

quantity in some cases is greater than from the better ones.

We are all aware of the fact that there are a great many things to be learned about buttermaking and creamery management to make a success of them; therefore, to have a successful and well-managed creamery we must have at the head a buttermaker who has a thorough knowledge and who is interested in his work, ready and willing to learn and try anything new that will lead to the advancement and progress of the business, and to realize that the interests of his employer, patrons and creamery are bound together, and he needs to have tact and good judgment enough to know how to keep everything running smoothly and in harmony, one with the other. The art of knowing how to get on well with the patrons is an accomplishment which every maker will find to be a valuable asset. Few makers pay any attention to this part of the work, consequently they and the patron drift apart, each one trying to get all he can out of the other, instead of doing all they can to build up the central interest that they both belong to. "Knowledge gives confidence, ignorance breeds suspicion," is truer in the dairy business than in any other line of business.

INCOMPLETE STATEMENTS FROM CREAMERIES.

Monthly statements are sent to the patrons from some of our creameries that should not be tolerated. All that is given is the pounds of cream sent, pounds of fat, and cheese. No test given, nor pounds of butter from the cream sent; no price for which butter is sold, etc. No annual or patrons' meetings are held to show the amount of business done, or any other transactions.

It is along these lines that a maker can make or break a creamery business. He should know each day what he is doing, by keeping a careful record of the weights, tests, and condition of each patron's cream; also a record of his work as to the total amount of cream, condition of cream at churning, the temperature and acidity of it from its arrival at the creamery until churned. If a poor grade of cream is received, which could be improved by a little personal effort, that effort should be made. If there is some point about buttermaking that is not clear, study it. We never get so near perfection that there is nothing more for us to learn, and after once getting a reputation it will be just as hard a fight to keep that reputation. It makes no difference how good a name a factory or maker has made, if the trade receives a few bad lots of butter from that factory the name is gone, and the only way to be sure of getting the best price at all times is to have it always of the best quality.

BUTTERMAKERS: GOOD, POOR AND INDIFFERENT.

It is generally conceded that a man who works in a position where intelligence and industry is needed will gradually fit himself to that position, but while at work at a trade where neither thought nor intelligence is needed a man will gradually grow slow and dull; the less he does, the less he wants to do, until he finds himself incapable of performing any work right.

Thus, we find men in the creamery business of both types; one clean, honest, skillful, painstaking and obliging, who commands a good salary, and is always sought after. Of these, we have 23 men out of 41, or 56%, who understand their business; have had a good training and experience before starting to manage a factory. Their personal appearance in most cases corresponds with the appearance of their creamery; they are neat and tidy, keep everything about the creamery in sanitary condition; they take pride in their work, and are ever ready to learn and try anything that will improve the quality of the butter.

They experiment with the different suggestions given them, to find out for themselves the best methods of

getting the cream cooled in a small space of time; the best temperature at which to churn and wash, to get quality and quantity.

Then we have 10 men, or 24%, who have had sufficient experience and education along the line of creamery management and buttermaking, who can make good butter and keep everything clean if they would try to do so, but become careless and indifferent, thinking anything is good enough as long as they get their time in, and get through with the work in some kind of a way; this is especially the case if working in a poorly-equipped creamery. They cannot get the necessary supplies, or do not go the right way about it. No encouragement is given them from the owner or company to keep things in repair. They thus become careless and neglect doing their duty, overlook part of their work as to keeping pipes, floors and utensils clean. The churn has a little warm water thrown in, and a couple of revolutions given it; it is then called clean, until fault is found with the quality of the butter. The churn is examined, and yellow matter has been found from 1-16 to 1-8 of an inch thick all over the interior. Vats are found nearly as bad; strong odors come from every direction.

The refrigerator is at a high temperature, and things generally are kept in a bad condition. It is a safe assertion to make with this class of buttermakers, that they injure more butter and do more injury to the creamery business by "a lack of disposition than from a lack of knowledge."

The remaining eight makers, or 19% (along with the poor creameries), should not be allowed in the business. They are a stumbling block and detriment to the advancement of the buttermakers, and to the progress of the industry. They are often the cause of the better maker quitting the work, by offering to work more cheaply, and giving guarantees that no man knowing his business would think of doing, because he has no control over the conditions.

These makers have not had enough experience before starting out for themselves, or have worked under a man who has not been careful enough in giving them training along clean or methodical lines. Some of them have no liking for nor take any interest in their work, but do it until some job turns up that they think they will like better, or earn enough money to give them a good time, clothes, and three meals per day. Some of them have never attended a dairy school, and those who have did not take enough interest while there to put into practice the scientific or practical things taught them. They seldom read dairy papers or attend dairy meetings, and lack a thorough understanding of the principles necessary in making a good, uniform grade of butter.

THE NEED FOR IMPROVEMENT.

To improve the quality and standard of our butter, the first thing to recognize is the real need for improvement. So many makers never see any butter but their own make that it is impossible to convince them of the need for improvement. One of the best methods used for improvement of the butter in the cream-gathered creameries, was carried on at some of the creameries during the past season, where the pasteurizer was not used. The cream was cooled down to 50 or 52 degrees as quickly as possible, either by running it over a cooler or icing the vats thoroughly containing the cream, and churning within three or four hours after being delivered. This prevents the development of further acid and bad flavors, which is sure to take place if left over night, especially at a temperature of 54 to 60 degrees, as is the custom of a good many buttermakers.

POINTS FOR MAKERS.

The oily flavor that is found in so much of the

cream-gathered butter is due to keeping the cream too long at and churning at a high temperature. When cream is cooled and churned at once this flavor is never noticed. It also helps to overcome the sour and rancid flavors due to old and overripe cream, by getting the cream into butter as soon as possible. By using the pasteurizer, the best all-round satisfaction is given, especially if the cream is not too sour or overripe, and testing over 25% fat. Where cream can be obtained under these conditions a pasteurizer certainly should be installed and used. A good culture is also essential, but owing to the difficulty of getting skim or whole milk, and the extra care that a cream culture takes, few of the makers use one continually. The cream in the vat should be stirred often enough to get an even temperature and acidity. If left without being stirred, the cream around and next to the cold water and it will be colder, and thus develop less acid than the cream in the center of the vat, which will be of a higher temperature, thus not giving an exhaustive churning.

IMPROVEMENT IN CREAM IN 1907.

The quality of the cream the past season has been quite an improvement over other years, showing better care as to cleanliness and being kept cool, but progress has been greatly impeded by a number of the factory owners having the cream hauled but twice a week, and in a few instances, where extra care was taken of the cream, only once a week. This should not be, and where the patrons are doing their part in taking good care of the cream, the owner should not be so avaricious, taking advantage of this extra care by cutting down expenses and spoiling the quality of the butter.

MOISTURE IN THE BUTTER.

In determining the amount of moisture in butter made by the different creameries the past season, the beaker method was used, and duplicate samples were taken in nearly every case. I made 187 tests, which averaged 13.92% of moisture; 11 of these were over 16%; highest, 20.90%; lowest, 8.85%. The churning temperature of those over 16% was from 52 to 54 degrees, and washing temperature, 56 to 58 degrees. Some of them were over-churned in the buttermilk, and others allowed the granules to increase in size in the washing of the butter.

The butter that contained the high per cent. of moisture was of a dull color, and had poor body and very open, though not as slushy as one would expect. The temperature churned at by the majority of makers who had about the average test was from 50 to 52 degrees to the size of wheat, spraying with cold water until the buttermilk was all expelled, and then washing once or twice, according to the conditions of the butter, at a temperature of 52 to 56 degrees, until the granules were the size of corn. As soon as the butter was sufficiently drained, and not too dry, one-half of the salt was sifted on as evenly as possible; the churn was then revolved without rollers a couple of revolutions, and the remainder of the salt added, with one or two more revolutions without rollers. The butter then should be worked four or six revolutions, and allowed to stand and drain off surplus moisture for 10 to 15 minutes, finishing working with six to ten revolutions more, depending upon the general conditions. No definite rule can be given for working butter, it being part of a buttermaker's trade, which is very important, yet a good many give it very little attention, doing it more by guesswork, causing mottles, streaks, greasy and open butter.

DAIRY PRODUCTS DEFINED.

The Association (United States) of State and National Food and Dairy Departments, at its last annual meeting, held during the Jamestown Exposition, adopted the following definitions:

MILK.

1. Milk is the fresh, clean, lacteal secretion obtained by the complete milking of one or more healthy cows, properly fed and kept, excluding that obtained within fifteen days before and ten days after calving, and contains not less than eight and one-half (8.5) per cent. of solids not fat, and not less than three and one-quarter (3.25) per cent. of milk fat.

2. Blended milk is milk modified in its composition so as to have a definite and stated percentage of one or more of its constituents.

3. Skim milk is milk from which a part or all of the cream has been removed, and contains not less than nine and one-quarter (9.25) per cent. of milk solids.

4. Pasteurized milk is milk that has been heated below boiling, but sufficiently to kill most of the active organisms present, and immediately cooled to 50 degrees Fahr., or lower.

5. Sterilized milk is milk that has been heated at the temperature of boiling water, or higher, for a length of time sufficient to kill all organisms present.

6. Condensed milk, evaporated milk, is milk from which a considerable portion of water has been evaporated, and contains not less than twenty-eight (28) per cent. of milk solids, of which not less than twenty-seven and five-tenths (27.5) per cent. is milk fat.

7. Sweetened condensed milk is milk from which a considerable portion of water has been evaporated, and to which sugar (sucrose) has been added, and contains not less than twenty-



Herd of Jerseys.

Property of Katharine Bradley-Dyne, Saturna, Vancouver Island, British Columbia.