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HINTS ON BUTTER-MAKING.

A PROMINENT feature in the International Agricultural Exhibition, recently held at Kilburn, was the International Dairy, in which were shown some of the processes of cheese- and butter-making, employed in England, in America, and on the continent of Europe. It has been stated that the Irish farmers who visited the Exhibition were so much impressed with what they saw in this dairy, that they resolved to call a public meeting on their return home, to consider whether it would not be possible for Irish dairy-farmers to improve their butter-making by adopting some of the improved appliances and methods exhibited in operation at Kilburn, and by forming an Association to aid them in marketing their produce.

The Council of the Royal Agricultural Society of England are of opinion that English dairy-farmers might also improve the quality of their butter in a similar manner; and it is probable that in many cases butter-making might at the present time be advantageously substituted for cheese-making.

The improved quality and increased quantity of American cheese recently imported into England have jointly operated to seriously lower the price of English cheese.* Butter also comes to England in large quantities from France, Holland, Denmark, and Sweden, as well as America; and each kind of foreign butter commands in its season, in large quantities, as high a

* Many farmers have this season obtained no more remunerative offer than 28s. per cwt. for their make of cheese.



price as any but the best English fresh butter, an article which is almost unknown in the open market, and the supply of which is, as a rule, restricted to private customers.

Milk is more easily tainted than any other substance, and its products require excessive care in their manipulation. Hard cheese and salt butter will, however, bear carriage long distances without injury; but really fine fresh butter cannot be obtained in large quantities from across the sea. For this reason, English farmers who cannot sell their milk at a remunerative price should endeavour to make that one of its products for which alone they possess the protection which nature has given them and which science has not yet taken away.

The bad quality of much of the English butter which finds its way to wholesale markets is due to one or more of the following defects in the ordinary processes of manufacture employed in England:—The milk is not skimmed early enough,—often not before a certain amount of sourness has been developed in the milk, and an appreciable amount of curd has, therefore, become mixed with the cream. Although this curd increases the quantity, it injures the quality, of the butter, which rapidly becomes rank, and fetches a deservedly low price. Skimming is often done with great carelessness, and a greater or less quantity of milk is taken off with the cream, producing the same result, in kind if not in degree, as when the cream is taken off sour milk, especially when the cream is left to become sour before it is churned. From carelessness in churning, or in the manipulation of the butter, a considerable proportion of butter-milk and water is often, either intentionally or accidentally, left in the butter. No doubt this practice increases the weight of the mass, but in a very few days, or even hours, the mixture becomes nearly unsaleable. Dirt in any form—foul smells—unskilful milking—bad food and bad water given to the cows—bad water, soap, or other noxious substances used in washing the dairy appliances—are all causes of bad butter which no amount of care in manipulation will counteract. Temperature is another element,

and is too often guessed at rather than tested by the thermometer, and sometimes too rapidly altered. Packing is frequently at fault; kegs, firkins, cases, &c., being defective, and in consequence their contents arrive at the market in a condition which prove that slovenliness is not confined to the making of the butter.

In giving the following hints, it is assumed that the feeding and milking of the cows are thoroughly understood, and that the room in which the milk is set is dry and cool, kept scrupulously clean, and is free from bad smells, including the smell of meat, cheese, and cooking. At the same time, it may be useful to warn the dairy-farmer against complete reliance upon grass as food for cows in wet seasons. If the milk is to be used for making butter, good quality of the product cannot be ensured unless the too succulent quality of the grass is neutralized by the addition of more concentrated feeding materials. In such a season as the present, 4 lbs. of bean-meal should be given to each cow every day; under ordinary circumstances, the ration may consist of from 2 to 3 lbs. of decorticated cotton-cake, or $2\frac{1}{2}$ lbs. of bran and $2\frac{1}{2}$ lbs. of oatmeal, or 3 lbs. of oatmeal and 2 lbs. of bean-meal. Either of these mixtures will enable the land to carry a much larger number of cows profitably than could be otherwise maintained upon it. Grass and hay should, in fact, be regarded as the most expensive articles of food.

The process of butter-making which I shall now describe is that adopted in the best districts of Normandy, the butter from which obtains the highest price in the Paris market. It is well adapted for English farms where churning is done only two or three times a week.

Clean all dairy utensils by rinsing them with clean cold water, and afterwards scrubbing them with boiling water, after which repeat the cold rinsing.

Cool the milk directly it is brought into the dairy, by placing the cans in a running stream, or by any other available method.

Set the milk, at a temperature not exceeding 55° , in glazed

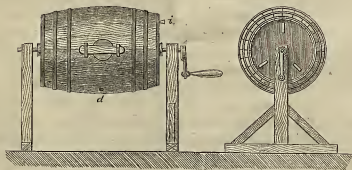
earthenware or tin pans, deep ones being preferred in France, America, and Northern Europe.

Skim the milk carefully with a perforated tin saucer after it has stood twelve hours, care being taken that what is taken off consists of cream unmixed with milk. A second skimming may be made twelve hours afterwards, but this cream should not be mixed with the "cream of the cream" until immediately before churning, and the most delicate butter is made with the first skimming only. The largest quantity of butter from a given quantity of milk is rarely or never combined with the finest quality, and good butter cannot be made if the cream contains milk, or is taken off sour milk. If the cream is too thick, a little pure water may be added to it before churning; but the addition of milk should be avoided.

Keep the cream until the time for churning in the coldest place available, in covered earthenware or tin vessels.

Churn the cream at a temperature * of 57° to 60° in a revol-

Fig. 1.—The Norman Barrel-churn.



ELEVATION.

END-VIEW.

d. Spigot. i. Ventilation Peg.

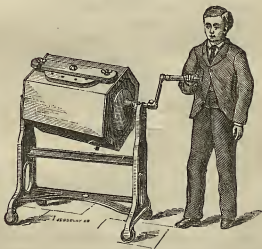
(The head being removed.)

ing barrel or a midfeather churn, fitted with a spigot. The more simple the churn the better, because it is more easily

* The temperature of the cream should be gradually raised or lowered as required by placing the vessel containing it in a bath of warm or cold water.

cleaned. The Norman barrel churn is thus an improvement upon those in which the dashboards extend to the circumference (see Fig. 1). The churning should be done with scrupulous regularity, at a speed which experience teaches to be best adapted to the kind of churn and the temperature of the air. With the Norman barrel churn the rate varies from forty to sixty revolutions per minute in the best districts, according to the size of the churn and the temperature of the air; and with Thomas and Taylor's Self-acting Eccentric Churn, which took the Society's First Prize at Bristol last year, the rate during the Trials was between fifty and sixty-two. 1272

Fig. 2.—Messrs. Thomas and Taylor's Prize Patent Self-acting Eccentric Churn.



Ventilate the churn frequently during the first ten minutes by removing the ventilating peg (*i*) for a few seconds.

Listen attentively to the sound of the cream, and when it changes in the least degree stop the churning, and ascertain whether the butter has come, and if it is in globules no larger than a pin's head, withdraw the butter-milk. The bad quality of butter is more often due to the neglect of this rule than to

any other cause. To avoid loss, pass the butter-milk through a hair-sieve, which will retain any particles of butter that may escape with the butter-milk, and return them to the churn.

Wash the butter thoroughly with cold water by half filling the churn, giving it three or four turns and then withdrawing it in the same way as the butter-milk. Repeat the washing until the water comes out of the churn as clear as it was when it was put in.

Take out the butter with a pair of wooden patters, and do not touch it with the hand.

Press out the water still in the butter by passing it under a kneading-board * (Fig. 3) or by working it with the wooden patters.

Fig. 3.—*Mechanical Butter-worker suitable for small Dairies.*



Colouring the butter is a practice that cannot be recommended from any point of view except that the public taste, or rather the public eyesight, requires that butter should have a rich yellow colour. The ordinary solutions of annatto which are generally used for the purpose are unsuitable, because they are

* This board and roller may be obtained of Mr. Hore, 4 Bishopsgate Street Within, London, E.C., and of Messrs. T. Bradford & Co., 140, High Holborn, London, and Crescent Iron Works, Manchester. Price 13s. 6d. Larger Tables in a circular form can also be purchased of these and other makers.

a mixture of annatto and water. Water will not mix with fat, and butter is essentially fat, therefore when such a material is used to colour the butter, it makes it look streaky and its market-value is ruined. Such a mixture should be added to the cream in a dilute state before churning. A fatty solution of annatto, which is now being sold in some localities, obviates this difficulty; but the best substitute is the liquid strained from pulped carrots. In any case, the process of colouring requires great care and judgment.

Make up the butter into such shapes and sizes as are most saleable to your customers, but be careful always that it should look clean and attractive. This need not be done until after the butter has been allowed to remain for twelve hours covered with a clean cloth, to drain and become consolidated.

Pack the butter for conveyance in small packages, lined first with white paper and then with new and clean muslin previously well rinsed in boiling water and again cooled, care being taken, in the case of fresh butter made up in pats or rolls, that the several pieces in one package cannot shift so as to injure their shape or appearance.

Salt should not be used except for what is known as "keeping butter," or to please the taste of special customers. Keeping butter should be packed in kegs large enough, but not too large for one churning. The salt may be incorporated with the butter by passing the butter sprinkled with salt once or twice under the roller of the kneading-board (Fig. 3). The kegs should be rinsed thoroughly with salt water, and a layer of salt sprinkled over the bottom head of the keg before the butter is put in, and another layer over the top head of the butter after it has been covered with muslin, which has been well rinsed in boiling water to get out the size, and then well cooled, previous to putting on the head of the keg.

Marketing the comparatively small quantities of butter which are made by individual farmers in England is the great difficulty to be overcome. The middlemen in England do not

perform the same duty as the butter-merchants of France, who not only buy butter in small quantities from the several farmers who make it, but also complete the process of manufacture, and by mixing together several parcels of the same quality are able to deliver in London large quantities of each of their brands. A member of the Society recently sent me two pats of butter of his own make. The quality was excellent, and I sent one pat to a factor in Tooley Street. He replied, "If your friend can send me half a ton or upwards of such butter per week all the year round, I shall be happy to correspond with him." Herein lies the difficulty of getting at the London market, and it can only be overcome by associations of farmers, or by the creation of new middlemen, whether companies or individuals. What I should recommend is the adoption of a factory system. Let each farmer send his cream or his butter, as may be arranged, to a central factory in each district, and be paid by results, as is done by the cheese factories. The Aylesbury Dairy Company has for some months been buying large quantities of cream all over the country, even from as far as South Wales, and I am informed by Mr. Allender, the Managing Director, that the results up to the present time have been most satisfactory.