The cheese gets ripe this way and the moisture, which expels day after day while the cheese is ripening remains on the cheese and that is what produces this odor.

The President: We will now take up the next subject, brick cheese making by Mr. Gottlieb Marty, of Madison, Wis., Instructor in Foreign Cheesemaking at the Wisconsin Dairy School.

BRICK CHEESE MAKING.

Gottlieb Marty, Madison, Wis.

The subject on which I have been requested to prepare a paper by our Secretary, Mr. Baer, is the manufacture of brick cheese, using a starter in the process.

We know that Wisconsin leads any state in the union in making cheese, both American and foreign, but there is still room for improvement in the quality of the average cheese made in this state. One of the most important changes in the methods employed is the introduction of the use of a good starter, for the quality of the cheese depends greatly upon the kind of starter used. Every up-to-date cheese maker knows that there is no other one factor which influences the quality of the product to a greater extent than the use of a good commercial starter, and it is today a recognized fact that a good starter will control to a great extent any abnormal fermentation in the cheese. I will not go into the details of manufacturing of brick cheese nor confine myself to the preparation and propagation of starters and startolene, but rather will state the results which we obtained at the Dairy School in Madison when we used a starter.

The first of December, 1905, we began making cheese. The milk we selected at the receiving room had an acidity of .16 to .18 of one per cent; the curd was cut fine and cooked at 110 degrees. An hour or more elapsed from the time of cutting to dipping. The results obtained from that month’s cheese made without starter were not uniform. After the cheese was cured, we had some which graded No. 1, some which graded No. 2 and some No. 3, although we did not have any that is termed
“blowed cheese.” That means where all the gassy fermentations went on while the cheese was still in the molds, leaving an unshaped cheese after salting and curing.

In regard to the cheese which graded No. 1, I would say that the conditions of the milk were just right to get a good cheese without the use of the starter. The cheese that graded No. 2 appeared well the first two weeks until abnormal fermentation set in, huffing the cheese at certain places, which in most cases were near the rind. In the third grade or the worst cheese, the fermentations set in earlier keeping on continually until the cheese was cracked through the center, giving off a bad gassy odor.

Commencing the first of January and continuing to the end of the Winter Course, we used a one per cent starter and no abnormal fermentations whatever occurred during the process of manufacture. The result was very satisfactory for the whole month’s make of cheese was very uniform. Encouraged by the results obtained, we made cheese with starter in March and April with the same success. To illustrate, I will briefly mention the two most important experiments made. On the 17th of March a certain amount of milk was taken, well mixed and divided into two equal parts; to one vat we added one per cent starter, while none was added to the other. Both vats were set at the same temperature. The cook was the same in both cases, but the time required different. It took 45 minutes to firm the curd in the vat having the starter and one hour where no starter was used. The body and texture was better in the cheese made from milk with the starter and the curing went on faster. At the first scoring contest the cheese made from milk where starter had been used scored three points higher than from the milk where no starter had been added.

The other experiment was made from the same patron’s milk three days in succession. The milk had the same acidity and richness each day. As nearly as possible the same cook was given each lot. On the first day, the cheese was made from milk without a starter; the time from cutting to dipping was one hour and five minutes; on the second day, one per cent starter was used. The time from cutting to dipping was 55 minutes. On the third day we used two per cent starter; on this day the curd was firmed in 45 minutes, twenty minutes sooner than the first day. The score received at the second
contest was 93 points for the first day’s make; 94½ for the second day’s make and 98 points for the cheese made the last day.

From the foregoing we can see what a good starter will do when used in connection with brick cheese making. Every cheese maker, no matter whether he makes American or Brick cheese, will turn out a more uniform product when a good starter is used. He must, however, understand the use of an acidity test and the preparation of starters for if he does not understand these fundamental points, he will get himself into all kinds of trouble when he commences to try to use a starter in making brick cheese.

DISCUSSION.

The President: I would like to ask Mr. Marty if he would recommend the use of starter in Limburger cheese making?

Mr. Marty: I would if the milk was sweet enough to only contain .1 of 1% of acidity, but in the case of milk having more than that I would not.

Mr. Glover: Do I understand that the milk making brick cheese in which starter was used cured quicker?

Mr. Marty: Yes sir.

Mr. Glover: Have you ever tried using starter when the milk was gassy, and noted its effect?

Mr. Marty: Of course you always get the best milk on the intake so I just add the starter, and the milk generally has from .16 to .18% acidity. I heat the milk up and add the starter just before setting. I add the starter to overcome the undesirable ferments in the milk. The cheese comes quicker if I add the starter.

Mr. Baer: Then you would advocate the use of starter in brick cheese making if you knew the milk contained gas?

Mr. Marty: Yes I would.

Mr. Glover: Wouldn’t it be a nice experiment if you made it a point to get some gassy milk and note the starter’s effect? Sometimes you can reach from the perfect to the imperfect, or from the imperfect to the perfect. New conditions come in.

Mr. Marty: Generally as soon as we apply the steam and we get the temperature to a certain point the cheese commences
to get spongey, so a number of cheesemakers in this case commence to warm the cheese curd higher. I know in some cases they warm curd to 130 degrees.

The President: Mr. August Westphal has had a good deal of experience using starter with gassy milk in brick cheese making. Please tell the cheesemakers what you think of it, Mr. Westphal.

Mr. Westphal: Brick cheese should be made with a starter. Mr. Aderhold did some work for me years ago when we had a lot of trouble and he did well without starter, but at the same time it is hard to make a moist cheese,—it gets a little dry. Of late years I have made it with home made rennet and I have had good results. Of course the starter is the main thing in making brick cheese, especially when you have gassy milk.

The President: The starter you had there was a pretty big starter. You had a lot of trouble with gas and you were trying to overcome that. It did help you in that respect but, of course, where you had to use a big starter you could not make the best quality of cheese.

Mr. Parkin, Minnesota: I would like to ask the gentleman if in using starter in this brick cheese it does not develop a somewhat cheddar cheese flavor?

Mr. Marty: Yes it would if the milk is too ripe. If the milk contains .20 of 1% of acid if you add a starter you will get a cheddar flavor in brick cheese, but if the milk is only about .10 or 14-100% acidity you will not get that flavor, but I would add the starter just before setting.

Mr. Fred Marty: I would like to ask Mr. Marty if it is not true that by using a starter in such cases where abnormal fermentations are often present during the hot summer months where it is a sweet curd cheese, if we do use a starter under those conditions, even if we should produce a sort of cheddar flavor in the brick cheese would it not be better than to have a tough or corky body as in dry cheese, which is caused from abnormal conditions? I would like to ask Mr. Marty if he would recommend that a starter be used during such periods when abnormal conditions are hard to control by any other means than using a starter?

Mr. Marty: I guess it will not hurt the cheese. Last summer we had more Swiss texture in our brick cheese than brick texture. Brick is what we call a soft cheese, so I would rather
have a cheddar flavor in brick cheese and soft cheese than the contrary.

Member:  Mr. Marty said in his paper that in his experimental work he divided the milk in the vats, in one part put a starter and in the other did not.  I wish to ask Mr. Marty whether he used the same amount of extract and the same kind of extract in both vats?

Mr. Marty:  Yes, I used four ounces of commercial rennet extract to a thousand pounds in each vat.  In one vat I used a starter so the milk would coagulate in twenty minutes, in the other thirty minutes.

Mr. Harkin:  What percent. of acidity did your whey have when you took it off?

Mr. Marty:  In the vat in which I used starter we had .12%, in the other we had .10%.  I cooked the curd to 112 in one vat.  In the vat where I used no starter I heated the curd to 118.  You would get the same texture but would get a smaller yield where you heat the curd so high.

The President:  Do you think it necessary for brick cheesemakers to have the acidmeter in the factory?

Mr. Marty:  Yes, that is the main thing, that is the thing to go by.  The first thing necessary for a man when he starts to make brick cheese is to have an acidmeter so as to know how much acidity the milk has.

Mr. Schaller:  What kind of starter do you recommend?

Mr. Marty:  I use Ericsson’s and Hanson’s and all kinds, anything so long as it is of good flavor.

The President:  Do you believe in using pasteurized milk for your starter or would you use raw milk?

Mr. Marty:  I sterilize the milk.

Mr. Luchsinger:  The cheesemakers of Dodge county, Wisconsin, have the reputation of making the best brick cheese, and I would like to hear from one or two of those cheesemakers to find out how in practice they find it has compared with the methods described by Mr. Marty in his practice.

Mr. Gunn:  I want to ask Mr. Marty how much acidity he has or wants in the milk before adding the rennet.

Mr. Marty:  I generally take what the milk has.  Sometimes it is only fourteen, sometimes sixteen, sometimes eighteen, I will not take any that has over .2% for brick cheese.  I would like to have, if I could get a good starter milk with .13 or .14%, which is generally the case where we get the milk twice
a day. I know two years ago I made Swiss cheese and I took acidity tests for two months right along from my home made rennet and from the milk, and it varied from .11 to .19%, but the most of it was from .13 to .14%. Some days I got only .11% and some days as high as .19%.

Mr. Glover: Then you like to have milk containing .13 to .14% acidity and add 1% starter?

Mr. Marty: No, I would just warm the milk up and add the starter, and then you can tell by the acidity the milk has, how soon to draw your whey. If your milk had .18% and you add 1% starter, you should draw the whey in thirty-five to forty minutes; in the other case, where your milk had .15% or .14% you will have to wait about an hour.

Mr. Parkin: Would you advocate ripening your milk to a certain point before setting for brick cheese?

Mr. Marty: I would add 1% of starter even if milk has .16%.

Mr. Fred Marty: I would like to ask Mr. Marty in reference to making the acid tests, where in the Swiss cheese factories where he found the milk varied from .11% to .19% acidity, if he did not find a marked difference in the handling of the curd for manufacturing Swiss cheese, and whether it would not also be a good plan to have an acidity test in the Swiss cheese factories as an indicator to the cheesemaker as to the ripeness of the milk before using his home made rennet?

The President: We are on brick cheese making and I will not let him answer that question now. You brothers can settle your arguments at home.

Mr. Luchsinger: I have not had any reply to my question as to whether that practice is universal among brick cheese makers in Dodge county.

The President: I will give them a chance to reply.

Mr. Baer: How about it, Mr. Westphal?

Mr. Westphal: Gentlemen, we have not been using any starter so far but are beginning to use home made rennet. Of course by using a starter in brick cheese you will lose a little of the original flavor and get some of the cheddar flavor. In our section they are using the home made rennet more and more of late years.

Mr. Luchsinger: Then you have not been using a starter?

Mr. Westphal: We have not.
The President: If you are going to use a starter, why not use the best starter you can make?

Mr. Westphal: Well, Mr. Chairman, our makers down there have not the right hang of it.

The President: That's it, preach that to them.

Mr. Westphal: We have not studied it and that is where we are falling down on it.

The President: I want to find out the sentiment of the brick cheese makers as to the best starter to use. The home made rennet is a starter; Mr. Marty says it will contain all the way from .35% to 1% acidity. You cannot make a starter any sourer than that from milk. If you are going to use a starter in some form, which form is the better to use it in? I think that is an important question for you brick cheesemakers to consider.

Mr. Gunn: I would like to ask Mr. Marty about where the starter comes in our rennet?

Mr. Marty: You mean the home made rennet? The home made rennet is made from whey and calves' stomachs. The whey is generally from twelve to twenty-four hours old before we add it to the milk.

The President: Any more questions? This has been a good discussion.

Mr. Parkin: I would like to ask a question of some of your best judges in scoring brick cheese, in reference to this cheese that has this cheddar flavor and the cheese that is made without any starter, which cheese would receive the preference? We find a difference in scoring the cheese and it is up to me to know what to do, and I would like to find out.

Mr. Marty: Of course brick cheese is clean, sweet curd cheese and if it has too much cheddar flavor I would prefer a cheese that has not so much of that flavor; but if you have a tainted milk I would rather have that cheddar flavor than a blowy or overworked cheese.

Mr. Parkin: Then in scoring cheese you would give preference to brick flavor that has had no starter?

Mr. Marty: Yes, I would.

Mr. Westphal: I would like to ask, in using a commercial starter in brick cheesemaking, at what time to get that starter into the sweet milk in order not to get too firm a curd? That is the hardest point to overcome in using commercial starter, not to get too firm a curd.
Mr. Marty: I have had no experience in summer cheese-making; we always made our cheese in the winter, but I think if I got a good starter and the milk contained only .11% to .13%, I would add the starter but ripen the milk up to 16% before setting in.

The President: I think we will close this discussion. The Secretary has some announcements to make.

Secy. Baer: Yesterday the cheese room was closed the greater part of the day for a number of reasons. One was the awarding of the prizes and the scores were not made public until the latter part of yesterday afternoon, that is the complete reports. Another was that cheese was coming in yesterday morning and the judges were still at work on some of them; still another reason was that after the judges had completed their work it was necessary to clean up the room, put the ribbons on the cheese, get a photographer and have pictures taken. But during the rest of the week the cheese room will be open at 10:30 A. M. and closed at 1; it will be open afternoons at 4 P. M. until 6:30 P. M.

The joint agent of the Western Passenger Association is here with us; we have something over three hundred certificates he is working on and they are coming in right along. He will be prepared this afternoon to hand out the greater number of the certificates that were handed in yesterday.

The Muscoda Board of Trade has offered $15 in cash to the first, second and third prize winners who sells cheese on the Muscoda Board of Trade. A. F. Averbeck Jewelry Co., of Madison, who manufactured the medals awarded yesterday, has sent this little medal properly engraved to the winner of the sweepstake cheese. Mr. Otis Kidd, of Sabin, having a score of 99 points gets this medal.

The President: I want to call your attention to one point. You know we have a great movement for stable sanitation in this state, also of stable and factory sanitation, on account of the laws on inspection. A great many cement floors will be constructed in the future every year. A great many cement floors have been constructed in a very poor way, that are unsatisfactory, very unsatisfactory. Too many people rely on their local masons to furnish the skill and knowledge to do the work, and their knowledge is very inefficient in a great many cases. The Allen Portland Cement Co. of New York, have gotten out a very fine circular on cement, what it is, how to mix the mor-