

there was a perfectly clean rind underneath. Where those circles only come within an inch of the side of the cheese, there is half an inch of mould all around. I think it is a poor idea putting caps under the bandages as they are beginning to do, it makes a slovenly top.

Question 3—Can curd be matted on the bottom of the vat just as well as on racks?

The Chairman—I think it can be matted as well on the bottom, but it doesn't do as good a job.

Mr. Phillips—I find that it is impossible when matting in the vat to get whey out as quickly as you ought to. If you throw your curds upon the rack you get a perfect drainage, you get the whey out sooner, and your curds mat nicely, and you are not apt to get sour cheese. I should advise the use of racks in all our factories, even where they are handling only five hundred pounds of milk.

Mr. Johnson—I quite agree with Mr. Phillips, although I made cheese for years without the racks. When you pile the curd on the bottom of the vat, the whey has chance to run off.

Question 4—How much dry acid would you run on a curd?

The Chairman—I would run enough dry acid to hold the cheese down as firmly as I wanted it under the conditions that it was manufactured and cured.

Mr. Schoenman—I think it will depend somewhat on the season of the year that you are making the cheese. I generally run about an inch and three quarters to two inches in the summer season, and in the fall perhaps a little less. I believe that in different localities, you will have to run different lengths. In some places you will have to string a curd on a hot iron more than in others, and also I think there is considerable difference in different makers in calculating the length of their string. I think that Mr. Phillips can string the curd an inch where very few makers would string half an inch. I think there is quite a knack in getting the hot iron test.

The Chairman—Mr. Phillips, why do you string the curd longer than the average maker? I don't think you ought to do that.

Mr. Phillips—I am going to quit it. In traveling through the state I find it impossible to get too much spin on the hot iron. When the curds are enough the spin usually lets up and you don't get any more. You take a piece of cheese that is cured up, it is impossible to get a spin on the hot iron. I don't think the maker need getting too much dry acid on the hot iron. I have been in some factories where in two and a half hours they would get three or four inches spin, and I have been in others where they won't get more than an inch after holding it six hours. The curd cures down quicker in some localities, the milk is different.

Mr. Hoard—Have you paid any attention to know whether the milk was from upland, dry soil, in those localities where the curd span long, or whether it was to the contrary?

Mr. Phillips—I think it is the upland pasture where you get the least spin, and I think it depends a great deal on the way the milk is handled before it comes to the factory. There is no danger of ever making too high acid cheese provided you get your whey out of your curd at the proper time, no matter if you get a foot of spin. I want to speak with regard to the milk that was worked up into cheese at the World's Fair. That was

perhaps the purest milk that I ever worked into cheese, in those three herds, and if I remember rightly, the milk from the Guernsey herd, I could never get more than a quarter to a half inch of spin, while the Jersey milk you could spin as long as you pleased, and it came quick. The Short-horns' was nearly the same as the Jerseys', and the Guernsey herd's always had a peculiar smell to it. I don't know that any of us came to any conclusion as to what the cause was, but I have been told since that that peculiar flavor was in the cheese. I know we could detect it in the curd.

Mr. Monrad—Was there any difference in the feeling of the herds?

Mr. Phillips—Yes; the milk was all taken care of in the same way.

The Chairman—You made the statement that there was no danger of cheese becoming sour if the whey was drawn at the proper time. We have been told that the word "proper" didn't mean anything.

Mr. Hoard—Don't you mean if the whey is drawn just as quickly as possible?

Mr. Phillips—No, I mean that you should ripen your milk and inside of, say, an hour and a half to two hours from the time you add the rennet, you should begin to draw the whey. You should at least have one eighth of an inch spin on the hot iron, then remove the whey as soon as possible.

Mr. Hoard—Do you know any reason on earth why the whey should be retained in the curd one single minute after it is safe to draw it off?

Mr. Phillips—No, I don't; the quicker you can get it off, the better it is for the cheese, but if you get it off much sooner than two hours from the time you add the rennet, you are not apt to get a sufficient cook, that is, your curd does not firm up enough.

The Chairman—Don't you think that two hours is rather a short time when a man has a vat full of milk?

Mr. Phillips—Where you have steam to work with, it is all right. If you are using self-heating vats, you can't do it. It is safe to say that in over 90 per cent of the factories in Wisconsin the maker has not appliances to do the work right. I know that I can do a great deal better work as an inspector in the southwestern part of the state than I can through the northern part because they are using so many self-heating vats in the northern part. I know that the farmers, most of them, have an idea that we are asking too much for manufacturing their milk into cheese, but in order to make it for less, we have got to build up larger factories, and we never can compare with Canada till we do it, till we get our factories in shape, and have money to improve them and keep them up.

The Chairman—On the question of spinning the acid, I think it must be answered in this way, there should be acid enough on the curd when the whey is drawn so that by two and a quarter hours after the whey is drawn, you have acid enough to hold your cheese down where you want it.

Mr. Phillips—The maker should inform himself how to spin the curd on the hot iron, it is quite a trick. They should practice in doing it.

Mr. Noyes—A man should use spin enough so his curds will work just right.

Mr. Michels—How will it affect the curd, keeping it after it won't spin any more on the hot iron?

Mr. Phillips—I have kept curd as long as two hours after it had stopped spinning on the hot iron. Where I had a poor flavored curd, I think it improved it. I don't think it injures

the curd as long as you keep up the temperature. I have used warm water at a temperature of about 108 deg. to wash the curd before salting it and putting it to press, in order to get rid of some of the fat that would press out and collect between the layers of the curd and keep the curd from closing up. Of course, if the fat begins to start you must do something of that kind. If you get the yield you lose the flavor, and you better get rid of a little more of the fat than to lose your flavor.

Mr. Delo—At what temperature do you recommend keeping the curd during the matting process in the vat?

Mr. Phillips—I hold it as near 98 as possible, 100 or 102 won't hurt it.

Mr. Delo—I think that in many instances the temperature is too high during the matting process, it has a tendency to start the butter fat. We had some trouble in our factory last season from the butter fat pressing out too much, and the cheese maker was holding the curd at 100 deg. He told me that was the way to keep the temperature, but I came into the factory one day and I thought that he was frying the butter fat out of the curd, and I had him try the curd with a thermometer, and it went up over 100 deg. and I instructed him after that to reduce the temperature as low as 90 deg., and we had no trouble about the butter fat pressing out. Even at 95 deg. the butter fat pressed out.

Mr. Phillips—I have always lost more fat in hot weather when the milk tested the least in fat and I have always laid it to tainted milk. In the fall of the year I have worked up milk that tested as high as 6 o/o. I have run my curd up as high as 106 and 108 deg., and I didn't lose any where near as much fat as I did on the 3 o/o milk in hot weather, where the milk was tainted.

Mr. Monrad—In Scotland in a private dairy, I saw them keep up the temperature in the curd by covering it with bags dipped in warm water, kept up to about 95 or 98 deg., but before going to press, they always separated it out and cooled it.

REAL NON-PEDIGREE DAIRY SHORTHORNS.

These cattle, selected for their performances as milk and butter producers, and bred from prize-winners in actual competition on such lines comprise such a collection as would be difficult to match. It has been Mr. Baxendale's plan to bring such of the dairy test cattle at the various shows as he could possibly persuade owners to part with. There are also a few of the most notable of the stock at Henham, together with some which he has succeeded in purchasing back from those who bought them at the Henham sale two years ago. It would be quite impossible to give anything like exhaustive details in respect of these superb dairy Shorthorns; they would fill a page of the paper, inasmuch as nearly all call for special mention, which cannot be given.

Take Semolina, first in catalogue, ten years old; she won third prize at the London Dairy Show in 1893 in the milking trials, when she yielded 1 lb. 12½ oz. of butter from 58 lb. of milk in one day, and was giving 34 lb. per day on April 19th; she came from Henham, and her red heifer calf by Melton's Monarch should be worth a lot of money to first-rate dairymen. Then there is Maud, another Henham cow, giving 24 lb. per day, with a big re-

cord; and from her there is a remarkably pretty and promising red-roan October weaning heifer calf, Mona by Earl of Feversham Beas, from Henham, is one of the very best of the lot; she was one of the best of the Henham cows, having an excellent bag, and being a first-rate milker. It is a great pity that there is no bull calf from her, which would in all probability be a valuable acquisition to a tenant-farmer. Pretty Face, now dry for calving, is one of the very best non-pedigree Shorthorns in the herd; she is a massive cow of scale, depth, substance, and the character of the old Durham and Yorkshire cows, which constituted the bulk of the supply of the metropolitan and suburban town dairies, or milk walks as they were called twenty years ago, where they were kept in such high condition that they were quickly dried and easily sold to caterers for the mining and manufacturing districts, where there is always a demand for that particular class of beef, when times are good. That is so much for the carcass; an aptitude to fattening having been always in view, together with milking propensities, in all Mr. Baxendale's breeding of Shorthorns. She is one of the best of the non-pedigree Shorthorns, as the records will show, and she is due to calve to Melton's Monarch just after the sale. From her there is a long, level, red, promising heifer by Melton's Monarch, Marsh Marigold, calved in 1889, is one of the very best milkers in the herd; she has a splendid milking and prize-winning record, and she is due to calve at the end of May. Flower, a Henham cow, was giving 37 lb. of milk per day. She is a deep-framed cow, with a great milk-vessel. Dairyman's Pride, rather a small cow, has an immense bag, and was giving 47 lb. of milk per day; at the butter test at the Chester "Royal" she gave 2 lb. of butter from 40 lb. 11 oz. of milk. Poppy is a capital cow, and has won several valuable prizes; she was giving 35 lb. of milk per day. Drayton, a massive red-roan cow, purchased from Mr. B. Merry, of Leighton Buzzard, is one of the best cows in the dairy. At the London Dairy Show in 1893 she won first prize in the butter test, yielding 2 lb. 5½ oz. of butter from 58 lb. of milk in one day, and second prize in the milking trials with 65 lb. 4 oz. of milk in one day. Dolly is another capital milker, and so is Beauty, winner of the Lord Mayor's Cup at the London Dairy Show in 1894 in the milking trials, where she gave 59 lb. 4 oz. of milk in one day, also first prize in the butter test, giving 1 lb. 15 oz. of butter from 57 lb. 4 oz. of milk. Both these were purchased from Mr. Merry, as also was the grand cow Marsh Marigold, winner of first prize in the milking trials at the Cambridge "Royal" with 67 lb. of milk in one day, and at Tring yielded 1 lb. 15 oz. of butter from 52 lb. 6 oz. of milk in one day; she is due to calve at the end of May to Melton's Monarch. Dairymaid, from the same stock, is also a capital milker, now giving 33 lb. of milk per day, and has made some excellent records. Sally, a young cow from Henham, is a red cow of good quality and a big milker. Teazle is a big roan cow from Henham, and has given 26 lb. of milk; and there are two young bulls from her which would be very useful to a tenant-farmer. Duckling is another good cow, and there are three capital heifers from the herd of Mr. J. Christy, of Sawbridgeworth—Lassie, Strawberry, and Lovely—which are likely to make grand milkers. Strawberry was giving 31 lb. of milk with her first calf, a very pro-