

thus save the labour during the best part of the season, which is so frequently lost. The boxes or drawers at the top, are made so as to hold about eight pounds of honey, and may be removed when they are full, or sooner if desirable.—*ib.*

OF THE MANAGEMENT OF MILK AND CREAM,
AND THE MAKING AND PRESERVA-
TION OF BUTTER.

The quality of milk greatly depends on the nature of the food, and which likewise materially affects the quantity that the cows will yield. This last circumstance is, to a certain degree, influenced by the manner in which the cows are milked; the dairy-man therefore, should pay a little more attention to this introductory process, than he is always accustomed to do. If a cow is roughly handled, it is not only painful to her, but will also cause her to withhold a portion of her milk, whereas, if it is gently drawn, she will yield it freely; and it is of importance that it should be drawn to the last drop, or it will otherwise decrease at each succeeding meal. As it sometimes happens that cows are fidgety and restless, they should by no means be harshly or severely treated. If the udder is hard and painful, it should be fomented with lukewarm water, and stroked gently, by which simple expedient the cow will generally be brought into good temper, and readily yield her milk. It is also proper to feed the cows at the time of milking, for, while eating, they give out their milk with greater freedom. They are also prevented by the motion of their jaws, from the habit of withholding their milk, by means of which, if it is not properly prevented, they would soon become dry.

In this country, it is the general practice to milk cows twice in the course of twenty-four hours, throughout the year; but in summer, the proper periods are at least three every day, and at intervals as nearly equidistant as possible, viz. very early in the morning, at noon, and a little before the approach of night. It is a well known fact, that cows when milked thrice in the day yield more milk in point of quantity, and of as good, if not better, quality, than they will under the common mode of milking them only in the morning and evening. Very particular directions should be given that the cows are driven slowly to the place of milking. If they are hurried, although in a very slight degree, the separation of the milk into its constituent parts, will not so readily or perfectly take place. If cleanliness were attended to as much as it ought, the teats would be washed with water and a sponge before the milking commenced.

After the milk is drawn from the cow, it should be carefully strained through a gauze or linen cloth, stretched on an open-bottomed wooden bowl, or a hair sieve, in the cream-pans, which should never exceed three inches in depth, though they may be made so wide as to contain any quantity required. If any ill-flavour is apprehended from the cows having eaten turnips, &c., the addition of one eighth part of boiling water to the milk, before it is poured into the dishes, will in a great degree remove it, or the solution of nitre may be used. These pans when filled should be set upon the shelves, there to continue until the cream is removed.

In the process of milking it should be remembered, that the milk first drawn from a cow is always thinner, and inferior in quality to that afterwards obtained, and this richness increases progressively to the very last drop that can be drawn from the udder.

It should also be recollected in the after process, that the portion of cream rising first

to the surface, is richer in point of quality, and greater in quantity, than that which rises in the second equal space of time, and so of the rest; the cream continually decreasing, and becoming thinner and poorer.

The milk produces a smaller proportion of cream than that which is thinner, though the cream of the former is of a richer quality. If thick milk therefore is diluted with water, it will afford more cream than it would have yielded in its pure state, though its quality will be inferior.

Milk carried about in pails, or other vessels, agitated and partly cooled before it be poured into the milk-pans, never throws up such good and plentiful cream as if it had been put into proper vessels immediately after it came from the cow.

From these fundamental facts, some important inferences, several of them already hinted at, and serving to direct the proceedings of the dairy, may be deduced.

1. It is evidently of much importance, that the cows should be milked as near to the dairy as possible, in order to prevent the necessity of carrying and cooling the milk before it is put into the dishes; and as cows are much hurt by far driving, it must be a great advantage in a dairy-farm, where the practice of house-feeding is not adopted, to have the principal grass fields as near the dairy homesteads as possible.

2. The practice of putting the milk of all the cows of a large dairy into one vessel, as it is milked, there to remain until the whole milking be finished, before any part is put into the milk-pans, is highly injudicious, not only on account of the loss sustained by the agitation and cooling; but also because it prevents the owner of the dairy from distinguishing the good from the bad cow's milk, so as to guide him with respect to the profit that he derives from each cow. A better practice, therefore, would be to have the milk drawn from each cow separately, or from only two or three cows, put into the creaming-pans as soon as milked, without being mixed with any other.

A small quantity of clear water, cold in summer, and warm in winter, put into the bottom of the milk-pan, will assist the rising of the cream; but some persons imagine that it is prejudicial to the butter.

3. If it is intended occasionally, or generally, to make butter of a very fine quality, the milk of all the cows that yield cream of a bad or inferior quality should be rejected, and also the milk that is first drawn from each cow. The quality of the butter will also be improved in proportion to the smallness of the quantity of the last-drawn milk that is used, as it increases in richness to the very last drop that can be obtained from the udder. The best butter will consist of the last-drawn milk, and also of the first-drawn cream.

Milk consists of three component parts, the *butyraceous*, or oily substance, of which butter is composed; *caseous* matter, from which cheese is formed; and the *serum*, or whey. The comparative value of different dairies, and of different cows, in each dairy, consists not only in the quantity of milk—the compound of these three substances—but also the quantity of butter in a given quantity of milk. These three ingredients differ materially in specific gravity or weight, and to separate them is the chief object of the dairy. The cream is the lightest—next in specific gravity is the whey, and the curd is the heaviest. The manufacture of butter consists in the separation of the *butyraceous* part, and that is a mere mechanical affair. The milk is left undisturbed, and thus the lightest portion mechanically quits the heavier one, and floats on the top. The separation of the curd from the serum—the man-

ufacture of cheese—is a chemical process, and is effected by means of a peculiar acid.

The cream, having separated from the other component parts of the milk in about twenty-four hours, in a medium temperature, is carefully skimmed by means of a skimming dish, and poured into a vessel, until enough is obtained for churning, or the milk is let off by taking out a plug in the bottom of the pan. When the cream has been thus collected, it should be put into a deep covered vessel, for the action of the air on the surface dries it, and also stirred with a stick or spoon, once or twice a day, until made into butter. The object of this is to produce a slight acidity, by which the after process of churning is much accelerated. The time of keeping depends on the weather: if the cream from each milking has been kept separate, it may remain from two to four days, in most seasons, without being injured; but if the cream is mixed with that which is sour, they ferment and soon become putrid. This is partly prevented by the stirring: but it is best to keep the cream from every milking apart, and thus allow each to become sour of itself. The contrary practice should never be adopted, unless it be intended to churn the moment the whole mass has become acid.

In some counties the separation of the cream from the milk, is not thought to be sufficiently complete by this mechanical process, but after the milk has stood twenty-four hours in the pan it is put over a slow fire, and there it remains until it begins to simmer, or is about to boil. As soon as the first bubbles rise to the top, the pan is taken off from the fire, and put carefully away for twenty-four hours in order to cool. At the end of this time, if the quantity of milk is considerable, the cream will be an inch or more in thickness upon the surface. It is then divided with a knife into squares of a convenient size, and removed by means of a skimmer, and is called *clotted* or *clouted* cream. It is more solid than the cream obtained in the usual way, and has a peculiarly sweet and pleasant taste. It is the usual companion of the breakfast table, and much valued as an addition to the fruit pie, or some kinds of fruit in their raw state, or in the manufacture of that unrivalled Devonian compound, the *syllabub*. The milk thus treated yields one-fourth more cream than is produced in the common way, but it is at the expense of the remaining milk, to which little is left but the watery particles that entered into its original composition. It more readily churns than cream produced in the usual way, and forms a butter retaining the peculiar taste of the *clouted* cream.

The cream thus preserved consists of the *butyraceous* portion of the milk with some quantity of the serous fluid, and these must be separated from each other. This has been found to be best effected by agitation. It might be effected on a small scale, by means of a bottle, but is best accomplished by the help of a machine called a *churn*. This is either formed of a revolving barrel, or of an upright one, wider at the bottom than at the top, and with a moveable cover affixed to it, pierced by a hole. In this hole works a stick or pole, four feet in length and two inches in diameter, to the bottom of which is affixed a circular board, somewhat smaller in diameter than the upper part of the cask, and pierced with several circular holes. The cream is poured into the churn until it is about two thirds full,—the stick with the circular board is then introduced, and the cover placed over this, admitting the end of the stick to pass through the aperture in its centre. The churning now grasps the stick in both hands and moves it rapidly and forcibly up and down. The