

as we have observed, upon one singular feature in these milking trials. These trials lasted through two days and the 'champion' Shorthorn cow gave in the two morning milkings 50.8 pounds of milk containing 4 per cent of fat and 9.5 per cent of solids not fat, whereas the two evening's milk had 6.1 per cent fat and 9.2 per cent of other solids. There was a similar though less wide variation in the milk of the first Jersey excepting that there was a slight decrease in the amount of milk.

"Hoard."

MOTTLES IN BUTTER.

SOME NEW IDEAS AS TO THEIR CAUSE AND PREVENTION

Mr. B. T. Quigly, of Philadelphia, whom the "Creamery Journal" introduces to its readers as an "old butter-maker" writes to that paper about "Mottles" as follows:

This is a subject which has been discussed at great length, and many reasons given why butter is mottled. I have given the subject considerable thought and study in the past fifteen years, and I think I have discovered a cause which has been overlooked by most writers on the subject, especially with butter made from separated cream.

Back in the old days of gathered cream butter, the cream on the very hottest days came into the factory with churned butter on the top of each can. Now the buttermaker had to strain that cream in order to separate it from the particles of butter or he would have white specks or mottles in his butter.

The reason for it was that the butter on the top of the cans was churned by agitation at a high temperature, say from 80 to 100, and of course it would come white, as all buttermakers know that a "scalded churning" (that is butter churned at a high temperature) will lose most of its natural color, and all butter makers know also that particles of butter already churned in cream will not take the artificial color at the time of churning if such particles are allowed to remain, hence we have one source of mottles.

Now every cheesemaker will tell you that once the cream rises on milk it is a hard matter to force that cream back into the milk again, so as to work it all into the cheese. You will see a cheese maker quite often while waiting for the last load of milk to come, in the morning, take a dipper or rake and thoroughly mix the milk in the vat. He is keeping down the cream until the vat is "set."

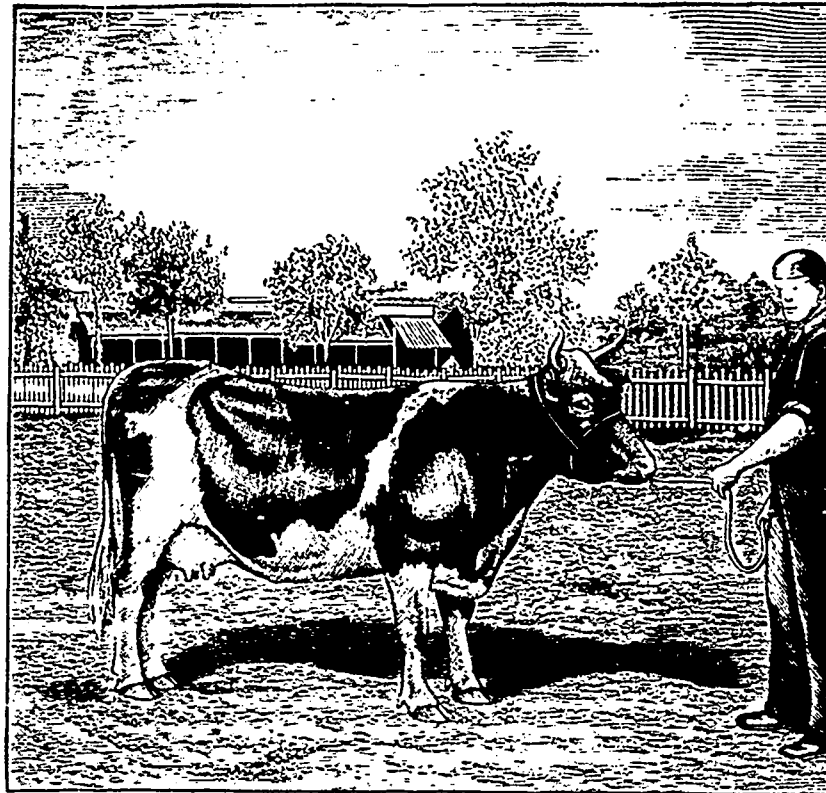
The dairyman in keeping his night's milk so as to bring it to the factory in the morning, must cool it, consequently the cream will rise more or less during the night, and in passing through the separator these globules of butter fat, which were raised through the night, will separate more readily than the rest unless the milk is well mixed before separating. My experience is that these globules being held so long in the bowl will be delivered by some separators into the cream vat in granular form or churned state, very small to be sure, but under a glass can be seen readily, or even by the naked eye, as perfectly formed as coming from the churn.

Now in running this milk through the separator these globules of butter have been formed at a high temperature which will almost entirely destroy the natural color, and as we know they will not take the artificial color, hence

with all the care possible in working the butter we have mottles and we know not whence they came. Now for a cure and I am done. My plan is to fasten a piece of strainer cloth over the end of the cream spout and strain them out. There will not be probably more than from one-half to one pound in a whole skimming yet they will spread over a large territory and knock a cent a pound off a dozen tubs of butter, besides causing trouble between the creamery man and the commission merchant. I think the better plan is to strain the cream from the separator instead of into the churn as they are so small they will pass through the churn sieve. There are other causes for mottles but most makers know how to deal with them.

MILK PRESERVATIVES ABROAD.

The following leading editorial from the Mark-Lane Express agrees with opinions more than once expressed in these columns, and is interesting as showing how the matter is regarded in England:



IONA, SWEEPSTAKES PUREBRED GUBRNSKY COW (Imported),

As shown at the Toronto Industrial Exhibition, 1896. The property of Wm. Butler & Sons, Dereham Centre, Ont.

A decision of the Enfield magistrates seems to have been strangely ignored by the press, and its importance has certainly not been appreciated as it deserved to be. The matter is well worth the attention of all milk producers as well as milk dealers. First, to deal with the facts. It appears that an Enfield milk dealer was summoned under the Food and Drugs Adulteration Act for selling milk as an article of food when it contained a mixture of boracic acid and water, which, it was alleged, was injurious to health. The local analyst certified that the milk in question contained in each pint some thirty grains of boracic acid, and ten per cent of added water. It is important to notice that this case was not one of the common kind of trying to add to the bulk of the milk by means of added water, with a view to increase the profit to be made. On the contrary, it is quite clear that the dealer was only trying to increase the keeping qualities of his milk, and that he was under the

impression that in so doing he was pleasing his customers. At any rate, he was not trying to increase his profits by increasing the amount of milk, and it was not suggested that there was any more water added than was required to cause the admixture of the drug and the milk. It was simply a case of adding a preservative to the milk. Of late it has become the fashion to use preservatives in the milk trade, and probably those which are most popular are preparations of boracic acid. It is difficult to understand why this should be so, for as long as milk is good it will keep in vessels which are perfectly clean and sweet for at least twenty-four hours and if it can be made to keep longer—which ought not to be required—it is at the expense of adding some drug which may do more harm than good. In this case the magistrates evidently took this view, for they inflicted a penalty of £1 and costs—which amounted to £1 10s. 6d.

When we come to look into the evidence which was given before the Enfield Bench, the point which is most striking is that a medical authority stated that the amount of boracic acid which can with safety be given to a

child or material so as to render the article injurious to health." Further, it is made an offence not to sell an article of the "nature, substance, and quality" demanded. It will, therefore, be readily seen that the case above referred to is practically a double offence. The net result, therefore, is that it is a dangerous thing to use preservatives at all, and that it can never be safe so to do unless it can be clearly shown that what is used is not in any way injurious to health. Under ordinary circumstances it ought not to be necessary to use drugs in this way, and as long as the farmer produces the genuine article, and delivers it in a cleanly and undiluted manner, he has nothing to fear. When he cannot, he had better let that branch of his calling alone.

THE MAKING OF BUTTER.

Milk — Skimming — Ripening cream churning—Making up and working (1)

In the making of butter a few things are necessary in order to produce an article of the finest quality. To begin with, you must have the right kind of raw material to work with. Cows that test much less than 4 per cent of butter fat should be discarded for a butter dairy, as rich milk will always give a firmer texture and a higher flavored article than poor milk, other conditions being equal.

SEPARATION OF THE MILK

After you have secured the right kind of milk, the next thing to consider will be how to separate the cream from it. There are several methods in use among dairymen, but perhaps the best and most economical of all is by the centrifugal separator process, as, with right management it will always do its work well in all kinds of weather. It stands at the head of all others in this respect. It is advisable to skim thick cream for two reasons: it will contain less curd and will also occupy less time in churning. The cream, after skimming, should be well aerated and cooled down to at least 50° as soon as possible. This is important. Do not add either ice or cold water to the cream while warming (ripening?) as it is almost sure to injure the flavor.

RIPENING THE CREAM

The next process to be gone through is the ripening of the cream. This is certainly the most important point as now is the time to secure the fine flavor. Some good butter makers use what is termed a starter. The object in this is to hasten the ripening process. This may be either some skim milk prepared for the purpose, or some butter milk from the last churning will suit as well if kept cool and fresh. This is added to the cream which has been kept sweet at the rate of 1 gallon to 10 or 12, mix thoroughly and set away at a temperature of 60° in summer and 65° in winter. In from 12 to 15 hours it will have developed a mild pleasant acid; it will now be ready for churning; it should have a smooth glossy appearance, and be about of the consistency of good maple syrup.

CHURNING THE CREAM

The cream is now ready for churning and should be brought to a temperature

(1) An essay sent in for the Exhibition Competition of 1895.