

REPORTS OF INCORPORATED RESEARCH ASSOCIATIONS

THE DAIRY RESEARCH INSTITUTE (N.Z.)

Director : Professor W. RIDDET

The Dairy Research Institute (N.Z.), of Palmerston North, which ceased to be a unit of the Department in 1947, now receives an annual grant from the Department.

The survey of the vitamin A content of New Zealand butter has been continued, and the results were generally similar to those of previous years but with some variations in samples from districts affected by unusual weather conditions.

The results obtained in comparisons of washed with non-washed butter from good-quality cream confirm the findings of Danish investigators that there is little difference in its keeping-quality, but it is not yet proved that the results are similar with butter from poor-quality cream.

In the investigations in the temperature of pasteurization of cream in relation to quality of butter, it has been found that with good-quality cream there was some slight advantage in raising the temperature from 202° F. to 208–210° F., but none when raised to 218–224° F. With poor-quality cream there was some slight advantage in pasteurizing at temperatures about 212° F.

Work on the land-cream taint in cream and butter has been continued, but all the treatments have not yet been fully explored.

It has been confirmed that the presence of more than 3 p.p.m. of soluble copper or 4–5 p.p.m. of soluble iron in parchment for butter wrapping increases the rate of development of tallowy off-flavour on the surface of the wrapped butter.

Information of the several processes of continuous buttermaking has been made available to industry; the operation of the heavy-cream concentrator portion of the process was studied, and the physical and other properties of butter produced by the Alfa process were investigated.

As it seemed possible that variations in the amount of "bound water" in milk or curd might afford a clue to the behaviour of different milks during cheesemaking, further investigations have been made of milk samples of different origins.

The Institute has developed to a commercial scale the system of pressing and later wrapping cheese in Pliofilm, and the production of 1 lb. portions reached 160 lb. per day. The product found a ready market.

A number of factories have been assisted by information on the methods of drying buttermilk and whole milk and by analysis of the powders produced.

The maintenance at their highest potential activity of cultures of starters for cheese-manufacturers has become a major task in the laboratories, and a search is also being constantly made for more active strains unrelated in phage reactions to the other stock strains. More evidence indicating that strains of *Str. lactis* are not so suitable for cheese-manufacture, as strains of *Str. cremoris* has accumulated.

"Phage-carrying" starter was submitted to field trials, and a fair degree of success was realized. From the practical point of view, further investigations do not seem worth while, but since the phenomenon of phage-organism symbiosis is of considerable interest, work on the problem may be resumed later.

The results of the survey of cheese-milk quality were examined, and the general conclusion was reached that some undisclosed feature of the manufacturing process was mainly responsible for the differences. The phenomenon merits further study.

Some work on the effect of penicillin in milk on the activity of cheese starter was carried out in view of rapidly increasing use of penicillin for the treatment of bovine mastitis, and it was shown that small quantities are sufficient to inhibit the growth of starter, and to adversely affect the quality of the cheese in other ways.

Experiments have been designed to indicate more precisely the relative importance of various procedures used to control moisture expulsion in cheese-manufacture, and the influence of various factors have been studied.