

Of those held in New Zealand till they were mature, the raw-milk cheeses made from finest-quality milk developed the fuller Cheddar flavour. This is a very significant point, since the more real Cheddar flavour that can be developed in reasonable time, the more acceptable to the consumer is the Dominion product. It is important to observe, however, that cheeses made from milk of lower grade than finest had less desirable flavours than those made from the corresponding pasteurized milk.

(b) When the milk was heated to temperatures which brought about slightly or distinctly cooked flavours in either the milk or freshly made cheese, the mature product usually had an undesirable flavour, generally bitter and acid, and altogether lacking in true Cheddar character.

(3) *Body*.—Whilst pasteurizing temperatures of 160° F. or less made no apparent difference in the body of the pasteurized-milk cheeses, temperatures above 165° F. brought about distinct pastiness and grittiness. Thus, of fifteen pairs of cheeses, one of each made from milk pasteurized at 175° F., the raw-milk cheeses were preferred in eleven cases, they were equal in three cases, and in only one case was the pasteurized-milk cheese preferred in total grading-points.

(4) *Fat-distribution in the Cheese*.—Raw-milk cheese made from high-testing milk frequently exhibited visible pockets of butterfat, while cheese made from the same milk after pasteurization showed this defect to a much lesser extent. No definite relationship was found to exist between the percentage of fat in the milk and the occurrence of these pockets of butterfat. As the season progressed, the tendency for free butterfat to appear visible decreased with milk of any definite fat content. Thus a cheese made from 4.2-per-cent-fat milk may show free butterfat in the spring months, while a cheese made from milk of the same fat content in the autumn would exhibit no butterfat sacs. This is no doubt due to the decrease in the size of butterfat globules with advance in lactation period of the milk cows.

(5) *Cheese-yields*.—At temperatures of 150°–165° F., pasteurization of milk increased the cheese-yield on the average by 0.02 lb. cheese per pound butterfat when yields were based on weight of the cheese at fourteen days old. At a pasteurizing temperature of 175° F. the pasteurized-milk exceeded the raw-milk cheese yield by 0.1 lb. cheese per pound butterfat. This benefit was entirely offset by marked deterioration in body and flavour.

No benefits were derived from pasteurizing milk in a cheese-vat by the holding method at temperatures of 140°–150° F. for thirty minutes, as is practised with market milk. When the milk was treated in this way the cheeses more readily developed cooked and bitter flavours.

CONTROL OF PASTEURIZING TEMPERATURES.

It is most important in the pasteurization of milk for cheesemaking that temperatures be carefully regulated to avoid defects arising from the over-pasteurization of fractions of the milk. Experimental work has shown that many ordinary dairy thermometers with thick glass walls, while accurate, are not sufficiently sensitive to quickly register fluctuations in temperature that occur with variations in the flow of milk and steam through the pasteurizer. Care has to be taken to use good-quality, sensitive thermometers. Splendid results have been obtained with time- and temperature-recording instruments fitted with mercury in steel bulbs which are readily fitted to the pasteurizer at the point of maximum temperature of the milk.

THE WAXING OF CHEESE-SURFACES.

The experiments referred to in last year's report showed that the protection of cheese-surfaces with wax to avoid evaporation of moisture has no effect on preventing slit openness, although it decidedly reduces loss in weight of the cheese. Thus more is involved in the development of slits than the mere control of moisture-evaporation. Observations made in the present dairying season show that when cheeses carrying a high percentage of moisture are waxed, although apparently dry at the time of treatment, there develops between the wax and the rind a distinct sliminess, which has an objectionable smell and appearance. Cheeses of normal moisture content when waxed at fourteen days old do not develop this defect.

CARE IN PACKING CURD IN CHEESE-HOOPS.

Trials made of packing curd carefully and carelessly, respectively, in cheese-hoops in commercial factories have verified previous observations that the addition of curd to a cheese-hoop in small quantities at a time, followed by careful manual ramming of the curd, results in much closer texture than is the case when less careful methods are adopted.

THE SALTING OF CURD.

Previous experiments have shown that the addition of large quantities of salt, as is occasionally practised, results in cheese with a harsh, brittle body. Later trials have shown that even an additional 2 per cent. above the normal makes an appreciable difference in body, the higher-salted cheese being distinctly less smooth in body. An increase in the proportion of salt effects an improvement in closeness of texture, but this benefit is more than offset by the reduction in character of body. On the other hand, too low rates of salting of curd (less than 2 per cent. based on the weight of well-cooked curd at salting) bring about a soft body, and frequently a bitter flavour.

It has been demonstrated that the salting of curd before it is ready for this treatment, as indicated by proper tests and the experience of the maker, induces distinctly more openness. Besides, the body of the cheese is made more pasty by this treatment, and the flavour is less attractive. It is, therefore, most inadvisable to hasten the completion of cheese-manufacture before the curd is ready for salting.