become an expert at it. We go and take samples; we mix the samples at the different creameries thoroughly, then take our samples and put them into a bottle, there to be tested. Then we carry them to the home factory and test them there.

Prof. Roberts — Can you mix milk that is put in the bottle and get a fair sample of it?

Mr. Gurler — Yes, we can do it. Our station has done a lot of work in that line in different directions. You can read it all in their bulletins.

Prof. Smith — We have been doing some of this work at our station this winter, at our dairy school, and we find that by weighing the milk and taking a sample and analyzing it, and taking another sample and holding it, as Mr. Gurler does, we have found at the close of the week that they come out almost to a "T." Our figures corroborate Mr. Gurler's statement exactly. We liquify the milk, of course, in taking the composite test, and, for all practical purposes, I don't know but it is just as good exactly as to analyze the milk every day.

Mr. Gurler — We went into this business and have given it all the thought we had to back it. I suppose we have made some mistakes, but I will say this, as far as that composite test is concerned, I have just dropped thinking about it, becoming fully convinced in my own mind that it was all right. Your chief care must be exercised in getting your sample from the patron's milk.

The convention adjourned to 2 o'clock P. M.

The convention met at 2 o'clock P. M.

HOW TO MAKE BUTTER ON THE FARM.

C. P. Goodrich, F. Atkinson.

If we wish to make butter on the farm, or for that matter, anywhere else, we are going to make it for somebody else to eat. That being the case we want to make it to suit them. If they demand June-colored butter in the winter time, we want to give it to them. If they demand butter salted high, we
will salt it high. If they demand fresh butter we will make it fresh; if they demand sweet cream butter, we will make it sweet cream butter; we want to suit those who are able and willing to pay a good price for that that does suit them. Now, we can't find this out by our own tastes always. We don't know what those who are best able to pay want, and so we will send it to an expert dealer and let him criticise it. Now, I know a great many will send their butter down to Chicago to a commission man, who is an expert dealer, and if he writes back to them and criticises them, they are indignant; they are mad right off. They say, "I don't believe anything of the kind; the butter is just as good as anybody's, but that is just an excuse of the man for not getting a higher price. It isn't but three days since that I heard a man talk that very way. He was indignant, and he sat right down and was going to write a real combative letter to the commission man.

I coaxed him not to do it. I said, "Pay attention to what he says, try and make it so he will say it is good." I know how easy it is to get into a fighting mood on this thing.

A great many years ago, when I first commenced to ship butter into the market, I didn't get a very good price for it, and the commission man, C. F. Dexter, wrote me a letter something like this: He says, "I have long since learned that it was not safe to tell the average dairyman the truth about his butter, but something tells me that it will do to chance it with you." Then he went on and criticised me pretty sharply, and I felt a little rising indignation when I came to look it over. You see my wife had made the butter, and whatever she did I thought was just about right, and at first I felt as if it was a kind of an insult to my wife to criticise her butter; but after a little more reflection I concluded I had better swallow down all those feelings, and I wrote back to him and thanked him for the information, and said that I would try and make it so as to suit the market if I could and I asked him to tell me when I got it right and when I got it wrong. Well, by following his suggestions I kept improving.

There is one thing that is actually indispensable in making good butter, no matter what kind of a customer you are mak
ing it for. We must have good milk, and to have good milk, we must have good healthy cows. In the summer they must be in a good, clean pasture, with a variety of good, nutritious, sweet grass, and not run in a mud hole or marshy pasture, with obnoxious, bitter weeds and stagnant pools of water that they will drink out of. In the winter they must be kept in a good, clean, well ventilated stable, and have a variety of the best kind of food, good hay, good sweet ensilage, good bright corn fodder and good grain. No cow can give good milk and be fed damaged and rotten ensilage, mouldy hay, musty oats, or corn meal. They must have all the good, pure water they want, and have access to salt. They must be milked with dry, clean hands, in a clean stable and into a clean pail. Now, when we have got the good milk, the next thing is the way to handle it to get the most out of it and the best results. We are bound to get all we can out of it, and we want to make as good a product as we can.

The old way was to set the milk in shallow pans, and I want to say I have a great respect for our grandmothers and the old way of doing it, an I say no better can be made in the world than can be made by setting in shallow pans, but it must be set in a pure, good atmosphere, not where there are bad odors, or you will never get it all out of the cream, nor can you get the cream to rise all of it to the top. I have tested hundreds of samples of milk this winter and I never have found any but what there was some butter fat left in it after the churning. There are other ways of setting and the churning is a very important point, but it takes skillful management to get the cream all out of the milk to start with. The deep, cold setting is a newer way, but no man ever got all the cream out of the milk in that way. The best way to do it is to set it immediately after being drawn from the cow in cold ice water. If it is set in a common shot gun can, they must be covered up tight, if you want good, flavored butter. You will shut in the animal odor or whatever you call it. In skimming the can there is sometimes a good deal of skill required. I tested a can of milk not long ago in which there was over two per cent. of butter fat left in after skimming. The cream had risen pretty well, but there was no skillful skimming
there. The safer way is to have some kind of cans that you draw the milk from the bottom with, then if you leave about an inch of milk with the cream you will not waste much cream. But there is another and more modern way of getting the cream out of the milk in handling it on the farm. The farm separators will take it all. The chemist says we can't get it all out, but my eyes are not sharp enough to see anything on top of the bottle. My separator is run with a power as near central as possible. The milk is put into the hoppers of the separator as fast as we milk, and in five minutes after the milking is done we have the cream all separated and take it to the dairy house and the skim milk is all warmed up for the calves at the stables.

Now, there is a difference in the way the cream should be handled, in the different ways that we raise the cream. If it is raised on shallow pans, the cream is partly ripened before it is skimmed, so there is no trouble in ripening the cream and holding it at sixty degrees and churning it when you get ready, as often as once in two days, but with separator cream it is another thing; it is warm and has all these animal odors in it, and you can spoil your butter if you shut it right up in the can and let it stand. I know this because I have tried it, and I don't want to try it again. The cream must be cooled and well aired, and the way we do it, the cream runs into some of these shot-gun cans; there will be two cans half or two-thirds full. We take those cans to the cool room and turn from one to the other, hold it up high so it gets a good aerating. In that way we cool it down to about sixty, and it is kept in a room at about sixty degrees. It can then be put into the cream vat and we hold it at that temperature and churn once in two days. We never put in the last two skimings at that time. It should ripen itself, but if it does not we put in a starter. If we should churn every day we would always save some of the ripened cream from the last churning and put it in as a starter. Now, if you want to churn to-morrow morning, you would want to have that commence to ripen this afternoon, and if it does not you should put in some already ripened cream, or some sour milk, and start it.
Mr. Weeks — Do you keep the cream covered tight while it is being ripened?

Mr. Goodrich — No, sir, we don't. We churn now at about sixty-three degrees, because we have found that the best temperature for churning with our milk; we put in the butter color into the cream enough to make it about a good summer color, June color, and I have found that exhaustive churning depends on several conditions. Since I got the Babcock tester, I have tested my cows and tested the skim milk, and that is what set me to getting a separator. Ignorance had been a blessing before that, but when I came to know how much I was leaving in the skim milk, it began to make me unhappy. The first test I found I had left 2 per cent. in the butter milk. That wouldn't do. I kept varying the conditions, and at last I got so I only left one-tenth of one per cent. in the butter milk so you see I only leave one-third of an ounce in 100 pounds of milk, but I am going to chase that third of an ounce until I get that out, too. Now, the conditions depend on the temperature, the ripeness, the thickness of the cream and the complete churning. I have spoken of the ripening and the temperature, which I told you was sixty-three degrees. The thickness of the cream has a good deal to do with it. When I used to have cream raised in shallow settings, the cream would be very thick. Now, such cream as that you can't get the butter all out of. Where it is raised by the deep, cold setting and always sets twelve hours, and you leave the milk with the cream, you have got to thin the cream to get the best results. You can set the cream over again and draw what milk settles at the bottom, or else you will have to thin to make exhaustive churning, but with the separator you can have the cream as thick as you like, and I have found that cream that is from 25 to 30 per cent. butter fat, is of the best consistency, that is, from three to three and a half pounds of cream to make a pound of butter. Then the speed of the churning, I first thought, had considerable to do with it. The very best results that I got were when I churned one and a half hours. I would not advise so long churning as that, but don't churn too quick. Three quarters of an hour is better than quicker churning.
Mr. Gilbert — How full is your churn?

Mr. Goodrich — About half full. At that time I made about thirty revolutions to the minute, but we run it forty to fifty. It is not a large churn. After the butter has come into granules about the size of kernels of wheat, or a little larger, I put in a handful of salt, revolve the churn once or twice, draw off the butter milk, and wash it twice.

The Chairman — As I understand you put in the salt to raise the butter, and make it float, and not draw off the granules of butter in the butter milk.

Mr. Goodrich — Yes, that is it. If you are bothered that way by the drawing off of the granules of the butter in the butter milk, just try that and see how nicely it makes the butter float. My way is to wash the butter twice with water, say a pail full of water twenty or twenty-five pounds of butter; put in the water, revolve the churn once or twice, and draw off the water. Then put in some more, take the butter out onto the butter worker, weigh it and salt it, an ounce to the pound.

The temperature of the water I put in is about fifty. Then the butter is left on the worker, from two to four hours, and then worked again enough to have the salt thoroughly distributed, and then it is packed in just such packages as the customers want, whatever they are.

Mr. Favill — Suppose it is a hot day and you leave that butter lying on the worker two or three hours. What sort of stuff will it be?

Mr. Goodrich — Well, if the weather is hot enough so as to injure the butter, we don't leave it as long.

Mr. Gilbert — How long does it take to ripen your cream at 60 degrees

Mr. Goodrich — About forty-eight hours.

Mr. Gilbert — Do you get as good results as you would if you ripened it at a higher temperature and ripened it in twenty-four hours?

Mr. Goodrich — I think I do, perhaps I don't.

Mr. Gilbert — I find that in the winter in ripening cream at as low a temperature as that, before it is ripened enough for the churn, it is very liable to make bitter butter.

7—D. A.
Mr. Goodrich—We never had any bitter butter, but I know that that is what makes it.

Mr. Gilbert — In what condition is your cream when you consider it ripe for churning?

Mr. Goodrich — It is thickened, it has been about sixteen hours after it commences to turn acid, kept at a temperature of about 60 degrees, perhaps a little above. My boys made butter a little differently. They stop the churn a little sooner, and they salt in the churn. They are trying to save work. The reason I don’t like to do that is because I don’t know whether I am going to get it salted exactly right or not, because they don’t know about the amount of water in the churn.

Mr. Favill — Don’t you have to guess at it when you put it on the butter worker?

Mr. Goodrich — It is always just about the same after you have pressed it once with the lever.

Question — Wouldn’t it be about the same in the churn every time, if you drained it about so much?

Mr. Goodrich — I find that the boys don’t get it salted all the time just alike. The commission men once, when they were notified of it, said they wished they would go back to my way. I want to say that it is possible my way of making butter wouldn’t suit every set of customers. The truth is that I don’t wash it as completely as most folks. Good butter makers in these days state it is best, but the customers someway have got a notion that they want it about so, and we work the butter salted and all to suit the market. We work the butter milk out.

Mr. Cribble — Won’t two washings take all the butter milk out?

Mr. Goodrich — The water will not run perfectly clear the last time.

Mr. Tibbett — I notice you use the expression “just about.” What do you mean by that?

Mr. Goodrich — I take it that there is no such thing as doing anything perfectly. What I mean is coming as near perfect as we can.

Mr. Morrison — Do you think that you can wash flavor out of butter?
Mr. Goodrich—I once tried brine salting; then I had to wash it perfectly when the butter was very fine, and the experts that handle it said that my butter lacked flavor. Now, I don’t know but it is possible that there is a fine flavor that the butter milk left in that was washed out.

Mr. Coburn—What do you mean by brine salting?

Mr. Goodrich—Putting in brine as strong as it can be with the butter, and that coats every little granule of butter with salt.

Mr. Tichnore—Were you ever troubled with any streaks in your butter and what is the occasion of it?

Mr. Goodrich—No, not when it is salted my way, but when it is salted in the churn, and taken right from the churn; and packed, I have seen streaks in it because the salt was not evenly distributed.

Mr. Coburn—Isn’t it a fact that when you have washed your butter with water cold enough to make the grains solid so they will not pack together, if you put in salt and revolve the churn and leave it a sufficient time to have that salt dissolve in the butter, it will then work and pack and never have streaks.

Mr. Goodrich—I think it is possible. It depends on how evenly distributed you get the salt.

Mr. Coburn—Can’t you mix the butter and salt better if you keep those grains hard, so they will roll in the churn like wheat grains?

Mr. Goodrich—I don’t know but you can. I only say I can’t.

Mr. Weeks—Mr. Goodrich, don’t the temperature have a good deal to do with packing without streaks?

Mr. Goodrich—If it is too cold it can’t be packed well

Mr. Gurler—You can soak flavor all out of butter, if you let your butter remain in water an hour or two and it don’t convince you, then you are harder to convince than I am.