SECOND SESSION—Thursday, November 16, 1939
2:30 P. M.

PRESIDENT WHITING: I will read the amendment offered to our constitution:

"Resolved, That the articles of organizaton be amended so as to provide for the election of officers by the Board of Directors immediately following their election.

"Further, resolved that the officers take all steps necessary to carry this resolution into effect."

These will not be acted on until tomorrow afternoon but they must be read the day before. Are there any other amendments? Has anyone any other amendments they would like to read at this time?

You will notice on your program book we have an address by Mr. Wallenfeldt, Madison, Wisconsin. Mr. Wallenfeldt could not be here so we are having Mr. Nusbaum, instead, to speak on starters. It is a great pleasure, ladies and gentlemen, to introduce to you Mr. Nusbaum.

STARTERS
By Mr. David D. Nusbaum

Mr. Whiting and ladies and gentlemen: Mr. Wallenfeldt had to go down into southern Illinois today to attend a meeting down there that was rather urgent, but I had a letter from him just this morning that said he would take the midnight train out of there tonight and would be here in time for the convention tomorrow. So he may be on the program tomorrow, Mr. Whiting,—I am not sure—on some other subject.

He asked me to speak for him today on the subject of recent developments in carrying starters. I was a little reluctant to do that at first because I knew how I would feel and as I stand here before you I feel just a little bit like the colored boy did down South, who got a job on a big plantation and his boss asked him to go down to the spring with a couple pails to fetch up some water, and in just a minute he came back tearing up to the house, and said, "Boss, there is a big alligator down there in that spring," and the master of the place looked at him and he said, "Well, sonny, you don't have to be afraid of that. You just take the pails and go down there and get the water. You know, that alligator down there is just as scared as you are." And the little colored boy looked back at the
boss and said, "Boy, if that old alligator is as scared as I is, that water ain't fit to drink."

In American cheese starters there have been very few recent developments. By recent developments I mean within the last five years or so. I think that American cheesemakers are—well, I probably shouldn't specify any given time but on a rough guess I would say American cheesemakers are 25 years ahead of most other kinds of cheesemakers on this proposition of carrying starters. I don't say that to discredit any Swiss or Brick makers in the crowd but as I see it, it just appears to be the situation and probably the reason they are ahead of other types of makers as a whole is because they were forced to do it sometime previous, and other types of cheesemakers are probably just now entering the era or time to take a little more precaution in their starter propagation and take a little more pains in the way they carry it. I don't mean to say there are men making Brick cheese or Muenster or other cheese that don't know how to carry starter—they certainly do know how to do it. There are Swiss cheesemakers down in the Green County area that are past masters in the art of carrying starters. There are many Brick cheesemakers that are starting to carry starters, especially those who are pasteurizing their milk for Brick cheese. They found the old method of starting was old-fashioned, but within the last ten years, I think, from what I have been told—I don't just remember that far back—in the Swiss cheese business the Swiss makers have started in to carry a pure starter in either milk or sterilized whey. Some kick in making Swiss cheese use the two organisms and some makers carry them as a mixture in the milk, while other makers prefer to carry them in the pure culture, and while some Swiss makers are still floundering around having quite a little bit of trouble keeping their starters from becoming contaminated. Other makers have the situation pretty well in hand, and they are carrying the desired mixture of starter or they are carrying the desired starters in pure culture form, which ever they prefer.

In going on I will just pass this business of Swiss cheese and pass to Brick. I think there have been more developments in Brick cheese starter in the last few years than in any other type cheese. The reason for that was because Brick cheese needed the development worse than any other type of cheese, I think.

As I talk to a great many makers—and you too, for that matter—they seem to be of the impression there is more trouble in Brick cheese factories today than there was in the good old days, or some years back. Now whether that is the case or not, I don't know. I do know this, that there is a definite need for improvement in starter growth and control in the Brick cheese industry.
In the last few years also the practice of pasteurizing for Brick cheese has become very common. The men that were doing this soon found out that the whey starter that they had been using for this type of cheese did not work very well in their pasteurized milk. Some complained of sweet holes and a few said that the cheese was too dry, that they couldn't get the yield, and that was the truth, and there were other things that they complained about; and so some of these men have taken to growing the common streptolactic starter in the milk to use in their cheese. That is perhaps the best Brick starter we have today. There are others used but certainly this starter or American cheese starter has its shortcomings as far as manufacturing Brick is concerned. In the first place, the Brick making process is a little bit too fast a process for this lactic starter to work just as well as it should. When you make an American cheese, the process is somewhat longer and the starter has a little more of a chance to start and grow and produce acid through the process.

The lactic starter is not quite fast enough on the trigger to prevent pin holes in Brick cheese because the making process is too short; it doesn't get started in time to grow fast enough. If enough starter is used to control the gas, to ferment it quickly and control the gas, you are apt to run into a short-bodied cheese due to the excess amount of acid that is formed in the press or on the draining table. The reason for that is that you just use an extra amount of starter or else give an extra long ripening period before you start your making process and you have no way of stopping it. And your cheese is short-bodied.

Perhaps we have to develop a new type of starter entirely for Brick cheese—I don't know. I wish that someone—and we have several fellows at the university who are working along those lines now, trying to find out a more suitable starter for Brick cheese or a combination of these starters that will work a little bit better.

This past summer some of the Brick makers started to use the coccus starter. It is not exactly the same strain that the Swiss makers used, although there is a related organism or heat making organism—it goes by all those names. There is a peculiar organism in its action and it develops acid very fast. You put it in milk—you can set a whole can of milk with two or three drops and under the right incubation temperatures and conditions it will coagulate the milk in ten or twelve hours. It is a whale of a fast starter and it is extremely sensitive to the acid it produces. It will drop the acid in the cheese, in the curd low enough to prevent pin holes. It will do that beyond any doubt whatsoever, if it is used in the milk but it will not form enough acid in that curd to prevent the formation of sweet holes, as you call them, or Swiss holes, or these little China
eyes in the Brick. A few of those are not objectionable to the trade but when you use this starter in pasteurized milk, and that is practically all the bacteria that are in there, it definitely does produce too open a Brick cheese.

Last summer there were a couple of makers started using that type of starter and one of them is sitting in the room looking at me. I won’t take the blame for it exactly. He was pasteurizing his milk and generally in that pasteurizing there are enough lactic organisms left in the milk, even after you are through pasteurizing, to close your cheese up or to keep it closed enough that the trade won’t kick on it, but this fellow happened to be doing an extremely good job of pasteurizing apparently and the lactic acid formers that were in his milk were practically all killed, and when he introduced this starter the cheese dropped wide open.

I came in one afternoon and he was glad to see me and he took me in the cellar and showed me some of his cheese and I realized then we couldn’t advocate the use of this starter alone, at least to the men who were pasteurizing milk.

Now, we have tried since then, and we were working on it at the time, the possibility of mixing the two starters, mix a coccus starter and a streptolactis starter, and using them both, using the coccus starter to form acid in a hurry to control your pin holes and using the streptolactis starter to go on after the other stopped growing and to keep some of those Swiss holes from forming in the cheese. That works fairly well but I don’t blame a cheesemaker for not wanting to do that exactly, because it requires the growing of two starters instead of one.

The Brick maker is not as fortunate as the Swiss maker was. The two starters used to grow under the same temperature and in either whey or milk, and were able to grow it in a mixture which necessitated the keeping of only one starter. The streptolactis starter grows at about 70 or 72 and this or thermophilic or heat starter grows around 100. It will not grow from 72 but it will grow from a range of 95 to 110, it will start to show some growth. So the Brick maker cannot mix these same organisms; he has to grow them separately and incubate them in two different temperatures, one at 70 and another at 100. That necessitates the use of two incubators. Perhaps that is the solution of the thing, I don’t know. This coccus starter some cheesemakers say is hard to grow and perhaps they are right. It must be grown, as I said before, at around 100; it won’t grow in ordinary room temperatures and it is extremely sensitive to small changes in temperatures of incubation.
Some are in the habit of growing their starter in the engine room or back of the stove and some old whey starters, they had quite a variety of organisms in one type, would grow at a temperature regardless of what it was held at—they always got some growth in their starter and apparently did well for many years and even today you run into factories who are using the old type starter and making real good Brick cheese. Some of them, however, are not having such good luck. This coccus starter, as I said, has to be grown in an incubator that is thermostatically held at about between 98 and 101.

Now, this coccus starter, as far as I know, is not on the market commercially. The bacteriology department in Madison has undertaken to supply the Swiss cheesemakers with the starters they made, these thermophilic or heat loving starters, and they aim to be doing that at cost. I think the cost of such a starter is 25 cents per bottle—I am not sure about that because I haven’t paid just too much attention to it, and on a yearly rate it is less than that if you have one shipped out every week. That includes the starter in the bottle and postage and everything else, and there is no return of the bottles.

They have done that for the Swiss cheesemakers only because they had no other source for the starter that they needed. They will do the same thing, I presume, for these coccus starters that can be used for Brick cheese making.

I want to give you this little warning or bit of advice or whatever you want to call it at this time. Don’t go right up to the university and ask them for one of their Brick starters you use in your Brick factory unless you had a little previous experience growing it.

If you are interested in trying out a coccus starter at any time, you can write to our department up there and someone will try and help you get started with it if you really want to use it. I wish that I could get you a little more definite information about Brick cheese starters this afternoon. You probably think I have told you a lot of things that don’t exactly work right and haven’t told you anything that does, and I want to say that is the truth, and the reason I am forced to do that is because there is a lot of work yet to be done in regard to starters to be used in Brick cheese. You can probably follow the practice that a lot of Brick makers are doing—to try one thing and if it doesn’t work, try another, but at any rate I wouldn’t advise you to just bet on this starter, whatever you are using because the Brick making process is a little bit uncertain today, as I see it.

Telling you not to bet on your starter reminds me of another little story I heard the other day. I will take the time to tell you.
It was a story of two salesmen that had gone to a salesmen's convention and they had quite a time meeting their old friends and they got lined up alongside a bar and buying each other drinks up and down the line. The next thing one of them knew, it was morning and he was in the hospital with his arm in a sling and a heavy bandage around his ribs, and he just seemed to be banged in pretty good shape generally, and his friend with whom he had gone to the convention was standing there beside the bed, and he said, "Well, Joe, what happened to me here? What went wrong last night?" And his friend looked at him and he said, "Well, it was about 9:30 last evening and we had been having a pretty good time and we were up in the bar room on the third floor of the hotel and you walked over to the window and made the statement you could jump out of the window on the third floor and fly the whole length of Main street."

The fellow could hardly believe it for a minute, and he thought it over and he said, "My God, Joe, when I made a statement like that, why didn't you stop me." The other fellow said: "Why stop you? Hell, I had five dollars on you."

And so I repeat again, whatever kind of a starter you are using, if you had good luck with it, go ahead and use it—I don't care what kind it is. If you are not having good luck with it, perhaps you want to change to a different starter, and even then if I would be you I wouldn't bet on it.

Another thing I want to mention while I am here—it doesn't have to do with starters but we get a lot of requests with regard to splitting in all types of cheese, American, Brick, and Swiss—most commonly in Brick cheese. That as far as we know is not a difficulty with the starter. Dr. Price and others working with him have isolated the organism that they think causes the splitting in cheese. It is a bacteria that lies dormant for ten days or two weeks and then kind of ages out and grows in the cheese and produces gas enough to split it.

There are several things that we have found out causes the splitting in cheese and one of them is a little salt content in the cheese. That is especially true of American cheese. When we get a split cheese in there to examine and determine what is wrong with it, we can guess the salt content of it before we ever test it, and it is quite invariably low. Now, the salt content of cheddar cheese is very easily controlled. With Brick cheese it is a little different proposition. You run across some types of cheese that do not take up salt readily. There are various theories on the matter. Some makers say an open cheese does not take salt as readily as a closed one and they have their theory on the matter that the
sodium has farther to travel going around the openings to get into the
center of the cheese. Others say that high moisture cheese doesn't
take salt as readily as low moisture cheese, and they have an equally
plausible sounding solution for that. As I say, the splitting in Brick cheese is not a starter defect. We have not been able to
lay it to a poor starter as a cause, but by using the best starter we
can and we know how we have to be able to control these latent
splits in Brick by the use of starter alone.

Now, I don't want to leave the impression here today that salt
is the only thing that is responsible or lack of salt is the only thing
that is responsible for splitting Brick. I don't know what they are
but I really think there are other factors involved as well. That
might be one of the causes and in some cases it might be the sole
cause but I have analyzed Brick cheese for salt that was well with
in the normal range of salt content that definitely was split, and
what caused it I don't know. There is some more work to be done.

I am really going to close now, Mr. Whiting and I want to say
that at least one person in the room here has enjoyed the fact that
Mr. Wallenfeldt could not be here today, and that, of course, as you
know, is myself. I have enjoyed being at your convention this fall.
This is the first time I have attended all the sectional conventions
and the state convention but I have enjoyed it very much and they
always say at a convention you can lead a man to water but you
can't make him laugh. Thank you.

PRESIDENT WHITING: Gentlemen, are there any questions
you would like to ask Mr. Nusbaum on starters? I think this is
a very important subject and I would like to have some discussion.
No one seems to be having trouble with their starters. They must
all be making good starters. I would like to ask you a question.

MR. NUSBAUM: Mr. Whiting wants to know whether there is
any advantage to saving a high testing milk for your starter milk,
or on the other hand, is there any advantage to saving a low testing
milk or using skimmed milk.

As far as I know, Mr. Whiting, in cheesemaking there is no advan-
tage to having butterfat in the milk. I have carried a starter—I
have quit now because I am not in Madison enough to transfer it
regularly, but here a couple of years ago I started in carrying both
the coccus starter and streptolactic starter just for the practice and
to see how it acted under certain conditions, and I carried the start-
ers for about two years without getting them contaminated and we
use them regularly in making our experimental lots of cheese and
they seem to be working all right. I was carrying them in skimmed
milk. Our cheesemaker up there carries his starter in just full milk
that he takes from the intake. He is not very particular about selecting milk because all of our milk has to come up to the fluid milk specifications in Madison.

Buttermakers on the other hand claim that their starter develops better flavor if they use of a higher testing milk and I think that that has been substantiated by experimental work I think either at Illinois or Purdue, I am not sure. They did a piece of work there several years ago on various tests of milk for butter starter and they found that the starter had more aroma as they called it, and was better suited for butter making than when they carried it on low fat milk or some skim milk.

Now, they have known for a long time, the types of organisms that form the aroma in butter. Hammer named them here about two years ago and they called them—maybe I won't think of it now. He named the type of the lactic organisms that caused the aroma in butter and he said they grew in a high fat milk better. They are present in every lactic starter; no one can tell them apart. They should be able to differentiate between them by microscopic methods and some of the other more common methods, and they don't grow until a little later in the development of the starter.

You American cheese men who are in the habit of looking at your starter through a microscope, if it is only a day or two old, it will be mostly in pairs of real short chains and as your starter gets a little older and more flavor to it you will notice the development of some long chains of organisms that will be 12 or 15 or 20 cells long. Those are the flavor producing organisms that creamery men like to have in their butter and it is quite an established fact that they do develop a little better in a high fat milk than a low fat milk but in cheese factory practice I know of no evidence that points to a benefit in either direction. The common practice, however, I think, is to use the best milk that comes into the intake for your starter milk.

Mr. Whiting asked me another question. He says, should the cheese factory carry their starter for a long period of time, as long as it is good or is it advisable to change starters frequently.

I think it is advisable to change starters at regular intervals. In our mimeograph directions that we send out from the college on how to carry starter, we simply say you should change starter whenever it is necessary. To carry a starter in ordinary cheese factory conditions I think is almost impossible unless the cheesemaker just takes more pains and time than what he can almost afford to do, to keep that starter from becoming contaminated and so I think from the point of just time saved, it might be better for him to
change starters a little oftener and start out with a pure culture and carry along the best way he can to be sure and still be practical.

In carrying the coccus type starter, they change starters every week. I know definitely it doesn’t hurt to use a starter in a factory as long as it is good. When you stop to think that starter has to be carried some place, they don’t just start spontaneously when you need a starter. I think it is advisable to change starters whenever you think it is necessary and it is a good idea to have a standing order for starter and change at regular intervals, just to make sure your starter is pure when you start and carry it that way, as long as you can.

PRESIDENT WHITING: Is there anyone else who would like to ask a question? If not, we thank you Mr. Nusbaum.

I might make this announcement again to all the licensed cheesemakers—remember some time this afternoon we are going to give away $100 as a cash door prize—we don’t know when. You must be in this room to win it, so you better not miss.

The next on the program we have a discussion, Net Weight Ingredients on Labels of Package Cheese. I will call on Mr. Horn at this time to lead us in that discussion.

NET WEIGHT AND INGREDIENTS ON LABELS OF PACKAGE CHEESE

By Mr. E. F. Horn

Mr. Chairman, I believe everybody is more or less familiar with the pure food and drug act as enacted by congress in the spring of 1938. Well, folks, I have always been afraid of these things but I am afraid I will have to face it for a few moments today.

The net weights labelling act came under the federal food and drug act enacted by congress in the spring of 1938. Notice was given that this law would take effect on June 24th of this year. There had been considerable confusion as to just how to apply this law on cheese. We found after considering the thing and looking the thing over that it was very objectionable, especially on some types of cheese.

We are not defending the package cheese. I believe that the law is justified insofar as the controlled package of cheese and the net weight should appear on those packages. A lot of work had been done by organizations and individuals in the past. Just recently again an extension was granted insofar as ingredients are concerned on that package, but there hasn’t as yet been anything done insofar as net weights on packages.