saying exactly the percentage, the cheese maker knows his milk, knows all the conditions affecting his particular factory.

You say, "how can the maker tell how much to skim?" Nothing but experience can tell him that, there is no set rule that I would follow, and I have been making cheese since 1892, thirty-two years, and I would not dare to say just how to tell what should be done.

Yours very truly,

F. A. Kuenzi.

The President: Here is a paper from Mr. H. C. Jordan from Antigo, on making Swiss cheese once a day.

MAKING SWISS CHEESE ONCE A DAY

By H. C. Jordan, Antigo, Wis.

Making Swiss cheese once a day is a matter that rests entirely with the cheese maker and his patrons. The method has advantages and disadvantages that should be well considered before undertaking the change.

Two important, outstanding advantages are, first, it would give the cheese maker a normal working day, allowing him time for recreation and sufficient sleep, which the twice a day factory does not afford. Second, it would save the patrons a trip to the factory every evening which must be especially tedious during busy seasons and holidays. It is not to be expected that a man getting up between four and five o’clock in the morning, working hard all day and half the night, will have the proper efficiency to do his work as it should be done and make good cheese day after day. I think it may safely be stated that with the application of modern methods, fully as large percentage of good cheese will be made in the factory making once a day.

A moderate amount of acidity in the milk is desirable for the best results, but the growth of organisms other than lactic acid bacteria must be guarded against. This means that the milk must be produced under sanitary conditions and cooled to sixty degrees or less immediately after milking. This is naturally the duty of farmers producing the milk but it will be the business of the cheese maker to instruct his patrons along this line and co-operate with them in every way possible to get the desired results.

A larger make room and more equipment will in most cases, be necessary, as the milk will have to be taken care of as fast as it comes in and made up; holding the milk in a receiving vat waiting for the first cheese to be taken from the kettle, would be dangerous unless it was chilled down to a low temperature.

Less rennet will be required to get proper coagulation in the same length of time than for milk made up twice a day. The curd develops faster all the way through the process, from the time of setting the milk to dipping the curd. In the average factory it will work out something like this: thirty minutes to thirty-five for setting, fifteen to twenty minutes to cut and reduce curd to desired fineness, another ten to twenty minutes with the stirrer (Brecher) before turning on the heat. Then heat up in thirty minutes to desired temperature,
very slowly at first, then as temperature rises a few degrees more
steam may be turned on, gauging time and temperature so that ap-
proximately thirty minutes will be required to reach the cooking
temperature.

Experience has shown that better and more uniform results are
obtained with the use of pure culture of Bulgaricus and rennet ex-
tract than with the home made rennet. The home made rennet very
often is the source of serious Swiss cheese troubles and should be
banished from the factory.

The prevailing opinion among Swiss cheese makers has been at
least until quite recently, that good cheese could not be made from
milk delivered to the factory only once a day, but proof to the con-
trary is now available all around us. The long hours demanded of
cheese makers continually day after day in twice a day factories, in
combination with the heavy labor involved in this work, requires men
of unusual ruggedness and endurance.

The most essential requirements for a change are: Proper care
of the milk on the farm, both morning and evening, milk must be
cooled to sixty degrees Fahrenheit or less, immediately after milking,
and delivered to factory promptly after morning's milk is cooled.
Have enough kettles to take care of all milk so it will not have to be
held. Standardize milk to the required ratio of fat to casein for the
proper texture in cheese: watch acidity of the milk with an acid-
imeter, milk over .18% is over ripe. Use three-tenths to one-half of
one percent Bulgaricus starter; set milk with about one and one-half
ounces of rennet per 1,000 pounds of milk.

When the milk has reached just the right stage of coagulation, cut
up curd carefully, when milk is standardized excessive loss of fat in
the whey should be avoided, as it reduces the yield of cheese. Watch
cooking temperatures closely, the curd will not stand extremely high
temperatures.

Unless you can get the hearty cooperation of your patrons in the
care of milk do not make a change.

DISCUSSION

MR. UBBELOHDE: Mr. Chairman, do we understand that to make
a high grade Swiss cheese the milk must not be too rich?

THE PRESIDENT: The excess amount of fat causes the glass tex-
ture which is an injury to the Swiss cheese industry.

MR. MARTY: Mr. Chairman, now the reason is they leave some fat
out in Switzerland, it isn’t so much glass but that they send, 5000
barrels of cheese over here and have to make a cheese that will stand
transportation. I don’t see that we have to take so much out here in
this country where we send the cheese right from here to the market.

THE PRESIDENT: Are there any more questions?

MR. MARTY: Mr. Chairman, the reason I haven’t taken an active
part in this matter here, I think I brought this up a year ago before
this convention and I brought it up the year before at the Southern
Wisconsin Cheese Makers’ and Dairymen’s Association convention in
Monroe. We even got the complaint regarding the matter somewhat
later through the medium of a local paper up there and the pointed
question I will not mention. You know the man as well as I do and he happens to be a patron of the factory in Mr. Kuenzi's neighborhood and he took issue in the matter. Not that I couldn't have given an intelligent answer to the matter nor that I believe he misunderstood the question that was intended on the standardization of milk on the basis of ratio between fat and casein. I am satisfied he does not understand the proposition. Here is the point however, in order to go ahead with a matter of this kind that shouldn't be put on the shoulders of any individual whether he be the state dairy and food commissioner of this state or any member or officer of any organization, but I believe that this matter should have the united support if we expect to do anything with the matter and it would be brought up for argument either for or against before men interested in manufacturing of that particular cheese in Wisconsin. It is hard to draw the line to say you can standardize the milk for manufacture in cheese in Wisconsin. Some eight, nine or ten years ago, I think it was 1917, the law was enacted that permits a separate standard on cheese for the manufacture of Swiss cheese. I am satisfied that at the time that that law was presented to the legislature of the state that the intent of the law was misinterpreted to the body in session in that particular legislature. It was not put in the law as I had advocated for three or four years leading up to the enactment of that bill, at our conventions in Monroe for two or three years, as past records of that organization will show you today. But the law put into the Statute book was based upon the finished product. The intent of the law as we wanted it passed at that time was to give us a lawful right and privilege to manufacture to that extent that we can have an elastic curd that would respond to the formation of the eyes and holes of the Swiss cheese. Now naturally if you were to put large eyes into your American cheese which seemingly seems necessary on our market, you know what happens to your American Cheese. You would have seams running through your cheese as we have in our Swiss cheese.

In order to make a Swiss cheese that is characteristic in the eye formation, we must have a curd that will break down the non-elasticity and respond to the eyes and holes. The law that was intended to help the evil went through with many objections but it became a law. The president of that organization at that time, as I was informed, later on presented it to the body of the Assembly just as the law reads today and I am satisfied that he presented a different measure to cure the ills and complaints that the Swiss cheese makers would be up against; and we would have had a law that we wanted and it would have been up to the American cheese people to appeal that law if they didn't like it at this particular time. Instead of us finding ourselves with the law, the law simply reads we are permitted to manufacture a Swiss cheese which contains 43 per cent of butter fat in the water press substance. We can easily manufacture cheese in Wisconsin corresponding to the 43 per cent. We are still within the law, but the law does not give us that right to abstract part of the cream from our milk at the present time. And who does it at the present time is violating the state law.

It isn't said that Swiss cheese can only be made down in the southwestern part of the state. You can make it clear up in Ashland or Superior. You can make it anywhere in Wisconsin and I want to tell you that Barron County today seems to become the banner country of Wisconsin, and is manufacturing the most beautiful Swiss cheese today, some of the very finest. With the small representation in percentage on exhibition here, they have carried off the prizes and honors at our conventions and state fairs. So the industry is open to all of you and I believe that this petty jealousy which is developing on this matter here should be disregarded if we can help out that
particular man that makes Swiss cheese in Wisconsin. Some fine morning some other state across the lake to the West of us will give a law just exactly as is needed for the manufacture of Swiss cheese, and they will go on and steal a march on us and here we are, our legislature preventing us.

DISCUSSION OF SKIM MILK CHEESE LAW ENFORCEMENT

By J. Q. EMERY, Dairy and Food Commissioner

Mr. Chairman, I have a few words I would like to say, I think it is recognized I am very glad to say, that the Wisconsin cheese industry is immense. I have been at different times in the office of the Dairy and Food Commissioner and besought to set aside a law for the particular benefit of classes or individuals, that I know on my part as Dairy and Food Commissioner would be a criminal act punishable with imprisonment. I have never been willing as Dairy and Food Commissioner to serve the state in that capacity. It is the legislature of Wisconsin that declares the public policy of the state. The legislature is composed of men chosen by the voters of the state and in that legislature they legislate in the capacity of the people of Wisconsin represented in the Assembly. That body has dictated to the Dairy and Food Commissioner his duties to perform to the best of his ability.

Now I am speaking of this to show why if I were disposed, I should not listen to the pleas of special classes or special privileges of any kind. And no man in an official capacity who will do that is worthy of his position.

Trace the laws through from the beginning to end and you will find that it has been duty of the Dairy and Food Commissioner to follow the dairy production from the cow to the consumer. That has been its maxim. No tampering with milk that is sold to the public; no tampering with milk that is brought to the cheese factory by the farmers; no tampering of the milk in any way. It shall be a pure product. What has been our problem years ago and what were the failings of the milk business—adulteration and impurity by injecting into it skimmed milk and foreign fat and the palming off on the public as something else.

Now in the same law they enacted the oleomargarine law, part of the same section of this provision of law which as Dairy and Food Commissioner I have charged with and for enforcement and it is this, I have been appealed to to ignore or set aside knowingly and wink its violation by some gentlemen who are in this room. There is a law on the statutes as I say, a part of the law that enacted the oleomargarine law, that provides that in the manufacture of skimmed milk cheese, which is therein defined, or cheese produced from milk from which any portion of the fat has been removed is prohibited; unless it is put into cheese on certain specified dimensions and that law has been on the statute books for nearly a third of a century. Now that