assist is when needed, the time when assistance does some good, permit me to suggest through you to the secretary, the chairs and also the enclosed check (\$100) which I ask you to please present to the association with my best wishes to all; and if it will be just a little incentive to encourage the keeping up of the good name of Wisconsin cheese that I, with many others, have reason to be proud of, and also if possible to encourage the cheese makers to see that the farmers, the producers of the milk for the manufacture of cheese, that in keeping up the quality they may also plan to increase the quantity of the product without materially increasing the cost, thereby increasing their net income and at the same time reach the consumer at a reasonable price to them as an article of food. If some good can be accomplished on these lines I will feel well paid for any little assistance I may see my way clear to render. Yours truly,  
S. A. COOK."

On motion of Mr. Noyes, the thanks of the association were given to Mr. Cook, and also to Mr. Bruhn for his efficient and faithful work for the association; and the association voted to purchase a chair like one of those given by Mr. Cook as a present to Mr. and Mrs. Bruhn.

### REVIEW OF SIX YEARS OF SCORING EXHIBITION WORK.

Prof. C. E. Lee, College of Agriculture, University of Wisconsin.

In the spring of 1907 the scoring exhibition work conducted by the Dairy and Food Commission was taken over by the Dairy Department, College of Agriculture. The plan of the exhibitions, as outlined in the first letter sent to all of the creameries and cheese factories of Wisconsin, has not been changed.

The factory operators were given an opportunity to send a package of butter or cheese to the dairy department each month during the year for the purpose of having the quality judged. The men were also informed that a determination of the per cent of water in each entry would be made and that a letter of advice would be sent to each exhibitor informing them of the probable cause and the remedy for the defects found in the cheese. Each exhibit would be sold and the money refunded to the maker. At that time a plan was also suggested for granting awards to exhibitors at the end of the year.

### Great Benefit Derived from Method Blanks.

During the first week of each month, a "call envelope" containing a method blank and shipping instructions, has been sent to the men who for the recent past months entered a cheese at Madison. These blanks when properly filled out are very useful to the men that make the cheese, because they furnish to those in charge of the exhibitions, helpful information as to why certain defects are noticeable to the judges. They are used in writing the letters to the exhibitors and in tabulating data for

the exhibitors' articles that have appeared each month in the dairy and agricultural press. These method blanks are useful to the factory operators. It has taught a number of them what to observe in each step taken in the manufacture of cheese. It has increased an interest in certain problems that are of vital importance to the dairy industry. For example, the one question, What is your score on this cheese?, has been the means of educating the makers how to score their product. In this respect the creamery operators have the advantage because the flavor of their product, while still in the churn, is invariably a true indication of what it will be one or two weeks later, while the cheese maker may not know the day their product is made what it will be when examined one month later unless he is guided by the condition of the milk.

### **Butter and Cheese Exhibitions Have Made Progress.**

If based on total number of exhibits of butter and cheese entered at Madison each year, it can not be said that the cheese industry has been as fully represented as has the butter. Large numbers do not always signify progress. With a decrease in the number of exhibits of cheese from 736 for the first year to 353 for the fifth and 292 for the sixth, it does not indicate the efficiency of this work. For the fifth year the average number of entries was higher than for the four previous years.

Primarily the exhibition work is for the men that are making the lower grade of cheese; consequently they have been urged to enter exhibits regularly during the months that the factory is in operation. It is not to be expected that the number of cheese exhibits should be as large as that of the butter because the latter is more of a summer industry than the former.

### **Greatest Progress Made.**

The men that have entered cheese since May of this year have made greater progress in improving the quality than for any of the previous years.

The average score on all of the cheese made in May was 89.3 with a gradual increase in score each month until average score of 93 was reached for the month of October. This is an increase in quality of 3.7 for a season's work. A similar progress has not been made by the creamery operators.

Since May this year twenty men have each entered four or more exhibits, making a total of 98 different lots of cheese for the seven months. The cheese made by these men in May averaged 91.3; June 89.5; July 90.7; August 92.3; September 92.5; October 93.2, and for the November cheese the average score was 91.9. One man received a score in July of 90.83 and 94.33 in October. The score on the first two exhibits this year from one factory was less than 92, with an increase in quality to 95.25 and higher on two of the three last exhibits. The cheese made in one factory has been of very high quality. Only one exhibit out of five scored less than 94. Last year 11 exhibits from this factory averaged 93.42.

### **A Large Number Have Exhibited Cheese.**

During the first six years 480 different men had entered cheese for the scoring at Madison. Several entered only one or two exhibits while others have a large number of scores to their credit. Last year 35 men sent their first exhibit. As a rule those who receive a low score on their first exhibits often fail to continue. The men that have entered a large number of exhibits have made a creditable showing. A Chippewa county man formerly located in Calumet county has entered 58 different exhibits of cheese with an average score of 93.9, while a Sheboygan county cheese



maker stands second with 52 entries with an average score of 93.6. The record made by these two men and others is a credit to the cheese industry of Wisconsin.

The two men already referred to are not working under identical conditions as to factory equipment and milk supply. The Sheboygan county man receives a larger supply of milk in the early spring; hence his cheese is made from milk received daily. His self-heating vat puts him at a disadvantage.

#### Seven Years Record of Quality of Cheese Made in Two Factories.

	Chippewa Co. No. Exhibits each month.	Factory. Average Score.	Sheboygan Co. No. Exhibits each month.	Factory. Average Score.
1907-1913—				
January.....	1	95.8	1	94.3
February.....	1	90.6	2	92.4
March.....	2	92.2	4	92.6
April.....	5	91.6	5	93.4
May.....	7	92.9	6	93.6
June.....	7	92.7	7	92.3
July.....	7	93.6	6	94.6
August.....	6	94.4	4	94.0
September.....	6	93.8	6	94.0
October.....	5	94.0	7	94.6
November.....	6	94.3	3	93.0
December.....	3	94.9	1	95.0
Average score.....		93.9		93.6

#### Condition of Milk Influences Quality of Cheese.

The quality of the cheese as well as that of the butter is in a measure governed by the condition of the milk when it is delivered to the factory. This in part accounts for a difference in the grade of cheese that is made in certain localities as compared with others. Although it is not always possible to connect the quality of an individual cheese directly with that of the milk. With proper method of handling, good milk naturally results in cheese of high quality. In the territories where butter and cheese are competing, the creamery industry is detrimental to the quality of the cheese. One exhibitor, when asked why the cheese made in his county was not of higher quality, replied: "If we demand too much of the cheese factory patrons with reference to the quality of the milk, they will patronize the creameries that do not demand frequent deliveries of cream. Too often the quality of the cheese made during the fall and early spring is lowered because the milk is delivered every two days instead of every day." This year, according to your secretary, A. T. Bruhn, the quality of November cheese was lower than for the previous months, partly on account of the milk not being delivered daily. The November cheese made from milk delivered daily was 2.62 points higher in quality than was the cheese made from milk delivered every two days. This lowered the average score 1.3 points below that of the October cheese.

One man received a score in May of 91.33 and 94 on a September cheese. A change of location resulted in a cheese of 92.83. From one factory the cheese gradually increased in quality to 93 in September. For October and November he made cheese from milk part of which was two days old, with a score of 91 and 91.5 on the two cheeses. In another factory the cheese made in September and October from milk received daily scored 94 and 94.33 respectively, while the cheese made in November from milk received every two days scored 90.33. The November high scoring cheese was all made from one day old milk. The cheese makers should not sacrifice quality rather than operate the factory daily.

### The Value of Starters in Cheese Making.

Every cheese maker should consider the importance of the starter to the quality of the cheese. A clean flavored active starter, next to the quality of the milk, is the factor in making good cheese. The men that have taken an active interest in the scoring exhibition work since May of this year have used a starter to a greater extent than in previous years. According to the method blanks sent to the Dairy Department, only two exhibitors of American cheese (for which a method blank was filled out) was made from milk to which a starter had not been added. This in part may explain why a greater gain has been made this year in the improvement of the exhibition cheese.

The value of using a starter in cheese making is not merely that starter be added to the milk, but the quality of the milk and starter must receive consideration. The amount to use and when it shall be added and the length of time after it is added before setting the milk must be studied. There are a lot of cheese makers that add their starter to the vat when the first lot of milk has been weighed in. This method is alright when cheese is made during the fall and winter months. During the summer, especially when the acidity of the milk is apt to be high, the starter should not be added until nearly all of the milk has been weighed in. No doubt the actual flavor of the starter is more noticeable in fall and winter cheese making than at any other season of the year, primarily because in the milk delivered cold, bacteria are less active, thus giving the starter a greater chance. Good milk and a pure starter are indications of good cheese.

### Water Content of American Cheese More Uniform.

For the first six years of the exhibition work, 1,956 exhibits of American cheese, 302 brick, 38 limburger and 16 exhibits of Swiss cheese have been tested for water. The average per cent of water in the 616 different American cheeses tested the first year was 35.5; 454 exhibits for the second year was 35.4 per cent and 35.2 per cent for the 216 exhibits tested the third year with an increase for the next three years until 36.2 was reached for the 181 exhibits tested the sixth year. The average per cent of water in the brick cheese varied from 37.6 per cent the second year to 41.0 per cent for the sixth with an average of 39 per cent for the 301 exhibits tested. The average per cent of water in the 38 exhibits of limburger cheese was 41.3, the highest average being found in the cheese entered the sixth year. The 16 Swiss cheeses contained an average of 35.3 per cent water.

For the first year 16.88 per cent of the American cheese contained over 37 per cent water; for the second, 6.17; third, 10.18 with a gradual increase for the next three years until for the sixth year 41.3 per cent of the cheese contained over 37 per cent of water and 10.6 per cent of the cheese contained less than 34 per cent water.

For the three year period, beginning May, 1909, and ending, April, 1912, the results for the corresponding months have been very similar. The January cheese always contained the highest average and the August cheese for the last two years, contained the lowest per cent of water. The August cheese in 1909 was not tested for water. For the sixth year, the lowest per cent of water was found in the cheese made during the winter months, with August cheese having the lowest per cent of water for the summer cheese.

In 1909 there was a difference of 3.6 per cent in the average per cent of water found in the January and July cheese, while in 1912 the variation was only 2.5 per cent. For the 11 months aside from August in 1912, the variation in the per cent of water for each month was 1.3 per cent. For six of the months the average per cent of water varied from 36 to 36.6 per cent, and for the other five, February and April to August, the monthly average was 35.3 to 35.8 per cent.

There may be several factors that influence the per cent of water in the American cheese with the exception of the last year the cheese made during the winter months averaged higher in per cent of water than the cheese made during the summer months. According to A. T. Bruhn the influencing factors may be enumerated as follows:

First: In winter the weather is cold and this enables the factory operator to regulate the temperature of the curing room at a point where, even if the water content of the cheese is rather high, it will not produce a soft appearing cheese.

Second: In a cold curing room the fermentation, or the curing of the cheese, takes place very slowly enabling the maker to sell his products before any ill effects are noticeable.

Third: During the winter months when the temperature is low the bacteria in the milk are in a dormant state and unless a large amount of starter is used the development of acid during the process of making the cheese will be very slow. This will tend to hold the water in the curd unless some precautions are taken to reduce it.

Fourth: The feed may indirectly bear some relation to the water content of the cheese. For example, in August, 1910, the per cent of water in the cheese was very low, produced in part by the condition of the feed and the weather. That year the latter part of June, July and early August was exceptionally dry, resulting in very short pasture in August. If the farmers supplying milk to cheese factories would supply succulent food for the cows during August, or when the pastures are short, and proper curing rooms provided at the factory, it would result in the making of cheese having a trifle higher water content."

#### Per Cent of Water in the Brick Cheese.

The 46 exhibits of brick cheese entered for scoring during the year May, 1908, to April, 1909, contained 37.6 per cent water. This is the lowest average for any one year. Two years later the average per cent of water for 36 entries was 40. The 61 exhibits scored the last year and the 41 for the third year contained the same average per cent water, namely, 39.5. There was a range of from 28 to 41 per cent in the water content of the American cheese as compared with a range of from 32 to 47 per cent in the brick cheese; 17 per cent of the cheese entered the first five years contained between 39 and 40 per cent water. The cheese for four years made in January contained the highest average per cent, namely 42.4 per cent, and the lowest 35.6 per cent in August. Only a small per cent of the brick cheese factory operators have taken an active interest in the exhibitions but from the data collected with reference to the water content of the brick cheese, it can be used as a true indicator of that type of cheese as made in the three brick cheese districts of Wisconsin, namely, the Northwestern, Eastern and Southern portions of the state.

In the opinion of G. Marty of the dairy department, he further stated that a large per cent of the brick cheese factories located in the northern and southern parts, begin operation early in May or the latter part of April. At that time of the year there is always a good demand for cheese, consequently a soft product is made. Later in the season when there is a decreased demand for cheese and the weather is warmer, the makers change the method of manufacture, namely, heating and firming the curd more, than earlier in the season. This firming of the curd is gradually increased until the cold weather of September.

The temperature employed in May varies from 102 to 106 degrees F., and the time from cutting to dipping varies from 20 to 60 minutes, while in July and August the heating temperature varies between 114 to 120 degrees and the time from cutting and dipping varies from 20 to 40 minutes.

After August they gradually change the method of making until it is the same as that employed in the early spring. For every year the per

cent of water in the cheese is the natural result of the method of manufacture. Very few brick cheese factory operators use an acid test. This is the main reason why there is a greater variation in the water content and the method of making as compared with that of the American cheese.

If the makers of brick cheese would depend upon the acid test and the use of a commercial starter especially in the making of cheese during the winter months, there would be less whey-soaked, sour cheese in the market.

#### Discussion.

Mr. Fowler: Why do they put such a high color in cheese in Wisconsin?

Prof. Lee: Why is it that the light colored cheese sold in our groceries is not sold as Wisconsin cheese? If it had a high color in it, it would be sold as Wisconsin cheese.

Mr. Williman: Not long ago I was in a grocery, and there was New York cheese on the knife, and I said, "Why not use our own cheese?" and the grocery man convinced me in this way. He says, "I have got to have it for the customers. We can't use Wisconsin cheese." "All right," I said, "when you give your order ask for aged cheese." We should see that we manufacture what people want.

Prof. Lee: Last fall when I was in Waterloo, Iowa, at a convention, a wholesale dealer in Iowa came to Waterloo, having heard that I came from Wisconsin. What he wanted to know is this. Can you put me in touch with a cheese maker in Wisconsin that will supply me with several carloads of white cheese. The people of Iowa want light cheese. In other words, they want New York cheese. Are the cheese makers of Wisconsin catering to the trade?

Mr. Ubbelohde: I have had several letters this summer from dealers in New York. This summer is the first that Wisconsin has shipped cheese to New York in carloads, and the fault they find with this cheese is that it is not of uniform color. The New York market demands light colored cheese. A good many makers in Wisconsin have no definite object in putting in so much color. A great many of our factories color their cheese because they have got in the habit. Except in some of the Southern states, they want a lighter colored cheese than we make, and they want a uniform color. If you use the same amount of color, and use a high standard color, we can get it uniform.

Member: Some of our cheese buyers want a high colored cheese.

A. D. Delana, Sheboygan: The assertion is made that if the cows were to have more succulent feed in August, the presence of moisture would be more. I question that. I think that the reason of the moisture is in the manufacture rather than in the feed. You want to get too big a yield, too much moisture in the cheese. You do it by pressing the cheese before it is ready. After you get the whey off the cheese, the main part of the cheese maker's skill is then to be shown. Mat that cheese frequently and you can keep the moisture of that cheese just as you want to. Furthermore, after taking your cheese from the press and putting it in boxes after one day and then paraffining it, you have retained all the moisture possible, and a moisture that isn't going to help you, but a moisture that is going to help injure the rinds of the cheese. A cheese should not be paraffined for three or four days after it is taken from the hooks, but many paraffin even the same day, and put them in boxes. The surplus moisture on the outside is still there, and you are not having as good results as you would if you held the cheese four or six days before paraffining. When you say more succulent feed will cause a larger percentage of moisture in cheese, you are talking something you don't know about, I think.

Mr. Delana: How much do you think is the right amount of moisture in cheese? 36 or 37 per cent?

Secretary Bruhn: That depends on a good many things. I contend that there is too much moisture in our cheese. I agree with Mr. Delana in this respect.



Mr. Noyes: The trouble with Wisconsin cheese makers is they get too much moisture which causes rind rot. We don't want too much moisture in the cheese. Any cheese maker can put as much moisture as he wants to in handling the curd.

Mr. Williman: We must have in view the proper normal percentage of moisture for both quality and yield, and every man must watch that. We know our past experience. Last night will tell us what the milk is in the morning. Let us be ready for it.

Secretary Bruhn: If we will just look over the average percentage of moisture for the month of August for 1910, 1911 and 1912, we will see that in 1910 we had an exceptionally dry season and the grass was mighty short in August. The percentage of moisture was 31.16; for 1911 it was 34.96; for 1912, 36 per cent. Now if the grass doesn't do it, what does it?

We will take June which was 37.3 of moisture this year. I would like to ask Mr. Noyes a question. Will you make the assertion that the presence of moisture in cheese is absolutely under the control of the cheese maker?

Mr. Noyes: In my experience of making cheese I found if I had good milk I could get all the moisture I wanted in that cheese. If I had poor milk I never could get the moisture in that cheese, and consequently had to run it down and therefore lose my moisture in my cheese.

Secretary Bruhn: You can get all the moisture in there that the cheese buyer will take, but that is not my question, whether you can control it?

Mr. Noyes: You can control it to a great extent.

Secretary Bruhn: You control the moisture, as Mr. Delana said, in the matting. You have the moisture under. When you come to weighing up your curd you weigh it in there. You are not measuring your moisture, you are measuring the excess moisture that is in there.

Mr. Delana: It is in your hands, cheese makers, to determine the percent of moisture. That is a fact, and you cheese makers who have made a study of it and experimented somewhat know that as well as I do.

Secretary Bruhn: I agree with you gentlemen, it is in the hands of the cheese makers to control the moisture so far as the quality of the cheese is concerned but there isn't anyone of you here who have sent cheese to the scoring exhibition and had your score and moisture content come back to you who could say, "I will make 35 or 36 moisture in that cheese in order to make the very best." I don't think that 31 per cent is the maximum amount of moisture that cheese will hold. You are just controlling the moisture content according to the quality; you are not controlling the moisture content, you are controlling the quality of your cheese.

### SOME IOWA EXPERIENCES.

George V. Fowler, Waterloo, Iowa.

There are three dairy methods in our state; one is the farm separator method of gathering cream. That is the best method. The next one is the whole milk butter factory and the next is the cheese factory. Those that are working the most against us are the farm papers, because of the money to be derived from the sale of the farm separators. I checked up on some of the highest, the best known farm papers of the country, and I found them getting \$16,500 a year to help sell the farm separators. They were partners. They say they just sell the space, but mind you, they sell the space and they sell the influence of the papers. What is the result? Today over our state they are taking eight to ten cents a pound less for butter fat on account of separating on the farm and sending off their cream. Some of the whole milk creameries are now paying as much as 40 cents for butter fat while the gathered cream pay about 30 or 31. The results have been wonderful to the farm papers and the farm separator manufacturers.

I want to make this point. The people of this country have been engaged in teaching the use of the farm separator under the guise of teaching dairying. It wasn't to teach dairying, but they have been teaching the use of the farm separator. That is a great mistake and it is costing the country millions of dollars, and then when it comes to hog feeding, what about that? It was changed to skim milk feeding, especially the warm, sweet skim milk separator feeding. In our own state it would cost \$40,000,000 to feed hogs. I want you to see the distinction between skim milk feeding and hog feeding. When you feed skim milk and are taught skim milk it is on account of something connected with the skim milk out of which they get profit, and one of the greatest mistakes ever made has been made on that account. One man wrote that when corn was 80 cents a bushel he fed his hogs skim milk worth 30 cents a hundred and saved money. He was wrong. The way he should have figured that would be to find out what the same amount of protein in a given amount of the different feeds would have cost. And so it is that the greatest mistakes are made and the farm suffers thereby. The mistake this man made about this price of skim milk, I have seen it in every prominent farm paper in the country. It served their purpose to call attention to their advertisements. They make the mistake of supposing that protein is to be received from skim milk. It won't furnish one per cent of the protein the hogs need. Feed the hogs one-third corn and two-thirds pasture and you will get the cheapest possible ratio.

#### DAIRY SCHOOL ALUMNI

Mr. Martin Meyer, secretary of the National Creamery Butter Makers' Association, addressed the convention, regarding the National Dairy School Alumni Association organization.

Last October, in Chicago, through the National Dairy Show, it was planned, he said, to organize in each state a state alumni association, and interlock all the different states in harmonious action for future work with the National Dairy School Alumni Association.

#### REPORT OF SECRETARY A. F. BRUHN.

On February 17, 1913, Mr. U. S. Baer came to me at the Dairy Building at Madison, apparently very much disturbed mentally, and told me that he had appropriated some of the funds of the Wisconsin Cheese Makers' Association to his own private use, but declaring at the same time that he would restore the money as soon as he possibly could. I tried then and since, but without success, to get a correct account of his transactions with the association. To the best of our knowledge, Mr. Baer did not attend to any of the duties of the office of secretary after this.

The bills against the association were constantly coming in, some of the creditors began to threaten legal action, if their bills were not paid. We could not get any satisfaction from Mr. Baer and finally a meeting of the officers was called for July 21, at Milwaukee. At this meeting the office of secretary was voted vacant. I resigned my office of president, and was appointed acting secretary. At this meeting arrangements were made to meet the immediate financial needs of the Association, and as soon as possible thereafter we began to pay the bills that had accumulated.

## RECEIPTS FOR 1913.

Balance on hand as reported at 21st annual convention.....	\$ 586.92
Membership fee 21st annual convention.....	343.00
Receipts for convention cheese sold.....	471.05
3-28-13 Temporary loan from Mr. A. J. Marschall.....	200.00
7-10-13 State Treasurer's draft.....	600.00
7-22-13 Temporary loan.....	300.00
1-3-14 Cash for advertising space in program.....	135.00
Total.....	\$2,635.97
Bills receivable.....	\$ 375.00

## DISBURSEMENTS FOR 1913.

Secretary Baer's office expense for 1912.....	\$ 123.99
1-12-13 U. S. Baer, Secretary services for 1913.....	200.00
1-13-13 Republican House 1913 meeting.....	144.37
1-13-13 Gilpatrick Hotel 1913 meeting.....	29.00
1-13-13 Mrs. M. G. Carpenter stenographic services.....	40.00
1-13-13 H. N. Wilson stereopticon services.....	12.00
1-13-13 J. W. Cross expense as Supt. cheese exhibit.....	35.14
1-13-13 Thos. Cusack Co. (Signs).....	2.50
1-13-13 Chas. Becker Entertainment two days.....	30.00
1-13-13 Plankinton Hotel 1913 meeting.....	6.00
1-13-13 Walter Mayer (printing).....	100.00
1-21-13 Hon. J. Q. Emery (traveling expense 1913 meeting).....	4.88
March 13 Sec. Expense at 1913 meeting, such as express, freight, telephone, telegraph and postage on reports.....	42.50
Mr. U. S. Baer's shortage, as near as I can come to it with the data at hand.....	545.17
1-10-13 Fred Marty (traveling expense as per bill).....	11.60
1-10-13 O. A. Damrow (traveling expense as per bill).....	13.60
3-29-13 Walter Mayer, balance on printing bill.....	209.19
8-4-13 Mrs. M. G. Carpenter, balance on bill.....	39.75
8-4-13 Mrs. A. B. R. Fish, balance on bill.....	49.64
8-4-13 A. J. Marschall, repaying loan.....	200.00
8-18-13 Schwaab Stamp & Seal Co. badges.....	45.00
8-18-13 Wells Fargo Express Co. 6 pck. to Milwaukee.....	.92
8-18-13 F. P. Downing, expense attending convention.....	6.78
8-18-13 C. E. Lee, expense attending convention.....	6.28
8-18-13 Tracy & Kilgore, printing.....	1.90
9-6-13 J. D. Cannon, expense attending convention.....	5.18
9-6-13 F. A. Averbek, watches.....	90.00
9-6-13 Joseph Willmann, bills paid.....	8.00
9-6-13 Jacob Lehnher, attending convention.....	11.70
9-6-13 A. J. Glover, expense attending convention.....	4.50
9-6-13 O. A. Damrow, expense attending convention.....	9.02
9-6-13 Alex. Schaller, expense attending convention.....	4.50
9-6-13 G. H. Benkendorf, expense attending convention.....	8.88
11-15-13 Miss Jennie Nelson, stenographic work for Baer.....	5.10
Pro rata premium and payment of cheese to exhibitors.....	467.48
Total.....	\$2,514.57
Balance on hand.....	\$121.40

### REPORT OF TREASURER.

Received from all sources.....	\$1,035.00
Paid out.....	912.01
Leaving a balance of.....	122.99

### Donated to Mr. Baer.

Secretary Bruhn said that the records for 1913 showed a shortage in Mr. Baer's accounts of \$545.17.

In view of Mr. Baer's good work in behalf of this association it had been suggested, Mr. Bruhn said, that he be credited with this amount since much of his work was done gratuitously. On motion of Mr. Kalk the amount of the shortage was donated to Mr. Baer.

### OFFICERS ELECTED.

Officers were elected as follows:

President—Oscar Damrow, Sheboygan Falls.

Vice President—Charles A. Voight, Chili.

Secretary—A. T. Bruhn, Madison.

Treasurer—T. A. Ubbelohde, Glenbeulah.

Director Four Years—P. H. Kasper, Welcome.

### RESOLUTIONS OF SYMPATHY.

The following resolution was adopted:

"Whereas Wisconsin Cheese Makers' Association, assembled in convention at Milwaukee, Wisconsin, January 8, 1914, having been advised that Mr. C. H. Williman of Lake Mills, Wisconsin, a member of this association for many years, passed away at his home on the 7th day of January, 1914,

"Be it Resolved, That this convention expresses its deepest sympathy and sorrow to the widow and family in their great bereavement.

(Signed) "W. C. THOMAS,

"MATH. MICHELS."

### RESOLUTIONS.

A letter was read from the J. B. Ford Company, Wyandotte, Mich., regarding special prizes, a camera first prize for high scoring American cheese and an umbrella each for first prize for high score for Swiss, limburger and brick cheese.

The convention then adopted the report of the resolutions committee, H. J. Noyes, Muscoda; H. M. Scott, Waldo; and T. A. Ubbelohde, thanking secretary Bruhn, for the exceptionally excellent program; the officers of the association, and the Citizens' Business League for contributing materially to the success of the convention; also the supply men, cheese dealers and transportation men for their substantial support in the past and present.



## JUDGES' REPORT ON CHEESE.

The following is the report of the judges on cheese exhibited:

## AMERICAN CHEESE.

Emil Hidde, West DePere, Wis.....	94.5
Anton Loehr, Hilbert, Wis.....	95.5
Wm. F. Brandes, Forest Junction, Wis.....	89.5
Chas. J. Tomashek, Shawano, Wis.....	95.
Albert E. Braun, Two Rivers, Wis.....	90.
J. J. Wilhelm, Manitowoc, Wis.....	93.25
John N. Buechel, Oconto, Wis.....	95.25
T. C. Battes, Welcome, Wis.....	94.
Gust Kohlmeier, Hortonville, Wis.....	92.75
Wm. F. Naulin, Neenah, Wis.....	90.5
Edw. Kaufman, Marshfield, Wis.....	91.75
Otto C. Deubner, Manitowoc, Wis.....	95.25
Walter F. Koepke, Neenah, Wis.....	93.
Theodore Schultze, Stanley, Wis.....	88.25
J. B. Daughetee, Granton, Wis.....	95.75
G. H. Scannel, Eden, Wis.....	91.
Robt. Nauman, Two Rivers, Wis.....	93.
Edward Prinzel, Two Rivers, Wis.....	92.
U. T. Prouty, Sandusky, Wis.....	91.25
Wm. P. Sterns, Brillion, Wis.....	87.5
Fred Schmidt, Reedfield, Wis.....	92.
August Brandt, Forestville, Wis.....	93.5
L. J. Blahnik, Kewaunee, Wis.....	93.25
August Larsen, Spring Green, Wis.....	93.
A. F. Marten, Allenville, Wis.....	87.5
L. F. Roesler, Dale, Wis.....	91.75
E. E. Hitzke, Auburndale, Wis.....	91.75
John J. Roch, Zumbrota, Minn.....	95.25
Dieterich Speich, Linden, Wis.....	90.75
H. H. Rahn, Manitowoc, Wis.....	92.
O. R. Schwantes, Clintonville, Wis.....	93.
A. C. Werth, Appleton, Wis.....	95.
Philip Greiner, Little Chute, Wis.....	96.
Louis Falck, Morrison, Wis.....	93.5
Arnold Grimm, Allenville, Wis.....	94.5
Otto G. Rohde, Unity, Wis.....	95.5
John Griener, North Kaukauna, Wis.....	96.25
Thos. S. Marten, Kaukauna, Wis.....	90.5
W. A. Bothwell, Darlington, Wis.....	88.
W. A. Bothwell, Darlington, Wis.....	90.75
Math. Meyer, Stanley, Wis.....	94.5
Ed. Termaat, Plymouth, Wis.....	97.
H. A. Kalk, Sheboygan, Falls, Wis.....	92.5
Gust Sixel, Cleveland, Wis.....	92.5
Louis Rach, Greenwood, Wis.....	91.75
Elmer Heckman, Cleveland, Wis.....	95.25
Ed. Maedke, Stanley, Wis.....	92.
Aug. Schwanz, Manitowoc, Wis.....	95.75
A. J. Schmelzer, Tillamook, Oregon.....	95.
A. J. Blahnik, Kewaunee, Wis.....	94.75

# PROCEEDINGS OF TWENTY-SECOND ANNUAL MEETING 67

A. F. Peterson, Appleton, Wis.....	96.
Tom Troxal, Muscoda, Wis.....	95.5
R. T. Richison, Dodgeville, Wis.....	91.
Ernst Boll, Sheboygan, Wis.....	95.

## SWISS CHEESE.

Robert Emmenegger, Gratiot, Wis.....	94.
Fred Emmenegger, Ramona, Wis.....	95.

## LIMBURGER CHEESE.

Michael Asenbauer, Theresa, Wis.....	88.
Ed. Buntrock, Cambria, Wis.....	93.5

## BRICK CHEESE.

Harry W. Mohr, Cambria, Wis.....	92.
John Jenny, Madison, Wis.....	94.25
Alois Froehlich, Reeseville, Wis.....	93.5
Anton Sutter, Cambria, Wis.....	96.
Robert Schaller, Barneveld, Wis.....	96.5
Robt. Salvisburg, Livingston, Wis.....	94.
Louis E. Hasse, Juneau, Wis.....	95.25
Geo. Schickert, West Bend, Wis.....	88.
G. F. C. Dobbratz, Randolph, Wis.....	94.
Chas. Marschall, Knowles, Wis.....	91.75
Fred Baertschi, Albany, Wis.....	95.5
Robt. Kohli, Knowles, Wis.....	95.
Ed. Buntrock, Cambria, Wis.....	94.75
Michael Asenbauer, Theresa, Wis.....	88.75
Carl Schmidt, Oconomowoc, Wis.....	91.25



# Wisconsin Cheese Makers' Association

## TWENTY-THIRD ANNUAL MEETING

Milwaukee, 1915

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### OFFICERS.

OSCAR DAMROW, President, Sheboygan Falls, Wis.  
C. A. VOIGHT, Vice President, Chili, Wis.  
A. T. BRUHN, Secretary, Madison, Wis.  
T. A. UBBELOHDE, Treasurer, Glenbeulah, Wis.

### DIRECTORS.

JACOB KARLEN, Jr., Monroe, Wis.  
J. W. CROSS, Milwaukee, Wis.  
P. H. KASPER, Welcome, Wis.

The twenty-third annual meeting of the Wisconsin Cheese Makers' Association was called to order by President O. A. Damrow, Sheboygan Falls. James P. Keenan, secretary of the Citizens' Business League, delivered an address of welcome, Arthur Mensch responding.

The exhibit of cheese was the finest and largest that has ever been shown. The average score for the total was 93.42. You won't find," said Secretary Bruhn at the close of the meeting, "an average of that score anywhere in any exhibit for the last eighteen years, that long I remember and that long I have been in business and since I have been in the cheese business, we have never had an average of 93.42 at any exhibition. We have seventeen cheeses scoring 96 or up. Two years ago we had seventeen cheeses scoring 95 or up and we thought that was a record."

### PRESIDENT'S ANNUAL ADDRESS

Oscar A. Damrow, Sheboygan Falls

Again I have the honor of appearing before you as president of this, the greatest organization of its kind in the world. Having honored me twice with the office of president of this Association, I want to thank you one and all for the kind consideration you have shown me.

It has been the aim of the officers of this Association and particularly of your worthy secretary, A. T. Bruhn, to make this convention one of the best and most profitable we have ever held, and a glance at your program will convince you that no stone has been left unturned to make it so.

The season just closed has been one of the best for the cheese maker in the history of the cheese industry. Weather conditions were favor-



able, with abundant crops of feed for the dairy herds, giving us all a good living income for which we should be thankful.

It should be the aim of every cheese maker in Wisconsin to attend these conventions. This association is our association and we can make it serve our interests and the great dairy interests of Wisconsin by attending its annual meetings and participating in the discussions of the various important questions that are brought up at each session. This educational feature, together with the meeting of old friends as well as new ones, will do us a world of good and after the close of the convention we will go to our respective homes with a lighter heart, a more thorough understanding and a better feeling toward one another.

I have always been a firm believer in organization as that is the only means by which we can better our condition. I do not believe meeting but once a year will fully answer our purpose. We should have county organizations where we can meet once a month and exchange ideas, endeavor to overcome our local difficulties and make a constant effort to raise the standard of Wisconsin cheese.

I also believe in a law licensing the cheese makers and factory owners. I believe this convention should go on record as favoring such a law and that resolutions should be adopted, petitioning the state legislature to pass a law covering this question and giving the Dairy and Food Commission the power to revoke such license when its provisions are not complied with.

It is my belief that only through such license system can we perfect our organization. Remember, we are living in an age of organization; nobody will look after our welfare unless we do so ourselves.

Before I close I want to announce that I am not a candidate for reelection. Having served the Association to the best of my ability for two years, I feel that I have done my duty, and again I thank you.

### MORE SPECIAL PREMIUMS; PREMIUM FUND

Secretary Bruhn announced an exceptionally large number of special premiums for this year, including one of four chairs presented by the Hon. S. A. Cook for the four different classes of cheese. It was therefore decided, he said, to move the premiums down a notch, that is, to give the premium intended for the winner of the highest score, to the second highest score, and so on, so there were four association premiums in each class besides a special premium.

"We have," said Mr. Bruhn, "the largest exhibit of cheese in the history of this association. The quality, as I understand from the judges, has never been up to what it is this year. We have about 150 entries. Our pro rata premium fund is only \$200. I would suggest that we add \$100 to the pro rata premium fund of this year so instead of \$200 pro rata premium fund we will have \$300. The reason for that is this, unless we can pay out a reasonable amount in pro rata premiums, a good many won't get the expense for sending their cheese down here. I suggest that you add a little more to the pro rata fund so we can have a good cheese exhibit. It is really in the fact that we can call the maker's attention to the small defects in the cheese that we are doing the state good. Cheese must score 92 or better, in order to come into the pro rata money.

"There is another suggestion. Let us move that down a little bit. The fellows that get a score of 90, for instance need attention more than the fellows that get a score higher than that. In order to keep them coming let us move that score down and give them a little smell of the pro rata premium fund.

"The diplomas are given to anyone having a score of 90 or above on the cheese. Let us raise this score in order to get a diploma. The diploma from the Wisconsin Cheese Makers' Association ought to mean something when they give it."

Mr. Noyes: I move you that we lower the score to 90, the pro rata, and also put \$100 more in that pro rata fund.

The motion was unanimously carried.

There was some discussion as to requiring a higher score for the diploma. When a vote was reached it was: Sixty-four in favor of a score of 93; thirteen in favor of a score of 95. Therefore the score of 93 carried.

## KEEPING THINGS IN LINE

P. W. Knudson, Barneveld

It is just as necessary for us to keep the surroundings neat and attractive as it is for us to keep the inside of our factory clean. There will be more who see the outside than those who see the inside, and they are most likely to judge the inside of your factory by the outside. So let us all have a good cleaning up around our factory this spring and then do not allow a weed to grow on your factory grounds any more.

Then see that your work room gets a good cleaning and a fresh coat of paint and the window screens and screen doors are in good shape before the flies and the busy season are on you. This all will do more than anything we can possibly do to get our patrons to be clean about handling their milk, which they must be if they are going to bring us good milk.

We see so many whey tanks set down on the ground without a cover, and the patrons dip their whey with a pail and of course spill a good deal on the ground and in their wagon box, which is a good thing to attract the flies. This, too, is a very easy thing to prevent. A whey tank can be put up to be just as attractive as a neat and well kept-up factory building and not cost any more than the old tank set on the ground.

A cheese maker should know everything that is needed about the factory and keep machinery in good repair, and he must understand testing and be very careful about this part of his work. You cannot be too accurate if you are going to give your patrons a square deal. You must do this if you are going to get their confidence, which you must have if you are going to be successful. I have always found it a very good thing to make it a point to invite my patrons when I am testing their milk, and urge them to bring any sample from any of their herd they may like to and test it for them.

A maker should be well posted on his patrons' work as well as his own, as there is no one who has a better opportunity to do his share toward improving conditions on a farm than a cheese maker. If all your patrons have not already got a silo, get busy and get them to put up one before the next corn crop is ready for the silo. No dairy man will get along any longer if he knows how much money he is losing every year by not having a silo on his farm filled to the roof every fall.

By working one or two afternoons every week a maker could keep everything about his place neat and tidy, which is sure to please his patrons, and as soon as they see you are doing your part, they will do their part. If we all do this it will not be necessary for us to be afraid of the inspector when he calls. All I regret is that he cannot call more often, as there is no one who can help us more or who has helped us more than our inspectors.

Just think of the advantages we have over the cheese makers before us! Up-to-date machinery and tools, good starters, dairy papers, scoring contests, factory inspectors and a dairy school that is recognized the world over. There is no excuse for us if we neglect to do our part.

### Discussion

Mr. Arthur Mensch, Sauk City: I would like to ask Mr. Knudson, do you lift your whey?

Mr. Knudson: I lift it. I run the whey into a small tank on the ground and lift it from that tank.

Mr. Ubbelohde: I would like to ask if he has any difficulty about the farmers taking each other's whey?

Mr. Knudson: No sir. I have a hole in the bottom of the tank and a string goes down and the farmer places his wagon under the hole and pulls the string and the whey drops out.

Mr. H. L. Maumann, Plain: I would like to ask Mr. Knudson how often he cleans his tank.

Mr. Knudson: I have a steam pipe connected with my tank and it goes down at the outside, down within a foot of the bottom and there is an elbow there with a nipple, and as soon as I get up steam in the morning, I send it into that pipe and that whirls the whey and stirs whatever cream I have in the bottom, and another pipe that drains into it and I clean it out every morning and scrub it out with a brush every week.

Mr. Ubbelohde: Do you skim your whey?

Mr. Knudson: No, sir, I do not.

Mr. Peter Larson, Oconto Falls: Do you pasteurize your whey?

Mr. Knudson: Only turning on the steam in the morning I get about a temperature of 140; probably it varies some.

Prof. Farrington: Do not the patrons object to the steam in the whey?

Mr. Knudson: No, they have not.

Chairman: Do you know what advantage it would be holding the temperature at 140 for a couple of hours?

Mr. Burrowes: I think the whey would be sweeter and it would not get sour, because where you raise it with a jet pump it is not as it is when it runs into the tank. But I find where the whey is kept at the temperature of 140, the patrons were well satisfied with it and they also used the whey for feeding calves with good results.

### SOME CAUSES OF VARIATIONS IN THE FACTORY TESTS OF MILK

**Prof. E. H. Farrington, Madison**

Those of us who have had a knowledge of milk testing ever since the Babcock test was first given to the public, remember that in the early days there was more or less suspicion that possibly the difference in the tests of milk reported to the patrons at a factory from one week or month to another, were due largely to the inaccuracies of the method. This suspicion, however, was soon quieted because a great many comparisons were made in the early days of the results obtained by using the Babcock test with those found by other well established methods which had been in use for many years for estimating the per cent of fat in dairy products. The accuracy or the method itself has been so well established that very little if any question on this point is raised at the present time. We still find, however, although this test is still used at many factories throughout the country as the basis of estimating the money value of the milk delivered to it by its patrons, that there are variations in the tests that are difficult to explain to some patrons.

I am going to take a few minutes to refresh your memories on some of the factors that are likely to cause a variation in the test of a patron's milk at a cheese factory.

Suppose we divide the question into two parts: first, the human side of it, and second, the cow side. That is to say we will discuss some of the causes of the variations in the test of milk that are due to the person taking the sample and making the test, and then those that may be the result of some condition of the cows producing the milk.

### Variations in Tests Due to Changes in the Milk

1. I suppose you all know that there is a great difference in the disposition of cows. Some of them are easily excited while others are quiet and have a mild, easy going temperament, which is not disturbed by surrounding conditions. This difference in the dispositions of cows is often responsible for a difference in the test of the milk the cows produce.

The easily excitable cow will produce milk from day to day that varies a great deal in test, sometimes as much as 6.0 per cent. By looking over some work which I did at one time on this subject, I find that the test of a certain cow's milk on different days varied from 2.5 per cent fat one day to 7.9 per cent fat the next day, while another cow in the same herd gave milk the test of which did not vary on these two days more than from 3.5 per cent to 3.7 per cent fat.

This simple illustration of the effect of a cow's disposition on the test of her milk is a point which few farmers understand. They think that if the cows in a herd are being milked each day by the same persons, at about the same time, morning and night, and if the cows are all out to pasture or in the stable and receiving the same kind of feed, the test of the milk of the different cows ought to be uniform from day to day.

2. The effects which the time of the milking period has on the test of a cow's milk is generally well understood. Most farmers bringing milk to a factory understand that when the cows are strippers the milk is richer than when the same cows are fresh. I think this influence on the test does not need much discussion. It is a fact, however, that the extent to which the test of the milk increases as the cows dry up in flow of milk, varies a great deal with different cows, and I have records which show that while the milk of one cow during the first month of her milking period tested 4.5 per cent fat it tested 6.4 per cent fat during the eleventh month of her milking period.

Another cow in the same herd gave milk during the first month of her milking period that tested 3.6 per cent and during the eleventh month of her milking period it tested only 4.1 per cent fat, showing a difference in the test of the milk between the beginning and the end of the milking period of nearly 2 per cent fat in the case of one cow and only one-half of one per cent in the case of another cow. This shows that while there is a difference in the richness of the milk between the beginning and the end of the milking period, it is not so great with some cows as it is with others.

3. Every one that milks cows knows that the last milk given at one milking or the strippings are richer than the first milk, and this being true the carefulness with which the different milkers strip the cows each day will have an effect on the richness of the milk sent to the factory; for on certain days more of the strippings will be included in the milk which comes to the factory than on other days and on this account there will be a variation in the test of that patron's milk.

4. The question is often asked whether or not the night's milk is richer than morning's milk. I have heard patrons at a factory discuss this question and there are always certain ones in favor of one side of the question while others claim the opposite.

Some careful comparisons on this point have been made and it has been found that the night's and morning's milk of a cow will usually test about the same per cent fat if there are a uniform number of hours between milkings, that is to say if the cows are milked at 6 o'clock at night and at 6 o'clock in the morning, the test of the milk will be about the same per cent fat insofar as this cause of a variation is concerned,



but in summer time when the days are long, many of the farmers are haying or working in the field so that milking is not done until 8 o'clock at night; under such conditions the night's milk is thinner or tests lower than the morning's milk because the farmer gets up at 4 o'clock in the morning and the first thing done is to milk the cows, this gives from 8 o'clock at night to 4 o'clock in the morning or only eight hours between these milkings; now if we subtract this time from twenty-four, it leaves sixteen hours as the time between the morning and the night's milking and because of the longer time the milk is thinner at night than in the morning.

It is, therefore, customary to obtain a richer milk in the morning than at night because there is a shorter time between milkings in one case than in the other.

5. It has been noticed that a change of milkers often has a great effect on the test of the milk given by certain cows. One of the many observations reported on this point shows that a good milker got 18 pounds of milk testing 4.2 per cent fat from a cow, and a poor milker got 12½ pounds of milk testing 2.7 per cent fat from the same cow. Such striking differences as these are not common perhaps among good dairy herds, but it is possible that a change in milkers is sometimes responsible for the variation in the tests of a patron's milk noticed at the factory.

6. The importance of milking a cow dry is well understood by nearly everyone who has milked cows for any length of time. It has been demonstrated that by the act of milking, the milk glands are stimulated to their maximum secretion of milk. If the process of milking is slighted the glands will become less active and the cow will dry up.

The difference between milking a cow dry and slighting the milking is illustrated by an observation which showed that a certain cow gave 71 pounds of milk at six milkings when she was milked dry each time, but that from the following six milkings only 44 pounds of milk were obtained when she was half milked at five of the last six milkings. This is a loss of over thirty per cent in one week, due to the failure of the milker to milk the cows dry.

Many other illustrations of the effects of certain conditions, such as a change of stable, cold weather, change in time of milking, sickness of the cows, etc., could be given to show the influence which the cow and her treatment have on the variation of the test of the milk delivered to the factory by a patron.

These factors should be kept in mind when the factory operator is discussing this question with his patrons and if they are presented in such a way as to appeal to him as reasonable, he will undoubtedly feel that he and not the cows are somewhat responsible for the variations in the test of the milk he delivers to the factory.

#### Variations in tests due to person doing the testing

Coming now to the human side of this question, I wish to mention a few causes of a variation in tests for which the men handling the milk are responsible.

I have heard some factory operators make, what seemed to me, marvelous statements about their ability to test milk and cream and make the results check up exactly with the figures that ought to be obtained, and while I have no evidence that leads me to doubt the accuracy of their statement or their work, I am inclined to think that from the very nature of the case there is bound to be some variation in the test of the milk and cream due to certain causes for which neither a cow nor a patron is responsible.

1. The first of these factors which I wish to mention is taking the sample, and while this is a threadbare subject discussed for many years, I am going to give some evidence collected at the dairy school this winter on this particular point.

It so happens that part of our milk supply for the cheese room this winter has been obtained from a factory in the country and shipped to us by rail. The owner of the factory has weighed and tested milk for many years and I think he is even more careful and more accurate than the average factory operator. I have made a few comparisons of his records at the factory with ours obtained at the dairy school on the same lots of milk shipped each day, and I get the following figures:

**Comparison of Weights and Tests of Milk as made by the Buyer and by the Seller**

NOVEMBER.	4	10	11	12	18	19	20	25
Seller, Milk lbs.	500	1020	680	1003	1026	680	1085	1000
Buyer, Milk lbs.	498	1018	680	1001	1024	677	1082	1007
Seller, Milk test.	3.6	4.1	3.7	3.9	4.5	3.6	4.2	3.7
Buyer, Milk test.	3.6	4.4	4.0	4.0	4.4	3.6	4.3	4.0

Now these figures, to my mind, represent about as close an agreement as can be expected under such circumstances. The samples of milk were taken at the factory in the country by dipping a small quantity of milk from each can and making a composite sample of these portions. The sample of the same milk when delivered at the dairy school was taken from the weighing-can into which the ten gallon cans of milk were emptied each day.

You will notice that there is a difference of several pounds in weight of the milk and that the tests of the same lots of milk at the two places is seldom the same figures; there being differences sometimes of .3 per cent between the dairy school test and the factory test.

I do not present these figures as a guide for anyone to follow in the future, but simply as evidence of the agreements in weights and tests that can be expected under such circumstances. It is possible that some patrons may think that such variations are evidences of inaccuracy of the method of testing or carelessness of the operator and that the test of the same lot of milk ought to be the same figures every time, but I think those of you who have had experience in this kind of work will agree with me that there is a certain amount of variation in the test that is inevitable and must be expected. An exact agreement of tests from the same lot of milk is more an accident than a certainty.

I hardly think it is worth while to discuss the reasons for this, but thought perhaps these figures might be of some help to a factory operator in discussing this question with some of his patrons.

2. There is only one more cause of the variations in the test of milk that I will take time to discuss and that is the carelessness of the operator who is taking the sample and making the test. This may be illustrated by a laboratory exercise which I suggested to our milk testing instructor at the dairy school this winter. We first examined all the different testing machines in the laboratory and placed them in first-class condition. We then had all the milk test bottles and milk measuring pipettes examined by the sealer of weights and measures so that we could supply each of the dairy students with accurate glassware as well as a satisfactory testing machine. We then placed a pail of milk at each one of the three desks in the laboratory and asked the students to report on the per cent of fat found by them in this milk. Each pail of milk was filled from the same can which had been carefully mixed by pouring, and although the students were not informed of this fact, they were supposed to know that it is always necessary to carefully mix any lot of milk before measuring a sample of it into a test bottle.

The results obtained the first time this section of forty students was in the laboratory are given in the following table, together with the results reported by another section of students after they had been instructed to carefully mix milk before testing it.

**Results obtained by different persons testing the same samples of milk**

<b>First Trial.</b>							
Students.....	3	3	8	5	4	3	1
Test of milk.....	4.0	3.9	3.8	3.7	3.5	3.3	3.2
<b>Second Trial.</b>							
Students.....	1	3	38	1			
Test of Milk.....	4.0	3.9	3.8	3.6			

These figures show a greater variation in the first trial than one would naturally expect, but they illustrate the fact that it is necessary to carefully mix a sample of milk before testing it and that failing to do this will give a great variation in results obtained from the same sample.

After the milk testing instructor had reported these figures to me, I suggested that he try and impress on the class the necessity of greater care in taking a sample without telling them of the experiment which we were trying on them. He did this, and the next time the students were given this exercise the results given in the second trial were obtained.

These results show that forty men may test the same lot of milk and get approximately the same figures but in order to do this they must take notice of the necessity of thoroughly mixing the milk before measuring it into the test bottle.

The Babcock test is a simple method of estimating the richness of milk and it ought to be used in every cheese factory in the state but the figures obtained by it may be disappointing to some parties, first because of carelessness of the operator and second because the cows are responsible for some changes in the milk that are not always remembered.

### Discussion

Mr. H. White, Milwaukee: Does it make any difference if the sample is frozen?

Prof. Farrington: I don't think it does, if the sample is thoroughly mixed after it is thawed out. It is true, as you doubtless know, that it is necessary to have the ice, when milk freezes—the milk ice contains a certain amount of fat and the amount of fat in that milk ice is influenced by the amount of ice. For instance, if we have some milk that is only frozen, even a little, and we say that milk contains two per cent of ice and we take that milk ice out of the can and melt that and test it, that milk ice does not contain nearly so much fat as the milk ice in which the ice is a very much larger proportion. For instance, suppose we had milk and it froze, twenty-five per cent of the milk was ice. We take that ice out and melt it and there will be more fat in that than there was in the other, so the larger the per cent of ice in the milk, the more fat in the ice when it is melted. But, of course, you will know in testing a sample of frozen milk you want to melt the ice and mix that with the liquid part of the milk. It is true, of course, sometimes when the milk freezes with all the mixing you give it, some globules of fat separate and it is a little harder to get a more satisfactory sample, but freezing of the milk does not destroy any of the fat any more than the souring of the milk.

I know that is a question we are often asked, whether the souring of the milk eats the fat. I even get letters from people in the state and they ask, "Will sour cream give the same test as sweet cream?" Some people have an idea that souring of the cream makes it necessary to be more careful in pouring the milk and then to fill the pipette after it is mixed.

Mr. Larson: Is there any difference between the milk that comes from the cow and the milk two weeks old?

Prof. Farrington: One time I took twelve milk test bottles and I took one sample of sweet milk and filled the pipette and measured the same pipette full of milk into those bottles. Two of those bottles I tested at once and wrote down the tickets. The other ten I sat on the shelf in the cupboard and I took two of those bottles down every two weeks and tested them. Now the last two weeks, of course, that milk was about six weeks old and the milk had all turned brown and sour, but it was all in the test bottle. It was not a sample in a jar. I took that oldest bottle down, added acid, and went through the motions, and I got absolutely the same figure as I did the first time. That is what we expected to get, but that simply demonstrates that the standing or the changing or souring or moulding or rotting of that milk did not destroy the fat which was all there, even though it was old, and we got the same per cent of fat we did when the milk was fresh. But the reason why you often get a different test of very old milk, is because you have not got the sample in your test bottle, you have got the sample in a jar and you are not so careful in sampling it. It is not possible to take so fair a sample of that old milk as it is of fresh milk. I guess the reason why you don't get quite the same result you did when your milk was sweet is because it is such a difficult operation, but it is due more to the inconvenience and not getting a fair sample, than it is to the age of the milk that the fat is destroyed.

Mr. J. Roach, Zumbrota, Minn.: I find that is where our biggest trouble is. Our patrons who are going to test will take, say, the night's milk. They will get a sample of this milk and the same way in the morning. They have got a nice sample, and during the night they may raise cream and it will be stirred up a little in the morning. He cannot get the chance to get this sample the way the sample is taken at the farm, and it is our difficulty to convince the farmer that we are testing the same as he does. I would think if the state in their bulletins would impress this more so that the farmers could read it, it would help the cheese maker a good deal.

Prof. Farrington: That is a good deal to impress upon the farmer. The farmer takes a sample from the bottle at the farm and then when he brings that to the factory he has some difficulty in mixing that cream with the milk. One thing that would help you, first warm that milk-up a little to about blood heat, and second, if that seems to have any cream globules in it, pour that through a very small sieve and that will help to mix it up so you can get a very fair sample. Perhaps some of you are aware of the fact that in the last year or two, individuals have been sending milk to us to have it tested. We immediately send blanks to the person who sent the sample and ask him to fill out this blank. This blank reads to the effect that all parties interested in this sample of milk were present when the sample was taken. We had to do that for our own protection, because sometimes a man would be testing a skim milk from a separator, and he would not go to the cheese maker, but he would take and send the sample that would give a very erroneous opinion when he tested it. If a person is really interested in finding out what the milk tested, he ought to be perfectly willing to have the farmer as well as the factory man present. Under these circumstances I think you will find that the tests all agree, but not absolutely. Maybe a variation of 3-10, but we like to have the least.

Mr. Joseph Schmuttfrantz, Madison: I would like to ask what is the best form of bottle and stopper to keep the sample in?



Prof. Farrington: A good many differ in opinion, but I think these wide mouth glass stopper bottles are very good. The Mason fruit jars are very satisfactory, but we are using the wide mouth glass stopper bottle. It is very clean and the stopper is easily cleaned. It is not a good plan to use a bottle with a cork stopper, because the milk sticks to the cork badly.

### HOW I MAKE MY PRIZE CHEESE

Edward Termaat, Plymouth

While I do not believe that my method of making cheese is much different from that of anyone else, yet I have been quite successful in winning a good many prizes.

In the first place, I think I am fortunate in having a good bunch of patrons, who not only take an interest in producing and caring for good milk, but who are also interested in seeing me win prizes whenever I do. I need not tell you that none of us can make a first-class cheese, or a high scoring cheese, unless we have the coöperation of every one of the patrons who furnish the milk. In order to get this coöperation it is necessary for us to instruct our patrons in the best way of caring for their milk. I must say that, in taking credit for myself for having produced quite a number of prize cheese, I must also give credit to my patrons for the care they take of their milk.

Another thing, we must exhibit our cheese and enter into competition with one another to find out whether we can make prize cheese or not, and I have never hesitated to exhibit cheese at the different conventions and state fairs throughout the country. In this way I have entered into competition with my fellow cheese makers, and have secured quite a number of mighty good scores. My advice to each and every one of you is that you exhibit cheese whenever the opportunity presents itself.

My plan of making cheese is as follows: I receive my first milk about 6:30 A. M. and as soon as I have about 1,500 pounds of milk in the vat I add twenty-five to thirty pounds of pure culture starter—this for 4,000 pounds of milk. By 7:45 A. M. I have all my milk received, and by eight o'clock I have the temperature raised to 85° F. As soon as the milk has reached an acidity of 19-100 per cent I add my rennet at the rate of three ounces to the thousand pounds of milk, using one ounce of color to the thousand pounds of milk. My vat is then ready to cut in about thirty minutes, or about 8:30 in the morning. At the time of year of which I am speaking I was cutting my curd four times—once with the horizontal and three times with the perpendicular knives, so that I was really cutting it fine. I then started stirring my curd, slowly, handling it with as much care as possible, and in the twenty-five minutes after heating it to a temperature of 102° F. I then keep it well stirred in the whey until it shows about 14-100 per cent of acid, or  $\frac{1}{4}$  inch thread on the hot iron. Usually this takes two hours from the time it is set until it is dipped. After the whey is drawn off I throw the curd back on the racks from six to eight inches deep, cut it in strips about eight inches wide and turn it every fifteen minutes until I have it piled from five to six layers high. In about an hour the curd has about 4-10 per cent of acidity and is then ready for grinding. After grinding the curd is washed with from five to six pails of water at a temperature of 105° F. and I work this through about three times, then pile my curd on both sides of the vat and allow it to drain. After it has drained the curd is forked over and salted with three pounds of salt to the thousand pounds of milk and well worked up with the fork four or five times and left for about fifteen minutes, when I can fork it through and put it in the hoops. In about half an hour I loosen the press and dress the cheese. I use a self-pressure cheese press and take my cheese out in the morning and put them in the curing room. I hold them three days, paraffine them,

and then put them in cold storage. The process of making my prize cheese takes about six hours time from the time the rennet is added until the cheeses are ready for the hoop.

There are none of us have any patent process on the manufacture of cheese. The whole thing necessary is care in receiving the milk, good milk, and care in making the cheese after you get the milk into your hands. The process, of course varies, depending on the condition of the milk, but I have spoken of milk that was in good condition from which prize cheese can be made.

### Discussion

Mr. H. L. Naumann: Could anybody make that cheese without putting it on the rack?

Mr. Termaat: Yes, you can.

Mr. Naumann: Do you get as good results?

Mr. Termaat: I don't know as you get as good results. I could not say, but all my cheese I made for fairs I made on racks. I think we get a drier cheese and firmer cheese all around by making on racks.

Mr. Lewis Root, Madison: What culture do you use for your starter?

Mr. Termaat: Pasteurized starter.

Mr. Root: I mean culture.

Mr. Termaat: This starter I have is two years and a half old.

Chairman: I feel the same as Mr. Termaat, if you have a good starter, keep it. Some years ago Mr. Johnson of Canada used a starter which was seven or eight years old. I used a starter for eight and a half years and I sold that starter with the factory and the starter is going today.

Mr. Root: How can you keep that?

Mr. Termaat: By taking care.

Chairman: I pasteurize the starter in the morning, cool it down, and I take the starter out the next morning. I used it eight and a half years and I sold it with the factory and the gentleman who bought the factory is using it yet.

Mr. H. B. Tanberg, Spring Valley: Do you pasteurize your starter indirectly? You do not have the steam running directly into the milk?

Chairman: No, sir, indirectly.

Mr. Mensch: I would like to ask if you recommend the washing of the curd?

Mr. Termaat: Yes, I use five to six pails of water, at a temperature of about 105 degrees.

Mr. Ubbelohde: How much starter do you put into your milk?

Mr. Termaat: For four thousand pounds of milk I use twenty-five pounds of starter.

Mr. Tanberg: How much do you save to start that starter?

Mr. Termaat: About a three-quarter can. I take that out right away.

Mr. Larson: When your curd is dry it causes more of a hard, drier cheese. In pressing it, it will show more of a curd, it will be coarse in texture.

Mr. Ubbelohde: If you have the right amount of acid when you start, there is no danger of your curd getting too dry.

Prof. Farrington: Don't you think you lose in yield?

Mr. Termaat: I don't know. It probably might affect the yield a little bit, but I don't think so.

Mr. Tanberg: At what temperature do you ripen your starter?

Mr. Termaat: From 175 to 180 degrees, then cool down.

Mr. Tanberg: How long do you keep it at 175 to 180 degrees?

Mr. Termaat: A little over an hour.

Mr. Tanberg: How low do you cool your starter?

Mr. Termaat: I suppose between 55 and 60 degrees. It depends on the time of year.

Mr. Roach: Washing at 145, is not it a fact that you want your curd any warmer than 85.

Mr. Termaat: You get a closer cheese. That water will take it out.

Mr. Mensch: Is not there danger of washing out some of your butter fat at that temperature?

Mr. Termaat: There might be.

Mr. Mensch: Is not there danger of having grease in your press washing at that temperature?

Mr. Termaat: I don't have any trouble.

Mr. Mensch: Your idea of washing your curd at this temperature is to lose the loose fat?

Mr. Termaat: I learned to do that in the course at Madison.

Mr. Ubbelohde: In washing the curd with the cold water my hoops would be full of grease in the morning. With the cold water you will have more grease in your hoops in the morning.

Mr. Mensch: Are you of the opinion that washing the curd will take off flavors?

Mr. Termaat: I think washing the curd will take that out.

Mr. Mensch: What temperature do you keep the curd when it is on the rack?

Mr. Termaat: I don't know.

Mr. Mensch: You do not allow it to cool down before the fat is warm?

Mr. Termaat: No.

Chairman: You use water under the vat?

Mr. Termaat: Under the vat.

Mr. Mensch: Do you use a steam heated vat?

Mr. Termaat: It is a self-heating vat.

## SHOULD WISCONSIN USE A STATE BRAND ON ITS CHEESE?

A. W. Hopkins, Madison

We all know that Wisconsin enjoys unusual conditions in the production of all farm products. We have the climate, we have the location, we have all of the natural advantages for the production of superior products. In the past year Wisconsin has been successful in its production, and other states have been having their difficulties. When it comes to the matter of butter, we are producing one-sixth of the nation's butter; when it comes to cheese, you are producing more than fifty per cent of the cheese of the nation, and you are producing various types of cheese which are in demand.

The matter of advertising comes in. Wisconsin is producing all of these various products and it seems there is no reason why we should not go out on the markets recognized by our own brands, instead of the dealer or market man in Chicago, probably. We are producing all of these various products. We are producing enough butter, I figured out a year ago, if you had it laid on cars of the average size, it would take one hundred trains of thirty cars each to haul that to market. That is in butter, and we do not produce as much butter in Wisconsin as we do cheese.

I am not a cheese man, I am a publicity man. About five years ago we thought out the idea of some state brands, and at that time we called together representatives of the fruit growing, the butter making, the cheese making, the potato growing, the grain growing, live stock—altogether there were eight different lines, and the plan was then submitted of having a state brand which would be similar. For butter we would have "Made in Wisconsin", and here we would have in this lower part here the type or the market package of whatever was for sale. Here are a number of the thirty-five varieties of cheese made in this state. When it came to butter, of the market package of butter. If it were

potatoes, we would have "Grown in Wisconsin". At that time the fruit growers adopted their brand and have it registered in the United States patent office. The grain growers have adopted their brand and are using it so that every sack of grain that is up to standard goes under that brand. The potato men are putting on all potatoes that will stand up to certification record "Grown in Wisconsin", so that everything that goes out of the state had either "Grown in Wisconsin" or "Made in Wisconsin" brand on it.

To tell you of the advertising, would be to tell you what you all know very well. Down in Ft. Atkinson is a man who is making sausage. He started a very poor man. Had Milo Jones come to anyone he would have said, "Don't do it," but he said, "I am going to manufacture a sausage that is clean and pure and I am going to let the people know about it." He started out manufacturing sausage upon which he was proud to put his name, and since that time Milo Jones has been manufacturing the sausage that has been getting two to three to four cents a pound more than any other sausage. I was in his office about three years ago and that very day he had paid express on sausage to the extent of \$400, and he was employing one hundred men in his factory there. He had two federal inspectors, watching all the animals that went through the slaughter house. That man has been advertising "Jones' farm sausage." Waukesha out here is known the country over for its waters. What has done it? A brand that has measured up.

This thing had been submitted at that time to the Cheese Makers' association. There are two possible ways to get this brand in use, one is for an association like this to own the brand and to have a definite standard and appoint a committee which shall pass upon the standard and to see that all the cheese which bears that brand, comes up to standard.

There is another method and that was proposed by certain state officers. That was for the state to own it, and if you took that system, it would be on some basis of the state owning it and enforcing it. My proposition at that time was this, that a committee representative of this organization, of the Dairy school, of the Dairy and Food Department, of the dealers and of the Dairy Men's Association be appointed a committee of five. The details would have to be worked out by these men. We want all people to know we are making all types of cheese that are in demand. Of course, some system of inspection would have to be worked out.

This was started five years ago and as I say, is used by the fruit men and by certain other interests. Some of the other states are beginning to use it. Iowa is beginning to use a butter trade-mark. This butter trade-mark was worked out here five years ago and yet Iowa claims to be on the way to using it now. They have adopted a standard, and as far as I can learn now, they will be selling butter of a certain standard under a state brand. Holland is using a trade-mark on its butter; Denmark and New Zealand are inspected by the government. These are so standardized in some of these countries that they do not have the name of the factory.

### Discussion

Member: They are putting that brand out at Minnesota and no man can use that brand unless the cheese scores 93, nine times out of twelve, and their farms have to score 50, I think.

Mr. Aderhold: Farm inspection would be a necessary part of this plan of guaranteeing a high quality of cheese. I know in a great many cases cheese makers could make cheese of milk, make cheese that would score 93 points, and some of the milk that went into that cheese might at the same time be produced under very unsanitary conditions or handled in unsanitary cans. I think an important part of this plan would be to see that there was inspection of the dairies and have some guarantee



that the raw material was of better quality than the average. Is is mighty easy to have things better than the average, and if the plan is to be used, I think it should be so used that it is a guarantee of superior quality.

Secretary Bruhn: We have this thing registered in our name, I understand. Now it seems no more than fair to Mr. Hopkins, who did all the work in getting it up, to say whether we shall try and go ahead and work it out, or give it back to him and he work it out as he pleases.

Prof. Sammis: It is important to decide what we want a brand to mean and what it really will mean when a consumer sees it. Some brands mean merely the geographical place where the thing is made. We see things marked, "Made in Germany" or Denmark, the brand says nothing about the quality. The brand may mean first, the geographical location where the thing is made, and if that is all we want it to mean, it will be easy.

In the second place the brand may mean we consider this of exceptionally good quality. So that brand might read, "Made in Wisconsin, an excellent quality, superior quality, first quality." I think if we put on the cheese it is made from good clean sanitary milk, under sanitary conditions, that is, it is clean, that means a lot. Then the consumer will be protected by that label and there will be a good demand for cheese bearing it. I think this problem of getting better milk is the best thing the label can accomplish.

The other day a speaker here said, in telling how the prize cheese was made, that he gave a great deal of credit to his patrons for bringing him clean milk, and he could not make good cheese without it. Every cheese maker knows that is true. The one great advantage to be derived from the use of the label is, that we are going to try to get more sanitary conditions on the farm and in the factory. This not only improves the quality of the cheese, but it will improve the most important point in the use of the label to build up the reputation of Wisconsin cheese, even more widely than at the present time.

It seems to me we want to get all this inspection of farms and factories by the Dairy and Food Commission. It is a good deal of work and I do not see how it is going to be done. In Minnesota and elsewhere it is done by having the cheese factories inspected by men whose business it is. They must be given power and authority to inspect factories and farms and to certify that certain farms are producing milk, and certain factories are in good, clean, sanitary condition. Cheese from each factory should be judged each month at the Wisconsin scoring exhibition of the dairy school. If this can be done it will be a great source of improvement for Wisconsin cheese.

Mr. Hopkins: That "Made in Germany" stood for something and they have made it stand for quality. I should like to find out how many men, if it were possible for you to meet the standard required, would use a brand on cheese. I would like to know how many men in this room, if conditions were right for them to do so, would be glad to use the brand established by your organization.

Seventy-two indicated their willingness to use the brand.

Mr. H. G. Davis, Plymouth: Having been a dealer in cheese for some years, attending these conventions and thinking of your interests, I believe that the cheese makers of Wisconsin should be organized along a little different line from the present method, and that is to follow the custom of Canada and Minnesota and have each cheese maker licensed. You will readily see the protection it will give to yourselves. I have a copy of the Canadian Law licensing cheese makers, that I am going to turn over to your chairman; this committee just appointed I think would be very well qualified to handle matters of this kind.

Then there is another suggestion, that is vital to those owning factories, and that is that a factory in the location be protected and another factory not allowed to be placed alongside of it by farmers or other makers. I think you who have your money invested in factories are entitled to

protection. I think this should be incorporated in the laws of Wisconsin, giving you the same protection that other industries have. As a cheese dealer I am in full accord with this "Made in Wisconsin." We sell a great deal of cheese east. I have repeatedly had those eastern men ask us, "Why don't you put a Wisconsin brand on your cheese, because in New York state a cheese without a brand is a skim." In Wisconsin we make nothing but full cream, so that when any cheese is put on the market without a brand, it goes for skim.

By viva voce vote the following named committee on a state brand was elected: H. S. Davis, T. A. Ubbelohde, H. H. Kalk, H. A. Chaplin, J. H. Noyes.

## USE OF STARTERS IN BRICK CHEESE MAKING

Edward Buntrock, Cambria

As there are several different kinds of starters to use, the question arises, which is the starter to use in brick cheese making? My answer would be, the pure culture. I find that the whey starter is easy to make, does not take very much time, is very active on gassy milk; in fact you need not worry about open cheese in moulds, but I have not been able to get the flavor and texture that is required in a brick cheese. I know of one or two cheese makers who have received high scores and claimed they used a whey starter, I also know of a good many cheese makers that are using a whey starter and receiving the same results I did.

As I have not been successful in the use of whey starters, I will change the subject to, "The Use of a Pure Culture Starter in Brick Cheese Making." No doubt you all know the reason why we use a pure culture starter in brick cheese making, mainly to help us control the undesirable fermentations and to expel the whey more readily, when milk arrives too sweet for brick cheese making. This is reason enough for any brick maker to use a pure culture, but why do not more brick makers use a pure culture? There is no doubt in my mind that all would use a pure culture at times if somebody would make it for them or if it could be bought prepared, the same as rennet extract. It must be the work connected with making and that some do not know how to make one, for I am sure nobody would argue that the whey starter is just as good.

I will tell you how I make my starter and when I use it. Maybe some have better ways as some factories are arranged more favorably for this work. The first thing is to have all utensils clean and sterile. Sterilize glassware (which consists of a quart milk bottle and tumbler which is placed on bottle) by boiling in water. The big starter can, which is a small sized cream setter can, I sterilize by blowing steam into. Fill mother starter bottle half full of milk and take as much milk in big starter can as you think you will need (this milk to be the best received). As I have been in the habit of breaking glassware, my wife has taken charge of the glassware and heats the mother starter milk on an oil stove in the following way: place bottle of mother starter milk in a kettle of water in which has been placed a tin cover on which bottle is placed, this is done so the direct heat does not strike the bottle. We used to have trouble in cracking bottles before we used the cover. Heat this milk to a temperature of 170 to 180 and hold for a half hour, then cool immediately to 80° F. Big starter milk is heated by placing starter can in a large pail of water into which leads a steam pipe. Heat to a temperature of 170 to 180 and hold at this temperature for a half hour, then cool immediately to a temperature of 80° F. After starter milks are cooled to 80° F., we propagate starter. The mother starter from the day before is examined by looking at it, then shaken and some placed in glass which has been on bottle. This is tasted and criticized, and here I tell the amount to use in my mother starter and big starter milk (enough so

it will be ready the next day at the desired time). After we have added this starter, we have a young starter. Young mother starter is placed in a mother culture can and held as nearly as possible to a temperature of 80° F., and big starter is placed in the salt room which is the closest to the right temperature (averaging about 70° F.)

This starter I use from the time I start making cheese twice a day until late in the fall, or in other words, until all undesirable fermentations with which a brick maker must contend, are frozen. As to the amount of starter to use, it is hard to tell. Generally I use from .3 to .4 of 1 per cent according to quality of milk. When troubled with gassy milk I have used as high as .5 of 1 per cent. Add starter five or ten minutes before setting, according to amount of starter and condition of milk. By using these methods, I have had my best results.

I will also say that I would favor this "Made in Wisconsin" brand.

### Discussion

Mr. Ubbelohde: I would like to ask why they worked up the milk twice a day for brick cheese.

Mr. Buntrock: In the first place we have too much milk so we could not handle it once a day. Another thing, the stockholders in my factory live near the factory. They are big patrons, bringing in four or five hundred pounds a day. They would rather bring it to the factory than to cool it, and I think we can make a better class of cheese. I know we can.

Mr. Ubbelohde: In making brick cheese do you test the curd, or anything for acid? How do you tell when you have acid enough on the brick cheese to draw the whey, for instance?

Mr. Buntrock: We can tell by aromas of the curd.

Member: How long do you carry your starter?

Mr. Buntrock: I will keep one after I get a good one. In the winter time I don't use it, because my cream has enough acid.

Member: Do you think the freezing would have any effect on it?

Mr. Buntrock: Certainly it would, you should not let it freeze.

Member: Have you found that if your starter had been held in a cool temperature for quite a while, it will not be as effective?

Mr. Buntrock: Certainly, if your starter is weak.

### SPECIAL STAMP ON CHEESE

E. V. McConkey, Chicago

I have been asked to address the convention on the idea of putting a special stamp either with the name of the house you ship to or your name incorporated in the stamp so as to show the buyer, whoever he is, of cheese that he is getting your cheese. We handle the output of about seven or eight factories in the Badger state and each one of them is using a special stamp with his name incorporated therein showing him to be the manufacturer of the product, cheese. I think the majority of you are selling your product, cheese, in the Chicago, Milwaukee or any other market as it may be, under a stencil number. You have no way of identifying your cheese.

Why don't you incorporate your name either with the name of the firm or put a special wrapper on your cheese and thereby create a demand and get the difference in price? I venture to say the cheese with the special stamp on it will get a littler better price. We obtain a quarter and a half cent more for the simple reason that the shipper's name is on the cheese, and five-sixths of all cheese we sold last year was sold at a premium.

In your notes on your program here I have read the assertion, "If the price of cheese could be increased by even as much as a quarter cent per pound it would mean an extra income of \$475,000 to the cheese industry of Wisconsin." I don't think it is a broad assertion to say that the price of Wisconsin cheese could be increased one-half a cent if you would simply advertise it by putting the name of the maker on the cheese, and that would total almost a million dollars. When I started this plan of putting the shipper's name on the cheese other dealers said, "You are a big fool." I said, "Why is that?" They said, "Because you are letting everybody know who your shippers are." I said I would wait and see. So now, instead of it acting against me as they said it would, it has led to an increase in the demand for these different brands sold at a premium.

In New York everything is handled under a brand. Even hens eggs, so also with butter. The Fox River Valley company put out butter under the brand of Meadow Gold butter, and they reap the benefit that the producer ought to have. You are the men who produce the goods.

Submit the plan to your dealers, tell them you feel you ought to have a little advertising yourself. Create a demand for your product. They will probably be willing that you should put your name on your cheese.

#### FUNCTIONS OF THE WISCONSIN DAIRY AND FOOD DEPARTMENT

J. Q. Emery, Madison

The fundamental functions of the dairy and food department can be most effectively presented by calling attention to the purposes as set forth by the pioneers who took the initiative in securing the creation by the legislature of the office of dairy and food commissioner.

That initiative was taken by the Wisconsin Dairymen's Association in 1887. At the 15th annual meeting, held at Sparta, President W. H. Morrison called the attention of the association to the need of such a commission and recommended that steps be taken to secure such a result. The following resolution was adopted at that meeting of that association:

"Resolved, That this association ask of the legislature a law with proper police authority, to prevent the manufacture and sale of any form of adulterated cheese, for the pure article; that any adulterated cheese shall be branded and sold for what it is; that any violation of this law shall incur a penalty of not less than \$100 for the first offense; that there must be a suppression of the practice of adulteration of cheese or the cheese industry of Wisconsin will suffer almost irreparable loss."

In 1888, at the sixteenth annual session of the Wisconsin Dairymen's Association, held in Ripon, President H. C. Adams, in his annual address vigorously advocated the establishment by the state of a dairy and food commission. At that meeting the association adopted the following resolution:

"Resolved, That in the opinion of this association, the time has arrived in the history of the state for the passage of a law similar to that in existence in Minnesota, Ohio, New York, and other states, and the providing for a dairy commission, whose duty it shall be to ferret out and prosecute all adulterations of butter and cheese, and the sale of the same, as well as other foods, and we respectively ask the next legislature to enact such a law and establish such a dairy commission."

Again, at the seventeenth annual session of that association held at Augusta, in 1889, President Adams in his annual address, at greater length and with great vigor, advocated the establishment in Wisconsin



of such a commission. At that session the association adopted the following preamble and resolution:

"Whereas, Imitations of butter are being sold in Wisconsin in violation of laws, to the prejudice of honest goods; cheese is being made in large quantities, robbed of its natural fat, filled with lard or other foreign fats, and not stamped as the law provides; adulterated and impure milk floods the market of towns and cities, drugs are made useless, drinks made more poisonous, and nearly every article of human food diminished in value by adulteration; therefore,

"Resolved, By the Wisconsin Dairymen's Association, that as dairymen and citizens we hereby earnestly express to the state legislature our unanimous request for the passage of bill No. 444 A., providing for the establishing the office of food and dairy commissioner, and for the execution of all laws aimed at adulteration."

At that time, 1889, Hon. W. D. Hoard was governor. I quote the following from his message to the legislature in that year:

"I desire to call your attention to the necessity for more practical legislation against the manufacture and sale of fraudulent imitations of butter and cheese, and the sale of adulterated milk. Our present laws are found practically inoperative, because of the fact that there is no well established agency in existence to secure their enforcement. The sale of imitation butter and cheese visits serious injury upon both consumer and producer. Upon the consumer, because he is not made acquainted with the fraudulent character of the compound. He buys and eats what he supposes is pure butter and cheese, when the contrary is true to a large extent. Especially is this the case in hotels and boarding houses. The law gives him no guarantee of the true character of his food.

"The producer is injured greatly, in that his market is destroyed, and that largely through fraud. His business aids greatly in building up the state. In Wisconsin alone there is a hundred millions of dollars invested in the dairy business, all of it taxable for the support of the state. It would seem, then, to be nothing more than common justice that the state should protect the producer from competition based on a cheat. Several of our sister states, notably Iowa and Minnesota, to meet this evil and injustice have each established a commission with the necessary powers and means conferred by law for the suppression of the fraudulent manufacture and sale of imitation butter and cheese as well as the sale of adulterated, impure or diluted milk. In Minnesota the work of the commission has been mainly devoted to the suppression of fraud in the sale of dairy products. The following table, showing the results of the investigation of the official chemist of that state, is, however, a most significant argument in favor of the organized effort of society against such wide spread and rapidly increasing adulteration of the food of the people."

The table gives 1,084 samples of milk, cheese, cream, butter, flour, bread, cream of tartar, bicarbonate of soda, baking powder, tea, ground coffee, unground coffee in packages, mustard, ground spices, vinegar, cider, sugar, colored sugars, confectionery, honey, maple sugar, maple syrup, lard, and olive oil, of which number 470 or 43 per cent were adulterated or injurious. Governor Hoard then goes on to say:

"The result of the work of such commissions in several states of the union has been highly satisfactory, and I would recommend the adoption of a similar commission by this legislature, with the power to enforce the laws against all adulteration of foods and drinks, and a permanent annual appropriation suffi-

cient to make the work of the commission effective in protecting the health and property of the people of this state."

By chapter 452 of the laws of 1889, the office of dairy and food commission for the state of Wisconsin was created. The following are the duties of the commissioner then prescribed which with slight modifications still remain:

"It shall be the duty of the commissioner to enforce all laws that now exist, or that may hereafter be enacted in this state, regarding the production, manufacture or sale of dairy products, or the adulteration of any article of food or drink or of any drug; and personally or by his assistants to inspect any article of milk, butter, cheese, lard, syrup, coffee or tea, or other article of food or drink or drug, made or offered for sale within this state which he may suspect or have reason to believe to be impure, unhealthful, adulterated, or counterfeit, and to prosecute, or cause to be prosecuted, any person or persons, firm or firms, corporation or corporations, engaged in the manufacture or sale of any adulterated or counterfeit article or articles of food or drink or drug, contrary to the laws of this state.

"Said commissioner or any assistant shall have power in the performance of his official duties to enter into any creamery, factory, store, salesroom, or other place or building where he has reason to believe that any food or drink or drug is made, prepared, sold, or offered for sale, and to open any cask, tub, package or receptacle of any kind containing, or supposed to contain any such article, and to examine or cause to be examined and analysed the contents thereof."

#### Suggestion Not Enough

I call attention to the conspicuous fact that in all these statements made by those who took the initiative in securing the creation by the legislature of the office of dairy and food commissioner, the evil complained of for which a remedy was sought was that milk and butter and cheese and other food products were being adulterated and sold to the public to the detriment alike of the consuming public and of the producers of honest products. I call attention to the terms of the statute prescribing the duties of the commissioner, namely, to enforce all laws regarding the production, manufacture or sale of dairy products or the adulteration of any article of food or drink or drug.

The end sought by law is compliance with the terms of the law. Suggestion, instruction, and persuasion have been constantly employed by the dairy and food department from the time of its organization to the present moment to secure compliance with the dairy and food laws. This remark is applicable to many phases of those laws. But reliance for securing compliance with the terms of law cannot be placed alone on these instrumentalities. The law provides penalties and this instrumentality must be used in flagrant cases. An illustration of my meaning is to be found in the discussion on pages 47-50 of the report of the meeting of the Wisconsin Dairymen's Association for 1906, held at Waukesha. In that discussion former Governor Hoard stated:

"It is impossible for any man to make clean milk in the ordinary Wisconsin stable. Impossible. In the ordinary average farm stable it is impossible to make clean milk, the cows plastered with manure, their sides and flanks, the milk specked with it every time when they are milked, and I do not think the average Wisconsin farmer really has an idea of what 'clean' means. I have talked with hundreds of such men; they will say, 'Why, my stable is clean.' 'Clean, how?' 'Why, I cleaned it this morning.' And I say, 'Are your cows clean?' 'Why, yes, as clean as Johnson's, or Chris Olsen's,' mentioning all the time

the fact that a neighbor had just as dirty cows as theirs, consequently they were clean. A man came into my stable one morning, looked at the cows, and stood a moment and said, 'How often do you wash these cows?' I said, 'They never were washed.' 'How often do you brush them?' 'They are not brushed.' 'But,' he said, 'they are clean.' 'I know it.' 'Why, I do not see any manure stains on the white flanks of any of these cows, how do you they keep so?' 'Well,' I said, 'It is the form and fashion of the stable; the cows are obliged to be clean, and then we try to keep them clean, and then the stable is ventilated.' And he said, 'I noticed I could not smell any odor of stable in here.'"

Following his statement will be found the reply I then made:

"This subject of clean milk for the creameries and cheese factories and the village and city milk supplies of this state, in my judgment, is the paramount issue today. And how to get this matter before the men who are producing this milk is an important topic. It is one I have given a great deal of consideration to and have had some practical experience in relation to it during the past year."

I then went on to explain the use that was being made by the dairy and food department of the Wisconsin curd test in educating the patrons of creameries and cheese factories as well as those who supply villages and cities with market milk. I pointed out the characteristics of different types of curd as revealed by that test and the causes of the same and further said:

"What we are going to continue to do is to bring these patrons, so far as we can, face to face with these curds. We are going to make these curds in all these cheese factories and creameries so far as we can; and we ask the patrons to come in and see the milk that they are offering, and the curds that are produced from it, and to see those that are produced from their neighbors' milk and notice the difference. You may tell a man that his milk is not good, he is angry, and he says, 'I have got as good milk as anybody, and if this cheese factory does not want my milk, I will go somewhere else.' When he sees that curd and sees what his milk has produced, right beside his neighbor's that gives a clean, firm, velvety curd, that has an odor that he can recognize as agreeable, and in every way right, and then takes the milk from his own herd and gets his nose to it, it is so vile he turns away in disgust. Then he will be convinced that his milk is not so good; and that is what we are trying to bring hundreds of thousands of patrons up against."

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

This discussion occurred within a comparatively short time after the legislature had increased the membership of the dairy and food department threefold and concerning which legislation former Governor Hoard in a statement made in October, 1906, remarked:

"Not until the year 1905 did the state enter upon a broad and comprehensive policy of both education and prosecution. In that year a larger force of inspectors of food and dairy products as well as of farms and creameries and cheese factories was provided for by law and for the first time in our history has the state entered upon a food and dairy policy which is adequate for its needs."

Previous to the time referred to by former Governor Hoard the policy of mere instruction had been adopted and followed by the state. The

legislature had appropriated to the Wisconsin Dairy-men's Association a certain fund with which it had employed traveling cheese and butter instructors. This was previous to the establishment of the dairy and food department and continued until something like an adequate force for the dairy and food department had been provided by the legislature of 1905. But the policy of mere instruction had so failed of its purpose that in 1906, former Governor Hoard at a session of the Wisconsin Dairy-men's Association, of which he was the organizer, declared as herein-before quoted: "It is impossible for any man to make clean milk in the ordinary Wisconsin stable. Impossible." But this instruction has, of course, been carried on within the limits of the law and for the purpose of securing compliance with the terms of the law in relation to the production and sale of dairy products. In this period of time there has practically been no phase of the work of the production of dairy products upon which instruction has not been constantly given by the members of the dairy and food department in almost numberless ways.

### An Unrelenting Campaign

Realizing that for the production of a clean and safe article of market milk or of cheese or butter or condensed milk, clean, well-lighted stables and clean cows are indispensable, and that Governor Hoard's statement above quoted was not to be denied, an unceasing, vigorous campaign has been waged by the Dairy and Food Commission against the uncleanness and darkness of the "ordinary Wisconsin stable." This unrelenting campaign has been carried on against unclean stables by each assistant and by each dairy inspector by means of individual inspection of stables, by addressing meetings of patrons of cheese factories and creameries and dairy meetings and also by approximately one thousand addresses at farmers' institutes and dairy conventions and by prosecution in the most flagrant cases. This campaign has been carried on in pursuance of the duties of the dairy and food commissioner to enforce the laws regarding the production, manufacture and sale of any dairy product as well as in pursuance of the terms of section 1410d of the statutes which provides:

"The governor may authorize the commissioner or his assistants, chemists or inspectors, when not engaged in the performance of other official duties, to give such aid in farmers' institutes, dairy and food and farmers' conventions and the agricultural department of the state university as may be deemed advisable."

During each winter for the past nine years Mr. Aderhold has been assigned the definite and specific work of coöperation with the farmers' institutes, wherein he has aided at four farmers' institutes weekly in the various dairy sections of the state and given instruction on the subject of lawful milk and the conditions for its production. This has included in a special way instruction on sanitary barns as a means for the production of sanitary milk, including proper means of cleanliness, ventilation, and lighting of cow stables, a fitting arrangement of gutters and stalls as a means of keeping cows clean, and as before stated other members of the department have in season and out of season given suggestions and instructions for such improvement of the ordinary Wisconsin stables that they might become a fit place for the production of food for man.

Instruction has accompanied every phase of the dairy industry coming under the terms of the dairy laws of the state and has been given from day to day in connection with the inspections made by members of the dairy and food department. The sediment test superseding in a large degree the curd test has been used in thousands and thousands of cases to reveal to the patrons uncleanness in milk.

In Wisconsin where the cheese factories, creameries and condenseries exceed by more than one thousand the total number in the states of Michi-



gan, Illinois, Iowa and Minnesota, it may readily be seen that the legal duties of inspecting any milk, butter or cheese which may be suspected or that there may be reason to believe is impure, unhealthful, misbranded, adulterated or counterfeit or in any way unlawful, involve a Herculean task. The cheese factory or creamery or condensery or the city or village milk supply has been made the unit of inspection. At the creamery or cheese factory or condensery the inspector examines carefully and inquires into every condition present at the creamery or cheese factory in so far as the same comes within the terms of the law.

### Work of Inspection

In this connection I will state that at the first of each month in forty-two out of the forty-eight months of the years 1910, 1911, 1912, and 1913, the farmers of Wisconsin received from one to three cents a pound more for their butter than did the farmers of the states bordering on Wisconsin as reported in the Year books of the U. S. Department of Agriculture. That Wisconsin-made cheese commands the highest market price is common knowledge. As a matter of interest I submit an extract from a letter bearing date November 9, 1914, received from a former prominent Wisconsin educator, now a resident of Pasadena, California:

"In way of just encouragement you may understand that in all cities of this vicinity Wisconsin cheese is sold at a retail of 28c per pound, the highest of all cheeses offered. Retail dealers tell me that the Wisconsin make runs in such uniform excellence in quality that lower priced goods win away few customers when once Wisconsin cheese has been used."

Inspectors have at all times had as one of their purposes the improvement of conditions calling for improvement. Inspection has not been merely for the purpose of promoting self-satisfaction with existing conditions when those conditions were not up to the legal standard. Improvement of conditions requiring improvement, that is securing compliance with the terms of the statute, is the only justification for the maintenance at public expense of the dairy and food department and the enforcement of the terms of the law in the interest of the general public and of honest producers and dealers. The maintenance of the dairy and food commission in subservience to the wishes of would-be violators of law would be the rankest injustice upon the general public and upon honestly conducted business.

The weights and measures department of the Wisconsin dairy and food commission was the first department of all the states to investigate thoroughly the conditions of the scales and of glassware used in making the Babcock test at creameries and cheese factories. Practically all of the scales of a certain type used in making the Babcock test for butter fat were found inaccurate and this type was in general use in creameries throughout the state of Wisconsin. Similar conditions were found to prevail in other appliances used for making the Babcock test. The results of this investigation were embodied in a pamphlet and issued to the creameries and cheese factories for their information and guidance. Before this complaints were constantly coming to the dairy and food department calling for investigation at a large expenditure of time, from patrons against the butter maker or cheese maker and by one creamery or cheese factory management against another of false manipulation of the Babcock test to the detriment of honest business. Since the improvement in the condition of scales and glassware these complaints have been reduced many fold. This work is educational but it seeks compliance with the terms of the law, failing in which prosecution must follow.

The state dairy and food department took the initiative in establishing the state butter and cheese scoring exhibition and in collaboration with the Wisconsin Cheese Makers' Association, the Wisconsin Butter Makers' Association, the Wisconsin Dairywomen's Association, and the

Wisconsin Dairy School carried on that work during the first season and through its initiative the same was transferred to the Wisconsin Dairy School, since which time the dairy and food department under the terms of section 1410d of the statutes, has furnished monthly the services of two assistants, or a substitute inspector to aid in the scoring of both butter and cheese.

The dairy and food department has always stood for the highest possible quality in all dairy products and has realized that for the production of the highest scores of butter and cheese the raw material must be produced and the manufacture carried on in compliance with the terms of the dairy laws of the state. In other words, the dairy laws have an application in practically every phase of the production of milk, butter, cheese and condensed milk.

I am gratified to be able to state that all the lines of work I have recounted contribute directly to the accomplishments of the objects of the Wisconsin Cheese Makers' Association as set forth in its constitution and by-laws.

Time fails to discuss the many other lines of work of the dairy and food commission,—the enforcement of the law relating to linseed oil, turpentine, white lead, zinc white, etc.; the law relating to the sale of adulterated drugs; the law relating to weights and measures; the law relating to the sale of adulterated foods, etc.

### An Impossible Censorship

I desire, however, to mention just one item relating to food laws. A somewhat prominent lady in an address in this city a few weeks ago in an outburst of supposed wisdom, criticised the dairy and food commissioners of the country because they do not furnish lists of foods or brands of foods which they guarantee to be pure and genuine. This criticism might seem to be appared with the garments of wisdom, but in reality it displays the full nakedness of ignorance relative to the fundamental laws of the state and of the nation. No one in this country with less knowledge and power than the Almighty Himself could undertake to make such a guarantee. Before such a condition as that can be brought about in this country the constitution and the laws of the states and the United States and the wisdom of man must undergo profound and radical change. The number of different brands of foods manufactured in the world, any one of which may reach the Wisconsin market, probably reaches a number represented by seven figures. To analyse all of these foods from day to day to enable one to guarantee their purity from day to day as they come upon the market would require a veritable army of chemists to analyse and of inspectors to gather samples. It must be recognized that what an article of food that appears upon the market today may be is no sure guarantee that it will be identically the same tomorrow. But to analyse only a portion of the vast number of foods and drugs that may come on our market and from that partial list undertake to furnish a "white list" of foods would be to undertake to exercise a "censorship" so unwarranted under the constitution of the state and of the United States that the dairy and food commissioner who should enter upon such a foolhardy undertaking would be promptly restrained by injunction by the courts, because to undertake officially to make a white list unless all the brands were included in the test would be so partial and unjust as not to be tolerated by the courts.

In the enactment and enforcement of food laws there are dangers of veritable constitutional Scyllas and Charybdises to be studiously avoided. The state undertakes to fix the standard of purity for food products and to penalize the seller of an adulterated or misbranded article of food. Through such laws the state makes the manufacturer and dealer not the dairy and food commissioner responsible for the purity and genuineness of the article he sells. To the extent that such laws are enacted and

effectively enforced, the tendency is to cause all goods offered for sale on the market to be in a veritable "white list" and such laws are held to be within the constitutional prerogative of the state. It may be confidently asserted that the great bulk of foods now offered on the Wisconsin market belongs in such list and it is the aim of the Wisconsin dairy and food department to keep the foods in such list and to see that the new foods that come on the market from time to time belong to that list, or are driven from the market.

## MANAGING A COÖPERATIVE CHEESE FACTORY

Mrs. O. Dix, Auburndale

We have a great problem now to solve in the cheese making business, consequently coöperation is what we need. Farmers throughout the state are building and operating their own factories. This may not seem profitable to many present, but I am merely suggesting it. I have gained some knowledge of it, having worked in such a factory for five years, the seven years before having been spent in an individual business, and I believe it is a good system. For instance, you will find in many individual places where the owner is compelled to let the farmer do nearly all the business, and if a maker has his own earnings invested, it is like a ship on water, never sure whether it will reach its destination safely. On the other hand, it has occurred in our own locality, farmers become dissatisfied and offer the maker a small price for his building if he wishes to accept, if not, they proceed to build themselves. With strong competition and materials for manufacturing advancing there are several small factory owners through our part of the state who I believe, if their earnings are figured honestly, do not make more than a maker's salary, besides having the risk to think of. Patrons are constantly mistrusting, and it seems that when they have their own dollars invested they are more apt to help patronize and work for the factory's interest.

Of course it is true there are many places where coöperation fails. Patrons disagree and jealousy among themselves causes trouble; many times a maker will fail to operate successfully for them. As a coöperative maker it is most essential to do everything possible to deserve and retain the good will and confidence of the patrons, especially by making full and complete reports on all matters of business entrusted to you. Explain those things, such as the way milk should be handled on the farm, the quality and value and selling of cheese. Advise the officers on all parts of business. Lack of understanding and good faith often makes it impossible for makers to accomplish a success in coöperative business. In the long run it is those makers who are most prosperous and successful who can win the good will of the patrons by making the best of cheese for them, evidently trying to operate economically for them. It is true most men who manage coöperative factories have not the necessary time to devote to the business, therefore makers should remember the fact that coöperation is a business dependent mostly on their ability for success not merely on turning milk into curd and cheese.

Most factories needlessly lose money due largely to a desire to keep the cost of equipment down. That is not real economy. For instance, most factories only have one set of hoops to press their curd, and naturally they can only manufacture one style of cheese the year around. The cost of hoops is but small, and every factory should equip itself with at least a small number of different hoops at a very little expense, and then they could follow the course of the market and take advantage of different conditions governing it, thereby getting a larger percentage of their cheese on the market at top prices. This has been the experience at our coöperative plant, and it has accumulated many a dollar for us.

On account of the serious condition in the south the past year it has been difficult for our dealers to market daisies, therefore other styles were

from a half a cent to a cent higher. The cost of boxing is considerably higher, besides more being lost on weight; but in spite of all, factories continue to make all daisies, merely because the other way makes a lot of extra work. Often you will find coöperative makers do not wish to accomplish this saving for their companies, but surely in the face of these conditions it is not only economy, but self-preservation to equip with the necessary hoops and take advantage of the market conditions. Should we not give this subject thought? Surely it would help to make better conditions prevail in our coöperative plants, give encouragement to factory patrons and make them capable of paying better and higher salaries to their makers.

Another subject of disadvantage is the poor milk problem. Sharp competition in the cheese industry makes it unavoidable for makers to accept poor milk and renders them in continued fear of the patrons threatening to take their milk to the neighboring factory if they refuse, and they are only too glad to receive the patronage. Evidently there should be a better understanding and good faith among us makers. To strengthen the value of local organizations does much to better the serious conditions, and would be a great benefit to patrons, makers and the industry of our state.

One great reform needed in the cheese industry is a better educated, trained class of makers. There is much money lost through careless makers who will hurry their work through just for a good time somewhere. They do not think the farmer toils hard for this product. Should it not be our duty to do our part the best we know how, no matter where we are? We ought to master the art of cheese making, pay attention to the convention, read and study dairy papers. This will help manufacture a finer grade of cheese. Not only is it a great loss to the patrons but it is a great loss to the industry and ruins the market to flood it with inferior quality. Attention should be paid to having a uniform starter from day to day. On the other hand, cleanliness and orderliness are other important factors. Do not forget to be a guiding hand to your patrons as either a coöperative or an individual maker. Strive hard to bring them to the crown of success, and help you manufacture a finer grade of cheese.

## SHALL WE EQUIP OUR CHEESE FACTORIES FOR MAKING BUTTER?

C. F. Doane, U. S. Dairy Division, Washington, D. C.

During the past year there has been considerable agitation in various parts of the country looking towards the building of cheese factories. This was due largely to the high prices paid for cheese as compared with the prices paid for butter in May, June and July, the heavy producing months. Because of this comparatively high price a number of attempts were made to start cheese factories in localities in the South and West which we do not consider well adapted to cheese making, and while we have done everything possible to discourage the location of cheese factories in localities where they are likely to fail, this awakening of interest has called attention to the fact that not only may cheese pay better than butter some years and some seasons of the year, but that on the other hand butter may pay better than cheese at some particular seasons, and as I am talking to a cheese audience I want to call attention to the comparative prices received for cheese and butter in each month for a number of years, and also the comparative cost of making these two products.

Cheese makers as a rule have not had much experience in making butter, but it is a fact often commented on by people who have had a chance to observe that good cheese makers invariably become good



butter makers. It is more difficult to make good cheese than it is to make good butter, and the training which the cheese maker receives applies in a large measure to the operation of a creamery. In the very keen competition between cheese factories located so close together as they are throughout the cheese sections of this State the cheese maker has learned to get the last cent out of the milk delivered. This particular part of his training would be of great value to him in making butter, and I believe that cheese makers as a rule would secure the maximum returns from the milk delivered in butter making as they do in cheese making.

There is another question in regard to marketing the product. The cheese boards established in different sections of the State make it possible for factories to secure the highest prices for cheese sold and this without any particular effort on the part of the maker or salesman. It is very natural to suppose that the marketing of butter would be more difficult than the marketing of cheese. I think that the cheese makers of the State are largely responsible for the excellent markets for their product which they have built up in the last fifteen to eighteen years. I take it for granted that the cheese makers would show the same ability to marketing their butter that they have shown in marketing their cheese.

Very few creameries indeed receive the quality of raw material from which to make butter that is received by even the poorest cheese factory. The butter made in cheese factories would be the very best obtainable. For this quality of butter creameries of Minnesota are at the present time from two to four and five cents above the highest New York quotations. This should net the creameries New York quotations f. o. b. the local shipping point. As will be pointed out to you later the chief advantages to be derived from butter making occur in October, November and December. At this season the marketing of butter from the Minnesota creameries has begun to fall off and the buyers from New York who take most of this product are becoming a little anxious to secure a greater volume of this product. Because of these conditions there is no reason to believe that the cheese factories of Wisconsin could not take advantage of this market and receive the highest prices.

Another question arises concerning the cost of equipment. A large portion of the cheese factories are already equipped with boiler, engine and separator for the making of butter. The separator used for separating whey would be entirely satisfactory for separating milk. The additional equipment required would be a churn large enough to make 500 pounds of butter, costing about \$125, and a cream vat costing about \$300. If additional room was necessary it would be hard to give any figures for this, but ordinarily the additional equipment required by the best cheese factories would cost in the neighborhood of \$500. It is a fact of course that the changing from the making of cheese to butter or from butter to cheese involves some hardships, extra labor and loss, the value of which is difficult to estimate. Each man would have to consider this from his own point of view, but I think that I can point out to you enough profit to warrant the expense of equipment and the difficulties of changing.

This subject has been criticized by many of the best cheese makers because it is claimed that there would be nothing in it for them, even were they to make the necessary outlay of money and time. They do not claim that there would be nothing in it for the farmers and I understand fully their position. The keen competition which the factories, particularly of Sheboygan county have because of the fact that the factories are located so close together, has led to the cheese makers giving to the farmers more than rightfully belongs to them. To meet the competition of neighboring factories the cheese factory is often forced to pay money out of his own pocket and very few of the factories indeed, only those which are the best located for quality of milk, have returned more than a living wage to their operators. The cheese makers claim with some reason that if they put in equipment for butter making competition will

immediately force them to give the entire returns for the product to the farmers. Right at this point I should like to enter a criticism on the cheese makers of the state. They have shown unusual ability in making and marketing their product, but they have failed to show the ability to protect themselves.

Now I have here a table which gives the totals of the expense and income in comparison of making cheese and butter. I wish you would note this very carefully. These tables are made up largely from the averages of our figures in the dairy division from thousands of reports. I have used those figures and also my own experience and knowledge of the cheese business and also of the creamery business, for I have had experience in both creameries and cheese factories. One hundred pounds of fat make 270 pounds of cheese. That would be a yield of 2.7 pounds of cheese for a pound of fat. Does anybody want to question that statement?

### Discussion

Mr. Doane: The biggest yield comes from a factory where the milk averages 3.9. I know some of you think you would get a greater yield from a lower testing milk. One hundred pounds of fat makes 120 pounds of butter, 20 per cent of overrun.

Mr. Noyes: They don't allow that in this state.—15 per cent.

Mr. Doane: That will allow for about 15 per cent of water and 2½ per cent to 3 per cent salt, 1 per cent casein. Is there any question on that? As I say, it takes a good butter maker to do that, but I am taking for granted a good cheese maker will make a good butter maker; if they learn how to put water in their butter as well as they have in their cheese they will get better than this. My definition of a good cheese maker is a cheese maker that knows how to make the best kind of cheese but he also knows how to get the returns for the farmers. I believe that the cheesemakers ought to stand together on this cheese business.

Mr. Noyes: I have made cheese and butter both, and I have bought both and I know whereof I talk.

Mr. Doane: One thousand pounds of 3 per cent milk will make 81 pounds of cheese; one thousand pounds of 3 per cent milk will make 36 pounds of butter; one thousand pounds of 3 per cent milk will make about 2.5 per cent whey butter. Skim milk 30 cents for 100 pounds. Whey 15 cents 100 pounds. There is a question comes in on that and that is, it does not make so much difference to the cheese maker what these things are actually worth, but it does make a difference what the farmer thinks it is worth.

Mr. Haese: The farmer thinks there is more difference.

Mr. Doane: If you would go into the butter factory and offer the farmers in place of their skim milk, whey, they would not think it was worth so much, but when you go from a cheese factory and offer them skim milk and buttermilk, in place of whey, do they think it is worth twice as much?

Mr. Chaplin: It must be sweet to be worth that, the whey.

Mr. Doane: It doesn't make much difference. There would be a little difference on your sour whey, because the acid has used up a proportion of your sugar. The amount that would be used in forming acid would not be hardly enough to consider. The cost to make butter is 2 cents a pound.

Mr. Noyes: You can make it for that, I don't want to.

Mr. Doane: This is the actual cost in the coöperative creameries in Minnesota. It is a little less than that for us at Albert Lea. The creamery made for 1.95 and 1.80 cts. and provided for a sinking fund. Where they make butter by the pound, I suppose they charge 2½ to 3 cents. Of course, the milk was delivered in this case. The cost to make cheese is 1½ cents per pound. Most of your cheese makers, making it by the pound, get 1¼. The 1½ cts. is probably more nearly the actual cost.

Mr. Calvin: Do you take the cheese makers' wages out of that?

Mr. Doane: Yes, the cheese makers' wages should be considered on the same basis as the butter makers' are.

Mr. J. N. Buechel, Madison: That would all depend on the size of the factory.

Mr. Doane: Yes, but it does not make so much difference, because a small amount of milk in a cheese factory can be handled far more economically than in a creamery. I assume here a price of 30 cents a pound for the butter, thirty-six pounds of butter at 30 cents is \$10.80, plus \$2.90, the value of skim milk and buttermilk, minus 72 cents, the cost of making, equals \$12.98. Whey, \$1.37, whey butter, 50 cents—I have given that a very nominal price—brings \$1.21, the cost of making equals 66 cents, which is to be subtracted from this \$12.98 and that is the value of the cheese, and the price per cheese on that basis would be 15.2. I am not figuring on per cent of moisture, I am figuring on 2.7 cheese to a pound of fat, which is giving a very good yield.

Mr. Haese: 3 per cent milk?

Mr. Doane: Not necessarily. I have used 3 per cent milk there to give an easy figuring basis. If I use 3.5 or 3.6, I would have to do a lot of figuring in fractions.

Mr. Chaplin: I always thought the butter maker had to get 35 cents to equal up 13 cent cheese.

Mr. Doane: That is what everybody thinks.

Mr. Chaplin: Thirty cents for butter and 13 cents for cheese. They don't compete.

Mr. Doane: I think if they will allow the proper value to everything concerned, I think the figures in the tables are right. You will notice here I have the months of the year and I have the comparative cheese and butter price for each month and the average price for each month in five years. This is the New York quotation which I think, as I have said, you could secure F. O. B. your local shipping point if you were in the butter business. This is the Plymouth quotation on cheese, which is probably as fair a market and as good a market as there is.

Mr. Voigt: I do not think many butter makers can secure that New York quotation in Wisconsin.

Mr. Doane: There are lots doing it in Minnesota. You will find as you make comparison on these figures, as a rule, during the early months of the year the cheese business is a little bit the best or equal to the butter. You get down to the fall months of the year, beginning usually with October and November, and I think you will find on the basis of the figures I have used, that butter would be the best. Take October here, particularly this last year, which has been the most remarkable we have had. For instance, starting out in March, butter at 32 and cheese at 17. Cheese has the advantage all along there. You get down to July and then it breaks about even, but when you get down to October, then you can see the difference in favor of butter. The average price on butter on the New York market was 31.2, cheese 13.3.

Now I have some figures here that would show the advantage, say in October. I have given the cheese makers the credit for knowing when they will have to take advantage of the best butter market. There has been almost as much difference, for instance, between horns and twins, as between butter and cheese, but the cheese maker follows his own ideas on it and the most of them hit it fairly close. In October the price of cheese should have been a little over 15½ cents and it was 13½ cents. A cheese factory making 1000 pounds of cheese at a difference of 2 cents would lose \$20 a day. At the present time to meet this price in November, cheese should have been 17½ cents; it was 14½ cents, a difference of 3 cents. A factory getting 5000 pounds of milk a day, as many factories were, and making 500 pounds of cheese, would lose \$15.00 a day. Now I understand, of course, that there are a good many objections to the cheese makers, the men who are experienced in the business, making some of these changes. First there is the experience, then a person loses

a lot in a way in being forced to switch from one to the other. It is hard to get an estimate or put a value on what it would cost the cheese maker to switch from one to the other, but it has an actual money value.

Mr. E. A. Damrow, Fond du Lac: Did you ever have the experience?

Mr. Doane: You have got an equipment which is rusting out, probably as fast or faster than it would wear out when you were using it continually. You have to soak up your churn and do a lot of extra undesirable work and it is hard to put an estimate on what it would cost the cheese maker to do that. I am simply giving you these figures. I am not making any recommendations.

Mr. Beckman: Have you averaged those years for the butter and cheese, averaged them up for the whole year?

Mr. Doane: We have not. If you would ask for an average, I would say that cheese pays fully as much, if not better. It is hard to average them up, because in June and July you are getting a great yield of cheese and down in December and January, you are getting a very small yield. From the cheese makers' standpoint, particularly in Sheboygan county, where there is competition, I can see the other disadvantage. The competition between the factories has actually lead to paying money to the farmers out of the pockets of the cheese makers. This would probably be true in a good many instances with butter, if they changed over to butter and they did make \$20 a day, instead of saving that for themselves, or saving a reasonable amount of it for themselves, I imagine that the competition that has existed in past years would have the same effect as it has in the past. All the money would be paid to the farmer and the cheese maker would be to the expense of putting in his equipment and would probably not gain anything. But that is up to the cheese maker.

Mr. Noyes: On the butter side of that question, a man that just starts in to make butter in October, if you please, it is harder work for him to step right into the market and get the higher market price.

Mr. Doane: There is a large demand for that butter in Minnesota all summer, and by the time these prices in the table began to shade off, there is a greater demand for good butter. I don't think there would be any difficulty.

Mr. Noyes: That depends a great deal on whether they are summer dairying or winter dairying in October or November. When the cows are all strippers it is almost impossible.

Mr. Doane: I believe you could make good butter.

Mr. Noyes: I don't believe anyone could make good butter from a number of herd of dairy cows where they had been milking for six or eight months. I don't believe it could be done.

Mr. Doane: It is done, whether it can be or not.

Mr. Bitner: They have fresh cows.

Mr. Doane: That is a mistake. There is more winter dairying in Wisconsin than in Minnesota. I was stationed in southern Minnesota for six years and I am pretty well acquainted with conditions there.

Mr. Noyes: Mr. Doane, do you think that will work out in the common practice of cheese and butter makers in any state?

Mr. Doane: Cheese makers must work that out for themselves.

Mr. Carr: Will it work out in actual practice? Not that I object to those figures there. I believe those figures are right, but I don't believe it will work out.

Mr. Doane: There is one thing I forgot to mention. From the standpoint of the cheese dealer a large number of these cheeses made in May, June, July and August must go into storage to supply the winter demand. There comes a time when the dealers would like to keep this market up.

Mr. Chaplin: They do keep it up.

Mr. Doane: They do at a loss to themselves, so as to sell their summer make at a profit. If the market could be relieved of this cheese and the factories not make anything through October, November and December, I think it would be a great help for the cheese dealers. They are paying



more, I suppose, on the Wisconsin boards today than the cheese is worth.

Member: How would it be with the butter dealer?

Mr. Doane: Well, I can say in October, November and December there is a demand for that butter. There is a market for good butter which nothing will take the place of.

Mr. Noyes: I have put in both a cheese and a butter outfit, and I ran it for five years and I must say it was a detriment to me. I made cheese seven months and butter five months, and while I was making butter my cheese outfit was rusting out and rotting out, and when I reversed that, my butter outfit was rusting and not only that, but I had to put up ice, both for the butter and cheese at an extra expense. I quit the butter making altogether and turned into cheese. We make much more cheese in the fall. I would prefer making two kinds of cheese. I believe there is more profit in it for the manufacturer and I do not believe any factory, without he is getting a large run, I don't believe it is profitable to change from one to the other.

Mr. Voigt: Did Mr. Noyes get the New York price?

Mr. Noyes: No sir, I did not and I made good butter too. I fail to see how any man can start in in the fall and jump right into Elgin prices. I have been unable to get the fine flavor.

Mr. Chaplin: Speaking from the dealers' side. One-fifth of all the creamery butter made during the winter months is undergrade butter. The price of seconds is 26½ to 27 cents, one lot in 100 scoring extra. Everything else is undergrade. If you would do that, it would be very foolish.

Mr. Doane: At the same time those Minnesota creameries were getting from three to four cents above.

Mr. Scott: In December, in the year 1914, they were getting 15 a hundred, according to prices on the board, not including December months.

Mr. Doane: What do you mean, for the whole year?

Mr. Scott: Yes, sir, 1914. I say there is a difference of 15 cents a hundred. The creameries in Sheboygan county today have had to store their butter all over the country.

Mr. W. Watterstreet, Spring Green: I think it is not a very wise proposition. I think it wise for a cheese maker to stay in his own factory and make his cheese, but the thing to do, as Mrs. Dix said here, is to cooperate.

Mr. Chaplin: I would like to make a statement of a place I know of, where they changed over this spring from butter to cheese. They are making butter now and have been making butter, but it is a dissatisfaction. No two farmers are satisfied as to which is going to be the best. This man wrote me a short time ago. I knew the farmers had voted that he must put in a cheese outfit at a cost to him of about \$1500. They made cheese one month and then they were satisfied. He has in his cheese factory an outfit that cost him \$1500. During that time he did not make any more making cheese than he would making butter. It is a dead loss. The average cheese factory could not put in an outfit for less than \$1200 to \$1500 and that outfit wouldn't last more than five or six years.

Mr. Doane: I have always given Mr. Chaplain credit for being a very progressive cheese maker, but he does not agree with me on this subject. He has not convinced me and I have not convinced him.

## COÖPERATION AND BRAND

A. J. Steffen, Milwaukee

I am one of those who believe that reforms come slowly. The thing that is possible for us to do is relatively small in our own respective community. Coöperation is the watchword and will continue to be in all man's seeking to uplift—to do something along the lines of making it better for those to live who come after us. But when we consider the cheese industry, one of the largest industries in Wisconsin, if not the largest, the dairy industry as a whole if you please, you have a gigantic situation confronting you if you seek to improve, or if you seek to establish laws or principles, governing the manufacture and sale of those products.

One of the most important things to consider will be the question of licensing cheese factories and creameries. I believe it will solve a great many needs toward improving the quality of the cheese made in the state of Wisconsin, if the cheese maker is licensed. The licensing of factories, in some states has been accomplished and is looked upon as the solution of the poor cheese which has been produced in the past. It may or may not prove a solution in time to come. I remember some twelve years ago, when Dr. Gore, of the city of New York, attempted to better the milk supply of the city of Rochester. The United States Government issued bulletins upon the admirable work he had been doing. Dr. Gore, three years ago, admitted the milk supply of Rochester was no better than it was twelve years ago. After all, he was dependent upon the producer. He could not make the conditions better without the coöperation of the producer in his immediate vicinity, and this he was unable to accomplish.

The next question is the one affecting the brand of cheese. You have appointed a committee to consider the branding of Wisconsin cheese. Some men are imbued with enthusiasm, and believe that every cheese going out of Wisconsin should have a Wisconsin brand fixed to that package. You are dealing with a perishable product, as you all know. Bear well in mind that that cheese is just as apt to spoil after it leaves your hands as before, and that after all, the quality of that cheese is dependent upon the care in handling it. Your cheese may be a very fine cheese, but poor handling may spoil it, before it is put on the consumer's table. If you are going to brand that cheese as produced in Wisconsin, it is necessary to see that it is put in proper cold storage, in order to be deserving of the brand of Wisconsin cheese.

Another suggestion has been made and that is, that cheese factories are entitled to some protection in their respective communities from other factories being built within a half a mile or a mile. In all deference to your opinion, the moving picture operator in Milwaukee, the little delicatessen store, the butcher and the baker is in the same position you are in the country. He is not needing any more protection than you are needing. Go slow in attempting reforms in this gigantic industry, for if a wrong step is taken, it may retard rather than advance, this great, if not the greatest, industry in Wisconsin.

## Discussion

Mr. A. Kookmann, Grafton: I would like to ask if he thinks in order to build a factory, a man ought to have a permit from the state factory inspector. Here in Milwaukee, I understand, if a man is a milk dealer, he has to have a permit and license, something on that order. Suppose I am running that factory, and suppose the farmer should go to work and build a factory, do not you think those farmers ought to have a permit from the state?

Mr. Steffen: I don't believe the permit may cover a great many things. The state factory inspector considers the rights or the benefits of the community as a whole. I don't believe it is wise to place any restrictions upon any business so long as that business conforms to the law, produces a clean commodity.

Mr. Kookmann: A city milk license does not prevent anybody from doing business in the city of Milwaukee.

Mr. Steffen: It is a business of the city of Milwaukee to license a milk establishment. There is no known way, if he complies with the law, in which you can prevent that man from doing business. Neither do I believe that there should be any law enacted that would prohibit a cheese man or creamery man from building in a community. Of course, there are certain conditions involved in this controversy, if the man is not able to hold the patronage, you may have all the law that you please upon the books of Wisconsin enacted for your own protection, and yet there is nothing to prohibit those men from hauling their milk in another direction. There is no known way in which you can compel the citizens of the state to buy their meat, or whatever they will, in their community. Perhaps they should be licensed, but the license is for the purpose of seeing that the commodity is clean. As long as that individual keeps that store or business in a reasonably sanitary condition, that is all you can ask of that law.

I would say again, coöperation is going to be the coming thing. Be careful of enacting any legislation which will tell any man in this state that it will require five or ten thousand dollars to do business. It is a dangerous thing to establish, and I believe if you consider it in that light, you will see my point. Coöperation is the watchword.

Mr. Kookmann: I think this coöperating business will put the cheese maker right down to a hired man. If I were a young cheese maker, I would not work in a coöperative factory.

Mr. Steffen: I am not talking for the coöperative. I don't see why the man with the privately owned factory cannot coöperate with the other privately owned factories. If coöperative factories can give the farmer the kind of service he desires, he will build coöperative factories. After all, the milk producer has got the upper hand of the cheese maker. You are compelled to give the producer of the milk the kind of service he requires, and if he believes that the coöperative factory is the thing he ought to have, he will have it. I believe a privately owned factory should give the farmer the kind of service he desires. Bear you in mind this fact, that you cannot deny the milk producer what in his opinion is right. If we are producing milk and we believe we could get together and build a factory of our own, that would be our privilege.

Chairman: Mr. Steffen, you say that the coöperative factories will give the farmers the service they want, but so far as I have observed, they have not done that.

Mr. Steffen: You cannot deny the opinions of these people producing the milk. That sentiment is growing and it will probably go on until the sentiment will go the other way. Public opinion will hang a man.

Mr. Roache, Minnesota: It is a fact that coöperative factories may give the farmers better satisfaction, if properly managed. If there is a wrong man in it, it is good night.

Mr. Steffen: Public opinion is fostered and growing along a certain line and it is absolutely impossible for the cheese maker to go against that sentiment. If it is mismanagement, the privately owned factory will come in and stay for a number of years after that. It all depends on the man behind. It should be your duty, gentlemen, to solve these problems in a reasonable and rational way and to give the producers the kind of service they demand. I don't believe you have been doing your best to meet these problems that have been discussed from time to time. I believe if you will work just a little harder, put in just a few work licks, so to speak, you will benefit Wisconsin's great dairy industry.

## PROCEEDINGS OF TWENTY-THIRD ANNUAL MEETING 101

Mr. Roache: I am sure in Minnesota that 80 per cent of the factories are coöperative factories, and the coöperative factories are most successful in Minnesota and the same with creameries.

### ADVANTAGE OF COLD STORAGE AT THE CHEESE FACTORY

H. A. Kalk, Sheboygan Falls.

I am going to tell you the advantage of cold storage as I find it at my cheese factory.

You will have no extra expense on the cheese and will save the cold storage charge of  $\frac{1}{4}$  cent a pound or more, depending on how long you want to keep the cheese in storage. As it is not far to haul the ice at my factory, every farmer helps with team or by hand, and in two days we have the ice stored for our summer's use, as my farmers are all willing to do that for the cheese factory. They see it is for their own benefit.

In case you have pin holes, gassy milk or a little soft cheese, put them in the cooler; then the hot summer days won't bother you much.

My cheese is paraffined three times a week in summer; some paraffine every day; then weighed and boxed, and then put in the cooler till sold.

You have no mould to rub off your cheese; there will be no fat to run off your cheese in the hot summer days.

You can make the cheese a little softer, get a bigger yield and have a milder flavored cheese. It is a cold or cool place that the cheese wants, and it won't be long before every factory will have its own little cold storage plant.

### Discussion

Chairman: Mr. Kalk, do you put your cheese in the cold storage immediately after taking it out of the press in the morning?

Mr. Kalk: No, I carry it until afternoon and then I put it in cold storage.

Mr. J. B. Fillinz, Boltenville: Do you paraffine every day?

Mr. Kalk: About three times a week. Just as quick as it is dry.

Mr. Aderhold: How much ice do you have to put up?

Mr. Kalk: The ice-house is about 12 x 12 and 18 feet high and I fill it up.

Chairman: Two feet square, about 500 cakes of ice will cool any factory.

Mr. Aderhold: What arrangement have you for keeping ice in the cooler?

Mr. Kalk: I have got a little shelf in there, about as big as a table and I put three or four cakes of ice in there and that keeps it about 45. Sometimes it comes up to 48.

Chairman: The best success I have had with a cooler I fill it up about once a week and I put in twelve cakes of ice. That refrigerator is 10 x 12 and I have got a little space made off, 3 x 8 and I have got circulation in the cooler, and then I bring in the ice, I take it in from the outside, and I can keep that cooler down to 60 in the hottest weather in summer. I think that is pretty fair for the refrigerator and when it is not so hot, I can keep it around 52 or 53.

Mr. Kalk: I don't have to put ice in from the outside, just put it through the sliding door. I do not have to go outside at all.

Mr. Boldt: Why would not it be a good plan to have the ice on one side and the cold storage on the other, really have the cold storage one big ice-box and have a partition between and a little circulation at the top?

Mr. Kalk: It takes a good deal more ice. We have got a neighboring factory that has a cold storage plant and in the middle of August his ice is all gone.



Mr. Ubbelohde: How long do you keep your cheese in there before shipping?

Mr. Kalk: We ship every week.

Chairman: It is true, if a man wants to paraffine in a factory the hot days, you have got to have a refrigerator.

Mr. Bruhn: Don't misunderstand, Mr. Kalk, don't lay it all to the ce. In addition to the ice you have to have pretty good cheese before you put them in there.

Member: I want to know what kind of a curing room you have. Is it a curing room above ground?

Mr. Kalk: I have a curing room above ground with one window in it and I set my cheese far enough apart so the air will get around it.

Mr. Rhode: I would like to ask if he has gassy curd?

Mr. Kalk: If I have gassy curd, I work them a little longer in the vat and then I look at them and ship them to market immediately. If I think it will pass, I send it. If I think it won't pass, I won't send it.

Mr. Rhode: Some cheese has to be on the road and lay in a side-track two or three days before they get to Plymouth.

Mr. Kalk: I advise you to quit that kind of cheese.

Mr. Rhode: How long do you keep your cheese before you paraffine them?

Mr. Kalk: Some cheese is three days old and some I take out the day before. I don't paraffine so often, because it takes so long to heat the paraffine. If I had steam, I would paraffine every day.

Mr. Rhode: If the cheese is not in good shape, you paraffine one day old?

Mr. Kalk: Yes, if your paraffine is hot enough, it doesn't hurt the cheese.

Member: I would not recommend paraffining cheese if it was one day old with the majority of curing rooms, because it will not dry the cheese sufficiently.

Mr. Kalk: If you have good ventilation it will only take half a day to keep it dry.

Chairman: I believe it is a very good thing to have cold storage in the factory. I believe those little refrigerators pay for themselves in a year or two. Your cheese has a better flavor. Cheese that comes out of the cooler is in much better shape than cheese put in a hot room.

Mr. Ubbelohde: Do I understand Mr. Kalk it is to improve the quality of the good cheese, as well as the bad?

Mr. Kalk: It is to the interest of the good cheese and bad cheese. It costs me no money to put in the cold storage, the farmers do the hauling and the packing.

Chairman: I would say a little refrigerator would cost you according to lumber, about \$200 to \$300.

Member: You would build it yourself?

Chairman: Providing you have a cooling room big enough. If you have twelve thousand pounds of milk, I would advise you to build an ice-house, 14 to 18 feet long and 18 feet high and that will be ice enough to carry you through all the hot weather.

Member: Do you sell your cheese every week?

Mr. Kalk: Yes, upon competition.

Chairman: You will find those factories having these local coolers are the ones that receive best prices, so it is to the interest of the dealer to put them in.

Mr. Aderhold: I would like to ask what temperature he can keep his curing room at in the hottest weather.

Member: About 80 and better.

Mr. Aderhold: Don't you think it would be better to keep it at 60, instead of 80?

Member: Sure.

Mr. Kalk: Did you ever see any good cheese cured at 80 or above?

Member: Yes, I did.

Mr. Kalk: Was it a good cheese they cured? What score would you put on it, 95 or 96 or 75?

Member: 99, if it was a Limburger.

Mr. Kalk: Before I started sending cheese to a scoring exhibit I thought I made good cheese. The first cheese I sent, I kept that four weeks. I got 81½ on that cheese. I had a temperature of about 80. Ever since then I have put my cheese in cold storage and I have never had a score below 92.

Member: Does the cheese dealer have any objection to the paraffining of the cheese?

Mr. Kalk: Some do and some don't. That generally depends upon whether you have a cold place to keep it.

Mr. Voigt: As we are situated at Marshfield we have only two local dealers. One is a packer and the other is an individual. We are always shipping cheese to the same concern as long as we can get along with them, and they will fight the paraffine just as long as they can. It would be different if we had a board, because that would draw more buyers there and the more buyers we have, the less they would be in a position to object to paraffining cheese.

Mr. Kalk: If you can't get more buyers than two and they don't want paraffining, it would not be the thing to paraffine.

Mr. Voigt: There is more cheese at Marshfield to patronize a local board than at Sheboygan.

Mr. Noyes: The majority of those people who paraffine their cheese in the package, do it so poorly that it is better not to paraffine them at all, because we have to take them in the warehouse and reparaffine them. The cheese always has to be reweighed after it enters the warehouse and there is lots of that paraffine that is broken and it leaves a place for that cheese to mould. I do not think it is feasible at all for the general factories to paraffine the cheese, because they do it so poorly. If we are caught with a few ounces short, we are liable to a fine and the dealers are being held up all the time. That is the reason why, in our section, we don't want them paraffined at all, but if it is done, it should be done properly with very warm paraffine.

Mr. Kalk: Did you ever see the cheese that the dealers paraffined in their own warehouse? Is the cheese in the same condition after it leaves them? Ship it on a train and your cheese is just as broken up as our cheese. It is in the same condition.

Chairman: There is a difference of opinion here. I have been in some warehouses and seen some men work, and if they paraffined cheese for me that way, they could not get out of the door fast enough. I never paraffine cheese under 212 degrees. I have seen a local cheese house where the cheese had been paraffined at a temperature—the paraffine been at 180 degrees. I would not accept such paraffining as was done there.

### CHEESE AT PANAMA EXPOSITION

Mr. J. Rounds of Waukesha addressed the convention regarding an exhibit of cheese at the Panama fair at San Francisco. The best the commission could do was to supply not to exceed \$1,500, to give the space and a two-ton ice machine. Mr. Noyes said a carload of cheese could not be sent out there and exhibited for \$1,500. It would cost \$3,000 he thought. In response to a question from the chairman fifteen cheese makers offered to donate one cheese.

Mr. Ubbelohde: If this exhibit does go through, and they conclude to exhibit, those who are willing to make a nice cheese, something Wisconsin would be proud of, should concentrate the cheese in one section and let one buyer handle it. In this way we can get eight or ten in Muscoda and maybe 150 in Plymouth and all the dealers around will have something to send to the coast. I certainly think it would be a good thing

After further discussion the subject of the exhibit was left to the officers of the association, on motion of Mr. Kalk.

Total.....	\$1,218.14
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### Drawn on State Treasurer

Schwab Stamp & Seal Co., Fobs.....	\$66.95
W. C. Thomas, for printing.....	39.50
E. L. Aderhold, Judge, expenses.....	13.22
J. D. Cannon, Judge, expenses.....	9.93
Total.....	\$129.60
Balance in State Treasury.....	470.40

The secretary reported the death during the year of two esteemed members of the association, Samuel Indermuehle, at Leroy, Wis., Nov. 20, and of Joseph Williman, Dec. 25, at St. Mary's Hospital, Madison. He also reported efforts to increase the membership of the association now comprising only 400 of the 3,000 cheese makers of the state, the increase being only about five per cent; impressing the need of the larger membership for larger influences on the cheese industry. The financial condition of the association is better, he said, than at any time in its history with ample funds to pay all bills. He added: "By an act of the last Legislature the \$600 appropriation which we formerly received in a lump sum is now retained in the state treasury subject to our orders, but in order to draw upon this appropriation each bill must be accompanied by a voucher, which is furnished by the state. This voucher must be sworn to before a notary and signed by the president and secretary of the association. This may look like considerable red tape, but after thinking it over carefully you will agree with me that it is a safeguard which should have been employed since the first of these appropriations was made. To the best of our knowledge all associations receiving state aid are now receiving their appropriations on this same basis.

On motion of H. J. Noyes, Muscoda, the secretary was given a unanimous vote of thanks for his very complete report.

## REPORT OF TREASURER

**T. A. Ubbelohde, Glenbeulah**

Balance on hand, January 7, 1914.....	\$122.99
Contribution from Hon. S. A. Cook, Neenah, Wis.....	100.00
Contribution from Diamond Crystal Salt Co.....	10.00
Exhibition cheese sold to H. J. Grell.....	259.07
Exhibition cheese sold by W. J. Cross .....	16.60
Membership Fees.....	328.00
Deducted from sale of cheese for pro rata premium fund.....	130.00
Deducted from sale of cheese for membership fees.....	30.00
Cash for pro rata received from exhibitors.....	7.00
Received from A. J. Blahnik to pay difference.....	1.54
“ “ U. T. Prouty “ “ .....	.08
“ “ Ernest Boll “ “ .....	.38
Membership Fees.....	4.00
H. J. Grell, Milwaukee, Wis.,.....for advertising space	5.00
Germania Pub. Co., Milwaukee, Wis.....	5.00
J. S. Hoffman Co., Chicago, Ill.....	5.00
Glauser Marty Co., Chicago, Ill.....	10.00
D. & F. Kusel Co., Watertown, Wis.....	10.00
Louis F. Nafis, Chicago, Ill.....	10.00
Kiel Wooden Ware Co., Kiel, Wis.....	10.00
Stoelting Bros., Kiel, Wis.....	10.00
Republican House, Milwaukee, Wis.....	10.00



Richardson Bros., Sheboygan Falls, Wis....	" "	10.00
P. J. Schaefer Co., Marshfield, Wis.....	" "	10.00
Racine Aluminum Shoe Co., Racine, Wis..	" "	5.00
Wis. Dairy Supply Co., Whitewater, Wis.	" "	15.00
Brillion Iron Works, Brillion, Wis.....	" "	5.00
Plymouth Cheese Co., Plymouth, Wis.....	" "	10.00
Winnebago Cheese., Fond du Lac, Wis.....	" "	5.00
Dairy Record, St. Paul, Minn.....	" "	5.00
Juneau Boiler Works, Juneau, Wis.....	" "	10.00
Vilter Mfg. Co., Milwaukee, Wis.....	" "	10.00
De Laval Separator Co., Chicago, Ill.....	" "	20.00
J. B. Ford Co., Wyandotte, Mich.....	" "	10.00
Creamery Package Mfg. Co., Chicago, Ill.	" "	25.00
Amer. Steam Pump Co., B. Creek, Mich.	" "	9.80
Reinhold & Meyer, Plymouth, Wis.....	" "	5.00
Worcester Salt Co., Chicago, Ill.....	" "	10.00
Danrow Bros., Fond du Lac, Wis.....	" "	10.00
Colonial Salt Co., Chicago, Ill.....	" "	10.00
International Harv. Co., Chicago, Ill.....	" "	10.00
A. H. Barber Cream. Sup. Co., Chicago, Ill.	" "	10.00
C. A. Straubel, Green Bay, Wis.....	" "	5.00
Quincy Mkt. & Cd Stor. Co., Boston, Mass.	" "	5.00
Callaway Fuel Co., Milwaukee, Wis.....	" "	5.00
Union Storage Co., Pittsburg, Pa.....	" "	10.00
Coöperative Creamery Sup. Co. Milw. Wis	" "	10.00
Elov Erricsson, St. Paul, Minn.....	" "	5.00
Automatic Adding Machine Co., New York City, N. Y.....	" "	5.00
Jos. Dusek & Co., Chicago, Ill.....	" "	10.00
Stoelting Bros., Kiel, Wis.....	" "	10.00
Plymouth Refrig. Co., Plymouth, Wis.....	" "	5.00
Albert Blank, Sheboygan, Wis.....	" "	5.00
Dairy Mkt. Reporter, Sheboygan F's, Wis.	" "	10.00
Reinhold & Meyer, Plymouth, Wis.....	" "	5.00
S. H. Conover, Plymouth, Wis.....	" "	5.00
H. Wheeler Co., Plymouth, Wis.....	" "	10.00
H. Sprenger & Son, Sheboygan Falls, Wis.	" "	5.00
Sheboygan D'y Prod. Co., Sheboygan, Wis.	" "	5.00
Richardson Bros., Sheboygan Falls, Wis....	" "	10.00
C. E. Blodgette Co., Marshfield, Wis.....	" "	10.00
Pauly & Pauly, Manitowoc, Wis.....	" "	10.00
J. Hanson Co., Neenah, Wis.....	" "	5.00
J. Habhegger, Watertown, Wis.....	" "	5.00
Sheboygan Bandg. Fact., Sheboygan, Wis.	" "	5.00
Neenah Cheese & Cd. Stor. Co., Chicago, Ill.	" "	10.00
Neenah Ch. & Cd. Stor. Co., Neenah, Wis.	" "	5.00
Stanley Woodenware Co., Stanley, Wis.....	" "	10.00
J. S. Hoffman Co., Chicago, Ill.....	" "	5.00
Grunert Cheese Co., Chicago, Ill.....	" "	5.00

Total..... \$1,484.46

#### Disbursements

Geo. Burroughs & Son, for Association Premiums.....	\$53.00
F. A. Averbek & Co. to replace watch lost by U. S. Baer....	12.50
Trowbridge Engraving Co., Stereopticon work.....	15.00
Germania Publishing Co., Printing Programs.....	154.00
H. P. Olsen, cuts, printing, postage, mailing programs.....	24.13
Miss L. D. Mason, reporting convention.....	60.00
Repaying loan and interest.....	309.00

# PROCEEDINGS OF TWENTY-THIRD ANNUAL MEETING 107

Republican Hotel bill.....	51.80
Pro rata premiums paid.....	199.85
Paid exhibitors for cheese.....	282.65
Shortage on pro rata premium fund for coming year.....	2.27
Chas. Sorrenson, for chair.....	15.00
Clair R. Cannon, clerical work.....	5.83
Fred Marty, Judge, expenses.....	12.40
Alex Schaller, Judge, expenses.....	12.25
W. J. Cross, Superintendent.....	2.28
C. E. Lee, expenses attending convention.....	6.18
<b>Total.....</b>	<b>\$1,218.14</b>
<b>Receipts.....</b>	<b>\$1,484.46</b>
<b>Disbursements.....</b>	<b>1,218.14</b>
<b>Balance on hand.....</b>	<b>\$266.32</b>

## REPORT OF BOARD OF DIRECTORS

At the meeting held by the board of executive officers, at the State Fair park on September 15, 1914, called to order by President Damrow, it was decided to hold the Twenty-third Annual Convention in Milwaukee, on January 6, 7, 8, 1915.

It was moved and seconded that the president appoint a committee of one to represent the Wisconsin Cheese Makers' Association at the National Dairy Show in Chicago. T. A. Ubbelohde was duly appointed by the President.

We examined the books of the Secretary and Treasurer and found them to be correct.

JACOB KARLEN, Jr.  
P. H. KASPER.

## RESOLUTIONS

Resolutions were adopted thanking the officers of the association, the Citizens' Business League of Milwaukee, contributors of premiums, the Daily Market Reporter, official organ of the association and also:

Whereas: the Hon. S. A. Cook of Neenah has been a great benefactor to the dairy interests of the state of Wisconsin, dating from his term in the Congress of the United States many years ago when he effected the passage of the filled cheese bill, which action wrested the cheese industry of the United States from a disgraceful attempt of an unscrupulous element to manufacture and market a spurious article for whole milk cheese, and the passage of which bill brought back the honor and reputation of Wisconsin genuine whole milk cheese, and which further has resulted in adding many millions of dollars to the dairy interests of the state, and

Whereas: Mr. Cook has ever been mindful of the welfare of the great dairy interests of Wisconsin, and a steadfast supporter financially and otherwise of the Wisconsin Cheese Makers' Association and kindred organizations; therefore

Resolved, that we hereby express our deep appreciation of his loyal and substantial support of the dairy industry in general, and kindly interest in the welfare and success of our association.

E. L. ADERHOLD,  
H. J. NOYES,  
O. RHODE.

**OFFICERS ELECTED**

Officers were elected as follows:

President.....	O. A. Damrow, Sheboygan Falls
Vice President.....	H. J. Noyes, Muscoda
Secretary.....	A. T. Bruhn, Spring Green
Treasurer.....	T. A. Ubbelohde
Director.....	J. W. Cross, Milwaukee

**CHEESE SCORES****American**

1st—A. C. Werth, Appleton, Wis.....	97.375
2nd—Andrew Peterson, Lone Rock, Wis.....	97.125
3rd—Otto G. Rhode, Unity, Wis.....	96.75
4th—John Greinen, Kaukauna, Wis.....	96.62

**Brick**

1st—Oswald Schneider, Appleton, Wis.....	96.00
2nd—Buddie Schaller, Barneveld, Wis.....	95.75
3rd—Fred Piper, Beaver Dam, Wis.....	95.50
4th—John Jenny, Alma, Wis.....	95.25

**Swiss**

1st—Fred Schlappi, South Wayne, Wis.....	95.75
2nd—Fred Emmenegger, Romona, Wis.....	95.25
3rd—John Emmenegger, Gratiot, Wis.....	95.00
4th—Robt. Emmenegger, Gratiot, Wis.....	94.50

**Limburger**

1st—Ernest R. Haessig, Monticello, Wis.....	96.25
2nd—Ed. Buntrock, Cambria, Wis.....	94.75





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