

- (d) The use of rennet at the rate of 4 oz. per 1,000 lb. milk, instead of lower rates, tends to improve the rate of ripening of cheese. It hastens flavour-development and makes the cheese break down more quickly than is normal; but the advantage of using increased amounts of rennet is not equal to that of improving maturity by reasonable curing temperatures and age. The use of additional rennet intensifies flavour defects of any kind.

These experiments uphold the regulations affecting the heating of curing-rooms and the holding of spring-made cheese on factory shelves for three weeks; but they go further by emphasizing the need for longer time on the shelves and two months' storage prior to export. It is realized that such storage would involve difficulties, especially in the flush periods. Accordingly, the industry is urged to consider either the more uniform distribution of its production over the year or the provision of the necessary storage accommodation.

#### *Harsh and Gritty Body in Cheese.*

Experiments reported at the annual conferences in 1930 and 1931 showed that the addition to curd of excessive quantities of salt was responsible for harsh, gritty bodies of cheese which mature very slowly. Produce made from such curd resembles skim-milk cheese. It is gratifying to learn that cheesemakers are now alive to this fault, and that during the past season there has been a very material improvement in the bodies and flavours of cheeses as a result of paying attention to this matter. It must be recognized, however, that other factors—notably excessive acidity or inadequate acidity—play a part in producing harshness. The addition to curd of excessive salt also is a very common cause of cracked rinds. In experiments on this question curd salted at the proper rate produced cheese showing a perfect rind, while cheese from the highly salted curd showed very unsightly cracking of the rinds. Mould entering the cracks of such cheese causes loss by spoilage, which extends  $\frac{1}{2}$  in. to 1 in. in depth all round the outside of the cheese. Discoloration of coloured cheese frequently arises from cracked rinds.

In the light of the Institute's investigations, the importance of the control of the rate of salting curd cannot be overestimated.

#### BUTTER STUDIES.

These have been concerned mainly with the development of a fairly full flavour to suit particular parts of the British market. Meanwhile these areas are supplied by countries near to the British market, which to some extent develop acidity in their cream by the use of starter. Such butter does not keep well; but this does not constitute a drawback to those countries within a short distance of the British market. The practice of developing high acidity in cream with a view to obtaining this full flavour is not applicable in New Zealand because of the time it takes for butter to reach the British market, and of the risk of "fishiness" developing in transit. Thus the problem that we are attempting to solve is the manufacture of a fairly full-flavoured butter which will stand up to keeping for a reasonable period of time.

The extensive trials carried out in the 1929-30 dairy season indicated that by the addition of starter in limited amounts to fresh cream there could be developed a mildly full flavour which did not deteriorate on storage, and which, on the average, was superior to the flavour of butter made from fresh cream to which no starter was added. Corresponding trials with neutralized cream, on the average, showed no advantage in the adding of starter. In the following season butter was made from fresh sweet cream, the same cream ripened to a mild acidity, and the same cream ripened to an acidity comparable with that used in certain other countries. The Home reports on these butters invariably favour those made from a perfectly sweet cream. The cream used in this experiment was of very high quality, and had no neutralizer whatsoever added to it. What were considered to be dangerously high acidities were developed so that definite information might be obtained on the effect of these upon perfectly good cream. During last season trials were carried out with butter made from fresh cream, the same cream ripened to a very mild degree of acidity, and from neutralized cream to which starter had been added, and to which no starter had been added. Part of this butter was exported to an area characteristic of that desiring fairly full-flavoured butter, and, with the collaboration of the Home representatives of the Dairy-produce Board and Dairy Division, trade opinions were obtained on this butter. This market is well satisfied with a rich creamy butter made from fresh cream which still possesses a clean aroma, and which is easily spreadable. It prefers a butter rather paler in colour than many New Zealand makes. Fresh cream butter apparently is preferred to that made from a neutralized cream; and distinct objection is raised to a butter which is neutral or very insipid in flavour. The following extract is taken from a report by the Home manager of the Dairy-produce Board on inquiries made in Glasgow:—

"Conversations with importers, wholesalers, retailers, and consumers reveal the interesting fact that our very best butter can be sold in this area on its own flavour, if salesmanship is exercised and the consumers are kept on the butter for a few weeks so that they become used to it. One of the largest retail establishments in one shop alone have increased their weekly sales of New Zealand butter from 30 cwt. in April, 1930, to 84 cwt. in April, 1932; whilst their sales of another brand of butter have decreased in the same period from 32 cwt. to 25 cwt. This result has been achieved by careful selection of New Zealand butter sold, by an attractive display of our goods, backed by efficient sales effort.

"I found dozens of shops in the city itself and in the suburbs displaying New Zealand butter prominently on their counters, and in many cases New Zealand butter posters appeared in the windows. This is a very different state of affairs from that obtaining two years ago, and indicates clearly that there is a growing demand for good New Zealand butter. I am of the opinion that if all our output had the aroma and flavour of our very best butters as they are to-day the Danish bogy would be overcome in time. It is the flat neutral flavour, whether due to over-neutralizing or to age, that puts us so definitely in the second class compared with Danish."