

all, or nearly all, be expelled by proper manipulation of the milk, and cured. Again cheese is not such a perishable article, decomposition being much slower than in butter. Cheese can also be subjected to a higher and more fluctuating temperature without sustaining the same amount of damage.

I cannot impress too strongly upon manufacturers of butter for export the necessity for using the greatest amount of care in the treatment of the milk before separation; and where milk is supplied to creameries, or butter-making establishments, there must be equal care on the part of the milk-suppliers, for their interests are identical, and much of the success of the industry depends upon their efforts. They should see that the cows kept possess good butter-making qualities, such as the Jersey cow (which certainly takes the lead in this respect) possesses. For general purposes, however, the Jersey cow, on account of the amount of attention she requires (not being of a hardy nature) is not the best for general introduction at the present stage of the industry. There can be no doubt, however, but that any district or country aiming to secure first place in the market would do well to secure a blending of the Jersey qualities in their breeds of cattle, by keeping a certain percentage of the Jersey breed, or by carefully crossing them, and thus giving the desired quality and character to the milk-product. To any country aiming at the production of butter, this fact cannot be too plainly pointed out, and is one which should be impressed upon the farmers in a course of lectures directly dealing with the subject. Farmers should immediately see to the weeding-out of poor stock, and should keep and breed from only their best animals. During my circuit I have been astonished to see the breeding of dairy-cows, on the whole, carried on in such a slipshod fashion.

Food, as already pointed out, has a great influence on the quality of the product, besides having a marked effect on the keeping-qualities of the butter. New Zealand being naturally adapted to the growth of grasses (although in some districts only a few varieties are grown, owing to the nature of the soil), these form the chief or only food of the cows. This grass, during the flush of the season, being rank and green, and containing a very high percentage of moisture, causes an excess of moisture in the milk, which leads to a softness in the butter. Butter made from such milk, when the cows are fed on rank green grass, without that food being supplemented with some artificial food, such as crushed oats or bran, is likely soon to lose its firmness of texture. In supplementing green grass food with any other kind of concentrated food, only such should be chosen as will not taint the milk. For this form of food, crushed oats or bran make a good substitute. Milk is, of itself, a very complex fluid, containing as it does all the elements of the animal body. Naturally, therefore, the food should be rich in all of these elements. The greater the variety of food consumed by the cow the better the quality of the milk, conditional upon the food not containing anything that will taint the milk, as already pointed out.

Any one engaged in the manufacture of butter will be struck by the difference in the firmness of body and texture of the product when the grass begins to run to seed, as compared with that produced from cows fed upon young green grass. The difference in this respect, and in the keeping quality, flavour, firmness of body and texture of the butter, is very clearly illustrated when cows have access to an old meadow which has been laid down for some considerable time with good variety of grasses. On the cows being taken off such pasture it will be found that not only is there a decrease in the yield of milk, but also in the quality of the butter.

The milk from cows which are in any way unhealthy should not upon any account be used for the manufacture of butter, or any other product for human consumption. Great care should also be exercised to exclude from the factory all milk taken from cows soon after calving. Milk supplied to the factory in this condition does incalculable harm, besides proving very troublesome in all the operations of the manufacture. Some people either use or send to the factory the milk of the third milking. The colostrum or cells of the animal have not at such an early period ceased shading off with the milk. I have seen milk of the fifth or seventh milking in a fit state for use. This very much depends upon the amount of inflammation in the udder at the time of calving, resulting chiefly from the treatment, condition, health, and food of the cow at the time of calving. It usually takes six or seven or even more days before the milk is fit for use. A reliable and convenient test of fitness for use is applied by boiling the milk, which if fit for use will not curdle. This reminds me of a case which came under my notice only a few weeks ago. While standing conversing with a few suppliers of milk to a large Southland dairy-factory, the question of colostrum arose. When I asked one of the suppliers in question how long a time he considered should elapse after a cow calved before her milk would be fit to send to the factory I was surprised to hear in reply that he usually held back the first two or three milkings. I remarked that it was surprising that such milk was not detected by its reddish colour in the can on arrival at the factory. The reply was that he always distributed such milk equally in all the cans, so that it would be more difficult of detection. Thus we see how often the efforts put forth by the other milk suppliers in trying to deliver their milk into the hands of the manufacturer in the soundest state possible are nullified by the dishonesty of a few. For this abuse there is, to my mind, only one remedy, and that is organization among milk-suppliers and factory-men, which is just as essential as the scheme brought forward for the federation of the dairy-factories and dairy-produce manufacturers. To bring about this desideratum my services have in the past to a great extent been directed; but in this direction much yet remains to be done before the industry can attain that importance which it merits in the colony.

The proper treatment of cows has a marked effect on the character of the milk and in its keeping-qualities. When cows are overdriven or receive brutal treatment the milk changes in its composition, and decays very rapidly. Such milk contains but little fat, and shows a considerable decrease in sugar and caseine; the place of these two essential elements (fat and caseine) in milk being taken by albumen. Therefore, it is easily seen that the milk is soundest and possesses better keeping-qualities when the cows are well fed, healthy, and quiet. Shelter from the broiling sun during excessive summer heat, by means of trees, hedges, or shelter-sheds, is very necessary if