won't take long to get on that car and go to your nearest town and find out whether Tom, Dick or Harry is responsible.

A Member: What we are looking for is somebody that will pay the cash for that cheese.

Mr. Piggott: It isn't always convenient for the buyer to have the cash. He may have to bring that money by express to your place; he can't always bring it in his pocket to your factory:

The Member: We don't ask to have it paid at the factory, but in town.

Mr. Piggott: That is all right; you can go to your bankers in town and find out all these things. I find a cheese factory-man occasionally who is not honest.

The Member: No, we cheese makers are not always honest, nor do I think the cheese buyers are always honest.

Mr. Piggott: I know they are not.

The Member: But I would like to get some buyer that would be honest with me that would inspect my cheese and pay what they are worth.

Mr. Piggott: My dear sir, I would refer you to your nearest cheese board.

THE PARAFFINING OF CHEESE.

PROF. H. J. NOYES, MUSCODA, WIS.

The subject of paraffining cheese has been rather speculative up to nearly the present time. Many of the leading cheese dealers at first did not believe in it, thinking it would close up all pores of the cheese, making them air tight, stopping evaporation and curing of the cheese, that it would retain rather too much moisture, and all the bad flavors in the cheese. After it was tried by some of the dealers they said paraffine all kinds of American cheese, and some practiced paraffining as soon as cheese were from one to four days old. Others said not to par-
affine cheese containing too much moisture, or off flavor stock, or cheese that was sour, or high acid.

In my opinion all cheese should be cured some at least before they are paraffined. Cheese that contain an excess of moisture should be well cured, and if one has high acid or sour cheese, and has to keep them any length of time, they should be paraffined, which would keep them from moulding. There would be less work to care for them, and the value would not be less because they are worth but very little to start with.

The paraffining of cheese is without a doubt a great benefit to the cheesemakers, to the dealers, and to the trade in general. And I believe it has come to stay. But it should not be used to try to cover up the faults of the cheesemakers and the dealers.

It was first practiced by dealers in the east, Philadelphia and Boston dealers being the first to draw my attention to it. In the winter of 1895 and 6 while in the Dairy School at Columbus, Ohio, I tried to investigate the matter through dealers in Philadelphia who gave the work great praise, and said it was a success in every particular, and at that time were having three or four factories paraffining cheese for them in northern Ohio, and the same factories were practicing it last winter when I was there. I think I am safe in saying that two-thirds, or more, of the whole cheese trade today demand it.

In the first place, where and how should it be done? It seems to me the proper place is at the warehouse, or cold storage, just before the cheese are shipped, or put in cold storage, they should at least be kept cool enough after paraffining so they would not become heated or huffed. The cold storage is the proper place for them after they have been paraffined.

The paraffine that should be used should be that which is tested at a heat of 120 degrees or thereabouts. At this heat it seems to melt easily and is more elastic when on the cheese than that which is tested at a higher heat. It does not seem to check or scale off the cheese as easily while being handled and makes a nice smooth surface. The paraffine that is used at a higher test heat seems to leave the surface more rough; it has the appearance of little pimples on the surface of the cheese. It requires more heat to melt it, increasing the cost, and will not coat the cheese as thinly unless it is kept very hot during the applica-
tion. Any paraffine should be kept at a heat of 200 degrees all the time during the dipping of the cheese, and if wax is used at a test of more than 124 degrees of heat, the paraffine should be kept boiling all the time.

The least expense can be obtained by paraffining the cheese at the warehouse, or cold storage, where a large amount of cheese can be collected weekly. A large tank can be fitted up in a convenient way with large capacity, with steam connections, having a coil of steam pipes placed in the bottom of the paraffine tank where it will come in direct contact with the paraffine, which will melt much faster, and will keep hotter with less fuel than in any other way. Do not use a double tank with hot water in the lower one as some did at first; it is more trouble, takes more heat and is not as satisfactory as when one heats direct from steam pipes.

Have a frame made to fit your tank so it will work up and down easily in the tank, adjusting with weights, and cords to correspond with the weight of the cheese to be dipped at each time, so that with a light pressure of the hands it may be forced into the melted wax and brought back with the weights very quickly. The cheese should be placed with its side resting on the sharp corners of angle iron while it is being dipped, and remain there after being brought out just long enough to cool the paraffine. Cheese should be just as well finished, free from face and side checks, the bandage pulled up smooth and even lapping over the corners about one inch; when such cheese are nicely paraffined they make a very nice looking package. Cheese makers should not think because cheese are to be paraffined that they can finish them in any old way. Like the Richland county maker who brought his cheese to the warehouse one day with the bandage of some of the cheese hanging down loose from the corners about three inches, not being pressed down on the corners at all. They were also face checked and ill shape. I asked him if he thought he could sell cheese in such condition. "Yes," he said, "what is the difference, you are going to mor- phine them anyway."

Twin cheese should be ten days old before they are paraffined, cheddar cheese a little older, and all small varieties could be paraffined a little younger. They should be kept clean and bright, circles removed. Many makers in our section do not use
circles; they leave the press cloths on until they are shipped, then they strip them off and box at once. They will not face check because they seem to have a heavier rind, which is very desirable for paraffining and cold storage use.

Cheese should not be allowed to mould before paraffining, if they do the mold should be removed by rubbing or washing, otherwise they look bad and will continue to mould under the paraffine.

The cheese boxes for paraffined cheese should be one-half inch larger than common boxes to keep the boxes from scraping the paraffine off the sides of the cheese.

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**DISCUSSION.**

Mr. Aderhold: What do you mean by testing paraffine at different degrees of heat?

Mr. Noyes: There seem to be different heats at which it is tested, and that which is tested high is hard to melt, and when you do melt it you have got to keep it very hot in order to form a very thin scale. We have to take the man's word for it when we are buying, but you can tell after you buy a little while. The lower test seems to have a clear appearance; you can take it up and chew it like gum, and this is the kind you want. I would rather have it test down to 120 than higher. You need a thermometer at your tank to test it and keep it hot all the time. Heat it by dry steam. That is where many fail in paraffining cheese. I bought some this week and the paraffine was very thick on it, and it spoils the appearance of the cheese. If it is just a little coated and run into the pores and meshes of the bandage, that is sufficient.

A Member: How hot is paraffine when it is boiling?

Mr. Noyes: Two hundred and twelve degrees, or hotter. We try to keep ours boiling so that it rolls over all the time in the tank. We never commence paraffining before it reaches the 200 mark.

A Member: Why not paraffine the cheese about two days after taking from the press?
Mr. Noyes: I don’t think they have quite as good a flavor. They have no chance of evaporation then, and that excessive moisture seems to bring a little different flavor.

The Member: Doesn’t it depend somewhat on the moisture in the cheese?

Mr. Noyes: Yes; I stated that cheese that has a great deal of moisture would be better cured than those that have a less amount of moisture. Then we must not forget we want good pure air to keep our cheese in.

The Member: I had some cheese two days old paraffined, and when I cut it it had a sour flavor, but after that I never noticed it again.

Mr. Noyes: Probably that bad flavor left your cheese when you cut it. You will notice quite often when you first cut a cheese, there is a little flavor about it that you don’t just like, and after it has been cut a short time that flavor leaves it.

A Member: Don’t you have any trouble with condensed water in the tank, where you run the steam direct in the paraffine?

Mr. Noyes: Oh, no, we have a coil pipe running in the bottom of the tank and we have a pet cock, just enough to carry off condensation.

A Member: How old do you prefer to have cheese to be paraffined?

Mr. Noyes: Four or five days. Our dairy school have paraffined immediately from the press and had good results. As our experiments went on, they took some cheese from different sections, and they were very fine, paraffined immediately, and kept until thoroughly cured.

A Member: Last summer I had some paraffined cheese that seemed blistered and rubbed off.

Mr. Noyes: Didn’t your cheese huff? Wasn’t it kept too warm?

The Member: No, the temperature was down to between 40 and 50. We put some in an underground curing room, with a cold air duct, and the temperature was about 55. The cheese cured up nicely; they were fine as far as flavor and texture were concerned, but they were blistered on the outside, and the paraffine would rub right off.

Mr. Noyes: There is quite a good deal of moisture in some
of those cheese, and probably your heat was not great enough so that the rind commenced to decay. That is the only reason I can think of why the paraffine should slough off. It must have been the softening of the rind, rind rot, as we call it. You have got to have it hot enough so it goes into your bandages and just forms a thin scale over them. Did you remove the circles on your cheese?

The Member: Yes. What kind of paraffine do you use?

Mr. Noyes: Well, I couldn't tell you; we buy it from different houses. The principal difference in the paraffine that you buy on the market is the hardness of it, and you must test that by melting it.

Mr. De Land: I do not wish to criticise the statements that have been made by the speaker, still I claim that I know something about paraffining cheese. I claim I was the first one to paraffine cheese in the state of Wisconsin, and I have kept records of every kind. Now in regard to the melting point of paraffine, I know that 124 is better than 120, 120 is better than 116. It is a very simple matter to test. Heat your water in a ladle to 120 degrees, and put in it a piece of paraffine the size of a pea. If that wax melts, that is the degree of test; if it does not melt, it must run higher than 120, perhaps 124. Now, the harder the wax, the cheaper the wax. The difference between 120 and 124 is a half a cent a pound. The harder wax will make a more finished surface than the softer wax, especially in the winter, but for summer paraffining the harder wax is the better; in the winter any will do. I don't see the use of you factorymen rigging up any paraffine business. You are not gaining anything. You sell your cheese when they are about four to six days old. Now, what have you gained by going to this expense and paraffining the cheese? Let the dealers paraffine the cheese; they will do it and make a better job than you possibly can, as an average. As to the question of which is the best way—whether steam heat or a vat surrounded by water—I have used both, and if anybody can tell which is the better, he can do better than I can. I have one steam outfit where the coils are in the bottom of the tank and the paraffine is on top. The other one is surrounded by hot water and a flue underneath. Of course there is no water in the paraffine; I run the steam pipes into the tank. The curing of cheese does not mean alto-
gether the evaporation of the moisture; it is a chemical change which takes place within the cheese, it breaks down the curd. When these germs that start fermentation get to work, that is what makes a sharp cheese.

Mr. Noyes: The trouble about factorymen starting in to paraffine cheese is that they put up something cheap; they do not get their paraffine hot enough; they haven’t the proper apparatus, and they don’t get it even. In such a case, I would advocate having them paraffine at the warehouse.

Mr. Luchsinger: I assume that the practice of paraffining has not been uniform at the factory, and perhaps the majority of those present have not used paraffining in connection with the curing of cheese. I would like Mr. Noyes to state what is the advantage in paraffining cheese, and also can paraffine be used where it is necessary to salt the cheese after they are made.

Mr. Noyes: In regard to the last question, it certainly could not be done until you are all through salting. In regard to the benefit of paraffining, the greatest benefit is to keep them from moulding; it saves rubbing and washing. After your cheese have been in storage, even three or four months, they become solidly covered with blue mould, and that has to be cleaned off, and it does away with that labor. Besides that, it stops shrinkage to a certain extent.

Mr. Luchsinger: Does it not hurt the appearance of cheese that are not old? You take a cheese four weeks to two months old, won’t they look better without paraffining when they come to be marketed?

Mr. Noyes: No, sir, not at all; they look better. It makes a nice finish on your cheese and helps to put a good rind on it.

Mr. Luchsinger: Don’t you think a little more rennet would be a good plan?

Mr. Noyes: No, I don’t. You don’t want to use too much rennet where you require keeping qualities in your cheese. If you are going to sell your cheese very early, I would advocate using more rennet.

A Member: Where a man has got a basement curing room, wouldn’t it be a good idea to paraffine the cheese? I have been using it at my factory because my basement curing room is very damp and the cheese mould badly. I find it is a great benefit to me, because I don’t have to wash my cheese, and I leave the
press cloths on until I paraffine them, and then I pull them off. I generally calculate to paraffine them when they are about three or four days old, and I find it a great benefit. My cheese have gone to Chicago and all over and have kept in fine condition. How high can you allow the temperature to go up on paraffined cheese?

Mr. Noyes: It depends a little on the cheese.

A Member: I have found at my factory that 60 degrees is a little too high.

A Member: You can allow your temperature to go as high as you want, as long as you keep your cheese from huffing. It won't hurt if it runs up to 90.

Mr. Noyes: That is too high. I would like to ask if Mr. De Land would advocate having larger boxes where we paraffine?

Mr. De Land: It would be better whether paraffined or not. The crowding of the cheese into a box is a great damage to the cheese, and of course more so where it is paraffined.

Mr. Noyes: We order half an inch larger boxes at the present time, and I would like to make it a full inch. Of course, they must not be too large, or they will break. Oftentimes we have boxes that are so tight that it crowds the paraffine off the sides.

Mr. Van Leeuwen: A gentleman back here spoke about his cheese containing too much moisture and being sour. We make a firmer cheese, and I have had no complaint of the cheese being too moist. We make the cheese at the factories and paraffine them at the factory. At first we used paraffine that melted at a temperature of 114 to 116. Of course, our climate is hotter than yours. We find we do better with paraffine that melts at 122 to 124. We ship those cheese into our central curing room and it takes a day, sometimes two days, to get them in there. As a usual thing, we get refrigerator cars to ship them in, but we always calculate that part of our cheese are going south immediately and we make a very firm cheese. I don't know but what some of the Wisconsin makers have had a tendency to make a soft, weak cheese. Now, that cheese going into storage, green and new, if it is brought out at the end of four months, is not a cured cheese, and it will naturally show up in the same
way that a cheese that is five or six days old on the shelf does, with a kind of a sour taste.

Recess till 2 P. M.

Convention met at 2 P. M.
Acting President Powell in the chair.
Mr. R. C. Green asked to be excused from serving on the committee on resolutions, and the President appointed in his place Mr. J. F. Bachmann.

In accordance with the vote of Wednesday, the resolution with reference to making the publication of Mr. Rankin's the official organ of the association was taken up for action, and after some discussion the resolution was adopted, to the effect that the *Cheese & Dairy Journal* be adopted as the official organ of the association.

THE FACTORY OPERATOR: AN ORGANIZER FOR THE BETTERMENT OF RURAL COMMUNITIES.

PROF. R. A. MOORE, MADISON, WIS.

Mr. President, Gentlemen of the Cheese Makers' Association: When I look back a few years in the agricultural development of Wisconsin and note the active part taken by the cheese makers in bringing about the dairy prosperity we now enjoy I feel there are no obstacles too formidable for this energetic body to surmount.

Twenty-five years ago no one could have predicted the great dairy future of Wisconsin as she was then recognized as a grain-raising state and very little attention paid to that branch of agriculture that was to make her pre-eminent as a dairy state. You well know the struggle that followed and those who took a