

and that an ice-making factory, driven by water-power, be started to supply all the neighbouring dairies with ice. It seems a good idea to have such a factory, and you might consider it and report. My fear is that the other dairies would not sufficiently support the venture.

Edinburgh, 30th May, 1890.

W. S. DAVIDSON.

REPORT BY MR. JOHN SAWERS, DAIRY INSTRUCTOR, ON THE EXPORTATION OF NEW ZEALAND BUTTER TO GREAT BRITAIN.

SIR,—

In accordance with your request, I have the honour to report on the exportation of New Zealand butter to Great Britain. In relation to the failure and causes thereof, it is an easy matter to indorse the views held by all those dairy-produce brokers handling New Zealand produce in London as to the inferiority of the butter-product during the past season, and who advocate the desirability of the product reaching the market at the right season as soon as possible after manufacture. Last year being an exceptionally favourable season for the disposal of dairy-produce in the Australian markets, on account of the high prices ruling, a great many of the producers held back their butter, in anticipation of a still further rise in price. On the fall of the market, in the months of October and November, 1889, large stocks of butter were held not only by producers, but also by many of the large exporting and commercial-agency companies. On the complete glut of the Australian markets, and the consequent heavy fall in price, the only alternative left was to send the butter to the Home market.

Many instances have come under my notice in which producers were offered as high as 1s. per pound for the whole of the butter produced during the summer season, but which they refused to accept, in anticipation of a still further rise. In one case a Christchurch firm, whose output amounted to about 20 tons, was offered 1s. per pound, but they would not entertain the offer; and on the fall in value in the Australian market this firm was compelled, as a last resource, to ship their butter to London. This butter by the time it reached its destination would probably be from six to nine months old. In the month of May last I saw the account-sales of some of this shipment—some 120 boxes—the greater portion of which only realised £1 8s. per hundredweight; some was sold for 14s. per hundredweight; while some 2cwt. or 3cwt. which had been shipped immediately after manufacture realised the remunerative figure of £5 10s. per hundredweight. This was consigned to Messrs. Doddridge and Co., London.

Very few samples of New Zealand butter I have inspected of any age have shown that firmness of body and texture so essential to butter of good quality, and upon which its keeping-qualities so much depend. The causes of this defect, and the remedy, I will specify further on in this report. Were the New Zealand producers in a position to place their butter on the market in from eight to ten days after it is manufactured they could, no doubt, compete successfully against the products of any other country. It is true that New Zealand has natural facilities for the production of milk, such as are possessed by scarcely any other country; and our manufacture of the products of that article are capable of almost indefinite expansion. Ample tests have now been made to demonstrate that the colony can produce a first-class article, as shipments of both butter and cheese placed in the Home market have commanded top prices. That the capabilities of this colony for the production of dairy-produce is fully recognised is borne out by the articles which have frequently appeared in the Danish newspapers during the last two years, warning their people that New Zealand is the most dangerous competitor Denmark is likely to have in the future, and advocating the withholding of all assistance to New Zealand, by retaining the knowledge of butter-making as much as possible within their own country.

Although we have so many natural facilities for carrying the dairying industry to a successful issue, there are many almost insuperable difficulties to contend with. The causes of bad butter are many, and to the uninitiated some of them might seem of little importance; but these are seeming trifles which cannot be overlooked without endangering the quality of the product. I shall first take up a few of the principal difficulties which beset the maker and which materially affect the quality of the butter, and then speak of them in detail: First, the particular breed of the cows kept for dairying purposes has a marked effect upon the butter produced. Second, food has a great influence on the quality of the butter produced. Third, some of the cows may be in bad health, and some may have been eating bad-scented weeds or other food prejudicial to the quality of the milk, or the milk may have been used too soon after calving. Fourth, the cow may have been harassed or overdriven, or they may have been without shelter from the hot broiling sun of summer, causing the milk to spoil in their udders. Fifth, the milk may have been kept standing too deep in close cans over night or exposed to an impure atmosphere. Sixth, filth breeds a tremendous progeny of bad consequences, all tending to do serious damage to the quality of the product. The most scrupulous cleanliness is therefore essential during milking, as also in all the subsequent operations in the process of butter-making. Seventh, the milk may have been driven a long distance to the factory in closely-covered cans. Eighth, the want of sufficient means for maintaining a low temperature in all the operations throughout the process, and the absence of the desired cool-storage for the butter after it is packed and during transit, are the most serious obstacles in the way of the success of our export butter trade. Ninth, the proper maturity of the cream before churning is a matter requiring much strict attention. Tenth, the preparation of the packages for packing the butter is another item of no small importance. These are the chief difficulties in the way of making butter of good keeping-quality, and attention to which will in the future insure the success of the New Zealand butter-export trade.

Any of the defects referred to as affecting the quality of the milk has far more injurious effect on the quality of the butter manufactured therefrom than upon cheese. For example, should it be found that a surplus of moisture predominates in the milk of a given dairy, the cheese-maker, if he be a thoroughly competent man, will regulate his process accordingly. So also with taint in milk which may have been caused by the cows eating some bad-scented weed or drinking impure water. This can