

By this statement it will be seen that milk which contains 3.4 percent of fat will produce 3.18 percent of butter, that it requires 31.44 pounds of milk to produce a pound of butter, and the price can, with equal justice to all the patrons of the creamery, be attached to the butter, the butter fat, or to the milk. In the above example, the percentage of butter is obtained by the following statement:

$$x = \frac{3.4 \times 80 \times 96}{82 \times 100} = 3.18;$$

or, for the sake of convenience, a formula may be employed. Let f represent the percentage of fat in the milk, c the cream co-efficient, b the butter co-efficient, and F the percent of fat in the butter; then all such questions may be worked out by the following formula:

$$x = \frac{fbc}{100F}$$

Let us now suppose that the market price of butter is 20 cents per pound, that the cost of manufacture and sale is 5 cents, and it will be evident that a corresponding price may be attached to the milk, which will be about 48 cents per 100 lbs., and justice can be approximated by simply making a test of the percentage of fat in the milk, and paying each patron accordingly, although the cream and butter co-efficients can be obtained by also testing the skim and butter-milk, and the percentage of water in the butter can be ascertained with little difficulty. But our farmers can hope for little progress or justice so long as our creamerymen have little or no interest in these tests, and the same remarks apply with equal force to our cheese-makers. Farmers, more than any other class of the community, are interested in having reliable tests made. The knowledge obtained by this system is necessary before breeding dairy herds can meet with appreciable success. A cheese or butter factory should be a sort of laboratory in which any patron can get the milk or butter, skim or butter-milk, of his cows tested at any time in order to ascertain their intrinsic merits for breeding or dairy purposes. As I pointed out before, the milk of some cows has a higher cream co-efficient than that of others, although the percentage of fat may be the same, and it is important that each cow should be tested separately for the purpose of ascertaining whether she is better adapted for butter or cheese production. The percentage of water or total solids in the milk does not properly decide this question under the test system, as is generally supposed.

Before I draw my lecture to a fair and just conclusion, it is necessary that I should notice at least one other method of testing the butter capacity of milk or cream. I have special reference to the oil test which recently originated in the United States, and which has been recommended so highly, even by some of our best dairy authorities.

(To be concluded in our next issue.)

Hoard's Dairyman says that it is computed that there would be as much nutrition per annum in the milk of fifteen million cows in the United States, if it was all used for human food, as in the eighteen thousand million pounds of boneless beef, and that the average good cow for a year is equal in feeding value to the meat of one and a half steers, weighing 1,500 pounds each. The whole calculation is based on the fact that three and one half pounds of milk are equal in feeding value to one pound of boneless beefsteak.

Butter Making.

The exercise of rigid cleanliness in all the operations of butter making has so often been enforced in our columns that we shall make no repetitions here. Not less important is it that the milk should come from healthy cows fed on clean, wholesome, sweet and nutritious foods, and the water drunk should not fail to be pure.

Revolutionary changes have recently been made in dairy practice, owing partly to the advancement of science and partly to a natural desire for change on the part of the consumers of butter. It is in place here to note a few of these changes, and say which of them are desirable and which are undesirable. When the butter is for sale, the maker should, by all means, consult the tastes of his consumers. It is not our place to educate the public as to what they should have in preference to what they too often desire; but a few hints in this respect may not be amiss to our readers. The farmer should endeavor to combine the wholesome with the luxurious, when manufacturing articles for his own consumption. For family use, we need not discuss the keeping

qualities of butter made after the different fashions, for the farmer can always have it fresh; besides, with reference to the keeping qualities, it is our way of thinking to consider that sour cream butter possesses the better keeping qualities, while in Europe attempts have been made to prove that sour-cream butter has at least as good keeping qualities as that made from sweet cream. Authorities also do not agree as to the effects of salt on the keeping qualities, and this question is difficult to determine, for when butter begins to get rancid, salt hides the rancidity from the taste, so that the unsalted butter appears to have the worse flavor.

One of the latest novelties is the salting of butter with brine. We have encouraged this tendency, not because we believe in salting with brine, but because it is an important step in the direction of doing away with salting butter altogether. When butter is made as it should be, no system of salting can improve its flavor, but salt improves the flavor of average butter by disguising all the little sins perpetrated in the making. It is better to learn the science of making butter that needs no salt than the science of salting butter. Butter salted with brine is sufficiently tasty for a majority of consumers in the present state of the fashion, and we therefore recommend our farmers to adopt the practice, using unsalted butter for the family table, made entirely from sweet cream. Butter being a luxury, mostly devoid of nutritive properties, it is the creamy flavor that makes it a luxury; it cannot be the salt, which might as well be used on lard or oleomargarine—neither can it be the sharp flavor of sour cream butter, which can be obtained in pickles at a much less expense, and nobody can conscientiously contend that pickly flavors are wholesome or in any sense hygienic. Creamy flavors cannot be successfully imitated by the arts of the druggist; hence the necessity for pure, sweet, creamy flavors in the butter, if a real, natural, wholesome luxury is to be enjoyed. It is the tendency of experts to complicate the butter business as much as possible—it is their interest to do so; but the straightest road is almost invariably the best, and the fare the cheapest. The omission of salt saves working the butter, makes the grain and quality even, saves the palate and saves money. Nobody has

ever been able to give a sensible reason why butter should be salted.

Our dairy authorities are very inconsistent in their talk about the keeping qualities of butter. They want a long keeping butter and they want everybody to go more extensively into winter dairying. When butter is made in direct conformity with the demands, it is not necessary that it should keep long; for if it is well made under any of the leading systems, it will keep long enough to reach the consumers. We prefer advocating a more extensive winter dairy—in fact, making butter at all seasons of the year—leaving the keeping qualities of the butter to look after themselves. What is really wanted is the best butter, fresh at all seasons of the year, and this alone should absorb all our present energies.

New Cure for Milk Fever.

The following experiences obtained in the application of a simple method of treatment for milk fever previously mentioned in the ADVOCATE, and taken from a German paper, are of considerable value:

Out of three cows that were attacked by the fever two were very seriously ill. In the treatment of one of those that fell sick in the afternoon, applications of ice on the head, frequent injections of cold water, four cathartic powders, and every two hours a decoction made of one oz. of camomile flowers, with the addition of two tablespoonfuls of ether, were employed during the night. The cow lay on her side for hours and looked very miserable. In the morning of the next day the loins were covered with blankets, and these rubbed, or rather ironed, with very hot irons. This process was continued for about three hours, after which the cow stood up and gave about 2½ quarts of milk. She was restored to health the next day.

One of the other cows was also very seriously ill. She was treated in the same way, with the exception that the ironing was continued from morning till noon, and again from 2 o'clock to 6 o'clock p. m. At 5 o'clock she was still on her side, but at 8 o'clock she got up without assistance and commenced eating straw.

The third cow was not so dangerously affected, but still was unable to stand. Her case was relieved after a few hours ironing.

Failures in Butter Making.

The main causes of the many failures which take place in the making of butter are the following:—

1. THE FODDER-FLAVORS.—These are too well known to require description; but the feed also exercises an influence on the composition of the butter, which influences the durability as well as the taste.

2. STABLE TAINTS.—Some people call it the "flavor of the cow's tail." This failure arises from a lack of cleanliness in milking, the neglect of cleaning the udder before milking, and imperfect straining of the milk. Without doubt, it is the effete matter from the body of the cow that gives the butter this peculiar flavor, which is intensified by allowing the milk to remain in the stable atmosphere for an unnecessary length of time.

3. SMOKY, MUSTY FLAVOR.—This condition has its origin in the setting of the milk or cream in an impure atmosphere, principally allowing the cream to sour in dwelling rooms, where all sorts