# July, 1885

#### FARMER'S ADVOCATE.

shown centrifugal butter to be inferior to that made on the other systems ; but the cream must be treated in a different way when a superior article is desirable.

FAMILY BUTTER-MAKING.

Before we present any arguments in support of what we consider to be the best system, let us consider a few of the leading objections against existing systems. Family butter-making must be entirely repudiated on account of its low price, its inferior quality, its lack of uniformity, and the uniform price paid by local dealers for all brands, good or bad, thereby placing a premium on inferior butter, general filthiness, and the absence of all desire to improve the dairy herds. On account of the scarcity of labor at reasonable wages, there must be a tendency to lighten household duties ; and if the farmer's wife can obtain more money for her cream than for her butter, she cannot long be so blind to her own interest as to persist in existing methods. She will resist all attempts to become educated in advanced methods of butter-making so long as her pecuniary interests are not enhanced by a higher education; and if she is wise she will use her political influence against the election of all candidates who will persist in burdening her with taxes in support of such an educational system. Family buttermaking must go, or its methods must be com pletely revolutionized.

### CO-OPERATIVE BUTTER-MAKING.

The system of milk gathering is gradually yielding to that of cream gathering, so that we shall confine our observations to the latter. The co-operative is superior to the family method, inasmuch as a more uniform quality and a higher price can be obtained, although any farmer who undertakes to study and apply the best methods of butter-making, including the feeding and care of his stock, can make a quality much superior to that made on the co-operative plan. There is no known method of preventing the [deterioration of the cream in its cartage to the factory ; but there is a great saving in labor and utensils in a farming community manufacturing co-operatively, compared with doing so individually, and if the profits could be shared alike, causing no injustice to be done, great harmony and success would be the result. But the injustice is greater than in the family system of butter-making. In uniformity of price the two methods are identical, but as to the uniformity of quality there is no known plan of causing justice to be done. It was formerly supposed that 113 cubic inches of cream, the milk being set at about 60°, would produce a pound of butter. Let us quote a few figures to show what variations may occur. The following twenty numbers represent the number of cubic inches required to make a pound of butter, as ascertained by tests made at the Maine Experiment Station, the milk having been taken from as many different cows, and set at the same temperature, viz., deep setting in ice water : 124, 113, 79, 133, 84, 128, 104, 74, 108, 108, 136, 104, 99, 130, 116, 120, 92, 104, the average being 108. These figures are quite in sympathy with those of other tests, and they prove the gross injustice that occurs in dividing the profits on the cubic inch basis. What would the difference have been if the milk had been set at different temperatures, as

tional standpoint it has also a pernicious effect, as it places a premium upon fraud and reckless management.

This system, however, has rapidly given way to the mode of testing by actual churning at different intervals, basing the payments upon the number of cubic inches required for a pound of butter as ascertained by the churn test. This is a cumbersome business, adding considerably to the cost of production, and has also been the cause of a great deal of dissatisfaction. The cream from the same cow may not produce the same percentage of butter on different days.

A great deal of discredit has been cast upon analysts because their methods of ascertaining the percentage of butter fats in the milk do not harmonize with the churn tests. But the question may be asked, is this the fault of the chemist or of the churn? The chemist can tell precisely the percentage of butter fats in the milk, but the churn cannot; for the quantity of water in butter varies from 8 to 18 per cent., and in addition to the butter fats, there may be appreciable quantities of casein, sugar, etc. How can the chemist foretell how much water and other extraneous stuff the churn is going to leave in the butter, or how much fat it will leave in the buttermilk ? The better the quality of butter, the more water it contains; for such butter is composed of large globules, amongst which more water can find place than amongst small globules. The fewer the broken globules, also, the more water, other conditions being the same, so that a fair basis of quality is the percentage of water.

#### THE CENTRIFUGAL SYSTEM.

So far as the quantity and quality of butter is concerned, as well as the saving of labor, water, and sometimes ice, the saving of space, and the superior quality of the skim-milk, the cream separator has advantages not possessed by any of the other systems. Another great advantage possessed by the cream separator is that the loss sustained by the imperfect rising of the cream in heavy milk, as is the case in the pan system, is obviated. As the original outlay for plans is somewhat considerable, the system is not adapted to small dairies; the milk of not less than 20 or 25 cows should be employed. On the co-operative principle trifuge has some serious drawbacks. The milk must be taken to the factory, and although it is not asserted that the hauling of the milk is much more expensive than the hauling of the cream, yet the condition in which the skimmilk is returned is considerably impaired by unavoidable delays, and all the products depreciate by the tardiness of the system. The milk is in the best condition for separation of the cream just after it leaves the udder, so that every minute's delay thereafter, as well as all sudden or extreme changes of temperature, injuriously effect the quality and keeping properties of the butter. The cream of two or more milkings cannot be secured in a uniform condition, and all attempts to make it so by changes of temperature will be attended by unsatisfactory results. All these facts point to the conclusion that if we are resolved upon acquiring the highest reputation for our butter in the world's markets, we must adopt the centrifugal system, not upon the co-operative principle, is done in actual practice ? From an educa- but by individual enterprise. There are many butter,

sections in the Dominion which are excellently well adapted to butter dairying. Let one or more enterprising farmers or dairymen in each of these sections, where pure, cool water abounds, where various grasses flourish, and where fresh breezes and shady resorts give health to and enliven the district, devote their energies to the undertaking for their own pleasure and profit, and for the reputation of the country. An ample commencement can be made on a hundred acre farm, even if the soil is materially worn out. The fertility can soon be restored, and the number of cows in the herd doubled. The raising of hogs or calves should be coupled with the enterprise, for the purpose of utilizing the surplus skim-milk, and making more manure to facilitate the raising of more cows. Let the cows be bred specially for butter-making. Such private enterprises will scarcely interfere in the least with the progress of cheese-making, for cheese factories may dot these districts almost as numerously as in others. The loss of a farm or two in the vicinity of a cheese factory will not materially effect our cheese business, while it will be millions of dollars to the country with regard to our butter industry, besides winning for us an imperishable name.

## Centrifugal Dairying-Canadian-Danish Butter.

While in Hamilton a short time ago we called at the dairying establishment of Mr. W. G. Walton, one of our oldest and most experienced dairymen. He is also well read in dairy matters, and has a strong prejudice in favor of the Danish system. His mode of manufacture will be interesting to many of our readers. He purchases the milk from the surrounding farmers, paying 8 cts. per gallon, and the milk must stand a certain test as to percentage of

He has two centrifugal cream separators, a DeLaval and a Burmeinster & Wain, operated by the same engine and in the same room, each having a capacity of 700 lbs. per hour, and costing \$250 each. He raises the temperature of the milk to 80° before skimming, by means of a heater supplied with steam from the boiler. This heater is common to both separators. It s not much used in summ the morning's milk with that of the previous evening makes about the desired temperature-80°. As soon as the cream comes from the separator the can which contains it is plunged into ice water, where it remains for 4 or 5 hours at a temperature of about 36°, until the cream is thoroughly chilled. It is then poured into a souring vat where it remains until the following morning at a temperature of about 60°. This vat is surrounded by a water-space in which water can be admitted at such a temperature as will keep the cream at about 60°, at which temperature the souring takes place. His theory is that the deleterious effects of any sudden or extreme change of temperature may be counteracted by a corresponding change in the opposite direction. How these changes effect the keeping qualities of the butter he has no personal experience, as his butter goes into immediate consumption. The cream is churned the following morning at 58° in summer and 60° in winter. He salts an ounce to the pound. He is not an advocate of heavy working of the

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