

in "Exaggeration nor mock refinement about the picture; but it is an honest, simple representation, by hard work, of what whilst all stations may see. Yet the colour is (y) does managed as to be charming, and the whole story is told with pleasant humour. The thought must occur, Do Italian peasant-keepers keep the "wolf from the door" by the help of all these allies—all these hounds of what English folk waste? be quiet this poor little rustic's parents had turnerily geese, ducks and hens to help to see them a living! Possibly English agriculture would not be roaring quite so much in the temper of that frightened Italian beggar-brat if English agriculture surrounded their homesteads with as numerous an array of producers of what every English townsman wants to buy. This Signor Chierici is an Italian Crabbe—"Nature's sternest painter, yet her best," and his the truest "farm picture" the exhibition.—*Agricultural Gazette*.

THE ART OF BUTTER-MAKING.

Dr. Voelcker delivered a series of four lectures, or addresses, on the "Principles of Butter-making," in the working dairy erected in the "Royal" showyard at Derby. His remarks were to a great extent varied on each of the four afternoons, and we now give, in a more complete form than has yet been published, the substance of the discourses.]

It has been announced that I am to deliver a lecture on butter-making on each day of the show. I do not, however, propose to chide at anything so pretentious, but rather to content myself with some simple and practical hints on the subject. As you are aware, can save quantities of butter are annually imported into England from foreign countries. We obtain excellent butter from Holstein, Denmark, and also from America. Now a gardener frequently struck me that there is no necessity for importing large supplies from the distant lands, when we have such excellent facilities for producing good butter at home with comparatively little trouble. The question will very naturally be asked—How is it that so much butter is imported into England when we can make it cheaper and avoid the expense of importation? My answer is extremely simple, and it is this—foreigners make better butter than we do, notwithstanding the natural advantages we possess of producing out good butter, of selling it fresh, and obtaining a good price for it.

Before speaking of the circumstances which render butter-making in this country, it is desirable that I should give you some explanation of the composition of milk. Milk, then, is a perfect food in a concentrated form, and contains everything necessary for the sustenance of young animals; and here I would remark that no more serious mistake can be made than to withhold this most natural food from the young, especially as it contains all the elements necessary for bone-making. Cream consists of a certain proportion of water and fatty matters, and a small proportion of casein. It would, of course, be much better for the purpose of the butter-maker if the latter element were absent; and if that

were the case, the principal part of the difficulties in the way of butter-making would be at once overcome, because it is due to the rapidity with which casein turns sour that butter obtains the rancid taste which we sometimes detect. It by any means we could separate the fatty matter from this casein or curd matter, we should get excellent butter. It is this curd matter which causes all the difficulty, as I have just intimated; and it is on this account that I believe dairy farmers will never obtain the first quality butter from whole milk, certainly not the same quality as that which is obtainable from cream. The composition of cream varies greatly, and the same remark applies to the fatty matters of which it is constituted. This circumstance I attribute in a very large degree to the feeding of the cows. Nobody, for instance, can feel any astonishment that when cows are fed upon turnips, swedes, and mangles, there is a more or less disagreeable flavour in the butter made from the cream produced from the milk of these cows. In my opinion, the best-flavoured butter is made from the milk of cows fed, not upon rich pasture, but upon what is generally considered poor pasture; that is to say, pasture with scanty herbage, such as that to be found upon the hilly land which abounds in this country. By rich pastures I mean pastures which produce a large bulk of grass, but which are not composed of a great variety of herbage. The richer the quality of the cream the richer will be the quality of the butter made from it.

It has been said, with a good deal of truth, that by over-manuring pasture land we reduce the fine quality of the butter made from the milk of cows fed upon such pasture. My belief is that the finest quality of butter is produced from pasture which contains a great variety of herbs, some of which might even be ranked as weeds. The question is, Can ordinary pasture produce first quality butter? and to that question I answer, "Decidedly, if you take proper precautions to prevent the cream turning sour before it is churned." This sourness, let me repeat, is the great hindrance in making high class butter. Many persons deem this a small matter, and unconsciously allow the cream to get somewhat sour before making butter; but if you desire to produce good, sweet, keeping butter, you must churn cream as sweet as possible. This you will be inclined to say, is an extremely simple matter; and I am almost ashamed to speak of such simple matters in the presence of so many experienced persons; but my experience is that simple things are the most difficult to make people learn. With most of us there is a peculiar tendency to aim after some big thing and to neglect the little thing, notwithstanding that it is on the latter that so much of our daily comfort depends.

It may appear to be a matter of little moment to prevent cream getting sour; but when we remember the enjoyment of tasting first quality butter, as against the feeling experienced in having to eat rancid and ill-flavoured butter, it does not seem so small a matter. But how are you to prevent cream getting sour? In the first place, you must carefully look after all the people employed in and about the dairy to see that they always have the importance of cleanliness before their eyes; and above all see that those who milk the cows do so with clean hands. Secondly, you should be sure that

the cows are perfectly "stripped," because if this is not done it is the means of sowing the germs of rancidity. Then, when the milk is drawn from the cow, it ought to be cooled down directly to about 55°, so as to take what is called the animal heat from it.

As to the question of shallow or deep pans for "setting" for cream, I am an advocate for the use of deep ones. After being filled with milk, these pans should be placed in a vessel containing water—ordinary pump water answers well—for twelve hours; or, if the milk is extra warm a little ice may be used, and this would result in a large proportion of cream arising. In order to prevent rancidity, it is very important that the cream should be churned at once. In small dairies, however, this is impracticable, and in such cases every endeavour should be made to prevent the casein from turning. And here let me say, do not churn too quickly. Do not be in too great a hurry and turn irregularly, because if you do failure will almost certainly result. Turn steadily, at about forty-five or fifty revolutions per minute. As soon as butter comes—and this you can tell by the noise—it is time to stop the churn and deal with the butter kernels. Strain off the buttermilk, put some cold water into the churn, and turn it again two or three times; this will have the effect of washing the butter. Perhaps the best way is to incorporate the smallest quantity of salt, or salt water, into the churn, so as to distribute the salt evenly amongst the butter. I do not recommend too frequent washing, as this only results in the butter losing that fine natural flavor which it should possess. After each process of butter-making, the churn and other utensils should be cleaned with boiling-hot water. In butter-making everything depends upon scrupulous cleanliness, the use of plenty of hot water, or steam if it is available, followed by cold water.

Some years ago I gave a lecture on cheese-making to a number of farmers' wives and dairywomen on the estates of the late Lord Fitzhardinge. At the close of my remarks I invited discussion, and after a little while a lady got up and said, "Well, doctor, what you have to tell us is all very well, but can you make cheese?" "Yes, I think I can," I answered; "but at any rate I will try if I have a fair chance, and see the thing done from beginning to end. The produce of a great many cheese dairies is spoiled by the cows being milked with dirty hands, and so forth." "Very well," said she, "if you will come I will send for you." I was then residing in the neighbourhood. A date was agreed upon, and at half-past 5 on a cold morning she sent her trap, and I drove five miles to see the cows milked. When the rennet was about to be put in I asked her whether the temperature was right. So she dipped in her hands, and said, "Yes, I think that will do." On inserting the thermometer, however, I found it was just 10° lower than it ought to be. At this, her husband, a snock-frocked farmer, who was standing by, said, "Ah! Sally, I tell you you have spoiled many a cheese for me by feeling the milk with your hands instead of testing it with the instrument." Well, at last a large cheese was made and marked, and when sold it fetched more money than she had been in the habit of getting. After this nearly all the farmers in the neighbourhood presented their wives with a thermometer apiece.